Automation Blocks 24.4

User Guide

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Automation Blocks User Guide

SysPacks are a bundle of applications developed in-house through the **FintechOS Platform**. They are exported from the FintechOS Core platform in the form of assets that contain `sql`, `xml`, or `doc` files, and other metadata.

In addition to the FintechOS Studio embedded automation processors, the FintechOS SysPacks bundle comes with automation blocks that allow you to enhance digital journeys and improve customer experience.

Automation blocks or processors are out-of-the-box functionalities used to customize a solution based on your customer's needs. You can use these components for OCR extraction, video streaming, face recognition, marketing campaigns management, electronic signatures, and so on.

FintechOS offers a variety of automation blocks that you can use to customize and enhance digital journeys. For additional details on how to integrate and use FintechOS Automation Blocks see the following pages:

- OCR and Identity Validation

- Face Recognition and Video

- Document Signing

- Campaign Management

- Task Management

Install SysPacks

The steps below describe how to perform both an automatic installation and a manual import of a FintechOS SysPack.

Depending on the FintechOS platform version that you want to install, make sure the correct SysPack type is applied:

1. For standard FintechOS infrastructure installation use Standard SysPacks.

2. For professional/ enterprise FintechOS infrastructure installation use the following

   SysPacks:

   a. Banking environments: Professional Banking SysPacks

   b. Insurance environments: Professional Insurance SysPacks

> **NOTE**
> SysPacks are mutually exclusive. The platform installation requires only one SysPack type.

Starting with V20.2.9, SysPacks can be imported asynchronous. Make sure you use async syntax when importing the packages in an Azure environment.

Below are the components for each FintechOS SysPack. Details about each component are in their .zip packages.

Package	Description
00 PreInstall DFP Common	PreInstall DFP Common
01 FTOS DFP Common	N/A
02 FoundationPreInstall	FoundationPreInstall
02 FTOS Content Templates	FTOS Content Templates
02 FTOS Foundation	FTOS Foundation
02 FTOS Versioning	FTOS Versioning PreReq
06 FTOS Project HyperPersonalization	FTOS Hyperpersonalization Processor Data Model
07 FTOS Project Campaign	FTOS Campaign Management Data Model
FTOS AriadNext Processor	N/A
FTOS OCR Processor	FTOS OCR Processor Scripts

Package	Description
FTOS Onfido Processor	FTOS Onfido Processor Scripts
FTOS Project Cognitive Processor Client	N/A
FTOS Project Cognitive Processor Operator	N/A
FTOS Project Data Governance Consent Management	N/A
FTOS Project Data Governance Sensitive Data	FTOS Data Governance Sensitive Data Data Model
FTOS Project Esign Processor	FTOS Esign Processor Scripts
FTOS Project Integration	FTOS Integration Scripts

For an automatic installation, follow the steps described in the **SysPacks Automatic Installation** section.

> **IMPORTANT!**
> The HyperPersonalization and Campaign packages must be installed together as they have dependencies.

Prerequisites

In order to install the SysPacks, you need the latest FintechOS platform version installed, with the database configured. For specific steps, see the Installation page.

> **NOTE**
> When using **FtosSysPackageDeployer** with SQL Server Integrated Authentication make sure:
> 1. The Windows user running the above command has read/ write rights access to the FTOS database.
> 2. You run the command without the SQL username/ password parameters.
>
> When using **FtosSysPackageDeployer** with SQL Server Build In Authentication make sure:
> 1. The login used has read/ write access to the FTOS database.
> 2. You run the above command with the SQL username/ parameters.

Pre-Installation Checklist

The SysPack has unique constraints on some of the standard entities like: FTOS_DFP_FlowSettings, FTOS_DFP_ProcessorSettings, FTOS_VersionSettings, FTOS_VersionSettingsItem, FTOS_EntityStatusSettings, FTOS_MKT_AudienceSegments, FTOS_MKT_Audience.

If you have already moved data using the Configuration Data Deployment Package menu, then you probably have already configured some unique constraints.

Before running the script, make sure you:

1. Disable the constraints that you have created on your environment, allowing the system to create the new ones after the SysPacks are imported.

2. Use the new **Configuration Data Definitions** imported with the SysPacks when you export the data.

Automatic Installation Steps

1. Download the desired SySDigitalSolutionPackages compatible with you platform version from the Release Hub.

2. Unzip the installation kits.

3. Use *FtosSysPackageDeployer* to install the Syspack as follows:

   - Locate the *FtosSysPackageDeployer* in the unzipped FintechOS installation kit at the following location: **<unzipped_install_archive>\Tools\FtosSysPkgDeployer**.
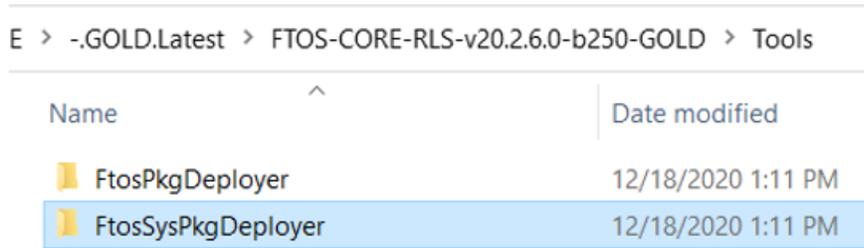
- Navigate to the location where you have unzipped the SysPack and copy the *FtosSysPackageDeployer* here. Let's call this location **<pckg_deployer_dir>**.
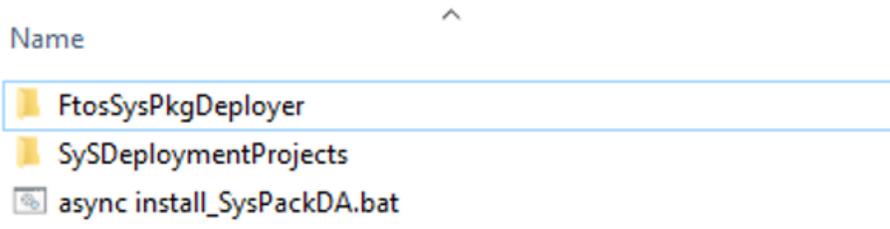
- Open `async install_SysPackDA.bat` to edit and replace the parameters described in the `install_SysPack.bat` Parameters Explanation section, with your own values.

- Right-click `async install_SysPackDA.bat` » Run as administrator.

`install_SysPackDA.bat` Parameters Explanation

For asynchronous import run the following command:
```
FtosSysPkgDeployer.exe-i –a -s <studio_url> -u <studio_user_name> -p <studio_user_password> -z <db_Server> -v <db_server_login_username> -k <db_server_login_password> -d <db_name> -r <syspack_file_path>
```

Field	Description
<studio_url>	The web URL of the Innovation Studio installation, for example http://localhost/ftos_studio.

Field	Description
<studio_user_name>	The username of the Innovation Studio user under which this import is executed. The user has to exist in Innovation Studio prior to this operation
<studio_user_ password>	The password for the Innovation Studio user.
<db_server>	The name of the database server where the FintechOS installation database was created.
<DB_user>	The username of the SQL Server user with administration rights on the FintechOS installation database.
<db_server_login_ username>	The login username of the SQL Server user with administration rights on the FintechOS installation database.
<db_server_login_ password>	The password for the above mentioned SQL user.
<db_name>	The name of the database where the package is deployed.
<syspack_file_path>	The physical path to the unzipped SysPack previously downloaded.

HINT

For more information about the deployment tool, please run FtosSysPackageDeployer.exe without any arguments to see the built-in help

Post-Installation Setup

After installing the .zip packages, access the 100_AfterImportManualCopy folder and follow the below steps:

1. Add the following images to the Upload EBS folder `<portal_EBS_folder>` (the Portal with operator flow):

   a. <syspack_file_path>**100_AfterImportManualCopy** \CopyToUploadEBS\emptyOCR.jpg

   b. <syspack_file_path>**100_ AfterImportManualCopy**\CopyToUploadEBS**emptyPhoto**.png

2. Copy the following folders over the FintechOS Portal installation directory for every Portal with back-office or B2C installed.

   a. <syspack_file_path>\ **100_AfterImportManualCopy** \FTOS Project Cognitive Processor Files\dcs-sdk-version**custom**

   b. <syspack_file_path>\ **100_AfterImportManualCopy** \FTOS Project Cognitive Processor Files\dcs-sdk-version**custom-on-demand**

   c. Copy any other needed js files in the corresponding js folder.

   d. For Onfido, follow the Instructions from the **InstallGuideOCRWithOnfido v1.1** file.

Cognitive Processor Custom Folders Explanation

Folder	Description
custom	Contains the video custom components: • css, images, and javaScripts: `dcs-sdk.js` and `onfido.min.js`
custom-on-demand	Contains the liveness component resources.

> **HINT**
> For any other information about the steps performed and their result, check **<pckg_ deployer_dir>\Logs**.

Manual Import Installation Steps

Follow the below steps if you choose to import the SysPack's individual deployment packages by hand.

1. Import the projects in SySDogitalSolutionPackages.Log into FintechOS Studio and navigate to **Configuration Management** > **Deployment**> **Digital Solution Packages**,

2. Click **Import Digital Solution Package** and select the zip packages in the order set by their names and import them one by one.

07 FTOS Project Campaign.zip	Compressed (zipped) Folder
06 FTOS Project HyperPersonalization.zip	Compressed (zipped) Folder
02 FTOS Versioning.zip	Compressed (zipped) Folder
02 FTOS Foundation.zip	Compressed (zipped) Folder
02 FTOS Content Templates.zip	Compressed (zipped) Folder
02 FoundationPreInstall.zip	Compressed (zipped) Folder
01 FTOS DFP Common.zip	Compressed (zipped) Folder
00 PreInstall DFP Common.zip	Compressed (zipped) Folder

3. Run the SQL scripts found in the folders that have a part of the name of the packages.

For example **02 FTOS Foundation. zip** and **FTOS Foundation**.

02 FTOS Versioning.zip	Compressed (zipped) Folder	19 KB	No
02 FTOS Foundation.zip	Compressed (zipped) Folder	221 KB	No
02 FTOS Content Templates.zip	Compressed (zipped) Folder	42 KB	No
02 FoundationPreInstall.zip	Compressed (zipped) Folder	2 KB	No
01 FTOS DFP Common.zip	Compressed (zipped) Folder	51 KB	No
00 PreInstall DFP Common.zip	Compressed (zipped) Folder	2 KB	No
PreInstall DFP Common	File folder		
FTOS Versioning PreReq	File folder		
FTOS Onfido Processor Scripts	File folder		
FTOS OCR Processor Scripts	File folder		
FTOS Integration Scripts	File folder		
FTOS Hyperpersonalization Processor Data Mo...	File folder		
FTOS Foundation	File folder		
FTOS Esign Processor Scripts	File folder		

NOTE

If you need to update certain packages from the SysPacks, import the .zip files for those packages and run the sql scripts from the folder.

Processor Settings and Mapping

For the below processors, there is a no-code form in the FintechOS Portall where the settings and mappings are defined.

- Computer Vision

- eSign

- Face Recognition with and without Liveness

The settings allow for the following types of controls:

- **String**: creates a normal input control.

- **Number**: creates numeric input control with spinner.

- **Boolean**: creates a drop-down control with following displayed values: Default, Yes, No.

- **Lookup**: creates a control which opens a grid for selecting the desired value. The grid allows filtering.

- **Object**: renders nested controls inside it.

- **Array**: renders nested controls inside it. Add and remove buttons are available to manipulate sets of controls

To render the proper form, follow these steps in the FintechOS Studio and in the FintechOS Portal:

1. In the FintechOS Studio, open the `FTOS_DFP_ProcessorSettings` entity .

2. Open the data form, and in the **Advanced** tab fill in the following code:

   In the **Before Events** tab:

```
// "settings" in this case represents the name of the entity
attribute
formData.formScope.jsonEditor = new ebs.JsonEditorControl
("settings");
```

In **After Events** tab:

```
var settings = [{}] //will be discussed later

//add listener event on processor type
ebs.addFormChangeEvent("ebsContainerContent",
"digitalProcessorTypeId", setSettingsAndMappingsControls);

async function setSettingsAndMappingsControls(settingsJSON){
    //get the value of processorType which is a GUID
    var digitalProcessorType = ebs.getFormAttributeValue
("ebsContainerContent", "digitalProcessorTypeId");
    //get the optionSetName using the processorTypeId
    var optionSetItemName = await
ebs.getOptionSetItemNameById("FTOS_DFP_
DigitalProcessorTypeOptionSet", digitalProcessorType);
    if(digitalProcessorType) {
        //filter the settings to take the configuration for
the desired processor type
        processorSettingsConfiguration = settings.filter
(function(item){
            return item.key.toLocaleLowerCase() ==
optionSetItemName.toLocaleLowerCase();
        })[0];
        //call the configController method of the editor
created in 'Before events'
        formData.formScope.jsonEditor.configController
(processorSettingsConfiguration.value, settingsJSON);
    }
}

//call the above method with the previously saved JSON in DB
setSettingsAndMappingsControls(ebs.getFormAttributeValue
("ebsContainerContent", "settings"));
```

The settings available are the following :

> **NOTE**
>
> This is an example, please modify as needed.

Settings Example

```
var settings = [
{
 key:'FaceRecognition',
 value: {
         documentationUrl:
'https://docs.fintechos.com/APs/FaceRecognition/2.0/U
serGuide/Content/Settings.htm',
         props: [
                 {
                         name: "isLiveness",
                         label: "Is Liveness",
                         type: "boolean"
                 },
                 {
                         name: "DestinationEntityName",
                         label: "Destination Entity Name",
                         type: "lookup",
                         lookupEntityName: "entity",
                         lookupViewName: "default",
                         displayProp: "displayName"
                 },
                 {
                         name: "SourceEntityName",
                         label: "Source Entity Name",
                         type: "lookup",
                         lookupEntityName: "entity",
                         lookupViewName: "default",
                         displayProp: "displayName"
                 },
                 {
                         name:
"SourceLookupDestinationName",
                         label: "Source Lookup Destination
Name",
                         type: "lookup",
                         lookupEntityName: "attribute",
```

```
                        lookupViewName: "default",
                        parentPropertyName:
"SourceEntityName",
                        attributeToFilterReference:
"entityid",
                        displayProp: "displayName"
                    },
                    {
                        name: "FileAttributeName",
                        label: "File Attribute Name",
                        type: "string"
                    },
                    {
                        name: "MaxRetry",
                        label: "Max Retry",
                        type: "number"
                    },
                    {
                        name:
"MinimumAcceptedConfidence",
                        label: "Minimum Accepted
Confidence",
                        type: "number"
                    },
                    {
                        name: "maskNextStepURLSuccess",
                        label: "Mask Next Step URL
Success",
                        type: "object",
                        items: [
                            {
                                name: "entity",
                                label: "Entity",
                                type: "lookup",
                                lookupEntityName:
"entity",
                                lookupViewName:
"default",
                                displayProp:
"displayName"
                            },
                            {
                                name: "form",
                                label: "Form",
```

```
                                    type: "lookup",
                                    lookupEntityName:
"entityform",

                                    parentPropertyName:
"entity",

                                    attributeToFilterRefe
rence: "entityid",

                                    lookupViewName:
"default",

                                    displayProp:
"displayName"
                            },
                            {
                                    name: "section",
                                    label: "Section",
                                    type: "lookup",
                                    lookupEntityName:
"entityformsection",

                                    parentPropertyName:
"form",

                                    attributeToFilterRefe
rence: "entityFormId",

                                    lookupViewName:
"default",

                                    displayProp:
"displayName"
                            }
                    ]
            },
            {
                name: "maskNextStepURLFail",
                label: "Mask Next Step URL Fail",
                type: "object",
                items: [
                        {
                                name: "entity",
                                label: "Entity",
                                type: "lookup",
                                lookupEntityName:
"entity",

                                lookupViewName:
"default",

                                displayProp:
"displayName"
```

```
                                    },
                                    {
                                        name: "form",
                                        label: "Form",
                                        type: "lookup",
                                        lookupEntityName:
"entityform",
                                        parentPropertyName:
"entity",
                                        attributeToFilterRefe
rence: "entityid",
                                        lookupViewName:
"default",
                                        displayProp:
"displayName"
                                    },
                                    {
                                        name: "section",
                                        label: "Section",
                                        type: "lookup",
                                        lookupEntityName:
"entityformsection",
                                        parentPropertyName:
"form",
                                        attributeToFilterRefe
rence: "entityFormId",
                                        lookupViewName:
"default",
                                        displayProp:
"displayName"
                                    }
                                ]
                            },
                            {
                                name: "businessStatusSuccess",
                                label: "Business Status Success",
                                type: "string"
                            },
                            {
                                name: "businessStatusFail",
                                label: "Business Status Fail",
                                type: "string"
                            }
                        ]
                    }
```

```
        },
        {
            key: 'VideoStreaming',
            value: {
                documentationUrl:
'https://docs.fintechos.com/APs/VideoStreaming/2.0/Us
erGuide/Content/Settings.htm',
                props: [
                        {
                            name: "DestinationEntityName",
                            label: "Destination Entity Name",
                            type: "lookup",
                            lookupEntityName: "entity",
                            lookupViewName: "default",
                            displayProp: "displayName"
                        },
                        {
                            name: "SourceEntityName",
                            label: "Source Entity Name",
                            type: "lookup",
                            lookupEntityName: "entity",
                            lookupViewName: "default",
                            displayProp: "displayName"
                        },
                        {
                            name:
"SourceLookupDestinationName",
                            label: "Source Lookup Destination
Name",
                            type: "lookup",
                            lookupEntityName: "attribute",
                            lookupViewName: "default",
                            parentPropertyName:
"SourceEntityName",
                            attributeToFilterReference:
"entityid",
                            displayProp: "displayName"
                        },
                        {
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                            label: "Queue Parameters",
                            type: "array",
                            items: [
                                    {
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                                        name: "ParamName",
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Name",
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                                },
                                {
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                                        label: "Parameter
Value",
                                        type: "string",
                                }
                        ]
                },
                {
                        name: "maskNextStepURLSuccess",
                        label: "Mask Next Step URL
Success",
                        type: "object",
                        items: [
                                {
                                        name: "entity",
                                        label: "Entity",
                                        type: "lookup",
                                        lookupEntityName:
"entity",
                                        lookupViewName:
"default",
                                        displayProp:
"displayName"
                                },
                                {
                                        name: "form",
                                        label: "Form",
                                        type: "lookup",
                                        lookupEntityName:
"entityform",
                                        parentPropertyName:
"entity",
                                        attributeToFilterRefe
rence: "entityid",
                                        lookupViewName:
"default",
                                        displayProp:
"displayName"
```

```
                                                        },
                                                        {
                                                                name: "section",
                                                                label: "Section",
                                                                type: "lookup",
                                                                lookupEntityName:
"entityformsection",
                                                                parentPropertyName:
"form",
                                                                attributeToFilterRefe
rence: "entityFormId",
                                                                lookupViewName:
"default",
                                                                displayProp:
"displayName"
                                                        }
                                        ]
                                },
                                {
                                        name: "maskNextStepURLFail",
                                        label: "Mask Next Step URL Fail",
                                        type: "object",
                                        items: [
                                                {
                                                        name: "entity",
                                                        label: "Entity",
                                                        type: "lookup",
                                                        lookupEntityName:
"entity",
                                                        lookupViewName:
"default",
                                                        displayProp:
"displayName"
                                                },
                                                {
                                                        name: "form",
                                                        label: "Form",
                                                        type: "lookup",
                                                        lookupEntityName:
"entityform",
                                                        parentPropertyName:
"entity",
                                                        attributeToFilterRefe
rence: "entityid",
```

```
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"default",
                                        displayProp:
"displayName"
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                                        label: "Section",
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"entityformsection",
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"form",
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rence: "entityFormId",
                                        lookupViewName:
"default",
                                        displayProp:
"displayName"
                                }
                        ]
                },
        ]
    }
},
{
    key:'OCR',
    value:{
        documentationUrl:
'https://docs.fintechos.com/APs/ComputerVision/1.5/Us
erGuide/Content/Settings.htm',
        props: [
                {
                        name: "SourceEntityName",
                        label: "Source Entity Name",
                        type: "lookup",
                        lookupEntityName: "entity",
                        lookupViewName: "default",
                        displayProp: "displayName"
                },
                {
                        name: "Entities",
                        label: "Entities",
```

```
type: "array",
"items":[
 {
     name:
"DestinationEntityName",
         label: "Destination Entity
Name",
         type: "lookup",
         lookupEntityName:
"entity",
         lookupViewName: "default",
         displayProp: "displayName"
     },
     {
         name: "SourceEntityName",
         label: "Source Entity
Name",
         type: "lookup",
         lookupEntityName:
"entity",
         lookupViewName: "default",
         displayProp: "displayName"
     },
     {
         name:
"SourceLookupDestinationName",
         label: "Source Lookup
Destination Name",
         type: "lookup",
         lookupEntityName:
"attribute",
         parentPropertyName:
"SourceEntityName",
         attributeToFilterReferenc
e: "entityid",
         lookupViewName: "default",
         displayProp: "displayName"
     }]
},
{
     name: "FileAttributeName",
     label: "File Attribute Name",
     type: "string"
},
```

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                              {
                                  name: "MaxRetry",
                                  label: "Max Retry",
                                  type: "number"
                              },
                              {
                                  name: "OptionSets",
                                  label: "Option Sets",
                                  type: "array",
                                  "items":[
                                        {
                                            name:
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                                            label: "Option Set
Name",

                                            type: "lookup",
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"optionset",

                                            lookupViewName:
"default",

                                            displayProp:
"displayName"
                                        },
                                        {
                                            name:
"MappingName",

                                            label: "Mapping
Name",

                                            type: "string"
                                        },
                                        {
                                            name:
"OptionSetItems",

                                            label: "Option Set
Items",

                                            type: "object",
                                            items:[
                                                  {
                                                      name:
"M",

                                                      label:
"M",

                                                      type:
"lookup",
```

```
                                                      lookup
    EntityName: "optionsetitem",
                                                      lookup

    ViewName: "default",
                                                      parent

    PropertyName: "OptionSetName",
                                                      attrib

    uteToFilterReference: "optionSetId",
                                                      displa

    yProp: "displayName"
                                                    },
                                                    {
                                                      name:

    "F",
                                                      label:

    "F",
                                                      type:

    "lookup",
                                                      lookup

    EntityName: "optionsetitem",
                                                      lookup

    ViewName: "default",
                                                      parent

    PropertyName: "OptionSetName",
                                                      attrib

    uteToFilterReference: "optionSetId",
                                                      displa

    yProp: "displayName"
                                                    }
                                                  ]
                                                }
                                              ]
                                            },
                                            {
                                              name: "LookupEntities",
                                              label: "Lookup Entities",
                                              type: "array",
                                              "items":[
                                                  {
                                                      name:

    "MappingName",
                                                          label: "Mapping

    Name",
```

```
                                                type: "string"
                                            },
                                            {
                                                name:
    "EntityName",
                                                label: "Entity
    Name",
                                                type: "lookup",
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    "entity",
                                                lookupViewName:
    "default",
                                                displayProp:
    "displayName"
                                            },
                                            {
                                                name:
    "AttributeKey",
                                                label: "Attribute
    Key",
                                                type: "lookup",
                                                lookupEntityName:
    "attribute",
    e: "EntityName",
                                                parentPropertyNam
    eference: "entityid",
                                                attributeToFilterR
    "default",
                                                lookupViewName:
    "displayName"
                                                displayProp:
                                            },
                                            {
                                                name: "Parent",
                                                label: "Parent",
                                                type: "object",
                                                items: [
                                                    {
                                                        name:
    "AttributeParentKey",
                                                        label:
    "Attribute Parent Key",
                                                        type:
    "lookup",
```

```
                                                           lookup
    EntityName: "attribute",
                                                           lookup

    ViewName: "default",
                                                           parent

    PropertyName: "EntityName",
                                                           attrib

    uteToFilterReference: "entityid",
                                                           displa

    yProp: "displayName"
                                                   },
                                                   {
                                                       name:
    "MappingParentName",
                                                        labe
    l: "Mapping Parent Name",
                                                        type:
    "string"
                                                   }
                                               ]
                                           }
                                       ]
                           },
                           {
                               name: "Validations",
                               label: "Validations",
                               type: "array",
                               "items":[
                                       {
                                           name: "type",
                                           label: "Type",
                                           type: "string"
                                       },
                                       {
                                           name:
    "Validations",
                                           label:
    "Validations",
                                           type: "string"
                                       },
                                       {
                                           name:
    "CheckScriptName",
```

```
                                        label: "Check
Script Name",
                                        type: "string"
                                }
                        ]
                },
                {
                        name: "AvailableDocumentTypes",
                        label: "Available Document
Types",
                        type: "array",
                        "items":[
                                {
                                        name: "type",
                                        label: "Type",
                                        type: "string"
                                },
                                {
                                        name:
"DocumentType",
                                        label: "Document
Type",
                                        type: "string"
                                },
                                {
                                        name: "Country",
                                        label: "Country",
                                        type: "string"
                                },
                                {
                                        name: "Provider",
                                        label: "Provider",
                                        type: "string"
                                }
                        ]
                },
                {
                        name:
"maskNextStepURLSuccess",
                        label: "Mask Next Step URL
Success",
                        type: "object",
                        items: [
                                {
```

```
                                        name: "entity",
                                        label: "Entity",
                                        type: "lookup",
                                        lookupEntityName:
"entity",
                                        lookupViewName:
"default",
                                        displayProp:
"displayName"
                                        },
                                        {
                                            name: "form",
                                            label: "Form",
                                            type: "lookup",
                                            lookupEntityName:
"entityform",
                                            parentPropertyNam
e: "entity",
                                            attributeToFilter
Reference: "entityid",
                                            lookupViewName:
"default",
                                            displayProp:
"displayName"
                                        },
                                        {
                                            name: "section",
                                            label: "Section",
                                            type: "lookup",
                                            lookupEntityName:
"entityformsection",
                                            parentPropertyNam
e: "form",
                                            attributeToFilter
Reference: "entityFormId",
                                            lookupViewName:
"default",
                                            displayProp:
"displayName"
                                        }
                                    ]
                                },
                                {
                                    name: "maskNextStepURLFail",
```

```
                              label: "Mask Next Step URL
Fail",
                              type: "object",
                              items: [
                                     {
                                     name: "entity",
                                     label: "Entity",
                                     type: "lookup",
                                     lookupEntityName:
"entity",
                                     lookupViewName:
"default",
                                     displayProp:
"displayName"
                                     },
                                     {
                                         name: "form",
                                         label: "Form",
                                         type: "lookup",
                                         lookupEntityName:
"entityform",
                                         parentPropertyNam
e: "entity",
                                         attributeToFilter
Reference: "entityid",
                                         lookupViewName:
"default",
                                         displayProp:
"displayName"
                                     },
                                     {
                                         name: "section",
                                         label: "Section",
                                         type: "lookup",
                                         lookupEntityName:
"entityformsection",
                                         parentPropertyNam
e: "form",
                                         attributeToFilter
Reference: "entityFormId",
                                         lookupViewName:
"default",
                                         displayProp:
"displayName"
```

```
                                        }
                              ]
                    },
                    {
                              name:
"businessStatusSuccess",
                                        label: "Business Status
Success",
                                        type: "string"
                    },
                    {
                                        name: "businessStatusFail",
                                        label: "Business Status
Fail",
                                        type: "string"
                    },
                    {
                                        name: "DocumentType",
                                        label: "Document Type",
                                        type: "string"
                    }


              ]
     }
},
{
     key: 'ESign',
     value: {
          documentationUrl:
'https://docs.fintechos.com/APs/eSign/2.1/UserGuide/C
ontent/Settings.htm',
          props: [
              {
                    name: "EntityName",
                    label: "Entity Name",
                    type: "lookup",
                    lookupEntityName: "entity",
                    lookupViewName: "default",
                    displayProp: "displayName"
              },
              {
                    name: "FileAttributeNameList",
                    label: "File Attribute Name List",
```

```
                        type: "array",
                        items: [
                            {
                                name:
"fileAttributeName",
                                label: "File Attribute
Name",
                                type: "string"
                            },
                            {
                                name:
"fileToBeSignedName",
                                label: "File To Be Signed
Name",
                                type: "string"
                            }

                        ]
                    },
                    {
                        name: "MaxRetry",
                        label: "Max Retry",
                        type: "number"
                    },
                    {
                        name: "signedDocumentName",
                        label: "Signed Document Name",
                        type: "string"
                    },
                    {
                        name: "WebhookUrl",
                        label: "Webhook Url",
                        type: "string"
                    },
                    {
                        name: "WebhookStatusUrl",
                        label: "Webhook Status Url",
                        type: "string"
                    },
                    {
                        name: "SignatureSteps",
                        label: "Signature Steps",
                        type: "array",
                        items: [
```

```
                                        {
                                            name: "order",
                                            label: "Order",
                                            type: "number"
                                        },
                                        {
                                            name: "signatureTag",
                                            label: "Signature Tag",
                                            type: "string"
                                        },
                                        {
                                            name:
"signatureTypeTemplate",
                                            label: "Signature Type
Template",
                                            type: "string"
                                        },
                                        {
                                            name: "signatureType",
                                            label: "Signature Type",
                                            type: "string"
                                        },
                                        {
                                            name: "SignatureData",
                                            label: "Signature Data",
                                            type: "array",
                                            items: [
                                                {
                                                    name:
"SourceEntityName",
                                                    label:
"Source Entity Name",
                                                    type:
"lookup",
                                                    lookupEntityN
ame: "entity",
                                                    lookupViewNam
e: "default",
                                                    displayProp:
"displayName"
                                                },
                                                {
                                                    name:
"SourceLookupDestinationName",
```

```
"Source Lookup Destination Name",

"lookup",

ame: "attribute",

e: "default",

yName: "SourceEntityName",

lterReference: "entityid",

"displayName"



"DefaultFields",

"Default Fields",

"object",



ame: "languageCode",

abel: "Language Code",

ype: "string"



ame: "documentType",

abel: "Document Type",

ype: "string"



"MappedFields",
```

```
        label:

        type:

        lookupEntityN

        lookupViewNam

        parentPropert

        attributeToFi

        displayProp:
},
{
        name:

        label:

        type:

        items:[
                {
                        n

                        l

                        t
                },
                {
                        n

                        l

                        t
                }
        ]
},
{
        name:
```

```
                                          label:
"Mapped Fields",
                                          type:
"object",
                                          items: [
                                              {
                                                  n
ame: "languageCode",
                                                  l
abel: "Language Code",
                                                  t
ype: "string"
                                              },
                                              {
                                                  n
ame: "documentType",
                                                  l
abel: "Document Type",
                                                  t
ype: "string"
                                              },
                                              {
                                                  n
ame: "email",
                                                  l
abel: "Email",
                                                  t
ype: "string"
                                              },
                                              {
                                                  n
ame: "phoneMobile",
                                                  l
abel: "Phone Mobile",
                                                  t
ype: "string"
                                              },
                                              {
                                                  n
ame: "firstName",
                                                  l
abel: "First Name",
                                                  t
ype: "string"
```

```
                                        },
                                        {
                                            n
        ame: "lastName",
                                            l
        abel: "Last Name",
                                            t
        ype: "string"
                                        },
                                        {
                                            n
        ame: "documentIssuedBy",
                                            l
        abel: "Document Issued By",
                                            t
        ype: "string"
                                        },
                                        {
                                            n
        ame: "socialSecurityNumber",
                                            l
        abel: "Social Security Number",
                                            t
        ype: "string"
                                        },
                                        {
                                            n
        ame: "documentExpiryDate",
                                            l
        abel: "Document Expiry Date",
                                            t
        ype: "string"
                                        },
                                        {
                                            n
        ame: "documentIssuedOn",
                                            l
        abel: "Document Issued On",
                                            t
        ype: "string"
                                        },
                                        {
                                            n
        ame: "documentNumber",
```

```
                                                l
abel: "Document Number",
                                                t
ype: "string"
                                            },
                                        ]
                                    },
                                    {
                                        name:
"OptionSets",
                                        lable:
"Option Sets",
                                        type:
"string"
                                    },
                                    {
                                        name:
"LookupEntities",
                                        lable:
"Lookup Entities",
                                        type:
"string"
                                    }
                                ]
                            },
                            {
                                name: "smsText",
                                label: "SMS Text",
                                type: "string"
                            },
                            {
                                name: "clickMsg",
                                label: "Click link text",
                                type: "string"
                            },
                            {
                                name: "disableEmail",
                                label: "Disable Email",
                                type: "boolean"
                            }
                        ]
                    },
                    {
                        name: "maskNextStepURLSuccess",
```

```
                  label: "Mask Next Step URL Success",
                  type: "object",
                  items: [
                      {
                          name: "entity",
                          label: "Entity",
                          type: "lookup",
                          lookupEntityName:
"entity",
                          lookupViewName:
"default",
                          displayProp:
"displayName"
                      },
                      {
                          name: "form",
                          label: "Form",
                          type: "lookup",
                          lookupEntityName:
"entityform",
                          parentPropertyName:
"entity",
                          attributeToFilterReferenc
e: "entityid",
                          lookupViewName:
"default",
                          displayProp:
"displayName"
                      },
                      {
                          name: "section",
                          label: "Section",
                          type: "lookup",
                          lookupEntityName:
"entityformsection",
                          parentPropertyName:
"form",
                          attributeToFilterReferenc
e: "entityFormId",
                          lookupViewName:
"default",
                          displayProp:
"displayName"
                      }
```

```
                ]
            },
            {
                name: "maskNextStepURLFail",
                label: "Mask Next Step URL Fail",
                type: "object",
                items: [
                    {
                        name: "entity",
                        label: "Entity",
                        type: "lookup",
                        lookupEntityName:
"entity",
                        lookupViewName:
"default",
                        displayProp:
"displayName"
                    },
                    {
                        name: "form",
                        label: "Form",
                        type: "lookup",
                        lookupEntityName:
"entityform",
                        parentPropertyName:
"entity",
                        attributeToFilterReferenc
e: "entityid",
                        lookupViewName:
"default",
                        displayProp:
"displayName"
                    },
                    {
                        name: "section",
                        label: "Section",
                        type: "lookup",
                        lookupEntityName:
"entityformsection",
                        parentPropertyName:
"form",
                        attributeToFilterReferenc
e: "entityFormId",
```

```
                                    lookupViewName:
    "default",
                                    displayProp:
    "displayName"
                        }
                ]
            },
            {
                name: "businessStatusSuccess",
                label: "Business Status Success",
                type: "string"
            },
            {
                name: "businessStatusFail",
                label: "Business Status Fail",
                type: "string"
            },
            {
                name: "redirecttoNamirialLink",
                label: "Redirect To Namirial Link",
                type: "string"
            }
        ]
    }
}
]
```

IMPORTANT!
The fields available have to be configured with care. Each field must be tailed to the specific use-case.

To configure the processor itself, follow these steps:

1. Open the FintechOS Portal, **Digital Flow Settings** > **Flow Settings** > **Processor Settings** section.

2. To insert a new processor, click on the **Insert** icon on the right- top corner of the screen. to edit an existing processor, select the desired processor from the list.

3. In the Settings tab, a no-code form will be displayed. What has been configured in the code snippet above will be rendered here in a no-code approach.

4. Fill in the name of the processor. Select for each option set provided the needed information e.g. source entity name, type, item etc.

   Based on the values added/ selected in each field, it is possible to generate the JSON file. Click the **Preview** button to see the JSON file.

   To update the JSON as done for the previous releases, check the ''Use inline editor'' bool and the FintechOS Studio will generate the JSON:

   - on Edit mode, the inline editor will be populated with the previously saved value

   - on Add mode, the inline editor value is empty.

   To consult the documentation on the settings for an automation processor, click the *See documentation* hyperlink which will redirect the user to the documentation website.

   The two arrows on the right side of the screen open the editor in full screen to see the whole list of the possible no-code selection.

   When trying to save the configurations on Edit mode, however the JSON file cannot be rendered in the UI of the data form due to it having been created using inline editor or the configuration is not correct, a message is displayed below the top buttons above the source entity name in red.

   On **Save** mode:

   - if the Use inline editor is checked, then the inline editor value is saved

   - If the Use inline editor is not checked, then the JSON generated using the UI is saved.

Digital Cloud Infrastructure (DCI)

The **DCI (Digital Cloud Infrastructure)** system deals with the integration of third-party solution providers used in FintechOS. These providers are:

- **OCR (Microsoft Cognitive Services)** – document and Identity cards are automatically processed, and OCR data is stored and used in the FintechOS customer platform.

- **Face Recognition (Microsoft Cognitive Services)** – along with OCR, face comparison between ID picture and selfie picture algorithm is used to provide a confidence score and certify the identity of a person.

- **Liveness detection (FaceTec)** – used to certify a real person against bots/fake images. Uses the Digital Journey in the FintechOS platform. Uses an external server kit from FaceTec that sits in AKS.

- **KYC AriadNext** - used to perform an identity verification flow (OCR + Selfie + Liveness + ID Verification) to validate a person.

- **KYC Onfido** - used to perform an identity verification flow (OCR + Selfie + Liveness + ID Verification) to validate a person.

- **Namirial Electronic Signature** – used to digitally sign any document using a well-known digital certificate provided by a certification authority.

- **CertSign Electronic Signature** – used to digitally sign any document using a well-known digital certificate.

- **Video Streaming (Vonage TokBox)** – used for technical support, co-browsing or KYC process between client and operator via online video interview.

- **SendGrid** – solution used to send in an automated model transactional and campaign emails to customers.

- **SendinBlue** – solution used to send in an automated model transactional and campaign emails to customers.

- **VonageSMS** (Vonage Nexmo) - solution used to send SMS for MFA.

- **Cobrowsing** (Surlfy) - solution used to enable 2 users to securely surf the full web together, all from one browser tab.

- **Antimalware Scan Engine** - security solution that provides anti-virus protection, HTTP traffic scanning, and file and URL reputation checking for FintechOS deployments.

DCI & Processors Mock Functionality

Starting with v22.1.4003, the DCI & Processors Mock functionality eliminates the billing costs associated with testing requests and API calls during the implementation phase.

From an architectural viewpoint, the DCI (Digital Cloud Infrastructure) & Processors can be seen as a two-layer business product. Therefore, the Mock functionalities were added not only to the DCI for simple API calls, but to the Processors as well, to enable complete (sometimes short-circuited) flow-runs. This is most useful during implementations and of course, opens up the way for automation testing of these two important Ecosystem components.

DCI Mock mechanism

All API endpoints of all the DCI cloud microservices accept an additional header:
`enableMock: true/false`

This header lets the microservice know that it will process the request in mock mode. However, the business logic will still be in effect:

- The request & authorization headers will still be validated.

- The request data will be processed as standard (normal flow) and will throw validation errors or exceptions, if the request is invalid.

- Only the response data coming from the provider will be served as mock.

Processors Mock mechanism

FTOSServicesFaceEndpoint		
FTOSServicesFace**enableMock**		
FTOSServicesLivenessAppId		
FTOSServicesLivenessEndpoint		
FTOSServicesLiveness**enableMock**		
FTOSServicesOCR2AppId		
FTOSServicesOCR2Endpoint		
FTOSServicesOCR2**enableMock**		
FTOSServicesOnfidoAppId		

All processors now support a new configuration key (platform webconfig / vault). This key is formed as a concatenation of the `serviceKey` and `enableMock`.

This new key configuration (e.g. `FTOSServicesLivenessenableMock`) is not mandatory, and if it's missing, it defaults as false.

This tells the processor to call the DCI using the `enableMock` header set to true or false.

Some of the processors work alongside an SDK component (Liveness, Video, OCR) for various reasons (to perform liveness check, to do a selfie capture using the camera, or just take a photo of your ID card / Driver's License / Passport). When such processors work in mock mode, the SDK / capture process is circumvented. This can further allow the creation of automation tests, which was previously blocked from automating E2E flows, due to the capturing mechanism blocking the automation flow.

DCI Connectivity Tests

The DCI (Digital Cloud Infrastructure) Connectivity Tests processor allows users to test connectivity to the cloud services via a simple button test-panel.

NOTE To be able to test connectivity for a given component, you will need to have that component installed / deployed (.xml / digital solution) and configured properly (endpoint / subscription key / appId etc.) in your web config / vault.

The tests are very helpful in identifying:

- If your service configuration in the platform is bad.

- If the destination is unreachable (cloud DCI services cannot be reached due to network settings).

The tests also verify the functionality for webhooks for the services that provide them. The test will call the DCI and the DCI will perform a webhook callback to the FTOS platform, identifying potential problems such as:

- The DCI was unable to call client's FTOS platform due to incorrect configuration on DCI side (invalid FTOS user / password / platform callback URL configured for client).

- The DCI was unable to call client's FTOS platform because it received HTTP 403 / 401. This happens when the FTOS platform does not accept incoming calls from the DCI.

DCI Connectivity Testing

Here you can test the connectivity of the DCI components.

Each endpoint of each component is called with mock data functionality.

Components

AriadNext	AriadNext	Failure!
Onfido	Onfido	Success!
Namirial	Namirial	
FaceRecognition	FaceRecognition	
Liveness	Liveness	
Video Tokbox	Video Tokbox	
Cobrowsing	Cobrowsing	
Ocr Microsoft	Ocr Microsoft	
CertSign	CertSign	Success!

To benefit from this functionality, you must import the DCI Connectivity Tests .xml package (< v22), or deploy the DCI Connectivity Tests Digital Solution (v22+), and have the service you wish to test configured in web config / vault.

If the result is Failure!, the exact error will be displayed in the platform server side logs (not browser console).

OCR and Identity Validation

Optical character recognition (OCR) technology recognizes and coverts the data from images, scanned documents, or identity documents into machine-readable text. The information extracted can be used in identity verification or Know Your Customer (KYC) processes to essentially prevent identity fraud.

FintechOS offers the below components that can be integrated in your digital journeys to further extend their usability.

Computer Vision

The Computer Vision automation processor allows you to automatically populate entity records in your FintechOS applications with text extracted from document scans or photos.

This facilitates business processes such as digital onboarding. Customers can take a picture of their ID card or upload an existing picture from their device. The identity data is captured, parsed, and validated based on the automation processor's settings. Once the scanning completes, the customer's record is automatically populated with his personal information (mappings defined in the Computer Vision automation processor match the various entries in the ID card to specific entity attributes in the data model).

Applications

Computer Vision can be implemented to simplify paper-driven financial or insurance processes, such as:

- Customer onboarding

- Account opening

- Loan applications

- Compliance related processes

- Claims handling

- Mortgage processing

Computer Vision Business Process Model

You can choose Optical Character Recognition (OCR) technology based on the Microsoft Azure Computer Vision OCR API.

The OCR services use proprietary recognition models to detect text content from an image and convert the identified text into a machine-readable character stream.

Supported Input Documents

- Documents with a special machine-readable zone (MRZ). For example, Machine Readable Passports usually have an MRZ at the bottom of the identity page at the beginning of the passport.

- Identity cards.

- Driving licenses.

Data Security

All document scans are processed and transferred under strict, GDPR compliant, safety policies.

Data Flow
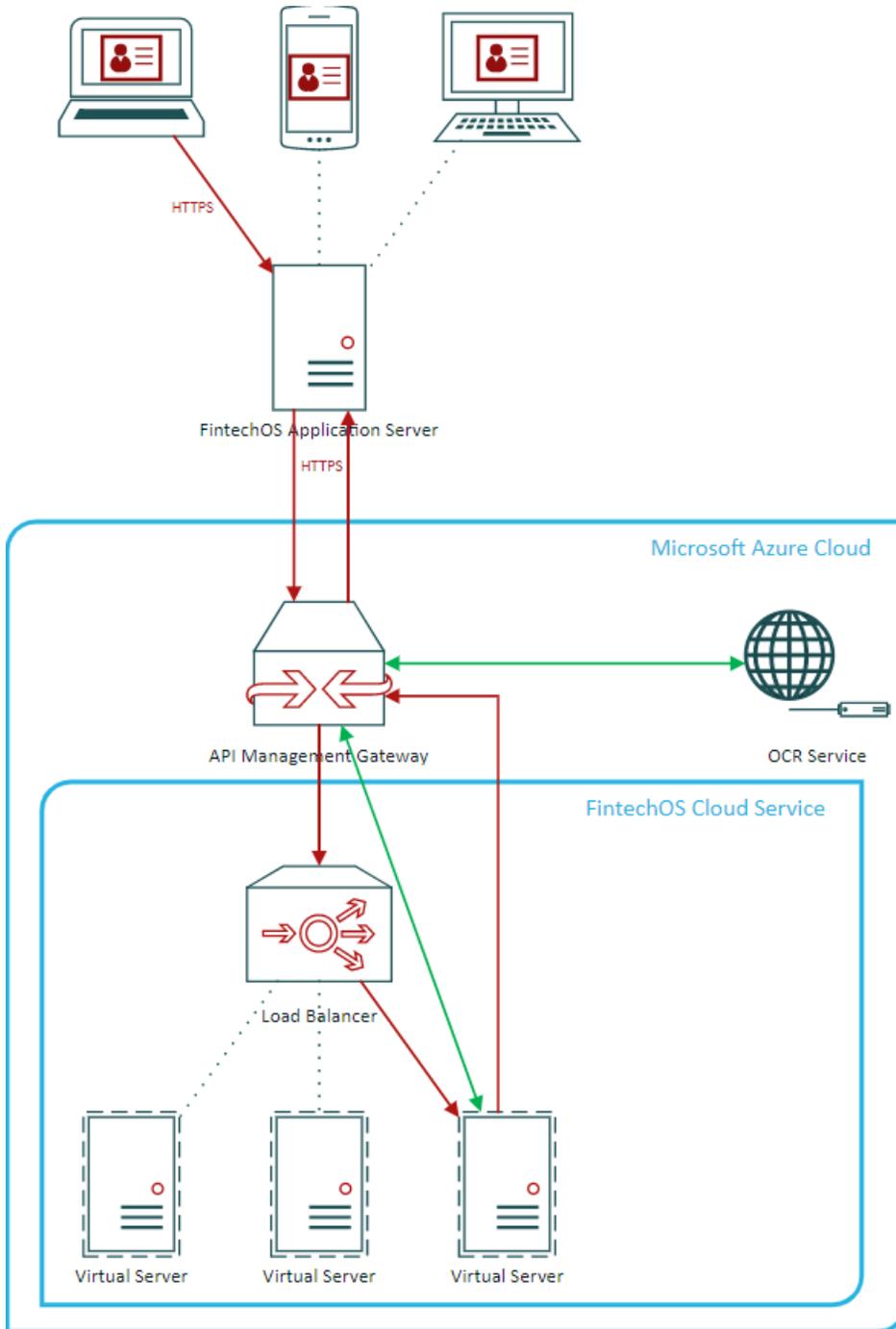
1. The end-user sends the document scan to the FintechOS application server over secure communication channels (HTTPS encrypted messages, including the HTTP headers and request/response data).

2. The application server sends the document to the FintechOS cloud service via the Azure API Management gateway, also using HTTPS. The API Management gateway ensures secure communication and provides identity and access management to the FintechOS cloud service.

3. The document arrives at the FintechOS cloud service (hosted on a private load balanced cluster of virtual machines in the Azure cloud). The virtual machines are managed by FintechOS and can be accessed only using the API Management services (no Internet access is allowed to any virtual machine or load balanced cluster).

4. The FintechOS cloud service processes the document (each ID card field is delimited) and forwards each field for text recognition to the OCR service (also hosted on the Azure cloud).

5. The OCR service returns the field values to the FintechOS cloud service, which sends the information back to the FintechOS application via the API Management gateway.

No data is stored in cloud. All processed information is immediately deleted.

Location

The API Management gateway, the FintechOS cloud service (load balancer and virtual machines), and the OCR services are provisioned using the Microsoft Azure cloud service in the Western Europe data center (Amsterdam, Netherlands), with fail-over backup services on the Northern Europe data center (Dublin, Ireland). No data leaves the European Union in transit or at rest.

Based on customer requirements, similar services may be provisioned in the future in other regions.

Compliance

For cloud services compliance information, see:

- Overview of Microsoft Azure compliance

- Microsoft Services Trust Portal

Installing Computer Vision

1 Install the SysPacks

1. Download the **SySDigitalSolutionPackages.zip** archive.

2. Unzip the archive and follow the instructions from the from the SysPacks Installation page.

> **NOTE** We recommend that you load *sdk/dcs-usermedia-component.js* and *sdk/dcs-usermedia-component.js.map* by placing them in the ***custom-on-demand*** folder, and import them using the **injectScriptAsync** method. See example below:

```
if (window.UsermediaComponent == undefined) {
    var slash = ebs.getBaseUrl().slice(-1) === "/" ? "" : "/";
    await ebs.injectScriptAsync(
      ebs.getBaseUrl() +
        slash +
        "custom-on-demand/components/dcs-usermedia-component.js"
    );
  }
```

2 Set up the Cognitive Processor subscription key(s)

On the FintechOS Portal server or B2C (depending on where the server side script is executing), open the *web.config* file in a text editor and add the following entries in the `<appSettings>` section:

```
<add key="FTOSServicesOCR2Endpoint" value="URL to the services endpoint"/>
<add key="FTOSServicesOCR2AppId" value="service authentication key"/>
```

Set Up a Computer Vision Automation Processor

1 Create a flow settings group

The Computer Vision automation processor must be hosted inside a flow settings group. A flow settings group can include multiple processor settings and is typically used as a container for the automation processors called by a specific digital journey, e.g.: an OCR flow settings group with three processor settings (for scanning passports, identity cards, or driver's licenses).

1. In FintechOS Studio, navigate to **Digital Experience** > **Digital Flow Processing**. The **Flow Settings** list page displays.

2. Click **Insert**. The **Add Flow Settings** page displays.

3. Select your **Digital Journey** and enter a **Name.**

4. Click **Save and Reload**. The **Processor Settings** section displays.

2 Create the automation processor settings

1. In the flow settings page, click **Insert** to create a new processor settings entry.

2. In the **Add Processor Settings** screen, fill in the following fields:

   - Name – Enter a name for your automation processor

   - Digital Processor Type – Select **OCR**.

   - Settings – JSON code for the automation processor's settings. For details, see "Computer Vision Settings" on the next page.

   - Mapping – JSON code for the automation processor's mappings. For details, see "Computer Vision Mappings" on page 79.

3. Click the **Save and Close** button at the top right corner to save your automation processor.

4. Repeat for the remaining processor settings.

Call the RotateImage option

Create the following request:

```
POST /dcs/ocr2/ocrdocument HTTP/1.1
Host: dcs.fintechos.com
Content-Type: application/json
Ocp-Apim-Subscription-Key: to be obtained from subscription portal
OCRValidations: V01,V10 // the validations separated by ','

{
    "DocumentType":"3", //mandatory - documentype:  MRZ = 1,
Passport = 2, IdentityCard = 3, DrivingLicence = 4
    "Base64File" :"/9j..", //mandatory - the base64 file
    "RotateImage": true // optional - true/false if you want to
receive the image rotated based on the text orientation
}
```

Response:

The image will be rotated with an angle that is a multiple of 90° (180°, 270°, etc.), based on the orientation of the text. If the text in the image has an angle smaller than 45°, the image is not be rotated and the Base64File field from the RotatedImage object is null.

```
    ......
    "PersonalNumber": "1111111111",
    "GivenName": "asd",
    "LastName": "fgh",
    "ImageProperties": {
        "Angle": 89.1171 //the angle of the text from the image
    },
    "RotatedImage": {
        "Base64File":"iVBORw0", //the base64 of the rotated image
        "IsSuccess": true, //true/false if the rotation is ok
        "ErrorMessage": null
    },
    ....
```

Computer Vision Settings

The Computer Vision settings are defined in JSON format as key-value pairs. The following settings are available:

Setting	JSON Key	Description
Workflow entity	SourceEntityName	The entity associated with the business workflow (digital journey) that calls the OCR process. Needed only if the OCR process is used on an edit form (to alter an existing record) to update the workflow entity's business status after the scan (see "BusinessStatusSuccess" on page 75 and "BusinessStatusFail" on page 75). If the OCR process is used on an insert form (to create a new record), this key is not needed.
Populated entities	Entities	Indicates the entities that will be populated with the scanned values. • DestinationEntityName – Name of the entity that is populated with the scanned data. • SourceEntityName – Entity associated with the business workflow (digital journey) that uses the automation processor. If this is the same entity that is populated, this value will be identical to DestinationEntityName. • SourceLookupDestinationName – Name of the SourceEntityName lookup key that points to • DestinationEntityName. If they are the same entity, enter the primary key.
Logging context	ContextForm	Logging context field included in the log events sent to the DCI logging. Useful for tracking the relevant digital journey when debugging.

Setting	JSON Key	Description
User confirmation	WaitUserConfirmation	The default value is `true`. • If `true`, the user takes or uploads a photo and then clicks Process the Photo to continue the OCR process. • If `false`, the photo processing is automatically triggered.
Show Upload Photo button	ShowUploadPhotoButton	• If `true`, the **Upload Photo** button is displayed. • If `false`, the **Upload Photo** button is hidden.
Show Take Picture button	ShowTakePictureButton	• If `true`, the **Take Picture** button is displayed. • If `false`, the camera on your device will not be enabled.
Register face from OCR	RegisterFaceFromOCR	• If `true`, the OCR process is successful only if the person's face from their ID is registered. • If `false`, there is not attempt to also register the person's face from their ID.

Setting	JSON Key	Description
Expiration time	SessionExpiredMins	The time in minutes after which, if no navigation to another screen is done, the session expires. In this case, it redirects the user to a session expired page. **NOTE** Make sure your main entity's business status is updated to the business status you have set in your flow settings for `businessStatusSessionExpired`.
Rotate image	RotateImage	Rotates the image to an angle that is multiple of 90° (180, 270 etc.), based on the orientation of the text from the OCR. If the text from the image has an angle smaller than 45°, the image remains the same. If the image doesn't need to be rotated the `Base64File` field from `RotatedImage` will be null. The rotated image is stored in the `FTOS_DFP_OCR.RotatedImage` entity.
Crop image	CropImage	If `true`, it extracts the person's face in an image and returns the data in the following structure: ```"CroppedImage" : "your_document_field_here", "MatchFound": "your_bit_field_here", "Confidence": "your_text_field_here"```

Setting	JSON Key	Description
Maximum number of scan attempts	MaxRetry	The maximum number of scan attempts. If this number of failed scans is reached, the user will be redirected according to the specifications in the "maskNextStepUrlFail" on page 74.
Expiration Redirect	businessStatusSessionExpired	Enables or disables redirection to the expiration page after `SessionExpiredMins`.
Option set based validation and replacement	OptionSets	Replaces values returned by the OCR process with entries from an option set. • OptionSetName – Name of the option set that stores the valid replacement values. • MappingName – Name of the field as returned by the OCR processor. For details, see "OCR Processor Field Names" on page 89. • OptionSetItems – Key-value pairs that map the value returned by the OCR processor (the key) to the replacement value from the option set (the value). If the value returned by the OCR processor is not found in the OptionSetItems keys, the entry will not be populated. The user will be able to manually select only values from OptionSetName.

Setting	JSON Key	Description
Entity based validation	LookupEntities	Validates values returned by the OCR processor based on records in an entity. • MappingName – Name of the field as returned by the OCR processor. For details, see "OCR Processor Field Names" on page 89. • EntityName – Name of the entity that stores the valid values. • AttributeKey – Name of the attribute in EntityName that stores the valid values. Parent – Defines hierarchical relationships between lookup entities. For instance, you can check if a city name belongs to a valid county name. • MappingParentName – Name of the parent field as returned by the OCR processor. For details, see "OCR Processor Field Names" on page 89. • AttributeParentKey – Name of the EntityName lookup key linked to the parent entity. If the value returned by the OCR processor is not found in the lookup entity, the entry will not be populated. The user will be able to manually select only values from the

Setting	JSON Key	Description
		lookup entity.

Setting	JSON Key	Description
Scanned Document	DocumentSettings	Defines settings specific to the scanned document: • DocumentType – Type of document. Supported values are: *MRZ*, *Passport*, *IdentityCard*, *DrivingLicence*, or *VehicleIdentityCard*. • Country – Optional parameter for the country code of the document. • Provider – OCR provider. Supported value is *Azure* • Validations - Defines advanced document validations based on predefined validation codes (see "Computer Vision Validations" on page 80). • RequiredFields - "Computer Vision Mappings" on page 79 that are mandatory for a successful scan. Otherwise, the OCR fails. • BirthdayValidation - Optional parameter for Romanian identity cards that checks the date of birth (see "Romanian Identity Card" on page 81). • PINValidation - Optional

Setting	JSON Key	Description
		parameter for Romanian identity cards that checks the personal identification number (see "Romanian Identity Card" on page 81).
Redirect in case of success	maskNextStepUrlSuccess	Location in the user interface where the user is redirected after a successful scan. • entity – Entity name. • form – Form name of the above entity. • section – Optional parameter for the section name of the above form.
Redirect in case of failure	maskNextStepUrlFail	Location in the user interface where the user is redirected after the maximum number of failed scan attempts (see "MaxRetry" on page 70). • entity – Entity name. • form – Form name of the above entity. • section – Optional parameter for the section name of the above form.

Setting	JSON Key	Description
Redirect in case of session expired	maskNextStepURLFailSessionExpired	Location in the user interface where the user is redirected if the scan is not finalized before the expiration time (see "SessionExpiredMins" on page 69). • entity – Entity name. • form – Form name of the above entity. • section – Optional parameter for the section name of the above form.
Business status update in case of success	BusinessStatusSuccess	Business workflow status update of the "Workflow entity" on page 67 if the scan is successful. Needed only if the OCR process is used on an edit form (to alter an existing record). If the OCR process is used on an insert form (to create a new record), this key is not needed.
Business status update in case of failure	BusinessStatusFail	Business workflow status update of the "Workflow entity" on page 67 if the scan fails. Needed only if the OCR process is used on an edit form (to alter an existing record). If the OCR process is used on an insert form (to create a new record), this key is not needed.
Retain SDK logs	DisableLogSDKMessages **(Ecosystem SysPack 2.5.0 or later)**	Set this property to `true` if you do not wish to retain SDK logs.
Log severity level	LogLevel **(Ecosystem SysPack 2.5.0 or later)**	Controls the minimum severity level for the logged messages. Set it to `error` to capture only SDK errors or to `debug` to include all SDK log messages.
Log browser details	DisableSaveBrowserDetails **(Ecosystem SysPack 2.5.0 or later)**	Set this property to `true` to prevent storage of user platform details in the FTOS_DFP_Logging entity.

Setting	JSON Key	Description
2-sided document	DocumentSides **(Ecosystem SysPack 2.7.0 or later)**	The number of scans per session. • Set this property to 2 to scan both sides of a document when using the FTOS_ECOS_OCR component. • When using the FTOS_DFP_OCR component, this setting is not needed.
Process both sides together	CaptureBothSides **(Ecosystem SysPack 2.7.0 or later)**	Set this property to true to process and validate both sides of a document together and return a single result.
Debug mode	Debug **(Ecosystem SysPack 2.7.0 or later)**	Set this property to true to log debugging information in the browser console.

Examples

Computer Vision settings for scanning passports

```
{
    "SourceEntityName":"FTOS_Test_OCR",
    "Entities":[
      {
        "DestinationEntityName":"FTOS_Test_OCR_Applicant",
        "SourceEntityName":"FTOS_Test_OCR",
        "SourceLookupDestinationName":"applicantId"
      }
    ],
    "ContextForm" : "FTOS_Test_Processors_UserJourney",
    "WaitUserConfirmation" : false,
    "ShowUploadPhotoButton" : true,
    "ShowTakePictureButton" : true,
    "RegisterFaceFromOCR" : false,
    "SessionExpiredMins" : 15,
    "RotateImage" : true,
    "CropImage" : false,
    "MaxRetry":5,
    "businessStatusSessionExpired": true,
```

```
    "OptionSets":[
       {
           "OptionSetName":"Gender Type",
           "MappingName":"Sex",
           "OptionSetItems":{
               "M":"Male",
               "F":"Female"
           }
       }
    ],
    "LookupEntities":[
       {
           "MappingName":"Country",
           "EntityName":"FTOS_CMB_Country",
           "AttributeKey":"code"
       }
    ],
    "DocumentSettings": {
           "DocumentType":"Passport",
           "Provider":"Azure",
           "Validations":"V01,V05,V06,V07,V10",
           "RequiredFields": ["PersonalNumberBody",
"DocumentNumberBody", "LastNameBody", "GivenNameBody",
"NationalityBody", "PlaceOfBirthBody", "BirthDateBody",
"SexBody"]
       },
    "maskNextStepURLSuccess":{
       "entity":"FTOS_Test_OCR",
       "form":"FTOS_Test_OcrFDF",
       "section":"Success"
    },
    "maskNextStepURLFail":{
       "entity":"FTOS_Test_OCR",
       "form":"FTOS_Test_OcrFDF",
       "section":"Fail"
    },
    "maskNextStepURLFailSessionExpired":{
       "entity":"FTOS_Test_OCR",
       "form":"FTOS_Test_OcrFDF",
       "section":"Expired"
    },
    "businessStatusSuccess":"OCR Valid",
    "businessStatusFail":"OCR Failed"
}
```

Computer Vision settings for scanning driver's licenses

```
{
    "SourceEntityName":"FTOS_Test_OCR",
    "Entities":[
        {
            "DestinationEntityName":"FTOS_Test_OCR_Applicant",
            "SourceEntityName":"FTOS_Test_OCR",
            "SourceLookupDestinationName":"applicantId"
        }
    ],
    "ContextForm" : "FTOS_Test_Processors_UserJourney",
    "WaitUserConfirmation" : false,
    "ShowUploadPhotoButton" : true,
    "ShowTakePictureButton" : true,
    "RegisterFaceFromOCR" : false,
    "SessionExpiredMins" : 15,
    "RotateImage" : true,
    "CropImage" : false,
    "MaxRetry":5,
    "businessStatusSessionExpired": true,
    "OptionSets":[],
    "LookupEntities":[],
    "DocumentSettings": {
            "DocumentType":"DrivingLicence",
            "Country":"RO",
            "Provider":"Azure",
            "Validations":"",
            "RequiredFields": ["IssuedAt", "IssuedUntil",
    "IssuedBy", "PIN", "DrivingLicenceNo", "DrivingCategory"]
        },
    "maskNextStepURLSuccess":{
        "entity":"FTOS_Test_OCR",
        "form":"FTOS_Test_OcrFDF",
        "section":"Success"
    },
    "maskNextStepURLFail":{
        "entity":"FTOS_Test_OCR",
        "form":"FTOS_Test_OcrFDF",
        "section":"Fail"
    },
    "maskNextStepURLFailSessionExpired":{
        "entity":"FTOS_Test_OCR",
        "form":"FTOS_Test_OcrFDF",
        "section":"Expired"
```

```
        },
        "businessStatusSuccess":"OCR Valid",
        "businessStatusFail":"OCR Failed"
    }
```

Computer Vision Mappings

The Automation Blocks mappings match the field names as returned by the OCR processor (keys) with the populated entities' attributes (values).

Setting Name	Description
DocumentsMapping	Holds attribute mappings for various types of scanned documents.
Type	Scanned document type as defined in the list of "Scanned Document" on page 73.
Map	Key-value pairs that match the field name as returned by the OCR processor (the key) to the attribute name in the destination entity (the value). See "OCR Processor Field Names" on page 89 and "Populated entities" on page 67 for details.

Examples

Sample JSON code for Automation Blocks mappings

```
{
  "DocumentsMapping": [{
    "type": "IdRom",
    "Map": {
      "PictureAttribute": "pictureOcr",
      "LastName": "lastName",
      "GivenName": "firstName",
      "DocumentNumber": "IdCardSeries",
      "StreetType": "streetType",
      "PersonalNumber": "PIN",
      "BirthDate": "dateOfBirth",
      "PlaceOfBirthBody": "placeOfBirth",
      "BirthCountryBody": "birthCountry",
      "Address": "fullAddress",
      "Sex": "gender",
      "DistrictCode": "DistrictId",
      "Nationality": "nationality",
```

```
        "City": "CityId",
        "Street": "StreetName",
        "StreetNo": "StreetNo",
        "Storey": "FloorNo",
        "Stairway": "Stairway",
        "ApartmentNo": "ApartmentNo",
        "ApHouse": "BuildingNo",
        "IssuedBy": "IdIssueInstitution",
        "IssuedAt": "IdIssueDate",
        "IssuedUntil": "IdExpirationDate",
        "IssuingCountry": "issuingCountry"
      }
    }]
  }
```

Computer Vision Validations

You can define advanced validations based on predefined validation codes for the following document types:

MRZ (Machine Readable Zone)

Validation Code	Description
V01	Checks the Romanian personal identification number (CNP) integrity. Also validates that the CNP contains only digits. If this validation fails, the data returned in the PersonalNumber field will be as extracted from OCR (the returned string won't be a valid CNP).
V10	Checks the MRZ integrity based on the following international standards: • TD1 - For biometric IDs or non-Romanian IDs • TD2 - For standard Romanian IDs • TD3 - For passports Control digits are verified based on the Machine Readable Passport (MRP) specifications.

Romanian Identity Card

Romanian identity cards support two types of validations:

- Microservice validations - Validations performed by the OCR service. These validations are set by providing the corresponding validation codes in the `Validations` field of the `DocumentSettings` key. E.g: V01, V07, V10, etc.

- Processor validations - Validations performed by the OCR processor, after receiving the result from the OCR service. Each of these validations has a dedicated boolean field (e.g.: `BirthdayValidation`, `PINValidation`) in the `DocumentSettings` key.

```
"DocumentSettings": {
      "DocumentType":"IdentityCard",
      "Country":"RO",
      "Provider":"Azure",
      "Validations":"V01,V05,V06,V07,V08,V10",
      "RequiredFields": ["LastNameBody", "GivenNameBody",
"DocumentNumberBody", "PersonalNumberBody", "BirthDateBody",
"Address", "DocumentNumber", "CardType", "ProcessedPage"],
      "BirthdayValidation": true,
      "PINValidation": true
  }
```

The following microservice validations are supported:

Validation Code	Description
V01	Checks the Romanian personal identification number (CNP) integrity. Also validates that the CNP contains only digits. If this validation fails, the data returned in the PersonalNumber field will be as extracted from OCR (the returned string won't be a valid CNP).
V05	Compares the birth dates extracted from the CNP and MRZ. For new identity cards, this will always return **N/A**.

Validation Code	Description
V06	Compares the final 6 CNP digits extracted from the CNP and MRZ. For new identity cards, this will always return **N/A**.
V07	Checks if the identity card's expiration date matches the person's birthday and if the identity card is not expired. Dates are extracted from the MRZ. The following checks are performed: For standard IDs: • Pass if the day and month of the expiration date are equal with the birth day and month. • **N/A** if the ID was issued between August 2nd and September 13th 2021. • Pass if the expiration date is prior to August 3rd 2031. • Pass if the date of issue is after September 13th 2021 and the expiration date is prior to August 3rd 2031. For biometric IDs: • First page = N/A. • Pass if the day and month of the expiration date are one day prior to the date of issue.
V08	Checks if the age is above 18 years old. The date of birth is extracted from the MRZ.
V10	Checks the MRZ integrity based on the following international standards: • TD1 - For biometric IDs • TD2 - For standard IDs Control digits are verified based on the Machine Readable Passport (MRP) specifications.

The following processor validations are supported:

Field	Value
BirthdayValidation	• true - Checks that the date of birth matches the date of birth extracted from the MRZ. • false - No check.
PINVAlidation	• true - Checks that the personal identification number (CNP) matches the CNP extracted from the MRZ. • false - No check.

Romanian Vehicle Identity Card

Validation Code	Description
V01	Checks if the Vehicle Identity Number (VIN) is valid.
V02	Checks that the vehicle license plate number is valid (AA-111-AAA).

Passport

Validation Code	Description
V01	Checks the Romanian personal identification number (CNP) integrity. Also validates that the CNP contains only digits. If this validation fails, the data returned in the PersonalNumber field will be as extracted from OCR (the returned string won't be a valid CNP).
V05	Compares the birth dates extracted from the CNP and MRZ.
V06	Compares the last 6 CNP digits extracted from the CNP and MRZ.

Validation Code	Description
V07	Checks that the passport is not expired and that the expiration date matches the date of issue. Dates are extracted from the MRZ.
V10	Checks the MRZ integrity based on the TD3 international standard. Control digits are verified based on the Machine Readable Passport (MRP) specifications.

Adding Computer Vision to a Digital Journey

There are two ways to add a Computer Vision processor to a digital journey: with a custom processor step or manually.

Add Computer Vision to a Journey with Custom Processor Steps (No Code)

This no-code approach is the easiest way to add Computer Vision to your journey. Use a custom processor step to create a dedicated flow step that triggers the processor.

Add Computer Vision to a Journey Manually

1. Use the UI Designer to create a button in the user interface that calls the processor.

2. Add the following code in the **After Events** window:

```
// For Ecosystem SysPack 2.5.0 and later, use:
var dfpHelper = ebs.importClientScript('FTOS.ECOS.Utils');

// Prior to Ecosystem SysPack 2.5.0, use:
// var dfpHelper = ebs.importClientScript('FTOS.DFP');

// For simplified OCR component configuration, use:
var componentName = "FTOS_ECOS_OCR";

// For advanced OCR component customizations, use:
```

```
// var componentName "FTOS_DFP_OCR";


var params = {};
params.flowSettingsName = '<generic processor settings group
name>';
params.processorSettingsType = 'OCR';
params.processorSettingsName = '<processor settings name>';

$('<Computer Vision button name>').click(function () {
    ebs.callActionByName("FTOS_DFP_
FlowProcessorSettingsByType", params, function (f) {
        var processorSettingsId =
f.UIResult.Data.ProcessorSettingsId;
        dfpHelper.loadComponent(componentName,
processorSettingsId, ebs.getCurrentEntityId(), false);
    });
}
```

NOTE

The **FTOS_ECOS_OCR** component can be customized using the

FTOS.OCR.Component.Capture and OCR.Translations client script libraries.

The **FTOS_DFP_OCR** component can be customized using the

FTOS.OCR.Controls, FTOS.OCR.Component, and OCR.Rresources libraries.

3. If the Computer Vision automation processor is called in an insert form (to create a new record, not edit an existing record), also add the following code in the After Events window:

```
var ocrResult = sessionStorage.getItem("ocrResult");
ocrResult = JSON.parse(ocrResult);

if (ocrResult) {
    ebs.setFormAttributeValue("ebsContainerContent", "<form
field 1 name>", ocrResult.updateObject.<form field 1 name>);
    ebs.setFormAttributeValue("ebsContainerContent", "<form
field 2 name>", ocrResult.updateObject.<form field 2 name>);
        ...............
```

```
        sessionStorage.removeItem("ocrResult");
    }
```

This code populates the form fields with the scanned values according to the automation processor's mappings (see "Computer Vision Mappings" on page 79 for details) and clears the scan results from session storage.

4. Click **Save and Close** to save your form step.

Examples

After Events code for an insert form

In this example:

- We are inserting a record in a generic processor settings group called **Test Flow Setting 1**.

- The name of the Computer Vision automation processor is **OCR_1**.

- The name of the form button that calls the automation processor is **btnOCR1**.

- The Computer Vision automation processor populates the following form fields: **lastName**, **firstName**, and **gender**.

```
var dfpHelper = ebs.importClientScript('FTOS.DFP');
var componentName = 'FTOS_DFP_OCR';

var params = {};
params.flowSettingsName = "Test Flow Setting 1";
params.processorSettingsType = 'OCR';
params.processorSettingsName = 'OCR_1';

$('#btnOCR1').click(function () {
    ebs.callActionByName("FTOS_DFP_
FlowProcessorSettingsByType", params, function (f) {
        var processorSettingsId =
f.UIResult.Data.ProcessorSettingsId;
        dfpHelper.loadComponent(componentName,
processorSettingsId, ebs.getCurrentEntityId(), false);
    });
```

```
});

var ocrResult = sessionStorage.getItem("ocrResult");
ocrResult = JSON.parse(ocrResult);

if (ocrResult) {
    ebs.setFormAttributeValue("ebsContainerContent",
"lastName", ocrResult.updateObject.lastName);
    ebs.setFormAttributeValue("ebsContainerContent",
"firstName", ocrResult.updateObject.firstName);
    ebs.setFormAttributeValue("ebsContainerContent",
"gender", ocrResult.updateObject.gender);
    sessionStorage.removeItem("ocrResult");
};
```

After Events code for an edit form

In this example:

- We are editing a record in a generic processor settings group called **Test Flow Setting 2**.

- The name of the Computer Vision automation processor is **OCR_2**.

- The name of the form button that calls the automation processor is **btnOCR2**.

- Since this is an edit form, the Computer Vision automation processor automatically populates the form fields defined in the processor's mapping (for details, see "Computer Vision Mappings" on page 79).

```
var dfpHelper = ebs.importClientScript('FTOS.DFP');
var componentName = 'FTOS_DFP_OCR';

var params = {};
params.flowSettingsName = "Test Flow Setting 2";
params.processorSettingsType = 'OCR';
params.processorSettingsName = 'OCR_2';

$('#btnOCR2').click(function () {
    ebs.callActionByName("FTOS_DFP_
FlowProcessorSettingsByType", params, function (f) {
```

```
        var processorSettingsId2 =
f.UIResult.Data.ProcessorSettingsId;
        dfpHelper.loadComponent(componentName,
processorSettingsId2, ebs.getCurrentEntityId(), false);
    });
});
```

After Events code for an edit form with two Computer Vision automation processors

In this example:

- We are editing a record in a generic processor settings group called **Test Flow Setting**.

- The form fields are populated in two stages, by two different Computer Vision automation processors called **OCR_1** and **OCR_2**.

- The names of the form buttons that call the automation processors are **btnOCR1** and **btnOCR2**.

- The parameter objects for the automation processors are called **params1** and **params2**.

- Since this is an edit form, the Computer Vision automation processor automatically populates the form fields defined in the processor's mapping (for details, see "Computer Vision Mappings" on page 79).

```
var dfpHelper = ebs.importClientScript('FTOS.DFP');
var componentName = 'FTOS_DFP_OCR';

var params1 = {};
params1.flowSettingsName = "Test Flow Setting";
params1.processorSettingsType = 'OCR';
params1.processorSettingsName = 'OCR_1';

$('#btnOCR1').click(function () {
```

```
    ebs.callActionByName("FTOS_DFP_
FlowProcessorSettingsByType", params1, function (f) {
        var processorSettingsId2 =
f.UIResult.Data.ProcessorSettingsId;
        dfpHelper.loadComponent(componentName,
processorSettingsId2, ebs.getCurrentEntityId(), false);
    });
});

var params2 = {};
params2.flowSettingsName = "Test Flow Setting";
params2.processorSettingsType = 'OCR';
params2.processorSettingsName = 'OCR_2';

$('#btnOCR2').click(function () {
    ebs.callActionByName("FTOS_DFP_
FlowProcessorSettingsByType", params2, function (f) {
        var processorSettingsId2 =
f.UIResult.Data.ProcessorSettingsId;
        dfpHelper.loadComponent(componentName,
processorSettingsId2, ebs.getCurrentEntityId(), false);
    });
});
```

OCR Processor Field Names

The OCR processor returns different sets of values, depending on the service provider and type of document. The corresponding field names are described below.

OCR Provider – Azure; Document Type – Identity Card

```
LastNameBody
GivenNameBody
DocumentNumberBody
StreetType
StreetName
PersonalNumberBody
BirthDateBody
PlaceOfBirthBody
BirthCityBody
```

```
BirthDistrictBody
BirthCountryBody
Address
DistrictCode
City
Street
StreetNo
Storey
Stairway
ApartmentNo
ApHouse
IssuedBy
IssuedAt
IssuedUntilBody
IssuingCountry
NationalityBody
Document
Type
Country
DocumentNumber
Nationality
RawBirthDate
BirthDate
Sex
RawIssuedUntil
IssuedUntil
PersonalNumber
GivenName
LastName
```

OCR Provider – Azure; Document Type – MRZ

```
Document
Type
Country
DocumentNumber
Nationality
RawBirthDate
BirthDate
Sex
RawIssuedUntil
IssuedUntil
```

```
PersonalNumber
GivenName
LastName
```

OCR Provider – Azure; Document Type – Vehicle Identity Card; Country - RO

```
IdentityCardNumber
PlateNumber
Type
VehicleTypeDescription
VehicleTypeCategory
Brand
Series
SeriesVariant
SeriesVersion
Model
VehicleIdentificationNumber
OmologationNumber
OwnerName
OwnerSurname
OwnerFullName
OwnerFullAddress
OwnerIsCompany
OwnerCity
OwnerCounty
OwnerStreet
OwnerStreetType
OwnerStreetName
OwnerStreetNo
OwnerStorey
OwnerStairway
OwnerApartmentNo
OwnerApHouse
CurrentUserName
CurrentUserSurname
CurrentUserFullName
CurrentUserFullAddress
CurrentUserIsCompany
CurrentUserCity
CurrentUserCounty
CurrentUserStreet
CurrentUserStreetType
```

```
CurrentUserStreetName
CurrentUserStreetNo
CurrentUserStorey
CurrentUserStairway
CurrentUserApartmentNo
CurrentUserApHouse
FirstRegistrationDate
RegisteredCounty
MaxAllowedMass
VehicleWeight
ValidUntil
RegistrationDate
EngineCapacity
Power
FuelType
PowerMassRatio
Color
NumberOfSeats
NumberOfStandingSeats
IdentityCardSeries
IssuedBy
IssuedAt
```

OCR Provider – Azure; Document Type – Driving Licence

```
LastName
GivenName
BirthDate
PlaceOfBirth
IssuedAt
IssuedUntil
IssuedBy
PIN
DrivingLicenceNo
DrivingCategory
Address
```

OCR Provider – Abbyy; Document Type – Identity Card; Country – RO

```
LastNameBody
GivenNameBody
DocumentNumberBody
StreetType
PersonalNumberBody
BirthDateBody
PlaceOfBirthBody
BirthCountryBody
Validations
ValidationsString
Address
BirthDate
GivenName
LastName
Sex
PersonalNumber
DocumentNumber
DistrictCode
Nationality
City
Street
StreetNo
Storey
Stairway
ApartmentNo
ApHouse
IssuedBy
IssuedAt
IssuedUntil
IssuingCountry
```

OCR Provider – Abbyy; Document Type – Identity Card; Country – BG

```
FatherName
LastNameLatin
GivenNameLatin
FatherNameLatin
District
Municipality
PlaceOfBirth
HeightAndColorOfEyes
```

```
Height
ColorOfEyes
Optional1
Optional2
Document
Type
Country
DocumentNumber
Nationality
RawBirthDate
BirthDate
Sex
RawIssuedUntil
IssuedUntil
PersonalNumber
GivenName
LastName
```

OCR Provider – Abbyy; Document Type – MRZ

```
LastNameBody
GivenNameBody
DocumentNumberBody
StreetType
PersonalNumberBody
BirthDateBody
PlaceOfBirthBody
BirthCountryBody
```

Computer Vision Use Case Scenario

This scenario covers an onboarding form driven flow that collects applicant data by scanning a proof-of-identity document, then saves it to the database.

OCR Option Set

Create an option set called **typeOCR** for the types of documents you wish to be able to scan. For this example, we have used the following options set items:

Option Set Item	Description
Standard	Government-issued IDs
Passport	Passports
DrivingLicense	Driving licenses
VIC	Vehicle identity cards

City Type Option Set

Create an option set called **FTOS_BNK_CityType** for the types of cities available for the applicants' addresses. For this example, we have used the following options set items: Village, Township, City, Municipality.

Data Model

The data model is built around an OCR entity that uses business entity extensions to temporarily store the data collected during the applicant's onboarding flow, then distributes it to the relevant entities in the database for long term storage.
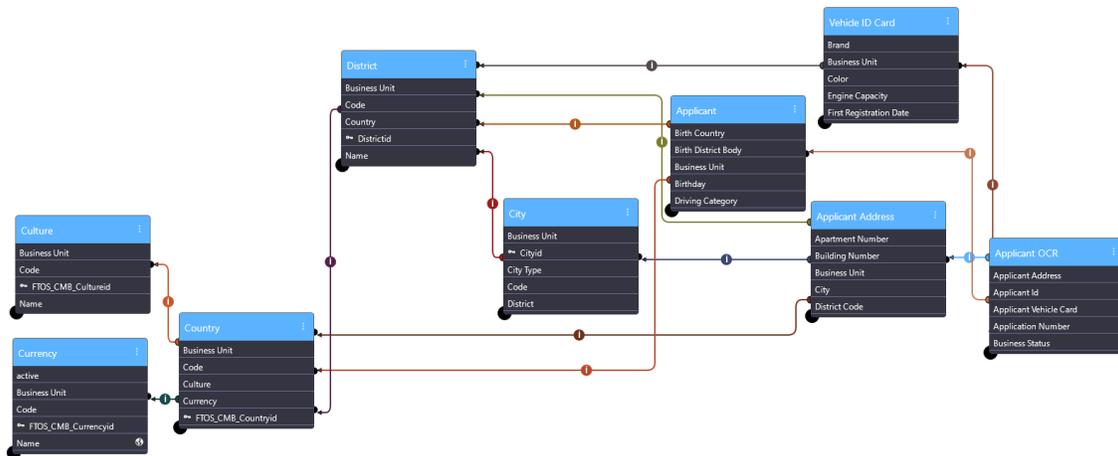
Culture Entity

This entity stores the various cultures that countries issuing the scanned proof-of-identity documents belongs to. You can manually populate it with the desired culture codes based on your business specifications.

Create a business entity called **FTOS_CMB_Culture** with the following attributes:

Attribute Name	Attribute Type
name	Primary Attribute
code	Text

Currency Entity

This entity stores the various currencies used for the countries that issue the scanned proof-of-identity documents. You can manually populate it with the desired currency codes based on your business specifications.

Create a business entity called **FTOS_CMB_Currency** with the following attributes:

Attribute Name	Attribute Type	Notes
code	Primary Attribute	
symbol	Text	
name	Text	

Country Entity

This entity stores valid issuing countries for the proof-of-identity document. You can manually populate it with the desired countries based on your business specifications.

Create a business entity called **FTOS_CMB_Country** with the following attributes:

Attribute Name	Attribute Type	Notes
name	Primary Attribute	
cultureId	Lookup	Lookup to the "Culture Entity" on the previous page.
currencyId	Lookup	Lookup to the "Currency Entity" above.
code	Text	Country code.

District Entity

This entity is used to break down the countries into smaller administrative units such as counties or states if business requirements necessitate it.

Create a business entity called **District** with the following attributes:

Attribute Name	Attribute Type	Notes
Name	Primary Attribute	
Code	Text	
CountryId	Lookup	Lookup to the "Country Entity" on the previous page.

City Entity

This entity stores the information about the cities available for the applicants' addresses. You can manually populate it with the desired cities based on your business specifications.

Create a business entity called **City** with the following attributes:

Attribute Name	Attribute Type	Notes
name	Primary Attribute	
Code	Text	
DistrictId	Lookup	Lookup to the "District Entity" on the previous page.
Name	Text	
zipCode	Text	
cityTypeId	Option Set	Select the "City Type Option Set" on page 95 you created earlier.

Applicant Data Entity

This entity stores all the applicants' personal information collected using the onboarding flows.

Create a business entity called **FTOS_Test_OCR_Applicant** with the following attributes:

Attribute Name	Attribute Type	Notes
name	Primary Attribute	
firstName	Text	
lastName	Text	

AUTOMATION BLOCKS USER GUIDE

Attribute Name	Attribute Type	Notes
pictureOcr	File	
IdCardSeries	Text	
PIN	Text	
dateOfBirth	Date	
birthCountry	Text	
nationality	Text	
IdIssueInstitution	Text	
IdIssueDate	Date	
IdExpirationDate	Date	
gender	Option Set	Create an option set called **Gender Type** with the Male and Female option set items.
email	Text	
phone	Text	
IssuingCountry	Lookup	Lookup to the "Country Entity" on page 96.
BirthDistrictBody	Lookup	Lookup to the "District Entity" on page 96
DrivingLicenseNo	Text	
DrivingCategory	Text	

Applicant Addresses Entity

This entity stores all the applicants' addresses collected using the onboarding flows. Since an applicant can have multiple addresses, they are stored in a separate entity and each address is linked to its parent applicant record in the related "Applicant Data Entity" on the previous page.

Create a business entity called **FTOS_Test_OCR_ApplicantAdress** with the following attributes:

Attribute Name	Attribute Type	Notes
name	Primary Attribute	
fullAddress	Text	
City	Lookup	Lookup to the "City Entity" on the previous page.
streetType	Text	
StreetNo	Text	
BuildingNo	Text	

Attribute Name	Attribute Type	Notes
Stairway	Text	
FloorNo	Text	
ApartmentNo	Text	
StreetName	Text	
DistrictCode	Lookup	Lookup to the "District Entity" on page 96.
IssuingCountry	Lookup	Lookup to the "Country Entity" on page 96.

Vehicle ID Card Entity

This entity stores the vehicle identity card information collected during the onboarding flows.

Create a business entity called **FTOS_Test_OCR_ApplicantVIC** with the following attributes:

Attribute Name	Attribute Type	Notes
IdentityCardNumber	Primary Attribute	
PlateNumber	Text	
Type	Text	
VehicleTypeDescription	Text	
VehicleTypeCategory	Text	
Brand	Text	
Series	Text	
SeriesVariant	Text	
SeriesVersion	Text	
Model	Text	
VehicleidentificationNumber	Text	
OwnerIsCompany	Bool	
FirstRegistrtationDate	Date	
RegisteredCounty	Lookup	Lookup to the "District Entity" on page 96.
MaxAllowedMass	Numeric	
VehicleWeight	Numeric	
RegistrationDate	Date	
EngineCapacity	Numeric	
Power	Numeric	

Attribute Name	Attribute Type	Notes
FuelType	Text	
Color	Text	
NumberOfSeats	Text	
NumberOfStandingSeats	Text	

OCR Entity

This is the base entity of the onboarding form driven flow. It uses virtual attributes to collect personal data from the applicants that go through the flow, then populates the corresponding entities in the related data extensions for long term storage (the "Applicant Data Entity" on page 97, "Applicant Addresses Entity" on page 98, and "Vehicle ID Card Entity" on the previous page).

Create the OCR entity

Create a business entity called **FTOS_Test_OCR** with the following attributes:

Attribute Name	Attribute Type	Notes
applicationNo	Primary Attribute	
ocrType	Option Set	Select the "OCR Option Set" on page 94 you created earlier.
applicantId	Lookup	Lookup to the "Applicant Data Entity" on page 97.
applicantAddress	Lookup	Lookup to the "Applicant Addresses Entity" on page 98.
applicantVehicleCard	Lookup	Lookup to the "Vehicle ID Card Entity" on the previous page.

Create the applicant data extension

1. Create a related business entity extension named **applicantData** based on the **applicantId** lookup attribute.

2. Make sure you tick the **Is owner for relation** checkbox.

3. Add virtual attributes for the following related attributes: **birthCountry**, **BirthDistrictBody**, **dateOfBirth**, **DrivingCategory**, **DrivingLicenceNo**, **email**, **firstName**, **gender**, **IdCardSeries**, **IdExpirationDate**, **IdIssueDate**, **IdIssueInstitution**, **IssuingCountry**, **lastName**, **name**, **nationality**, **phone**, **pictureOcr**, **PIN**, and **placeOfBirth**.

Create the applicant addresses extension

1. Create a related business entity extension named **applicantAddress** based on the **applicantAddress** lookup attribute.

2. Make sure you tick the **Is owner for relation** checkbox.

3. Add virtual attributes for the following related attributes: **ApartmentNo**, **BuildingNo**, **City**, **DistrictCode**, **FloorNo**, **fullAddress**, **IssuingCountry**, **Stairway**, **StreetName**, **StreetNo**, and **streetType**.

Create the vehicle ID card extension

1. Create a related business entity extension named **applicantVehicleCard** based on the **applicantVehicleCard** lookup attribute.

2. Make sure you tick the **Is owner for relation** checkbox.

3. Add virtual attributes for the following related attributes: **Brand**, **Color**, **EngineCapacity**, **FirstRegistrationDate**, **FuelType**, **IdentityCardNumber**, **MaxAllowedMass**, **Model**, **NumberOfSeats**, **NumberOfStandingSeats**, **OwnerIsCompany**, **PlateNumber**, **Power**, **RegistrationDate**, **Series**, **SeriesVariant**, **SeriesVersion**, **Type**, **VehicleIdentificationNumber**, **VehicleTypeCategory**, **VehicleTypeDescription**, **VehicleWeight**.

Set up a business workflow to track the OCR status

Create a business workflow called **FTOS_Test_Ocr** that tracks the OCR status and assign it to the **FTOS_Test_OCR** entity. Set the flow states and transitions based on the figure below:
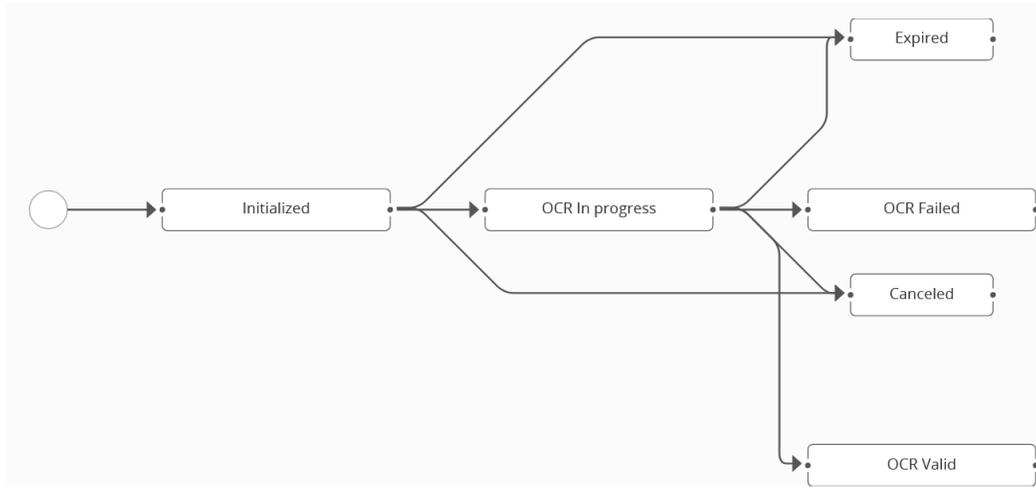
OCR Flow Settings

"Set Up a Computer Vision Automation Processor" on page 65 called **FTOS_Test_OCR** with processor settings for each of the "OCR Option Set" on page 94 items you have set up:

FTOS_Test_OCR_Standard

Typical processor settings for government-issued IDs.

Settings

```
{
    "SourceEntityName":"FTOS_Test_OCR",
    "Entities":[
        {
            "DestinationEntityName":"FTOS_Test_OCR_Applicant",
            "SourceEntityName":"FTOS_Test_OCR",
            "SourceLookupDestinationName":"applicantId"
        },
        {
            "DestinationEntityName":"FTOS_Test_OCR_
ApplicantAdress",
            "SourceEntityName":"FTOS_Test_OCR",
            "SourceLookupDestinationName":"applicantAddress"
        }
    ],
```

```
    "ContextForm" : "FTOS_Test_Processors_UserJourney",
    "WaitUserConfirmation" : false,
    "ShowUploadPhotoButton" : true,
    "ShowTakePictureButton" : true,
    "RegisterFaceFromOCR" : false,
    "SessionExpiredMins" : 5,
    "RotateImage" : true,
    "CropImage" : false,
    "MaxRetry":5,
    "businessStatusSessionExpired": true,
    "OptionSets":[
        {
            "OptionSetName":"Gender Type",
            "MappingName":"Sex",
            "OptionSetItems":{
                "M":"Male",
                "F":"Female"
            }
        }
    ],
    "LookupEntities":[
        {
            "MappingName":"DistrictCode",
            "EntityName":"District",
            "AttributeKey":"Code"
        },
        {
            "MappingName":"BirthDistrictBody",
            "EntityName":"District",
            "AttributeKey":"Code"
        },
        {
            "MappingName":"IssuingCountry",
            "EntityName":"FTOS_CMB_Country",
            "AttributeKey":"code"
        },
        {
            "MappingName":"City",
            "EntityName":"City",
            "AttributeKey":"Name",
            "Parent":{
                "AttributeParentKey":"DistrictId",
                "MappingParentName":"DistrictCode"
            }
        }
```

```
    ],
    "DocumentSettings": {
            "DocumentType":"IdentityCard",
            "Country":"RO",
            "Provider":"Azure",
            "Validations":"V01,V05,V06,V07,V08,V10",
            "RequiredFields": ["LastNameBody", "GivenNameBody",
 "DocumentNumberBody", "PersonalNumberBody", "BirthDateBody",
 "Address", "DocumentNumber", "CardType", "ProcessedPage"],
            "BirthdayValidation": true,
            "PINValidation": true
    },
    "maskNextStepURLSuccess":{
        "entity":"FTOS_Test_OCR",
        "form":"FTOS_Test_OcrFDF",
        "section":"Success"
    },
    "maskNextStepURLFail":{
        "entity":"FTOS_Test_OCR",
        "form":"FTOS_Test_OcrFDF",
        "section":"Fail"
    },
    "maskNextStepURLFailSessionExpired":{
        "entity":"FTOS_Test_OCR",
        "form":"FTOS_Test_OcrFDF",
        "section":"Expired"
    },
    "businessStatusSuccess":"OCR Valid",
    "businessStatusFail":"OCR Failed"
}
```

Mappings

```
{
    "PictureAttribute": "pictureOcr",
    "LastName": "lastName",
    "GivenName": "firstName",
    "DocumentNumber": "IdCardSeries",
    "StreetType": "streetType",
    "PersonalNumber": "PIN",
    "BirthDate": "dateOfBirth",
    "PlaceOfBirthBody": "placeOfBirth",
    "BirthCountryBody": "birthCountry",
    "Address": "fullAddress",
```

```
        "Sex": "gender",
        "Nationality": "nationality",
        "Street": "StreetName",
        "StreetNo": "StreetNo",
        "Storey": "FloorNo",
        "Stairway": "Stairway",
        "ApartmentNo": "ApartmentNo",
        "ApHouse": "BuildingNo",
        "IssuedBy": "IdIssueInstitution",
        "IssuedAt": "IdIssueDate",
        "IssuedUntil": "IdExpirationDate",
        "IssuingCountry": "IssuingCountry",
        "DistrictCode": "DistrictCode",
        "City": "City",
        "BirthDistrictBody": "BirthDistrictBody"
    }
```

FTOS_Test_OCR_Passport

Typical processor settings for passports.

Settings

```
{
    "SourceEntityName":"FTOS_Test_OCR",
    "Entities":[
        {
            "DestinationEntityName":"FTOS_Test_OCR_Applicant",
            "SourceEntityName":"FTOS_Test_OCR",
            "SourceLookupDestinationName":"applicantId"
        }
    ],
    "ContextForm" : "FTOS_Test_Processors_UserJourney",
    "WaitUserConfirmation" : false,
    "ShowUploadPhotoButton" : true,
    "ShowTakePictureButton" : true,
    "RegisterFaceFromOCR" : false,
    "SessionExpiredMins" : 15,
    "RotateImage" : true,
    "CropImage" : false,
    "MaxRetry":5,
    "businessStatusSessionExpired": true,
    "OptionSets":[
```

```
    {
        "OptionSetName":"Gender Type",
        "MappingName":"Sex",
        "OptionSetItems":{
            "M":"Male",
            "F":"Female"
        }
    }
],
"LookupEntities":[
    {
        "MappingName":"Country",
        "EntityName":"FTOS_CMB_Country",
        "AttributeKey":"code"
    }
],
"DocumentSettings": {
        "DocumentType":"Passport",
        "Provider":"Azure",
        "Validations":"V01,V05,V06,V07,V10",
        "RequiredFields": ["PersonalNumberBody",
"DocumentNumberBody", "LastNameBody", "GivenNameBody",
"NationalityBody", "PlaceOfBirthBody", "BirthDateBody",
"SexBody"]
    },
"maskNextStepURLSuccess":{
    "entity":"FTOS_Test_OCR",
    "form":"FTOS_Test_OcrFDF",
    "section":"Success"
},
"maskNextStepURLFail":{
    "entity":"FTOS_Test_OCR",
    "form":"FTOS_Test_OcrFDF",
    "section":"Fail"
},
"maskNextStepURLFailSessionExpired":{
    "entity":"FTOS_Test_OCR",
    "form":"FTOS_Test_OcrFDF",
    "section":"Expired"
},
"businessStatusSuccess":"OCR Valid",
"businessStatusFail":"OCR Failed"
}
```

Mappings

```
{
    "PictureAttribute": "pictureOcr",
    "LastName": "lastName",
    "GivenName": "firstName",
    "DocumentNumber": "IdCardSeries",
    "PersonalNumber": "PIN",
    "BirthDate": "dateOfBirth",
    "Sex": "gender",
    "Nationality": "nationality",
    "IssuedBy": "IdIssueInstitution",
    "IssuedAt": "IdIssueDate",
    "IssuedUntil": "IdExpirationDate",
    "Country": "IssuingCountry"
}
```

FTOS_Test_OCR_DrivingLicense

Typical processor settings for driving licenses.

Settings

```
{
    "SourceEntityName":"FTOS_Test_OCR",
    "Entities":[
        {
            "DestinationEntityName":"FTOS_Test_OCR_Applicant",
            "SourceEntityName":"FTOS_Test_OCR",
            "SourceLookupDestinationName":"applicantId"
        }
    ],
    "ContextForm" : "FTOS_Test_Processors_UserJourney",
    "WaitUserConfirmation" : false,
    "ShowUploadPhotoButton" : true,
    "ShowTakePictureButton" : true,
    "RegisterFaceFromOCR" : false,
    "SessionExpiredMins" : 15,
    "RotateImage" : true,
    "CropImage" : false,
    "MaxRetry":5,
    "businessStatusSessionExpired": true,
```

```
    "OptionSets":[],
    "LookupEntities":[],
    "DocumentSettings": {
        "DocumentType":"DrivingLicence",
        "Country":"RO",
        "Provider":"Azure",
        "Validations":"",
        "RequiredFields": ["IssuedAt", "IssuedUntil",
"IssuedBy", "PIN", "DrivingLicenceNo", "DrivingCategory"]
    },
    "maskNextStepURLSuccess":{
        "entity":"FTOS_Test_OCR",
        "form":"FTOS_Test_OcrFDF",
        "section":"Success"
    },
    "maskNextStepURLFail":{
        "entity":"FTOS_Test_OCR",
        "form":"FTOS_Test_OcrFDF",
        "section":"Fail"
    },
    "maskNextStepURLFailSessionExpired":{
        "entity":"FTOS_Test_OCR",
        "form":"FTOS_Test_OcrFDF",
        "section":"Expired"
    },
    "businessStatusSuccess":"OCR Valid",
    "businessStatusFail":"OCR Failed"
}
```

Mappings

```
{
    "PictureAttribute": "pictureOcr",
    "LastName": "lastName",
    "GivenName": "firstName",
    "BirthDate": "dateOfBirth",
    "PlaceOfBirth": "placeOfBirth",
    "PIN": "PIN",
    "IssuedBy": "IdIssueInstitution",
    "IssuedAt": "IdIssueDate",
    "IssuedUntil": "IdExpirationDate",
    "DrivingLicenceNo": "DrivingLicenceNo",
    "DrivingCategory": "DrivingCategory"
}
```

FTOS_Test_OCR_VIC

Typical processor settings for vehicle identity cards.

Settings

```
{
    "SourceEntityName":"FTOS_Test_OCR",
    "Entities":[
        {
            "DestinationEntityName":"FTOS_Test_OCR_Applicant",
            "SourceEntityName":"FTOS_Test_OCR",
            "SourceLookupDestinationName":"applicantId"
        },
        {
            "DestinationEntityName":"FTOS_Test_OCR_
ApplicantAdress",
            "SourceEntityName":"FTOS_Test_OCR",
            "SourceLookupDestinationName":"applicantAddress"
        },
        {
            "DestinationEntityName":"FTOS_Test_OCR_
ApplicantVIC",
            "SourceEntityName":"FTOS_Test_OCR",

"SourceLookupDestinationName":"applicantVehicleCard"
        }
    ],
    "ContextForm" : "FTOS_Test_Processors_UserJourney",
    "WaitUserConfirmation" : false,
    "ShowUploadPhotoButton" : true,
    "ShowTakePictureButton" : true,
    "RegisterFaceFromOCR" : false,
    "SessionExpiredMins" : 15,
    "RotateImage" : true,
    "CropImage" : true,
    "MaxRetry":5,
    "businessStatusSessionExpired": true,
    "OptionSets":[
        {
            "OptionSetName":"Gender Type",
            "MappingName":"Sex",
            "OptionSetItems":{
                "M":"Male",
                "F":"Female"
```

```
            }
        }
    ],
    "LookupEntities":[
        {
            "MappingName":"RegisteredCounty",
            "EntityName":"District",
            "AttributeKey":"Code"
        },
        {
            "MappingName":"City",
            "EntityName":"City",
            "AttributeKey":"Name",
            "Parent":{
                "AttributeParentKey":"DistrictId",
                "MappingParentName":"DistrictCode"
            }
        }
    ],
    "DocumentSettings": {
            "DocumentType":"VehicleIdentityCard",
            "Country":"RO",
            "Provider":"Azure",
            "Validations":"V01,V02",
            "RequiredFields": ["IdentityCardNumber",
    "PlateNumber", "Brand", "Series", "SeriesVariant",
    "SeriesVersion", "Model", "VehicleIdentificationNumber"]
        },
    "maskNextStepURLSuccess":{
        "entity":"FTOS_Test_OCR",
        "form":"FTOS_Test_OcrFDF",
        "section":"Success"
    },
    "maskNextStepURLFail":{
        "entity":"FTOS_Test_OCR",
        "form":"FTOS_Test_OcrFDF",
        "section":"Fail"
    },
    "maskNextStepURLFailSessionExpired":{
        "entity":"FTOS_Test_OCR",
        "form":"FTOS_Test_OcrFDF",
        "section":"Expired"
    },
    "businessStatusSuccess":"OCR Valid",
    "businessStatusFail":"OCR Failed"
```

```
}
```

Mappings

```json
{
    "PictureAttribute": "pictureOcr",
    "OwnerName": "lastName",
    "OwnerSurname": "firstName",
    "OwnerStreetType": "streetType",
    "OwnerFullAddress": "fullAddress",
    "OwnerStreetName": "StreetName",
    "OwnerStreetNo": "StreetNo",
    "OwnerStorey": "FloorNo",
    "OwnerStairway": "Stairway",
    "OwnerApartmentNo": "ApartmentNo",
    "OwnerApHouse": "BuildingNo",
    "IssuedBy": "IdIssueInstitution",
    "IssuedAt": "IdIssueDate",
    "IdentityCardSeries": "IdCardSeries",
    "ValidUntil": "IdExpirationDate",
    "RegisteredCounty": "DistrictCode",
    "City": "City",
    "IdentityCardNumber": "IdentityCardNumber",
    "PlateNumber": "PlateNumber",
    "Type": "Type",
    "VehicleTypeDescription": "VehicleTypeDescription",
    "VehicleTypeCategory": "VehicleTypeCategory",
    "Brand": "Brand",
    "Series": "Series",
    "SeriesVariant": "SeriesVariant",
    "SeriesVersion": "SeriesVersion",
    "Model": "Model",
    "VehicleIdentificationNumber":
"VehicleIdentificationNumber",
    "OwnerIsCompany": "OwnerIsCompany",
    "FirstRegistrationDate": "FirstRegistrationDate",
    "MaxAllowedMass": "MaxAllowedMass",
    "VehicleWeight": "VehicleWeight",
    "RegistrationDate": "RegistrationDate",
    "EngineCapacity": "EngineCapacity",
    "Power": "Power",
    "FuelType": "FuelType",
    "Color": "Color",
    "NumberOfSeats": "NumberOfSeats",
```

```
        "NumberOfStandingSeats": "NumberOfStandingSeats"
    }
```

OCR Form Driven Flow

Create an onboarding form driven flow called **FTOS_Test_OcrFDF** to collect the applicants' data.

Data Model

Use the "OCR Entity" on page 100 as the base entity of the flow and include all its business entity extensions in the data model: **applicantAddress**, **applicantData**, and **applicantVehicleCard**.

Entity	FTOS_Test_OCR	

BUSINESS ENTITY EXTENSIONS

Name	Extension Type	Relation Attribute
applicantAddress	Related	applicantAddress
applicantData	Related	applicantId
applicantVehicleCard	Related	applicantVehicleCard

Flow Control

Create the following entity form steps and transitions.
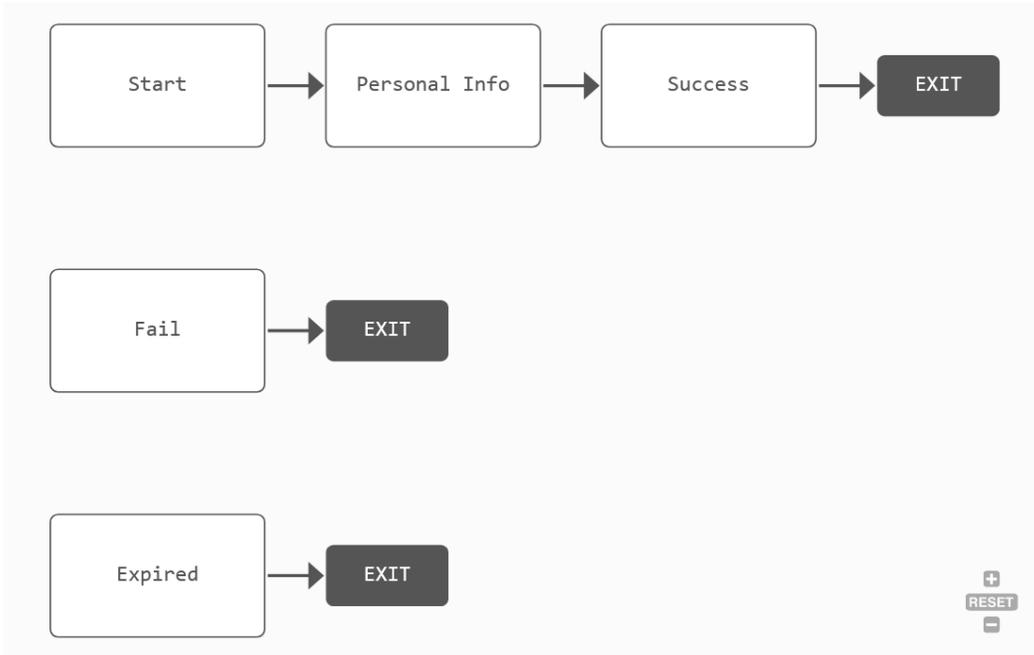
Order	Step Name	Flow Control: Default Navigation Rule
1	Start	
2	Personal Info	
3	Success	Close Flow. Navigate to Homepage.
4	Fail	Close Flow. Navigate to Homepage.
5	Expired	Close Flow. Navigate to Homepage.

Steps Configuration

Configure the flow steps as follows:

Step	UI Configuration
Start	This is the initial step of the flow where the applicant selects the type of identity document to be scanned. In the UI, include a welcome message and the **ocrType** attribute.

Step	UI Configuration

Personal Info	This step collects applicant contact information and triggers the OCR.
	
	In the UI, include the following attributes: **applicantNo**, **applicantId_email**, **applicantId_phone**, and **applicantId_name**.
	
	In the **Advanced** section, add the following code in the **After Section Save** tab:
	
	<pre>// For Ecosystem SysPack 2.5.0 and later,
	use:
	var dfpHelper = ebs.importClientScript
	('FTOS.ECOS.Utils');
	
	// Prior to Ecosystem SysPack 2.5.0, use:
	// var dfpHelper = ebs.importClientScript
	('FTOS.DFP');
	
	ebs.removeFormEditButton
	('ebsContainerContent');
	context.stopNextNavigation = true;
	
	var entitydata=ebs.getCurrentEntityData();
	var typeOCRId = entitydata.FTOS_Test_OCR_
	ocrType_displayname;
	
	var flowSettingsName =
	formData.FlowSettings;
	var params = {
	    flowSettingsName: flowSettingsName,
	    processorSettingsType: 'OCR',
	    processorSettingsName: 'FTOS_Test_OCR_'
	+ typeOCRId
	};
	var recordId = formData.id;
	var componentName = 'FTOS_DFP_OCR';
	dfpHelper.loadComponent(componentName,
	params, recordId, true);</pre>

Step	UI Configuration
Success	This step displays the information collected in case of a successful OCR and allows the applicant to further edit the fields. In the UI, include the following attributes, preferably grouped into three sections: • Applicant data attributes: **applicantId_nationality**, **applicantId_name**, **applicantId_firstName**, **applicantId_lastName**, **applicantId_PIN**, **applicantId_birthCountry**, **applicantId_dateOfBirth**, **applicantId_placeOfBirth**, **applicantId_ BirthDistrictBody**, **applicantId_gender**, **applicantId_ pictureOcr**, **applicantId_IdIssueDate**, **applicantId_ IdCardSeries**, **applicantId_IdIssueInstitution**, **applicantId_IdExpirationDate**, **applicantId_ IssuingCountry**, **applicantId_DrivingLicenceNo**, and **applicantId_DrivingCategory**. • Applicant address attributes: **applicantAddress_ StreetName**, **applicantAddress_StreetNo**, **applicantAddress_IssuingCountry**, **applicantAddress_BuildingNo**, **applicantAddress_ Stairway**, **applicantAddress_FloorNo**, **applicantAddress_ApartmentNo**, **applicantAddress_ fullAddress**, **applicantAddress_City**, **applicantAddress_DistrictCode**, and **applicantAddress_IssuingCountry**. • Vehicle identity card attributes: **applicantVehicleCard_IdentityCardNumber**, **applicantVehicleCard_PlateNumber**, **applicantVehicleCard_Type**, **applicantVehicleCard_ VehicleTypeDescription**, **applicantVehicleCard_ VehicleTypeCategory**, **applicantVehicleCard_Brand**, **applicantVehicleCard_SeriesVersion**, **applicantVehicleCard_Model**, **applicantVehicleCard_**

Step	UI Configuration
	VehicleIdentificationNumber, **applicantVehicleCard_OwnerIsCompany**, **applicantVehicleCard_FirstRegistrationDate**, **applicantVehicleCard_RegistrationDate**, **applicantVehicleCard_VehicleWeight**, **applicantVehicleCard_MaxAllowedMass**, **applicantVehicleCard_EngineCapacity**, **applicantVehicleCard_FuelType**, **applicantVehicleCard_Power**, **applicantVehicleCard_Color**, **applicantVehicleCard_ NumberOfSeats**, and **applicantVehicleCard_ NumberOfStandingSeats**.
Fail	This step is displayed if the OCR fails. Display a fail message in the UI.
Expired	This step is displayed if the OCR session expired. Display a session expired message in the UI.

Assign the OCR Flow Settings to the Form Driven Flow

In the form driven flow's **Advanced** section, in the **Before Events** tab, add the following code:

```
if (sessionStorage.getItem("B2CSessionIdParam")) {
    formData.setSaveEndpoint("FTOS_Test_SaveOnboarding");
}

formData.FlowSettings = "FTOS_Test_OCR";
```

Onfido

Onfido helps you validate a user's identity by checking the authenticity of the submitted identity document. The solution scans the ID front and back to validate the name introduced by the user with data extracted from the document. If, for example,

there's a middle name on the document that's not specified by the user, then the data doesn't match and the check can fail. In addition to the data extracted from the document scans Onfido retrieves the breakdowns and validations that depend on each configuration. This information is stored in the FTOS_ONFIDO_CHECKREPORT defined in JSON format.

Apart from identity documents validation, the Onfido automation processor offers face similarity checks by comparing a clear photo or a video provided by the applicant to their identity document. Using the face similarity functionality, it quickly verifies that the applicant is a real person and they are the same as the person from the identity document.

The data that Onfido handles must be GDPR compliant. To delete data from Onfido, you must do so manually from the Onfido account.

Benefits

- **Digitization**. Validate your users' digital accounts based on their real identities.

- **Customer Acquisition**. Streamline your customer onboarding process with a simple user experience.

- **Fraud Detection**. Prevent identity fraud with document verification.

- **Security**. Manual checks for warning cases on top of automated validations.

- **Compliance**. Implement KYC and AML requirements at scale.

Applications

- Customer onboarding

- Account opening

- Loan applications

- Compliance related processes

- Claims handling

- Mortgage processing

Installing Onfido

Prerequisites

Before installation, you need to have:

- An active FintechOS account. For details, contact a FintechOS sales representative.

- Make sure you have the latest *dcs-sdk-onfido.js* installed on your environment.

> **NOTE** We recommend that you load *sdk/dcs-onfido-component.js* and *sdk/dcs-onfido-component.js.map* by placing them in the ***custom-on-demand*** folder, and import them using the **injectScriptAsync** method. See example below:

```
if (window.OnfidoComponent == undefined) {
    var slash = ebs.getBaseUrl().slice(-1) === "/" ? "" : "/";
    await ebs.injectScriptAsync(
      ebs.getBaseUrl() +
        slash +
        "custom-on-demand/components/dcs-onfido-component.js"
    );
}
```

1 Install the SysPacks

1. Download the **SySDigitalSolutionPackages.zip** archive.

2. Unzip the archive and follow the instructions from the from the SysPacks Installation page.

2 Set up the Onfido service subscription key

In order to configure the processors to make the requests correctly to DCS, you must add in web.config / FTOS Vault (Portal / B2C - depending where the server side script is executing) the following keys:

Key Path	Key Name	Value
kv/<environment>/<FintechOS Portal instance>/app-settings	FTOSServiceOnfidoEndpoint	DCS web app endpoint URL provided by FintechOS.
kv/<environment>/<FintechOS Portal instance>/app-settings	FTOSServicesOnfidoAppId	ID for the Onfido service subscription.
kv/<environment>/<FintechOS Portal instance>/app-settings	FTOSServicesOnfidoSubscriptionKey	Subscription key for the Onfido service.
kv/<environment>/<FintechOS Portal instance>/app-settings	FTOSServicesOnfidoenableMock	Optional and *false* by default. Set this to *true* and the processor will use mock functionalities starting with Syspack 22.1.4003.

DCS Onfido configurations are stored using **Vault** secrets inside a KV (key-value) Service, using the following structure path: `kv/dcs/kyc-onfido`.

> **IMPORTANT!**
> Make sure that the Vault configurations are done and that the Webhook is created.

(Deprecated) Adding Keys In web.config

Key	Value
FTOSServiceOnfidoEndpoint	DCS web app endpoint URL provided by FintechOS.
FTOSServicesOnfidoAppId	ID for the Onfido service subscription.
FTOSServicesOnfidoSubscriptionKey	Subscription key for the Onfido service.

```
<add key="FTOSServicesOnfidoEndpoint" value="https://"/>
<add key="FTOSServicesOnfidoAppId" value=""/>
<add key="FTOSServicesOnfidoSubscriptionKey" value=""/>
```

Setting Up an Onfido Automation Processor

1 Create a digital flow settings group

The Automation Blocks automation processor must be hosted inside a digital flow settings group. A digital flow settings group can include multiple automation processors and is typically used as a container for the automation processors called by a specific digital journey.

If you already have a digital flow settings group you wish to host your Onfido automation processor, skip to " 2 Add the Onfido processor settings to a digital flow settings group" on the next page. Otherwise, follow the instructions below to create a new digital flow settings group:

1. In FintechOS Studio, go to **Main Menu** > **Digital Experience** > **Digital Journeys** > **Processor Settings**.

2. In the Digital Flow Settings list page, click **Insert** to add a new digital flow settings group.

3. In the Add Digital Flow Settings window, enter a **Name** for your digital flow settings group.

4. If you already have a digital journey set up where you wish to call the Onfido automation processor, select it from the Digital Journey drop-down box.

5. Click **Save and Close** to save your flow settings group.

2 Add the Onfido processor settings to a digital flow settings group

1. In FintechOS Studio, **Main Menu** > **Digital Experience** > **Digital Journeys** > **Processor Settings**.

2. In the Digital Flow Settings list, double click the desired digital flow settings group.

3. In the Processor Settings section, click **Insert**.

4. Fill in the following fields:

   - Name – Enter a name for your processor settings.

   - Flow Settings – Leave the default value.

   - Digital Processor Type – Select **Onfido**.

   - Settings – JSON code for the automation processor's settings. For details, see "Onfido Settings" below.

   - Mapping – JSON code for the automation processor's mappings. For details, see "Onfido Mappings" on page 134.

5. Click **Save and Close**.

Onfido Settings

The Onfido settings are defined in JSON format as key-value pairs. The following settings are available:

JSON Key	Description
SourceEntityName	The entity associated with the digital journey that calls the Onfido processor. Needed only if the Onfido processor is used on an edit form (to alter an existing record) to update the workflow entity's business status after the scan. If the Onfido processor is used on an insert form (to create a new record), this key is not needed.
UseProcessorForOCR	Boolean value. When set to $true$, on OCR request is sent to DCS.

JSON Key	Description
UseProcessorForCheck	Boolean value. When set to `true`, the raw identity check reports received from the Onfido service are attached to the `FTOS_ONFIDO_CHECK` entity (in the `FTOS_ONFIDO_CHECKREPORT` related entity).
UploadFallback	Boolean value - default: `false`. When set to true, an optimized camera UI is used to take a live photo of the identity document. When this is not possible (because of an unsupported browser or mobile device), it falls back to the mobile device's default camera application. **IMPORTANT!** This method does not guarantee live capture, because some mobile device browsers and camera applications allow uploads from the user's gallery of photos.
OnfidoCountry	The identity document's issuing country specified using a 3-letter ISO 3166-1 alpha-3 country code.
OnfidoDocumentType	An array with desired document types. Allowed values are: "national_identity_card", "passport", "driving_licence", and "residence_permit".
Referrer	The URL of the web page where the Web SDK is used. The referrer sent by the browser must match the referrer URL pattern in the SDK token for the SDK to successfully authenticate.
DocumentHasTwoSides	Boolean value indicating if the user must scan both sides of the identity document.
UseDefaultValues	Boolean value. When set to *true*, the processor creates a new Onfido applicant with the information defined in "DefaultApplicantData" below.
UseFaceSimilarity	Boolean value. When set to *true*, the **RequestedVariant** field is displayed to validate face similarity.
RequestedVariant	String, displayed if the **Use Face Similarity** field is set to *true*. The allowed values are: "standard" (default), "video", or"motion".
DefaultApplicantData	JSON object containing key-value pairs for the default Onfido applicant's data.
ApplicantData	The attributes from which the Onfido applicant's data is retrieved.

JSON Key	Description
Entities	Indicates the entities that populates with the scanned values. • DestinationEntityName – Name of the entity that is populated with the scanned data. • SourceEntityName – Entity associated with the digital journey that uses the automation processor. If this is the same entity that is populated, this value is identical to DestinationEntityName. • SourceLookupDestinationName – Name of the SourceEntityName lookup key that points to DestinationEntityName. If they are the same entity, enter the primary key.
OptionSets	Replaces values returned by the Onfido processor with entries from an option set. • OptionSetName – Name of the option set that stores the valid replacement values. • MappingName – Name of the field as returned by the Onfido processor. • OptionSetItems – Key-value pairs that map the value returned by the Onfido processor (the key) to the replacement value from the option set (the value). If the value returned by the Onfido processor is not found in the OptionSetItems keys, the entry is not be populated. The user is able to manually select only values from OptionSetName.

JSON Key	Description
LookupEntities	Validates values returned by the Onfido processor based on records in an entity. • MappingName – Name of the field as returned by the Onfido processor. • EntityName – Name of the entity that stores the valid values. • AttributeKey – Name of the attribute in EntityName that stores the valid values. Parent – Defines hierarchical relationships between lookup entities. For instance, you can check if a city name belongs to a valid county name. • MappingParentName – Name of the parent field as returned by the Onfido processor. • AttributeParentKey – Name of the EntityName lookup key linked to the parent entity. If the value returned by the Onfido processor is not found in the lookup entity, the entry does not populate. The user is able to manually select only values from the lookup entity.
MaskNextStepUrlSuccess	Location in the user interface where the user is redirected after a successful check. • entity – Entity name. • form – Form name of the above entity. • section – Optional parameter for the section name of the above form.

JSON Key	Description
MaskNextStepUrlFail	Location in the user interface where the user is redirected after a failed check. • entity – Entity name. • form – Form name of the above entity. • section – Optional parameter for the section name of the above form.
UseLocalization	Boolean value. Setting it to *true* enables user interface localization. Localization uses the FTOS_DFP_ OnfidoLocalization client script library to populate the interface text fields. By default, only the en-US locale is defined. Edit the library to add additional languages.
DocumentType	Used for embedded documents. The document type that identifies the set of attribute mappings used by the processor (see "Onfido Mappings" on page 134). Only one document type can be enabled per automation processor.

DocumentTypes
(Ecosystem SysPack 2.5.0 or later)
	Lists the accepted "GenericDocumentTypes(Ecosystem SysPack 2.5.0 or later)" on the next page. e.g.:
	
	``
	"generic_document": [
	        {"id": "my_single_side_
	document"},
	        {"id": "my_two_sides_document"}
	    ]
	``

DisableLogSDKMessages **(Ecosystem SysPack 2.5.0 or later)**	Set this property to `true` if you do not wish to retain SDK logs.
LogLevel **(Ecosystem SysPack 2.5.0 or later)**	Controls the minimum severity level for the logged messages. Set it to `error` to capture only SDK errors or to `debug` to include all SDK log messages.
DisableSaveBrowserDetails **(Ecosystem SysPack 2.5.0 or later)**	Set this property to `true` to prevent storage of user platform details in the FTOS_DFP_Logging entity.
crossDevicePolicy **(Ecosystem SysPack 2.5.0 or later)**	Set this property to to `disable` to allow image uploads from the current device, or `force` to always redirect the user to a device with a camera for a live photo.
_crossDeviceLinkMethods **(Ecosystem SysPack 2.5.0 or later)**	Choose how the secondary device (with a camera) should link from the primary device: `qr_code`, `copy_link`, or `sms`.

JSON Key	Description

enterpriseFeatures
(Ecosystem SysPack 2.5.0 or later)
	Allows you to hide or replace the Onfido logo, or display custom text instead:
	
	• hideOnfidoLogo - Removes the Onfido logo.
	
	• logoCobrand - Adds a custom logo image:
	
	  ▪ darkLogoSrc - URI of the replacement logo for dark mode.
	
	  ▪ lightLogoSrc - URI of the replacement logo for light mode
	
	• cobrand
	
	  • text - Adds a custom text to the logo

GenericDocumentTypes **(Ecosystem SysPack 2.5.0 or later)**	Set up custom documents for scanning, supporting one or more pages. • id - The document type that identifies the set of attribute mappings used by the processor (see "Onfido Mappings" on page 134). • title - Provides a title for the custom document. • subtitle - Provides a subtitle for the custom document. • country - Custom document's issuing country specified using a 3-letter ISO 3166-1 alpha-3 country code. • pages - Number of pages of the custom document.

Examples

Generic Onfido Processor Settings

```json
{
    "CustomUI": "",
    "SourceEntityName": "FTOS_Test_Onfido",
    "UseProcessorForOCR":true,
    "UseProcessorForCheck":true,
    "DisableSaveBrowserDetails": false,
    "DisableLogSDKMessages": false,
    "LogLevel": "debug",
    "OnfidoCountry":"ROU",
    "OnfidoDocumentType": ["national_identity_card"],
    "UploadFallback":true,
    "FaceSimilarityType": "video",
    "ReportNames": ["document"],
    "DocumentHasTwoSides": true,
    "UseDefaultValues":true,
    "DefaultApplicantData":{
        "LastName": "DefaultLastName",
        "FirstName": "DefaultFirstName",
        "Email": "DefaultEmail@email.com"
    },
    "ApplicantData":{
        "LastName": {
            "AttributeName": "applicantId_lastName",
            "Extension": "applicantData"
        },
        "FirstName": {
            "AttributeName": "applicantId_firstName",
            "Extension": "applicantData"
        },
        "Email": {
            "AttributeName": "applicantId_email",
            "Extension": "applicantData"
        }
    },
    "WaitingForResponseTimeout":1,
    "Entities":[
      {
          "DestinationEntityName":"FTOS_Test_Onfido_
Applicant",
          "SourceEntityName":"FTOS_Test_Onfido",
          "SourceLookupDestinationName":"applicantId"
      },
      {
          "DestinationEntityName":"FTOS_Test_Onfido_
ApplicantAddress",
```

```
                "SourceEntityName":"FTOS_Test_Onfido",
                "SourceLookupDestinationName":"applicantAddress"
            }
        ],

        "OptionSets":[
            {
                "OptionSetName":"Gender Type",
                "MappingName":"Sex",
                "OptionSetItems":{
                    "Male":"Male",
                    "Female":"Female"
                }
            }
        ],
        "LookupEntities":[
            {
                "MappingName":"DistrictCode",
                "EntityName":"District",
                "AttributeKey":"Code"
            },
            {
                "MappingName":"BirthDistrictBody",
                "EntityName":"District",
                "AttributeKey":"Code"
            },
            {
                "MappingName":"IssuingCountry",
                "EntityName":"FTOS_CMB_Country",
                "AttributeKey":"code"
            },
            {
                "MappingName":"City",
                "EntityName":"City",
                "AttributeKey":"Name",
                "Parent":{
                    "AttributeParentKey":"DistrictId",
                    "MappingParentName":"DistrictCode"
                }
            }
        ],
         "maskNextStepURLSuccess":{
           "entity":"FTOS_Test_Onfido",
           "form":"FTOS_Test_Onfido_FDF",
           "section":"Success"
```

```
      },
      "maskNextStepURLFail":{
          "entity":"FTOS_Test_Onfido",
          "form":"FTOS_Test_Onfido_FDF",
          "section":"Fail"
      },
      "UseLocalization": true,
      "DocumentType":"IdRom"
  }
```

Onfido Processor Settings for Two Custom Documents

```
{
    "CustomUI": "",
    "SourceEntityName": "FTOS_Test_Onfido",
    "UseProcessorForOCR":true,
    "UseProcessorForCheck":true,
    "DisableSaveBrowserDetails": false,
    "DisableLogSDKMessages": false,
    "LogLevel": "debug",
    "UploadFallback":true,
    "OnfidoCountry":"ROU",
    "DocumentTypes": {
        "generic_document": [
          {"id": "my_single_side_document"},
          {"id": "my_two_sides_document"}
        ]
    },
    "GenericDocumentTypes": [
      {
          "id": "my_single_side_document",
          "title": "My single side document",
          "subTitle": "Details about my one side document",
          "country": "ROU",
          "pages": 1
      },
      {
          "id": "my_two_sides_document",
          "title": "My two sides document",
          "subTitle": "Details about my two sides document",
          "country": "ROU",
          "pages": 1
      }
```

```
    ],
    "ReportNames": ["document"],
    "FaceSimilarityType": "video",
    "DocumentHasTwoSides": false,
    "UseDefaultValues":true,
    "DefaultApplicantData":{
        "LastName": "DefaultLastName",
        "FirstName": "DefaultFirstName",
        "Email": "DefaultEmail@email.com"
    },
    "ApplicantData":{
        "LastName": {
            "AttributeName": "applicantId_lastName",
            "Extension": "applicantData"
        },
        "FirstName": {
            "AttributeName": "applicantId_firstName",
            "Extension": "applicantData"
        },
        "Email": {
            "AttributeName": "applicantId_email",
            "Extension": "applicantData"
        }
    },
    "WaitingForResponseTimeout":1,
    "Entities":[
        {
            "DestinationEntityName":"FTOS_Test_Onfido_
Applicant",
            "SourceEntityName":"FTOS_Test_Onfido",
            "SourceLookupDestinationName":"applicantId"
        },
        {
            "DestinationEntityName":"FTOS_Test_Onfido_
ApplicantAddress",
            "SourceEntityName":"FTOS_Test_Onfido",
            "SourceLookupDestinationName":"applicantAddress"
        }
    ],

    "OptionSets":[
        {
            "OptionSetName":"Gender Type",
            "MappingName":"Sex",
            "OptionSetItems":{
```

```json
                "Male":"Male",
                "Female":"Female"
            }
        }
    ],
    "LookupEntities":[
        {
            "MappingName":"DistrictCode",
            "EntityName":"District",
            "AttributeKey":"Code"
        },
        {
            "MappingName":"BirthDistrictBody",
            "EntityName":"District",
            "AttributeKey":"Code"
        },
        {
            "MappingName":"IssuingCountry",
            "EntityName":"FTOS_CMB_Country",
            "AttributeKey":"code"
        },
        {
            "MappingName":"City",
            "EntityName":"City",
            "AttributeKey":"Name",
            "Parent":{
                "AttributeParentKey":"DistrictId",
                "MappingParentName":"DistrictCode"
            }
        }
    ],
     "maskNextStepURLSuccess":{
        "entity":"FTOS_Test_Onfido",
        "form":"FTOS_Test_Onfido_FDF",
        "section":"Success"
     },
    "maskNextStepURLFail":{
        "entity":"FTOS_Test_Onfido",
        "form":"FTOS_Test_Onfido_FDF",
        "section":"Fail"
    },
    "UseLocalization": true,
    "DocumentType":"IdRom"
}
```

Onfido Processor Settings with Cobranded Logos

```json
{
    "CustomUI": "",
    "SourceEntityName": "FTOS_Test_Onfido",
    "UseProcessorForOCR":true,
    "UseProcessorForCheck":true,
    "DisableSaveBrowserDetails": false,
    "DisableLogSDKMessages": false,
    "LogLevel": "debug",
    "OnfidoCountry":"ROU",
    "OnfidoDocumentType": ["national_identity_card"],
    "UploadFallback":true,
    "FaceSimilarityType": "video",
    "EnterpriseFeatures": {
        "logoCobrand": {
            "darkLogoSrc":
"https://www.freepnglogos.com/uploads/company-logo-
png/company-logo-telestream-press-kit-12.png",
            "lightLogoSrc":
"https://www.freepnglogos.com/uploads/company-logo-
png/company-logo-telestream-press-kit-12.png"
        }
    },
     "ReportNames": ["document"],
    "DocumentHasTwoSides": true,
    "UseDefaultValues":true,
    "DefaultApplicantData":{
        "LastName": "DefaultLastName",
        "FirstName": "DefaultFirstName",
        "Email": "DefaultEmail@email.com"
    },
    "ApplicantData":{
        "LastName": {
            "AttributeName": "applicantId_lastName",
            "Extension": "applicantData"
        },
        "FirstName": {
            "AttributeName": "applicantId_firstName",
            "Extension": "applicantData"
        },
        "Email": {
            "AttributeName": "applicantId_email",
            "Extension": "applicantData"
        }
    },
```

```
    "WaitingForResponseTimeout":1,
    "Entities":[
        {
            "DestinationEntityName":"FTOS_Test_Onfido_
Applicant",
            "SourceEntityName":"FTOS_Test_Onfido",
            "SourceLookupDestinationName":"applicantId"
        },
        {
            "DestinationEntityName":"FTOS_Test_Onfido_
ApplicantAddress",
            "SourceEntityName":"FTOS_Test_Onfido",
            "SourceLookupDestinationName":"applicantAddress"
        }
    ],

    "OptionSets":[
        {
            "OptionSetName":"Gender Type",
            "MappingName":"Sex",
            "OptionSetItems":{
                "Male":"Male",
                "Female":"Female"
            }
        }
    ],
    "LookupEntities":[
        {
            "MappingName":"DistrictCode",
            "EntityName":"District",
            "AttributeKey":"Code"
        },
        {
            "MappingName":"BirthDistrictBody",
            "EntityName":"District",
            "AttributeKey":"Code"
        },
        {
            "MappingName":"IssuingCountry",
            "EntityName":"FTOS_CMB_Country",
            "AttributeKey":"code"
        },
        {
            "MappingName":"City",
            "EntityName":"City",
```

```
            "AttributeKey":"Name",
            "Parent":{
                "AttributeParentKey":"DistrictId",
                "MappingParentName":"DistrictCode"
            }
        }
    ],
     "maskNextStepURLSuccess":{
        "entity":"FTOS_Test_Onfido",
        "form":"FTOS_Test_Onfido_FDF",
        "section":"Success"
     },
     "maskNextStepURLFail":{
        "entity":"FTOS_Test_Onfido",
        "form":"FTOS_Test_Onfido_FDF",
        "section":"Fail"
     },
     "UseLocalization": true,
     "DocumentType":"IdRom"
 }
```

Onfido Mappings

The Onfido mappings match the field names as returned by the Onfido processor (keys) with the populated entities' attributes (values).

Setting Name	Description
DocumentsMapping	Holds attribute mappings for various types of scanned documents.
Type	Scanned document type.
Map	Key-value pairs that match the field name as returned by the Onfido processor (the key) to the attribute name in the destination entity (the value).

Example

The *side* parameter indicates which side of the identity document the field belongs to. For one-sided documents, set it to *front* for all attributes.

```
{
    "DocumentsMapping":
    [
```

```json
        {
            "type": "IdRom",
            "Map":
            {
                "LastName": { "attribute": "lastName", "side":
"front" },
                "GivenName": { "attribute": "firstName", "side":
"front" },
                "FullName": { "attribute": "fullName", "side":
"back" },
                "SpouseName": { "attribute": "spouseName", "side":
"back" },
                "WidowName": { "attribute": "widowName", "side":
"back" },
                "AliasName": { "attribute": "aliasName", "side":
"back" },
                "TypeOfDocument": { "attribute": "typeOfDocument",
"side": "back" },
                "DocumentNumber": { "attribute": "IdCardSeries",
"side": "front" },
                "StreetType": { "attribute": "streetType", "side":
"front" },
                "PersonalNumber": { "attribute": "PIN", "side":
"front" },
                "BirthDate": { "attribute": "dateOfBirth", "side":
"front" },
                "PlaceOfBirthBody": { "attribute": "placeOfBirth",
"side": "front" },
                "BirthCountryBody": { "attribute": "birthCountry",
"side": "front" },
                "Address": { "attribute": "fullAddress", "side":
"front" },
                "Sex": { "attribute": "gender", "side": "front" },
                "DistrictCode": { "attribute": "DistrictId",
"side": "front" },
                "Nationality": { "attribute": "nationality",
"side": "front" },
                "IssuedBy": { "attribute": "IssueInstitution",
"side": "front" },
                "IssuedAt": { "attribute": "IdIssueDate", "side":
"front" },
                "IssuedUntil": { "attribute": "IdExpirationDate",
"side": "front" },
                "IssuingCountry": { "attribute": "isuingCountry",
"side": "front" },
                "Confidence": { "attribute": "confidence", "side":
"front" },
```

```
                   "mrz_line1": { "attribute": "mrz_line1", "side":
"front" },
                   "mrz_line2": { "attribute": "mrz_line2", "side":
"front" },
                   "mrz_line3": { "attribute": "mrz_line3", "side":
"front" },
                   "AddressLine1": { "attribute": "AddressLine1",
"side": "front" },
                   "AddressLine2": { "attribute": "AddressLine2",
"side": "front" },
                   "AddressLine3": { "attribute": "AddressLine3",
"side": "front" },
                   "AddressLine4": { "attribute": "AddressLine4",
"side": "front" },
                   "AddressLine5": { "attribute": "AddressLine5",
"side": "front" }
             }
          }
      ]
}
```

NOTE

By default, Onfido document pictures are saved on Onfido Events, inside FTOS_ Onfido_CheckReport. If you'd like to store the document pictures in picture attribute on applicant / retail applicant business entities, you can develop a trigger to save them there as well. Otherwise, PictureAttribute from Applicant / retail applicant business entity is not used by default for Onfido.

Onfido UI Customization

The Automation Blocks component supports language and UI customization through the `language` and `customUI` parameters.

- `language`: Customize the language displayed on the SDK by passing a string for the supported languages or object. The following languages are supported: en_ US, de_DE, es_ES, fr_FR, it_IT, pt_PT, nl_NL.

  For unsupported languages, send an object containing local string, a local tag and phrases, and an object containing the keys you want to override. For

example:

```
{
    locale: 'en_US',
    phrases: {
     "welcome": {
       "next_button": "Select document",
       "subtitle": "This will take a few minutes.",
       "title": "Validate identity."
     }
    }
}
```

- customUI: Customize text, the SDK main container, buttons, links, icon

  background color, and pop-ups by using the following properties:

```
// Typography
    fontFamilyTitle: string;
    ontFamilySubtitle: string;
    ontFamilyBody: string;
    fontSizeTitle: string;
    fontSizeSubtitle: string;
    fontSizeBody: string;
    fontWeightTitle: string;
    fontWeightSubtitle: string;
    fontWeightBody: string;
    colorContentTitle: string;
    colorContentSubtitle: string;
    colorContentBody: string;
    // Modal
    colorBackgroundSurfaceModal: string;
    colorBorderSurfaceModal: string;
    borderWidthSurfaceModal: string;
    borderStyleSurfaceModal: string;
    borderRadiusSurfaceModal: string;
    // Buttons
    colorContentButtonPrimaryText: string;
    colorBackgroundButtonPrimary: string;
    colorBackgroundButtonPrimaryHover: string;
    colorBackgroundButtonPrimaryActive: string;
    colorBorderButtonPrimary: string;
```

```
        colorContentButtonSecondaryText: string;
        colorBackgroundButtonSecondary: string;
        colorBackgroundButtonSecondaryHover: string;
        colorBackgroundButtonSecondaryActive: string;
        colorBorderButtonSecondary: string;
        colorContentDocTypeButton: string;
        colorBackgroundDocTypeButton: string;
        colorBorderDocTypeButton: string;
        colorBorderDocTypeButtonHover: string;
        colorBorderDocTypeButtonActive: string;
        colorBackgroundIcon: string;
        // Shared Buttons
        borderRadiusButton: string;
        buttonGroupStacked: boolean;
        // Links
        colorContentLinkTextHover: string;
        colorBorderLinkUnderline: string;
        colorBackgroundLinkHover: string;
        colorBackgroundLinkActive: string;
        // Warning Popups
        colorContentAlertInfo: string;
        colorBackgroundAlertInfo: string;
        colorContentAlertInfoLinkHover: string;
        colorContentAlertInfoLinkActive: string;
        // Error Popups
        colorContentAlertError: string;
        colorBackgroundAlertError: string;
        colorContentAlertErrorLinkHover: string;
        colorContentAlertErrorLinkActive: string;
        // Info Header/Highlight Pills
        colorBackgroundInfoPill: string;
        colorContentInfoPill: string;
        // Icon Buttons
        colorBackgroundButtonIconHover: string;
        colorBackgroundButtonIconActive: string;
        // Camera Shutter Button
        colorBackgroundButtonCameraHover: string;
        colorBackgroundButtonCameraActive: string;
```

Onfido Request Responses

The Onfido OCR processor is composed of a client side script, automation scripts, automation script libraries, and a client script library. When the applicant's documents are validated, the call is made using the below method. The OCR data is then saved in the entity based on the Settings configurations and the response is returned in JSON format.

> **NOTE**
>
> When the Onfido automation processor is called, the response returned is saved in JSON format in the customer's FintechOS Digital Journey. The parsing of the returned JSON object depends on the implementation team.

- `getReport`: the result contains the report for a related check.

Example

Sample JSON code for Onfido `getReport` response

```
{
    "id":"571ddd12-5e9a-43c9-ad87-3c2f434ece9b",
    "created_at":"2022-04-27T14:14:34Z",
    "name":"document",
    "href":"/v3.2/reports/571ddd12-5e9a-43c9-ad87-
3c2f434ece9b",
    "status":"complete",
    "result":"consider",
    "sub_result":"suspected",
    "breakdown":{
        "age_validation":{
            "breakdown":{
                "minimum_accepted_age":{
                    "properties":{

                    },
                    "result":"clear"
                }
            },
            "result":"clear"
        },
        "compromised_document":{
```

```json
            "result":"clear"
        },
        "data_comparison":{
            "breakdown":{
                "date_of_birth":{
                    "properties":{

                    },
                    "result":null
                },
                "date_of_expiry":{
                    "properties":{

                    },
                    "result":null
                },
                "document_numbers":{
                    "properties":{

                    },
                    "result":null
                },
                "document_type":{
                    "properties":{

                    },
                    "result":null
                },
                "first_name":{
                    "properties":{

                    },
                    "result":null
                },
                "gender":{
                    "properties":{

                    },
                    "result":null
                },
                "issuing_country":{
                    "properties":{

                    },
                    "result":null
```

```json
            },
            "last_name":{
                "properties":{

                },
                "result":null
            }
        },
        "result":null
    },
    "data_consistency":{
        "breakdown":{
            "date_of_birth":{
                "properties":{

                },
                "result":"clear"
            },
            "date_of_expiry":{
                "properties":{

                },
                "result":"clear"
            },
            "document_numbers":{
                "properties":{

                },
                "result":"clear"
            },
            "document_type":{
                "properties":{

                },
                "result":"clear"
            },
            "first_name":{
                "properties":{

                },
                "result":"clear"
            },
            "gender":{
                "properties":{
```

```
                    },
                    "result":"clear"
                },
                "issuing_country":{
                    "properties":{

                    },
                    "result":"clear"
                },
                "last_name":{
                    "properties":{

                    },
                    "result":"clear"
                },
                "multiple_data_sources_present":{
                    "properties":{

                    },
                    "result":null
                },
                "nationality":{
                    "properties":{

                    },
                    "result":null
                }
            },
            "result":"clear"
        },
        "data_validation":{
            "breakdown":{
                "barcode":{
                    "properties":{

                    },
                    "result":null
                },
                "date_of_birth":{
                    "properties":{

                    },
                    "result":"clear"
                },
                "document_expiration":{
```

```
            "properties":{

            },
            "result":"consider"
        },
        "document_numbers":{
            "properties":{
                "document_number":"clear",
                "personal_number":"clear"
            },
            "result":"clear"
        },
        "expiry_date":{
            "properties":{

            },
            "result":"clear"
        },
        "gender":{
            "properties":{

            },
            "result":"clear"
        },
        "mrz":{
            "properties":{

            },
            "result":"consider"
        }
    },
    "result":"consider"
},
"image_integrity":{
    "breakdown":{
        "colour_picture":{
            "properties":{

            },
            "result":"clear"
        },
        "conclusive_document_quality":{
            "properties":{
                "abnormal_document_features":"clear",
                "corner_removed":"clear",
```

```
                        "digital_document":"clear",
                        "missing_back":"clear",
                        "obscured_data_points":"clear",
                        "obscured_security_features":"clear",
                        "punctured_document":"clear",
                        "watermarks_digital_text_overlay":"clear"
                },
                "result":"clear"
            },
            "image_quality":{
                "properties":{

                },
                "result":"clear"
            },
            "supported_document":{
                "properties":{

                },
                "result":"clear"
            }
        },
        "result":"clear"
    },
    "issuing_authority":{
        "breakdown":{
            "nfc_active_authentication":{
                "properties":{

                },
                "result":null
            },
            "nfc_passive_authentication":{
                "properties":{

                },
                "result":null
            }
        },
        "result":null
    },
    "police_record":{
        "result":null
    },
    "visual_authenticity":{
```

```json
        "breakdown":{
            "digital_tampering":{
                "properties":{

                },
                "result":"clear"
            },
            "face_detection":{
                "properties":{

                },
                "result":"clear"
            },
            "fonts":{
                "properties":{

                },
                "result":"consider"
            },
            "original_document_present":{
                "properties":{
                    "document_on_printed_paper":"clear",
                    "photo_of_screen":"consider",
                    "scan":"clear",
                    "screenshot":"clear"
                },
                "result":"consider"
            },
            "other":{
                "properties":{

                },
                "result":"consider"
            },
            "picture_face_integrity":{
                "properties":{

                },
                "result":"consider"
            },
            "security_features":{
                "properties":{

                },
                "result":"consider"
```

```
            },
            "template":{
                "properties":{

                },
                "result":"consider"
            }
        },
        "result":"consider"
    }
},
"properties":{
    "date_of_birth":"1987-07-19",
    "date_of_expiry":"2011-07-19",
    "document_numbers":[
        {
            "type":"document_number",
            "value":"BV999999"
        },
        {

            "type":"personal_number",
            "value":"1000000000000"
        }
    ],
    "document_type":"national_identity_card",
    "first_name":"SHERLOCK",
    "gender":"Male",
    "issuing_country":"ROU",
    "issuing_date":"2001-12-14",
    "last_name":"HOLMES",
    "mrz_line1":"IDROMHOLMES<<DO<<<<<<<<<<<<<<",
    "mrz_line2":"BV999999<01328707198M110719110801192",
    "place_of_birth":"MUN. BRASOV JUD. BRASOV"
},
"documents":[
    {
        "id":"5590a41e-f6ba-479b-ade6-437a06fe2b2f"
    },
    {
        "id":"043609d6-4350-4e57-8ebe-7cb5b7801af3"
    }
],
"check_id":"cd1bc2ff-3b73-48a1-894e-08ad25da1177",
"isSuccess":true
}
```

Triggering Identity Verification in a Digital Journey

The Onfido SDK is responsible for capturing and uploading photos or videos. The Onfido automation processor can be added to a Digital Journey and further enhanced via FintechOS Studio based on the customer's business needs.

Follow the below steps when adding this automation processor to your Digital Journey:

1. In Innovation Studio, open the customer's form driven flow in the editor and setup the following base code (**Advanced > Before Events**)

```
ebs.importStyleSheet('FTOS_DFP');
ebs.importStyleSheet('FTOS_DFP_II');

formData.FlowSettings = "OnfidoFlow"; //name of your onfido
flow settings
```

2.

3. Navigate to the form or form step where you wish to initiate the identity check.

4. In the After Events tab, add code based on the model below:

```
// For Ecosystem SysPack 2.5.0 and later, use:
var dfpHelper = ebs.importClientScript('FTOS.ECOS.Utils');

// Prior to Ecosystem SysPack 2.5.0, use:
// var dfpHelper = ebs.importClientScript('FTOS.DFP');

var componentName = 'FTOS_DFP_Onfido'; //name of the
component

var recordId = formData.id;
var flowSettingsName = formData.FlowSettings;



var params = {};
params.flowSettingsName = flowSettingsName;
params.processorSettingsType = 'Onfido';
params.processorSettingsName = 'Onfido_Settings'; //name of
the processor setting that you created

ebs.callActionByName("FTOS_DFP_FlowProcessorSettingsByType",
params, function (f) {
    var processorSettingsId =
f.UIResult.Data.ProcessorSettingsId;
    dfpHelper.loadComponent(componentName,
processorSettingsId, recordId, false);
});
```

5. Click **Save and Close** to save your digital journey.

AriadNext

The AriadNext automation processor facilitates customer verification processes by validating identity documents and automatically populating entity records in FintechOS applications with text extracted from document scans or photos. Customers can validate their identity by taking a picture of their ID card or uploading an existing one from their device.

All document scans that AriadNext handles are processed and transferred under strict, GDPR compliant, safety policies. Data from AriadNext can be deleted manually from the AriadNext account.

In addition, an applicant's identity is easily verified through the following options:

- Using the document liveness process where they are required to move the document in certain directions in order to ensure that the provided identity document is not a copy or a fake.

- Using the biometric liveness process where an action is required, such as moving the head to the right, in order to be validated as a real person. Along with this, the customer is compared to the photo from the provided identity document.

The identity data is then captured, examined, and validated based on the automation processor's settings. Once the scanning process is complete, the customer's record populates with their personal information. The files resulted from the verification process (ID validation photo, document and biometric liveness recordings) can be downloaded and saved to the applicant's instance if needed.

AriadNext is ADR compliant and it follows the rules and regulations set in place by the Authority for the Digitization of Romania (ADR). These are meant to better facilitate video identity verification processes.

This solution benefits banking and insurance scenarios such as digital onboarding, Know Your Customer (KYC) processes, identity verification processes, and much more.

Key Features

- The ID validation process prevents identity fraud with document verification and facial biometrics.

- Data extracted from documents no longer needs to be added manually.

- Speeds up Know Your Customer (KYC) processes.

- ID cards and documents are captured and checked in real-time without any manual intervention. When this process is required, the manual validation can be added to comply with local legislation.

Applications

AriadNext can be implemented to simplify paper-driven financial or insurance processes, such as:

- Customer onboarding

- Account opening

- Loan applications

- Compliance related processes

- Claims handling

- Mortgage processing

Installing AriadNext

> **IMPORTANT!**
> Before proceeding with the installation, customers must set up an AriadNext account. The user name and password is obtained from the AriadNext platform. Additional information can be discussed with FintechOS sales representatives.

1 Install the SysPacks

1. Download the **SySDigitalSolutionPackages.zip** archive.

2. Unzip the archive and follow the instructions from the SysPacks Installation page,

2 Set up the AriadNext service subscription key

On the FintechOS Portal or B2C environment, open the **web.config** file in a text editor and add the following entries in the `<appSettings>` section, or in Vault:

In Vault

Key Path	Key Name	Value
kv/<environment>/<FintechOS Portal instance>/app-settings	FTOSServicesAriadNextEndpoint	DCS web app endpoint URL provided by FintechOS.
kv/<environment>/<FintechOS Portal instance>/app-settings	FTOSServicesAriadNextAppId	ID for the AriadNext service subscription.
kv/<environment>/<FintechOS Portal instance>/app-settings	FTOSServicesAriadNextSubscriptionKey	Subscription key for the ArdiadNext service.

```
{
  "FTOSServicesAriadNextEndpoint": "URL"
  "FTOSServicesAriadNextAppId": "APP-ID"
  "FTOSServicesAriadNextSubscriptionKey":
"SUBSCRIPTION-KEY"
}
```

In web.config

Key	Value
FTOSServicesAriadNextEndpoint	DCS web app endpoint URL provided by FintechOS.
FTOSServicesAriadNextAppId	ID for the AriadNext service subscription.
FTOSServicesAriadNextSubscriptionKey	Subscription key for the AriadNext service.

```
<add
key
="FTOSServicesAriadNextEndpoint" value="https://"/>
<add key="FTOSServicesAriadNextAppId" value="AppID"/>
<add
key
="FTOSServicesAriadNextSubscriptionKey"
 value="SubscriptionKey"/>
```

Setting up the AriadNext Automation Processor

Follow the below steps when configuring the processor.

1 Create a generic processor settings group

The Automation Blocks automation processor must be hosted inside a generic processor settings group. A generic processor settings group can include multiple automation processors and is typically used as a container for the automation processors called by a specific digital journey.

If you already have a generic processor settings group you wish to host your AriadNext automation processor, skip to " 2 Add the AriadNext automation processor to a generic processor settings group" on the next page. Otherwise, follow the instructions below to create a new generic processor settings group:

1. In FintechOS Studio, go to **Main Menu** > **Digital Experience** > **Digital Flow Processing**. The **Flow Settings List** page opens.

2. In the **Flow Settings List** page, click the **Insert** button at the top right corner to add a new digital flow settings group. The **Add Digital Flow Settings** page opens.

3. In the **Add Digital Flow Settings** page, enter a **Name** for your digital flow settings group.

4. If you already have a digital journey set up where you wish to call the AriadNext automation processor, select it from the **Digital Journey** drop-down box.

5. Click the **Save and Close** button at the top right corner to save your flow settings group.

2 Add the AriadNext automation processor to a generic processor settings group

1. In FintechOS Studio, go to **Main Menu** > **Digital Experience** > **Digital Flow Processing**. The **Flow Settings List** page opens.

2. In the **Flow Settings List** page, double click the desired digital flow settings group.

3. In the **Processor Settings** section, click the **Insert** button.

4. Fill in the following fields:

Field	Description
Name	Enter a name for the processor settings.
Flow Settings	Leave the default value.
Digital Processor Type	Select **AriadNext**.
Settings	JSON code for the automation processor's settings. For details, see "AriadNext Settings" on the next page.
Mapping	JSON code for the automation processor's mappings. For details, see "AriadNext Workflow Statuses" on page 199.

5. Click **Save and Close** at the top right corner of the screen.

> **NOTE**
> Customized configurations can be added to the Automation Blocks automation processor for a better user experience. These configuration can be related to colors,

logo, wording, and so on. Make sure that the configurations are made before adding the processor to a Digital Journey.

AriadNext Settings

The AriadNext settings are defined in JSON format as key-value pairs. The following settings are available:

Setting	JSON Key	Description
UID File	FileUIDAttribute	The name of the source entity attribute on which the unique ID of the AriadNext file is saved. It holds a unique ID used for retrieving reports.
Workflow entity	SourceEntityPrimaryAttributeName	The name of the primary key attribute.
ADR Compliant	isAdrCompliant	The following options are available: • If `true`, the identity verification process is **ADR** compliant. • If `false`, the identity verification process is not **ADR** compliant.
Configuration code	ConfigurationCode	Configuration code obtained from configuration call which is done initially. **NOTE** The configuration code is provided by FintechOS at implementation.

Setting	JSON Key	Description
Webhook endpoint name	WebhookEndpointName	Array containing the names of the notification endpoint obtained through the initial configuration call. **NOTE** The webhook endpoint name is provided by FintechOS at implementation.
Features	Features	The following options are available: • `DocumentLiveness`: if `true` the document liveness is enabled in AriadNext SDK. • `BiometricLiveness`: if `true` the biometric liveness is enabled. This option cannot be set to `true` if `DocumentLiveness` is set to `false`.

Setting	JSON Key	Description
Workflow entity	SourceEntityName	The entity associated with the business workflow (digital journey) that calls the OCR process. Needed only if the OCR process is used on an edit form (to alter an existing record) to update the workflow entity's business status after the scan (see BusinessStatusSuccess and BusinessStatusFail). If the OCR process is used on an insert form (to create a new record), this key is not needed.
Redirect in case of success	MaskNextStepUrlSuccess	Location in the user interface where the user is redirected after a successful scan. • entity – Entity name. • form – Form name of the above entity. • section – Optional parameter for the section name of the above form.

Setting	JSON Key	Description
Redirect in case of failure	MaskNextStepUrlFail	Location in the user interface where the user is redirected after the maximum number of failed scan attempts (see "AriadNext Settings" on page 154). • entity – Entity name. • form – Form name of the above entity. • section – Optional parameter for the section name of the above form.
Localization	UseLocalization	If true, it enables user interface localization.
Widget Configuration	WidgetConf	Allows you to remove the black box from the AriadNext background using `displaymode` into the `widgetConf`.
Retain SDK logs	DisableLogSDKMessages **(Ecosystem SysPack 2.5.0 or later)**	Set this property to `true` if you do not wish to retain SDK logs.
Log severity level	LogLevel **(Ecosystem SysPack 2.5.0 or later)**	Controls the minimum severity level for the logged messages. Set it to `error` to capture only SDK errors or to `debug` to include all SDK log messages.
Log browser details	DisableSaveBrowserDetails **(Ecosystem SysPack 2.5.0 or later)**	Set this property to `true` to prevent storage of user platform details in the FTOS_ DFP_Logging entity.

Example

Sample JSON code for AriadNext settings

```
{
```

```
    "FileUIDAttribute": "fileUID",
    "SourceEntityPrimaryAttributeName":
"FTOSTestProcessorsId",
    "SourceEntityName":"FTOS_Test_Processors",
    "Language": "EN",
    "isAdrCompliant": false, // True if you need to use
through ADR - therwise false,
    "ConfigurationCode": "fintechos_conf_1", //
Configuration code obtained from the configuration call that
was initially done.
    "WebhookEndpointName": ["test_webhooks_endpoint"] //
Array containing the names of the notification endpoint
obtained through the intial configuration call
    "Features": {
        "DocumentLiveness": true, // True if wyou want to
have document liveness enabled in AriadNext SDK.
        "BiometricLiveness": true // True if you want to
have biometric liveness enabled. This cannot be set to true
if document liveness is set to false.
    },
    "maskNextStepURLSuccess":{
        "entity":"FTOS_Test_Processors",
        "form":"AriadNext",
        "section":"SuccessStep"
    },
    "maskNextStepURLFail":{
        "entity":"FTOS_Test_Processors",
        "form":"AriadNext",
        "section":"ErrorStep"
    },
    "UseLocalization": true,
    "WidgetConf": {
        "theme": {
            "displayMode": "SIMPLIFIED", // Remove the black
box in the background.
            "body": {
                "fontFamily": "'Roboto', monospace",
                "fontSize": "12px",
                "backgroundColor": "#f1c40f",
                "secondaryBackgroundColor": "#5ec2ff"
            },
            "button": {
                "backgroundColor": "#ff6b40",
                "textColor": "#fff",
                "hoverColor": "#ff6b40",
```

```
                "borderRadius": "0px"
            },
            "pageTitle": {
                "textColor": "#cc0000",
                "hideImagesBackground": true
            },
            "card": {
                "backgroundColor": "#cc0000"
            },
            "typography": {
                "title": {
                    "fontSize": "26px",
                    "textColor": "#cc0000"
                },
                "description": {
                    "fontSize": "18px",
                    "textColor": "#cc0000"
                }
            },
            "stylesheet":
    "https://fonts.googleapis.com/css?family=Roboto"
        }
    }
}
```

AriadNext Request Responses

The AriadNext OCR processor is composed of a client side script, four server side scripts, and a server side library. When the applicant's documents are validated, the call is made using the below methods. The OCR data is then saved in the entity based on the Settings configurations and the response is returned in JSON format.

> **IMPORTANT!**
> The data saved contains video files in mp4 format. In order to save them into the platform you must white list the mp4 extension to allow to save it into the Upload EBS folder of the FintechOS Platform.

Requests

- `getFile`: the result contains file reports.

- `getDocument`: the result contains full document reports.

- `getDocumentImage`: the result contains a `base64` encoded image of the uploaded document

Requests Examples

Sample JSON code for AriadNext `getFile` response

```
{
    "response":{
        "uid":"file-4c06fafd-78af-4470-ad7d-0646b32a1c2e",
        "owner":"fintechos@ariadnext.com",
        "location":"default",
        "creationDate":"2022-03-29T09:19:29",
        "lastUpdateDate":"2022-03-29T09:19:33",
        "lastReportStatus":"ERROR",
        "lastAnalysisStatus":"OK",
        "lastReport":{
            "checks":[
                {
                    "fileUid":"file-4c06fafd-78af-4470-ad7d-
0646b32a1c2e",
                    "identifier":"64cd6532-0fd6-46c2-9993-
d7ec59811a19",
                    "title":"ID",
                    "message":"The ID is not valid",
                    "type":"UNKNOWN",
                    "status":"ERROR",
                    "documentUid":"64cd6532-0fd6-46c2-9993-
d7ec59811a19",
                    "subChecks":[
                        {
                            "dataReferences":null,
                            "fileUid":"file-4c06fafd-78af-4470-
ad7d-0646b32a1c2e",
                            "identifier":"BACKEND_ANALYSIS",
                            "title":"Document analysis",
```

```
                                "message":"The document has been
analysed",
                                "type":"DOCUMENT_ACCEPTABILITY",
                                "status":"OK",
                                "documentUid":"64cd6532-0fd6-46c2-9993-
d7ec59811a19",
                                "subChecks":null
                    },
                    {
                                "dataReferences":null,
                                "fileUid":"file-4c06fafd-78af-4470-
ad7d-0646b32a1c2e",
                                "identifier":"ID_ANALYSIS",
                                "title":"ID analysis",
                                "message":"The ID is not OK",
                                "type":"UNKNOWN",
                                "status":"ERROR",
                                "documentUid":"64cd6532-0fd6-46c2-9993-
d7ec59811a19",
                                "subChecks":[
                            {
                                    "dataReferences":null,
                                    "fileUid":"file-4c06fafd-78af-
4470-ad7d-0646b32a1c2e",
                                    "identifier":"MODEL_RECOGNIZED",
                                    "title":"Document type
identification",
                                    "message":"Identified document",
                                    "type":"DOCUMENT_ACCEPTABILITY",
                                    "status":"OK",
                                    "documentUid":"64cd6532-0fd6-
46c2-9993-d7ec59811a19",
                                    "subChecks":null
                            },
                            {
                                    "dataReferences":null,
                                    "fileUid":"file-4c06fafd-78af-
4470-ad7d-0646b32a1c2e",
                                    "identifier":"DOC_SPECIMEN",
                                    "title":"Specimen",
                                    "message":"This document is not a
specimen",
                                    "type":"DOCUMENT_ACCEPTABILITY",
                                    "status":"OK",
```

```
                                      "documentUid":"64cd6532-0fd6-
46c2-9993-d7ec59811a19",
                                      "subChecks":null
                              },
                              {
                                  "dataReferences":[
                                      {
                                          "givenValue":"19/07/2011",
                                          "expectedValue":null
                                      }
                                  ],
                                  "fileUid":"file-4c06fafd-78af-
4470-ad7d-0646b32a1c2e",
                                  "identifier":"DOC_EXPIRATION_
DATE",
                                  "title":"Expiration of the
document",
                                  "message":"There are some
warnings concerning the document expiration date",
                                  "type":"DOCUMENT_ACCEPTABILITY",
                                  "status":"ERROR",
                                  "documentUid":"64cd6532-0fd6-
46c2-9993-d7ec59811a19",
                                  "subChecks":null
                              },
                              {
                                  "dataReferences":null,
                                  "fileUid":"file-4c06fafd-78af-
4470-ad7d-0646b32a1c2e",
                                  "identifier":"ID_FALSIFICATION",
                                  "title":"Falsification
detection",
                                  "message":"Document is not
falsified",
                                  "type":"UNKNOWN",
                                  "status":"OK",
                                  "documentUid":"64cd6532-0fd6-
46c2-9993-d7ec59811a19",
                                  "subChecks":[
                                      {
                                          "dataReferences":null,
                                          "fileUid":"file-4c06fafd-
78af-4470-ad7d-0646b32a1c2e",
                                          "identifier":"DOC_
BLACKLISTED",
```

```
                            "title":"Verification if
the document is blacklisted.",
                            "message":"There was no
blacklist available for this document",
                            "type":"DOCUMENT_VALIDITY",
                            "status":"NONE",
                            "documentUid":"64cd6532-
0fd6-46c2-9993-d7ec59811a19",
                            "subChecks":null
                   },
                   {
                            "dataReferences":[
                               {
                                   "givenValue":"ROU",
                                   "expectedValue":null
                               }
                            ],
                            "fileUid":"file-4c06fafd-
78af-4470-ad7d-0646b32a1c2e",
                            "identifier":"EMISSION_
COUNTRY",
                            "title":"Document issue
country",
                            "message":"The issue
country of the document is valid",
                            "type":"DOCUMENT_VALIDITY",
                            "status":"OK",
                            "documentUid":"64cd6532-
0fd6-46c2-9993-d7ec59811a19",
                            "subChecks":null
                   },
                   {
                            "dataReferences":null,
                            "fileUid":"file-4c06fafd-
78af-4470-ad7d-0646b32a1c2e",
                            "identifier":"EMISSION_
DATE",
                            "title":"Document issue
date",
                            "message":"The issue date
of the document has not been verified",
                            "type":"DOCUMENT_VALIDITY",
                            "status":"NONE",
                            "documentUid":"64cd6532-
0fd6-46c2-9993-d7ec59811a19",
                            "subChecks":null
```

```
                        },
                        {
                            "dataReferences":[
                                {
                                    "givenValue":"ROU",
                                    "expectedValue":null
                                }
                            ],
                            "fileUid":"file-4c06fafd-
78af-4470-ad7d-0646b32a1c2e",
                            "identifier":"DOC_
NATIONALITY",
                            "title":"Holder
nationality",
                            "message":"The holder
nationality is valid",
                            "type":"DOCUMENT_VALIDITY",
                            "status":"OK",
                            "documentUid":"64cd6532-
0fd6-46c2-9993-d7ec59811a19",
                            "subChecks":null
                        },
                        {
                            "dataReferences":null,
                            "fileUid":"file-4c06fafd-
78af-4470-ad7d-0646b32a1c2e",
                            "identifier":"VALIDITY_
PERIOD",
                            "title":"Check the validity
period of the document with respect to the model",
                            "message":"The validity
period of the document could not be evaluated",
                            "type":"DOCUMENT_VALIDITY",
                            "status":"NONE",
                            "documentUid":"64cd6532-
0fd6-46c2-9993-d7ec59811a19",
                            "subChecks":null
                        },
                        {
                            "dataReferences":[
                                {

"givenValue":"IDROMJOACA<BINE<<MIREL<<<<<<<<<<<<<",
                                    "expectedValue":null
                                },
```

```
                                    {
    "givenValue":"BV183916<01328707198M110719110801192",
                                        "expectedValue":null
                                    }
                                ],
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fields",
                                "message":"The MRZ fields
are well-formed",
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CHECKSUMS",
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checksums are valid",
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FOUND",
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the model and found",
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holder's firstnames",
                                "message":"The holder's
firstnames have not been verified",
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holder's lastname",
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lastname has not been verified",
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holder's birth date",

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birthdate has not been verified",

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document number",

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number has not been verified",

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expiration date",

                                        "message":"The expiration
date consistency has not been verified",

                                        "type":"DOCUMENT_VALIDITY",
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PERSONALNUM",
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personal number",
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number has not been verified",
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ALIGNEMENT",
                                        "title":"Validity of MRZ
graphical format",
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```
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graphical format seems correct",
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CLASSIFIER",
                                                  "title":"Verification of
the consistency of the MRZ with the document model",
                                                  "message":"The MRZ is
consistent with the document model",
                                                  "type":"DOCUMENT_VALIDITY",
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CONFORMITY",
                                                  "title":"Extensive photo
compliance check",
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photo is legit",
                                                  "type":"DOCUMENT_VALIDITY",
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LOCATION",
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presence and location of the photo",
                                        "message":"A photo has been
detected at the location indicated in the document model",
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SECURITY",
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graphical security elements",
                                        "message":"The graphical
security elements have not been verified",
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                                        "status":"NONE",
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0fd6-46c2-9993-d7ec59811a19",
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      }
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        "chequeData":null,
        "consumptionData":null,
        "financeData":null,
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                "values":[
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                ]
            },
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                "month":7,
                "year":1987,
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            },
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                "value":"19"
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                    "ssn":null,
                    "usageName":null
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                "jobData":null,
                "role":null,
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    "state":"INITIAL",
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d7ec59811a19",
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                "message":"The document has been
analysed",
                "type":"DOCUMENT_ACCEPTABILITY",
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identification",
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                                "message":"This document is not a
specimen",
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ad7d-0646b32a1c2e",
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document",
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concerning the document expiration date",
```

```
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ad7d-0646b32a1c2e",
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falsified",
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9993-d7ec59811a19",
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BLACKLISTED",
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document is blacklisted.",
                                    "message":"There was no
blacklist available for this document",
                                    "type":"DOCUMENT_VALIDITY",
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4470-ad7d-0646b32a1c2e",
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COUNTRY",
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country",
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of the document is valid",
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46c2-9993-d7ec59811a19",
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the document has not been verified",
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NATIONALITY",
                                                "title":"Holder nationality",
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nationality is valid",
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                                                "status":"OK",
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PERIOD",
                                    "title":"Check the validity
period of the document with respect to the model",
                                    "message":"The validity period
of the document could not be evaluated",
                                    "type":"DOCUMENT_VALIDITY",
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SYNTAX",
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fields",
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well-formed",
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                                        "title":"MRZ checksums",
                                        "message":"All MRZ checksums
are valid",

                                        "type":"DOCUMENT_VALIDITY",
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FOUND",

                                        "title":"Checking for the
presence of a MRZ",

                                        "message":"MRZ expected by the
model and found",

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4470-ad7d-0646b32a1c2e",

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holder's firstnames",
                                          "message":"The holder's
firstnames have not been verified",
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4470-ad7d-0646b32a1c2e",
                                          "identifier":"OCR_LASTNAME",
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holder's lastname",
                                          "message":"The holder's
lastname has not been verified",
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holder's birth date",
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birthdate has not been verified",
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46c2-9993-d7ec59811a19",
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4470-ad7d-0646b32a1c2e",
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document number",
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has not been verified",
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4470-ad7d-0646b32a1c2e",
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EXPIRATIONDATE",
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expiration date",
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consistency has not been verified",
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4470-ad7d-0646b32a1c2e",
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EMISSIONDATE",
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emit date",
                                        "message":"The emit date has
not been verified",
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46c2-9993-d7ec59811a19",
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4470-ad7d-0646b32a1c2e",
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PERSONALNUM",
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personal number",
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has not been verified",
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4470-ad7d-0646b32a1c2e",
                                    "identifier":"MRZ_ALIGNEMENT",
                                    "title":"Validity of MRZ
graphical format",
                                    "message":"The MRZ graphical
format seems correct",
                                    "type":"DOCUMENT_VALIDITY",
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                                {
                                    "dataReferences":null,
                                    "fileUid":"file-4c06fafd-78af-
4470-ad7d-0646b32a1c2e",
                                    "identifier":"MRZ_CLASSIFIER",
                                    "title":"Verification of the
consistency of the MRZ with the document model",
                                    "message":"The MRZ is
consistent with the document model",
                                    "type":"DOCUMENT_VALIDITY",
                                    "status":"OK",
                                    "documentUid":"64cd6532-0fd6-
46c2-9993-d7ec59811a19",
                                    "subChecks":null
                                },
                                {
                                    "dataReferences":null,
                                    "fileUid":"file-4c06fafd-78af-
4470-ad7d-0646b32a1c2e",
```

```
                                    "identifier":"PHOTO_
CONFORMITY",
                                    "title":"Extensive photo
compliance check",
                                    "message":"The detected photo
is legit",
                                    "type":"DOCUMENT_VALIDITY",
                                    "status":"OK",
                                    "documentUid":"64cd6532-0fd6-
46c2-9993-d7ec59811a19",
                                    "subChecks":null
                            },
                            {
                                    "dataReferences":null,
                                    "fileUid":"file-4c06fafd-78af-
4470-ad7d-0646b32a1c2e",
                                    "identifier":"PHOTO_LOCATION",
                                    "title":"Check of the presence
and location of the photo",
                                    "message":"A photo has been
detected at the location indicated in the document model",
                                    "type":"DOCUMENT_VALIDITY",
                                    "status":"OK",
                                    "documentUid":"64cd6532-0fd6-
46c2-9993-d7ec59811a19",
                                    "subChecks":null
                            },
                            {
                                    "dataReferences":null,
                                    "fileUid":"file-4c06fafd-78af-
4470-ad7d-0646b32a1c2e",
                                    "identifier":"VISUAL_
SECURITY",
                                    "title":"Verification of
graphical security elements",
                                    "message":"The graphical
security elements have not been verified",
                                    "type":"DOCUMENT_VALIDITY",
                                    "status":"NONE",
                                    "documentUid":"64cd6532-0fd6-
46c2-9993-d7ec59811a19",
                                    "subChecks":null
                            }
                    ]
                }
            ]
```

```
                }
            ]
        }
    ],
    "documents":[
        {
            "documentUid":"64cd6532-0fd6-46c2-9993-
    d7ec59811a19",
            "customers":[
                "012ad73e-341f-4f1e-815d-dbb9ab82cff6"
            ]
        }
    ],
    "clientData":{
        "reference":null
    },
    "referenceValues":null,
    "customerIdentities":[
        {
            "uid":"012ad73e-341f-4f1e-815d-dbb9ab82cff6",
            "creationDate":"2022-03-29T09:19:33",
            "documentUids":[
                "64cd6532-0fd6-46c2-9993-d7ec59811a19"
            ],
            "addressData":null,
            "chequeData":null,
            "consumptionData":null,
            "financeData":null,
            "identityData":{
                "lastName":{
                    "valueLabel":null,
                    "label":"Last name",
                    "value":"JOACA BINE"
                },
                "firstNames":{
                    "label":"First name",
                    "values":[
                        "MIREL"
                    ]
                },
                "fullName":null,
                "birthDate":{
                    "day":19,
                    "month":7,
                    "year":1987,
```

```
                        "label":"Birth date",
                        "value":"19/07/1987"
                    },
                    "birthDay":{
                        "valueLabel":null,
                        "label":"Birth day",
                        "value":"19"
                    },
                    "birthDepartment":null,
                    "birthMonth":{
                        "valueLabel":null,
                        "label":"Birth month",
                        "value":"7"
                    },
                    "birthYear":{
                        "valueLabel":null,
                        "label":"Birth year",
                        "value":"1987"
                    },
                    "birthPlace":null,
                    "gender":{
                        "valueLabel":"Male",
                        "label":"Gender",
                        "value":"M"
                    },
                    "nationality":{
                        "valueLabel":null,
                        "label":"Nationality",
                        "value":"ROU"
                    },
                    "faceUrl":null,
                    "nationalRegistrationNumber":null,
                    "ssn":null,
                    "usageName":null
                },
                "jobData":null,
                "role":null,
                "vehicleData":null
            }
        ],
        "uid":"a936cbf5-861f-4b9f-a36b-90a5e08195ec",
        "generationDate":"2022-03-29T09:19:33",
        "globalStatus":"ERROR"
    }
}
```

Sample JSON code for AriadNext getDocument response

```json
{
    "isSuccess":true,
    "errorMessage":"",
    "document":{
        "IsSuccess":true,
        "Response":{
            "uid":"64cd6532-0fd6-46c2-9993-d7ec59811a19",
            "owner":"fintechos@ariadnext.com",
            "location":"default",
            "type":"ID",
            "subType":"ID",
            "classId":"ROU_ID_0111",
            "prettyName":"Romania National ID Card 1997",
            "lastReport":{
                "checks":[
                    {
                        "identifier":"BACKEND_ANALYSIS",
                        "title":"Document analysis",
                        "message":"The document has been
analysed",
                        "type":"DOCUMENT_ACCEPTABILITY",
                        "status":"OK",
                        "documentUid":"64cd6532-0fd6-46c2-9993-
d7ec59811a19",
                        "subChecks":null
                    },
                    {
                        "identifier":"ID_ANALYSIS",
                        "title":"ID analysis",
                        "message":"The ID is not OK",
                        "type":"UNKNOWN",
                        "status":"ERROR",
                        "documentUid":"64cd6532-0fd6-46c2-9993-
d7ec59811a19",
                        "subChecks":[
                            {
                                "dataReferences":null,
                                "identifier":"MODEL_RECOGNIZED",
                                "title":"Document type
identification",
                                "message":"Identified document",
                                "type":"DOCUMENT_ACCEPTABILITY",
                                "status":"OK",
```

```
                                "documentUid":"64cd6532-0fd6-46c2-
9993-d7ec59811a19",

                                "subChecks":null
                        },
                        {
                            "dataReferences":null,
                            "identifier":"DOC_SPECIMEN",
                            "title":"Specimen",
                            "message":"This document is not a
specimen",

                            "type":"DOCUMENT_ACCEPTABILITY",
                            "status":"OK",
                            "documentUid":"64cd6532-0fd6-46c2-
9993-d7ec59811a19",

                            "subChecks":null
                        },
                        {

                            "dataReferences":[
                                {
                                    "givenValue":"19/07/2011",
                                    "expectedValue":null
                                }
                            ],
                            "identifier":"DOC_EXPIRATION_DATE",
                            "title":"Expiration of the
document",

                            "message":"There are some warnings
concerning the document expiration date",
                            "type":"DOCUMENT_ACCEPTABILITY",
                            "status":"ERROR",
                            "documentUid":"64cd6532-0fd6-46c2-
9993-d7ec59811a19",

                            "subChecks":null
                        },
                        {

                            "dataReferences":null,
                            "identifier":"ID_FALSIFICATION",
                            "title":"Falsification detection",
                            "message":"Document is not
falsified",

                            "type":"UNKNOWN",
                            "status":"OK",
                            "documentUid":"64cd6532-0fd6-46c2-
9993-d7ec59811a19",

                            "subChecks":[
```

```
{
    "dataReferences":null,
    "identifier":"DOC_
BLACKLISTED",
    "title":"Verification if the
document is blacklisted.",
    "message":"There was no
blacklist available for this document",
    "type":"DOCUMENT_VALIDITY",
    "status":"NONE",
    "documentUid":"64cd6532-0fd6-
46c2-9993-d7ec59811a19",
    "subChecks":null
},
{
    "dataReferences":[
        {
            "givenValue":"ROU",
            "expectedValue":null
        }
    ],
    "identifier":"EMISSION_
COUNTRY",
    "title":"Document issue
country",
    "message":"The issue country
of the document is valid",
    "type":"DOCUMENT_VALIDITY",
    "status":"OK",
    "documentUid":"64cd6532-0fd6-
46c2-9993-d7ec59811a19",
    "subChecks":null
},
{
    "dataReferences":null,
    "identifier":"EMISSION_DATE",
    "title":"Document issue date",
    "message":"The issue date of
the document has not been verified",
    "type":"DOCUMENT_VALIDITY",
    "status":"NONE",
    "documentUid":"64cd6532-0fd6-
46c2-9993-d7ec59811a19",
    "subChecks":null
},
```

```
{
    "dataReferences":[
        {
            "givenValue":"ROU",
            "expectedValue":null
        }
    ],
    "identifier":"DOC_
NATIONALITY",
    "title":"Holder nationality",
    "message":"The holder
nationality is valid",
    "type":"DOCUMENT_VALIDITY",
    "status":"OK",
    "documentUid":"64cd6532-0fd6-
46c2-9993-d7ec59811a19",
    "subChecks":null
},
{
    "dataReferences":null,
    "identifier":"VALIDITY_
PERIOD",
    "title":"Check the validity
period of the document with respect to the model",
    "message":"The validity period
of the document could not be evaluated",
    "type":"DOCUMENT_VALIDITY",
    "status":"NONE",
    "documentUid":"64cd6532-0fd6-
46c2-9993-d7ec59811a19",
    "subChecks":null
},
{
    "dataReferences":[
        {
"givenValue":"IDROMJOACA<BINE<<MIREL<<<<<<<<<<<<<<",
            "expectedValue":null
        },
        {
"givenValue":"BV183916<01328707198M110719110801192",
            "expectedValue":null
        }
    ],
```

```
                                             "identifier":"MRZ_FIELDS_
SYNTAX",
                                             "title":"Compliance of MRZ
fields",
                                             "message":"The MRZ fields are
well-formed",
                                             "type":"DOCUMENT_VALIDITY",
                                             "status":"OK",
                                             "documentUid":"64cd6532-0fd6-
46c2-9993-d7ec59811a19",
                                             "subChecks":null
                                  },
                                  {
                                     "dataReferences":[
                                        {
"givenValue":"IDROMJOACA<BINE<<MIREL<<<<<<<<<<<<<<",
                                                "expectedValue":null
                                        },
                                        {
"givenValue":"BV183916<01328707198M110719110801192",
                                                "expectedValue":null
                                        }
                                     ],
                                     "identifier":"MRZ_CHECKSUMS",
                                     "title":"MRZ checksums",
                                     "message":"All MRZ checksums
are valid",
                                     "type":"DOCUMENT_VALIDITY",
                                     "status":"OK",
                                     "documentUid":"64cd6532-0fd6-
46c2-9993-d7ec59811a19",
                                     "subChecks":null
                                  },
                                  {
                                     "dataReferences":null,
                                     "identifier":"MRZ_EXPECTED_
FOUND",
                                     "title":"Checking for the
presence of a MRZ",
                                     "message":"MRZ expected by the
model and found",
                                     "type":"DOCUMENT_VALIDITY",
                                     "status":"OK",
```

```
                                    "documentUid":"64cd6532-0fd6-
46c2-9993-d7ec59811a19",
                                    "subChecks":null
                        },
                        {
                            "dataReferences":null,
                            "identifier":"OCR_FIRSTNAMES",
                            "title":"Consistency of
holder's firstnames",
                            "message":"The holder's
firstnames have not been verified",
                            "type":"DOCUMENT_VALIDITY",
                            "status":"NONE",
                            "documentUid":"64cd6532-0fd6-
46c2-9993-d7ec59811a19",
                            "subChecks":null
                        },
                        {
                            "dataReferences":null,
                            "identifier":"OCR_LASTNAME",
                            "title":"Consistency of
holder's lastname",
                            "message":"The holder's
lastname has not been verified",
                            "type":"DOCUMENT_VALIDITY",
                            "status":"NONE",
                            "documentUid":"64cd6532-0fd6-
46c2-9993-d7ec59811a19",
                            "subChecks":null
                        },
                        {
                            "dataReferences":null,
                            "identifier":"OCR_BIRTHDATE",
                            "title":"Consistency of
holder's birth date",
                            "message":"The holder's
birthdate has not been verified",
                            "type":"DOCUMENT_VALIDITY",
                            "status":"NONE",
                            "documentUid":"64cd6532-0fd6-
46c2-9993-d7ec59811a19",
                            "subChecks":null
                        },
                        {
                            "dataReferences":null,
```

```
                                "identifier":"OCR_DOCNUM",
                                "title":"Consistency of the
document number",
                                "message":"The document number
has not been verified",
                                "type":"DOCUMENT_VALIDITY",
                                "status":"NONE",
                                "documentUid":"64cd6532-0fd6-
46c2-9993-d7ec59811a19",
                                "subChecks":null
                            },
                            {
                                "dataReferences":null,
                                "identifier":"OCR_
EXPIRATIONDATE",
                                "title":"Consistency of the
expiration date",
                                "message":"The expiration date
consistency has not been verified",
                                "type":"DOCUMENT_VALIDITY",
                                "status":"NONE",
                                "documentUid":"64cd6532-0fd6-
46c2-9993-d7ec59811a19",
                                "subChecks":null
                            },
                            {
                                "dataReferences":null,
                                "identifier":"OCR_
EMISSIONDATE",
                                "title":"Consistency of the
emit date",
                                "message":"The emit date has
not been verified",
                                "type":"DOCUMENT_VALIDITY",
                                "status":"NONE",
                                "documentUid":"64cd6532-0fd6-
46c2-9993-d7ec59811a19",
                                "subChecks":null
                            },
                            {
                                "dataReferences":null,
                                "identifier":"OCR_
PERSONALNUM",
                                "title":"Consistency of the
personal number",
```

```
                                    "message":"The personal number
has not been verified",
                                    "type":"DOCUMENT_VALIDITY",
                                    "status":"NONE",
                                    "documentUid":"64cd6532-0fd6-
46c2-9993-d7ec59811a19",
                                    "subChecks":null
                            },
                            {
                                    "dataReferences":null,
                                    "identifier":"MRZ_ALIGNEMENT",
                                    "title":"Validity of MRZ
graphical format",
                                    "message":"The MRZ graphical
format seems correct",
                                    "type":"DOCUMENT_VALIDITY",
                                    "status":"OK",
                                    "documentUid":"64cd6532-0fd6-
46c2-9993-d7ec59811a19",
                                    "subChecks":null
                            },
                            {
                                    "dataReferences":null,
                                    "identifier":"MRZ_CLASSIFIER",
                                    "title":"Verification of the
consistency of the MRZ with the document model",
                                    "message":"The MRZ is
consistent with the document model",
                                    "type":"DOCUMENT_VALIDITY",
                                    "status":"OK",
                                    "documentUid":"64cd6532-0fd6-
46c2-9993-d7ec59811a19",
                                    "subChecks":null
                            },
                            {
                                    "dataReferences":null,
                                    "identifier":"PHOTO_
CONFORMITY",
                                    "title":"Extensive photo
compliance check",
                                    "message":"The detected photo
is legit",
                                    "type":"DOCUMENT_VALIDITY",
                                    "status":"OK",
```

```
                                    "documentUid":"64cd6532-0fd6-
46c2-9993-d7ec59811a19",
                                    "subChecks":null
                        },
                        {
                            "dataReferences":null,
                            "identifier":"PHOTO_LOCATION",
                            "title":"Check of the presence
and location of the photo",
                            "message":"A photo has been
detected at the location indicated in the document model",
                            "type":"DOCUMENT_VALIDITY",
                            "status":"OK",
                            "documentUid":"64cd6532-0fd6-
46c2-9993-d7ec59811a19",
                            "subChecks":null
                        },
                        {
                            "dataReferences":null,
                            "identifier":"VISUAL_
SECURITY",
                            "title":"Verification of
graphical security elements",
                            "message":"The graphical
security elements have not been verified",
                            "type":"DOCUMENT_VALIDITY",
                            "status":"NONE",
                            "documentUid":"64cd6532-0fd6-
46c2-9993-d7ec59811a19",
                            "subChecks":null
                        }
                    ]
                }
            ]
        }
    ],
    "issuance":{
        "issueDate":null,
        "issueDay":null,
        "issueMonth":null,
        "issueYear":null,
        "issuingAuthority":null,
        "issuingCountry":{
            "valueLabel":null,
            "label":"Issuing country",
```

```
                        "value":"ROU"
                    }
                },
                "info":{
                    "cardAccessNumber":null,
                    "documentNumber":{
                        "valueLabel":null,
                        "label":"Document number",
                        "value":"BV183916"
                    },
                    "personalNumber":{
                        "valueLabel":null,
                        "label":"Personal number",
                        "value":"1870719080119"
                    },
                    "documentType":{
                        "valueLabel":null,
                        "label":"Document type",
                        "value":"ID"
                    },
                    "expirationDate":{
                        "day":19,
                        "month":7,
                        "year":2011,
                        "label":"Expiration date",
                        "value":"19/07/2011"
                    },
                    "expirationDay":{
                        "valueLabel":null,
                        "label":"Expiration day",
                        "value":"19"
                    },
                    "expirationMonth":{
                        "valueLabel":null,
                        "label":"Expiration month",
                        "value":"7"
                    },
                    "expirationYear":{
                        "valueLabel":null,
                        "label":"Expiration year",
                        "value":"2011"
                    },
                    "readExpirationDate":{
                        "day":19,
                        "month":7,
```

```
                "year":2011,
                "label":"Read expiration date",
                "value":"19/07/2011"
            },
            "sidesIssue":null
        },
        "persons":[
            {
                "addressData":null,
                "chequeData":null,
                "consumptionData":null,
                "financeData":null,
                "identityData":{
                    "lastName":{
                        "valueLabel":null,
                        "label":"Last name",
                        "value":"JOACA BINE"
                    },
                    "firstNames":{
                        "label":"First name",
                        "values":[
                            "MIREL"
                        ]
                    },
                    "fullName":null,
                    "birthDate":{
                        "day":19,
                        "month":7,
                        "year":1987,
                        "label":"Birth date",
                        "value":"19/07/1987"
                    },
                    "birthDay":{
                        "valueLabel":null,
                        "label":"Birth day",
                        "value":"19"
                    },
                    "birthDepartment":null,
                    "birthMonth":{
                        "valueLabel":null,
                        "label":"Birth month",
                        "value":"7"
                    },
                    "birthYear":{
                        "valueLabel":null,
```

```
                    "label":"Birth year",
                    "value":"1987"
                },
                "birthPlace":null,
                "gender":{
                    "valueLabel":"Male",
                    "label":"Gender",
                    "value":"M"
                },
                "nationality":{
                    "valueLabel":null,
                    "label":"Nationality",
                    "value":"ROU"
                },
                "faceUrl":null,
                "nationalRegistrationNumber":null,
                "ssn":null,
                "usageName":null
            },
            "jobData":null,
            "role":{
                "valueLabel":"Holder",
                "label":"Role",
                "value":"ID"
            },
            "vehicleData":null
        }
    ],
    "backendResultId":"215750",
    "uid":"8fece2e5-f51c-4c5b-a429-6afaab8d4e98",
    "generationDate":"2022-03-29T09:19:33",
    "globalStatus":"ERROR"
},
"lastAnalysisStatus":"OK",
"reports":[
    {
        "uid":"8fece2e5-f51c-4c5b-a429-6afaab8d4e98",
        "generationDate":"2022-03-29T09:19:33",
        "globalStatus":"ERROR"
    }
],
"images":[
    {
        "uid":"29abf611-8f34-42b1-8e6f-c8fc5d8d59a0",
        "source":"ORIGINAL",
```

```
                    "documentPart":"RECTO",
                    "type":"DL",
                    "origin":"ORIGINAL",
                    "sourceImageUid":null
            },
            {
                    "uid":"254115be-dcf9-44b2-9041-6bfcd3469415",
                    "source":"CROPPED",
                    "documentPart":"RECTO",
                    "type":"DL",
                    "origin":"CROPPED_RECTO",
                    "sourceImageUid":"29abf611-8f34-42b1-8e6f-
    c8fc5d8d59a0"
            },
            {
                    "uid":"1ff21068-2dca-443a-94ef-bee57274c38f",
                    "source":"CROPPED",
                    "documentPart":"OTHER",
                    "type":"DL",
                    "origin":"CROPPED_FACE",
                    "sourceImageUid":"254115be-dcf9-44b2-9041-
    6bfcd3469415"
            }
        ],
        "creationDate":"2022-03-29T09:19:29",
        "lastUpdateDate":"2022-03-29T09:19:33",
        "extraData":{
            "emrtdData":{
                "deviceCompatible":false,
                "errorMessage":null,
                "nfcAuthorized":false,
                "sessionStatus":null
            },
            "deviceInfo":{
                "model":null,
                "nfcAvailable":false,
                "osVersion":null,
                "skd":null,
                "skdEmrtdActivated":false,
                "sdkVersion":null,
                "sdkVideoScanActivated":false
            },
            "videoScanData":{
                "sessionRectoStatus":null,
                "sessionVersoStatus":null,
```

```
                "errorMessage":null
            },
            "livenessData":{
                "livenessReadiness":"LIVENESS_READY"
            },
            "envelopeKeys":[

            ]
        },
        "isSuccess":true,
        "errorMessage":null
    },
    "StatusCode":200
}
```

Requests - ADR

- `getIdentityProofing`: the result contains and object with `identityProofing` information.

- `getIdentityProofingFile`: the result contains an object of the uploaded document.

Requests Examples - ADR

Sample JSON code for AriadNext getIdentityProofing response

> **NOTE**
> `identityProofingId` is a GET type request that has the `identityProofingId` parameter in the link.

```
{
    "id": "163f3869-cd49-4b49-8a01-f34d3ebc7bb4",
    "createdDate": "7/14/2022 7:37:04 AM",
    "workflowStatus": "CREATED",
    "error": null,
    "captureMode": null,
    "analysis": null,
```

```
      "isSuccess": true,
      "errorMessage": null
  }
```

Sample JSON code for AriadNextgetIdentityProofingFile response

> **NOTE**
> getIdentityProofingFile is a GET type request that has two parameters in the link: identityProofingId and an ID for the file that you want to retrieve.

```
{
    "imageArray": "{BASE64_ENCODED_IMAGE}",
    "isSuccess": true,
    "errorMessage": null
}
```

AriadNext Workflow Statuses

When going through the Automation Blocks identity verification flow, the following verdict statuses are returned:

- Intermediate Results: WorkflowStatus = INTERMEDIATE_RESULT_AVAILABLE

  Returned when the intermediate results are available. Partial or missing information is retrieved as no manual analysis has been done by an operator. Note that only images are processed, not videos.

- Verdict Success: WorkflowStatus = VERDICT_AVAILABLE et verdict = SUCCESS

  Returned when the data extracted from the document and reviewed by manual operators can be retrieved.

- Verdict Failure: `WorkflowStatus = VERDICT_AVAILABLE and verdict = FAILURE`

  Returned when an error code is sent.

- Capture Error: CAPTURE_ERROR

  The verification process is blocked due to an error during the capture process. The following table represents the definitions of this event:

Error Code	Description
`DEVICE_ ERROR`	There was an issue with the device during the capture that caused the analysis to fail and prevents the service from legitimating the Identity.
`DOCUMENT_ ERROR`	There is an issue with the captured document that prevents the service from legitimating the Identity
`NETWORK_ ERROR`	There was a network issue during the flow that prevents the service from legitimating the Identity.
`USER_ERROR`	There is an issue with the user that prevents the service from legitimating their Identity.
`INTERNAL_ ERROR`	This code is generic for a technical issue happening during the flow that prevents the service from legitimating the Identity.

For a SUCCESS verdict status, the owner and document data, and the captured and extracted images are available for manual review.

If the status verdict displays `FAILURE`, an error is returned notifying that the verification process could not be completed. In this case, there are two types of errors returned:

Error Type	Description
`FRAUDULENT_ IDENTITY_ SUSPICION`	The person's identity could not be validated and fraud is suspected.

Error Type	Description
TECHNICAL_REASON	Depending on the error source, the following codes are displayed, preventing the verification process to be complete: • `DEVICE_ISSUE`: issue with the device during the identity verification flow • `DOCUMENT_ISSUE`: issue with the document during the verification flow • `NETWORK_ISSUE:` issue with the network during the verification flow • `TECHNICAL_ISSUE`: generic code for technical issues that appear during the verification flow • `USER_ISSUE`: issue with the user during the verification flow • `USER_CANCEL`: the user canceled the process and the flow could not be completed • `FACE_TECHNICAL_ISSUE`: issue with the live capture of the user's face during the verification flow • `OTHER_QA`: generic code for other quality issues that appear on captures during the verification flow

Adding AriadNext to a Digital Journey

1. Open the digital journey in FintechOS Studio.

2. Make sure that the form you want to populate includes a button to call the AriadNext automation processor.

3. Click the **Advanced** tab.

4. Click the **After Events** subtab.

5. Add the following code in the **After Events** window:

```
// For Ecosystem SysPack 2.5.0 and later, use:
var dfpHelper = ebs.importClientScript('FTOS.ECOS.Utils');

// Prior to Ecosystem SysPack 2.5.0, use:
// var dfpHelper = ebs.importClientScript('FTOS.DFP');

var p = {};
p.flowSettingsName = formData.FlowSettings;
p.processorSettingsType = 'AriadNext';
p.processorSettingsName='AriadNext_Settings'; //the name of
the processor settings that you created.
var recordId = formData.id;
var rec2= ebs.getCurrentEntityId();
ebs.callActionByName("FTOS_DFP_FlowProcessorSettingsByType",
p, function(e)
    {
        var processorSettingsId =
e.UIResult.Data.ProcessorSettingsId;
        dfpHelper.loadComponent("FTOS_DFP_AriadNext",
processorSettingsId, ebs.getCurrentEntityId(), false);
    });
```

6. Click the **Save and Close** button at the top right corner to save the digital journey.

reCAPTCHA

The reCAPTCHA automation processor enables integration with the Google reCAPTCHA bot protection service. The service verifies whether a user is a human or an automated bot by analyzing interactions, mouse movements, cookies, and other browser metadata.

The processor supports both reCAPTCHA v2 and reCAPTCHA v3, allowing you to select a verification method best suited to your needs:

- reCAPTCHA v2 - Users must check a box labeled "I'm not a robot.". If further verification is needed, users may be prompted to solve image-based challenges (e.g., selecting all squares containing traffic lights, buses, or bicycles).

- reCAPTCHA v3 - Runs silently in the background, using a risk score ranging from 0.0 (very likely a bot) to 1.0 (very likely a human) based on behavioral signals and interaction patterns.

Key Features

- **Bot detection** - Differentiates between human users and bots through behavioral analysis and browser metadata.

- **Multiple verification methods** - Checkbox-based and challenge-response tests (v2), or background scoring without user interruption (v3).

- **Minimal user friction** - reCAPTCHA v3 functions invisibly for most users, while v2 challenges are only shown when suspicious activity is detected.

- **Accessibility** - Provides alternative audio challenges for visually impaired users.

Applications

- **Contact and feedback forms** - Prevents spam and automated malicious submissions.

- **User registration and login pages** - Blocks automated account creation, credential stuffing, and brute-force login attempts.

- **Support ticket systems** - Prevents bot-generated tickets or bulk request submissions.

- **Subscription forms** - Ensures legitimate user sign-ups to email newsletters and mailing lists.

- **Content upload and file submission** - Ensures files or data uploads originate from real users.

Install reCAPTCHA on your Environment

> **IMPORTANT!**
> Before proceeding with the configuration, you must set up a reCAPTCHA account. The site key and secret key are obtained from Google. Additional information can be discussed with your FintechOS sales representative.

1 Install the reCAPTCHA SysPack Files

Starting with release 24.4, the Ecosystem SysPack includes the reCAPTCHA automation processor by default.

For manual installation, see "Install SysPacks" on page 17.

2 Set Up the reCAPTCHA Site Key and Secret Key

On the environment where you want to use reCAPTCHA, set up the reCAPTCHA keys either in the Configuration Manager or web.config file:

reCAPTCHA Configuration Manager Settings

Key Path	Key Name	Value
kv/<environment>/<FintechOS Portal instance>/app-settings	FTOSServicesCaptchaSiteKey	reCAPTCHA 3 site key
kv/<environment>/<FintechOS Portal instance>/app-settings	FTOSServicesCaptchaSecretKey	reCAPTCHA 3 secret key
kv/<environment>/<FintechOS Portal instance>/app-settings	FTOSServicesCaptchaSiteKey2	reCAPTCHA 2 site key

Key Path	Key Name	Value
kv/<environment>/<FintechOS Portal instance>/app-settings	FTOSServicesCaptchaSecretKey2	reCAPTCHA 2 secret key

reCAPTCHA web.config Settings

```
<add key="FTOSServicesCaptchaSiteKey" value=""/> //
add your reCAPTCHA 3 site key value
<add key="FTOSServicesCaptchaSecretKey" value=""/> //
add your reCAPTCHA 3 secret key value
<add key="FTOSServicesCaptchaSiteKey2" value=""/> //
add your reCAPTCHA 2 site key value
<add key="FTOSServicesCaptchaSecretKey2" value=""/>
// add your reCAPTCHA 2 secret key value
```

Setting up the reCAPTCHA Automation Processor

Follow the steps below to configure the automation processor.

1 Create a generic processor settings group

The reCAPTCHA automation processor must be hosted inside a generic processor settings group. A generic processor settings group can include multiple automation processors and is typically used as a container for the automation processors called by a specific digital journey.

If you already have a generic processor settings group you wish to host your reCAPTCHA automation processor, skip to " 2 Add the reCAPTCHA automation processor to a generic processor settings group" on the next page. Otherwise, follow the instructions below to create a new generic processor settings group:

1. In FintechOS Studio, go to **Main Menu** > **Digital Experience** > **Digital Flow Processing**. The **Flow Settings List** page opens.

2. In the **Flow Settings List** page, click the **Insert** button at the top right corner to add a new digital flow settings group. The **Add Digital Flow Settings** page opens.

3. In the **Add Digital Flow Settings** page, enter a **Name** for your digital flow settings group.

4. If you already have a digital journey set up where you wish to call the automation processor, select it from the **Digital Journey** drop-down box.

5. Click the **Save and Close** button at the top right corner to save your flow settings group.

2 Add the reCAPTCHA automation processor to a generic processor settings group

1. In FintechOS Studio, go to **Main Menu** > **Digital Experience** > **Digital Flow Processing**. The **Flow Settings List** page opens.

2. In the **Flow Settings List** page, double click the desired digital flow settings group.

3. In the **Processor Settings** section, click the **Insert** button.

4. Fill in the following fields:

Field	Description
Name	Enter a name for the processor settings.
Flow Settings	Leave the default value.
Digital Processor Type	Select **Captcha**.
Settings	JSON code for the automation processor's settings. For details, see " 3 Fill in the reCAPTCHA settings" below.

5. Click **Save and Close** at the top right corner of the screen.

3 Fill in the reCAPTCHA settings

The reCAPTCHA settings are defined in JSON format as key-value pairs. The following settings are available:

JSON Key	Description
SourceEntityName	Name of the entity that calls the processor.
MinimumScore	(reCAPTCAHA 3 only) Minimum acceptance score between (0.0 and 1.0).
Debug	Set it to true if you wish to display the console logs.

```
{
    "SourceEntityName": "FTOS_Test_Captcha",
    "MinimumScore": 0.2,
    "Debug": true
}
```

Adding reCAPTCHA to a Digital Journey

You can insert reCAPTCHA bot protection in your digital journeys either by leveraging the FTOS.ECOS.Captcha client script library or, for version 2.0, as an HTML widget.

Add reCAPTCHA to a Digital Journey via the FTOS.ECOS.Captcha Library

reCAPTCHA 3.0 Example

Create a custom button to the desired form with the `btnVerify` ID, then add the following JavaScript code to the page:

```javascript
var captcha = ebs.importClientScript('FTOS.ECOS.Captcha');
captcha.loadCaptcha(changeLibraryLoaded);

var libraryLoaded = false;

/* Click event for the btnVerify button */
$('#btnVerify').on('click', function (event) {
    event.preventDefault();
    if (libraryLoaded){
        captcha.verifyToken("login", isTokenValid);
    }
});

function changeLibraryLoaded(){
    libraryLoaded = true;
}

function isTokenValid(token){
    if (token && token.isSuccess){
      // proceed with your call
    }
}
```

> **IMPORTANT!**
> Make sure to call the `removeToken()` function before using reCAPTCHA again for the same user.

reCAPTCHA 2.0 Example

This version requires you to add an HTML element with the `captcha` id. When the library is loaded, you must assign it the `g-recaptcha` class and set its `data-sitekey` attribute.

Create a custom button to the desired form with the `btnVerify` ID, then add the following JavaScript code to the page:

```javascript
var captcha = ebs.importClientScript('FTOS.ECOS.Captcha');
captcha.loadCaptcha(changeLibraryLoaded, 2);

var libraryLoaded = false;

$('#btnVerify').on('click', function (event) {
    event.preventDefault();
    if (libraryLoaded){
        captcha.handleCaptcha(isTokenValid);
    }
});

function changeLibraryLoaded(key){
    libraryLoaded = true;
    $("#captcha").addClass("g-recaptcha").attr("data-sitekey",
key);
}

function isTokenValid(token){
    if (token && token.isSuccess){
      // proceed with your call
    }
}
```

Add reCAPTCHA to a Digital Journey via Widget (v2.0 only)

Use the ebs.generateHtmlWidgetAsync to implement reCAPTCHA via widget. The widget inserts a records into the **FTOS_ECOS_CaptchaData** entity, where you can verify the `status` and `IsSuccess` properties for the verifications.

```javascript
var options = {
    hideTitle: true,
    skipJavascript: false,
    context: {
        recordId: formData.id,
        Debug: true,
        SourceEntityName: formData.entityName,
    }
};
```

```
var element = document.getElementById("widgetElem");

ebs.generateHtmlWidgetAsync("reCaptcha2", element, options)
    .then(function () {
        console.log("widget generated");
    })
    .catch(function (err) {
        console.log(err);
    });
```

Face Recognition and Video

Face recognition technology is used to automatically validate an individual's identity from an image or video source. You can use this functionality to verify if a person from a digital image (selfie) or a video, matches the photo from their identity card. A face capture process is essential in Know Your Customer (KYC) or onboarding processes, to validate the customer's identity and prevent fraud.
Operators can also use video streaming to start a live video with their customers, to complete the identity verification process and provide assistance if needed.

Along with face recognition and video streaming, FintechOS offers Co-browsing technology allowing operators and customers to connect and chat in real time.

Integrate the below FintechOS components in your digital journeys to further enhance their usability.

Face Recognition

A facial recognition system is a technology capable of identifying or verifying a person from a digital image by comparing the given picture with one existing in the database.

The Face Recognition automation processor is using Machine Learning to compare ID/ Driving License or any other picture that was uploaded during the OCR process, with the selfie to certify that they belong to the same person, using the AI-enabled capabilities of the FintechOS platform.

To use the Face Recognition automation processor capabilities, the user should first use the Computer Vision automation processor to enable the clients uploading an identity document that will be used during the face recognition process.

The face recognition flow:

1. The client takes a selfie.

2. The FintechOS Gateway identifies the client's PID and sends a register Face Recognition request to the Face Recognition Service.

3. Based on the PID received from the FintechOS Gateway, the Face Recognition Service compares the client's image file (selfie) with the image from the identity document the client uploaded during the OCR process.

4. As a result of the comparison, the Face Recognition Service returns the confidence score of the face recognition comparison.
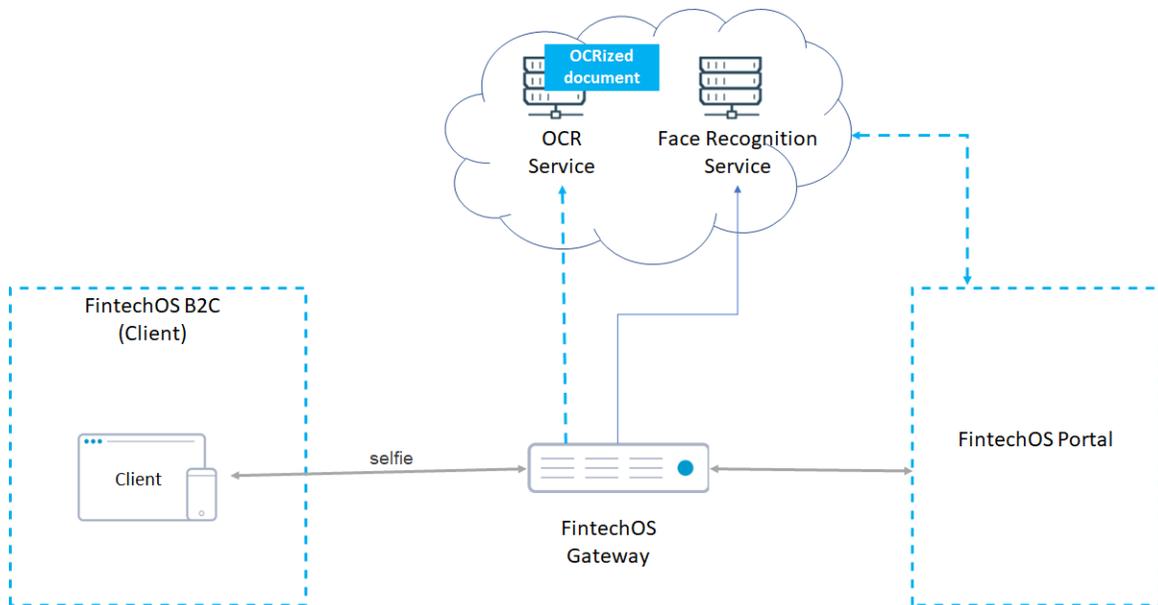
Once the Face Recognition is completed (i.e. the confidence score meets the minimum value set during the processor's configuration, see "Face Recognition Mappings" on page 229), you can provide the customers with various options:

• start a video call with one of the bank's consultants ("Video Streaming" on page 254)

• sign directly all associated documents ("eSign Processor" on page 289)

• choose to be contacted later by one of the bank's consultants.

Face Recognition Processor Features

- real-time image recognition

- liveness detection to validate an individual's identity

- reduced bandwidth and time-to-decision

- anti-spoofing mechanisms

- increased privacy and reliability

Applications

- Customer onboarding

- Account opening

- Loan applications

- Compliance related processes

- Claims handling

- Mortgage processing.

Data Security

All document scans are processed and transferred under strict, GDPR compliant, safety policies. Through the use of a secure protocol, files are sent to the Azure Cognitive Services Face service, which renders a score, that is finally returned to the FintechOS application. Data is safe under strict supervision as it follows a clear path from the sender to the FintechOS cloud.

Data Flow
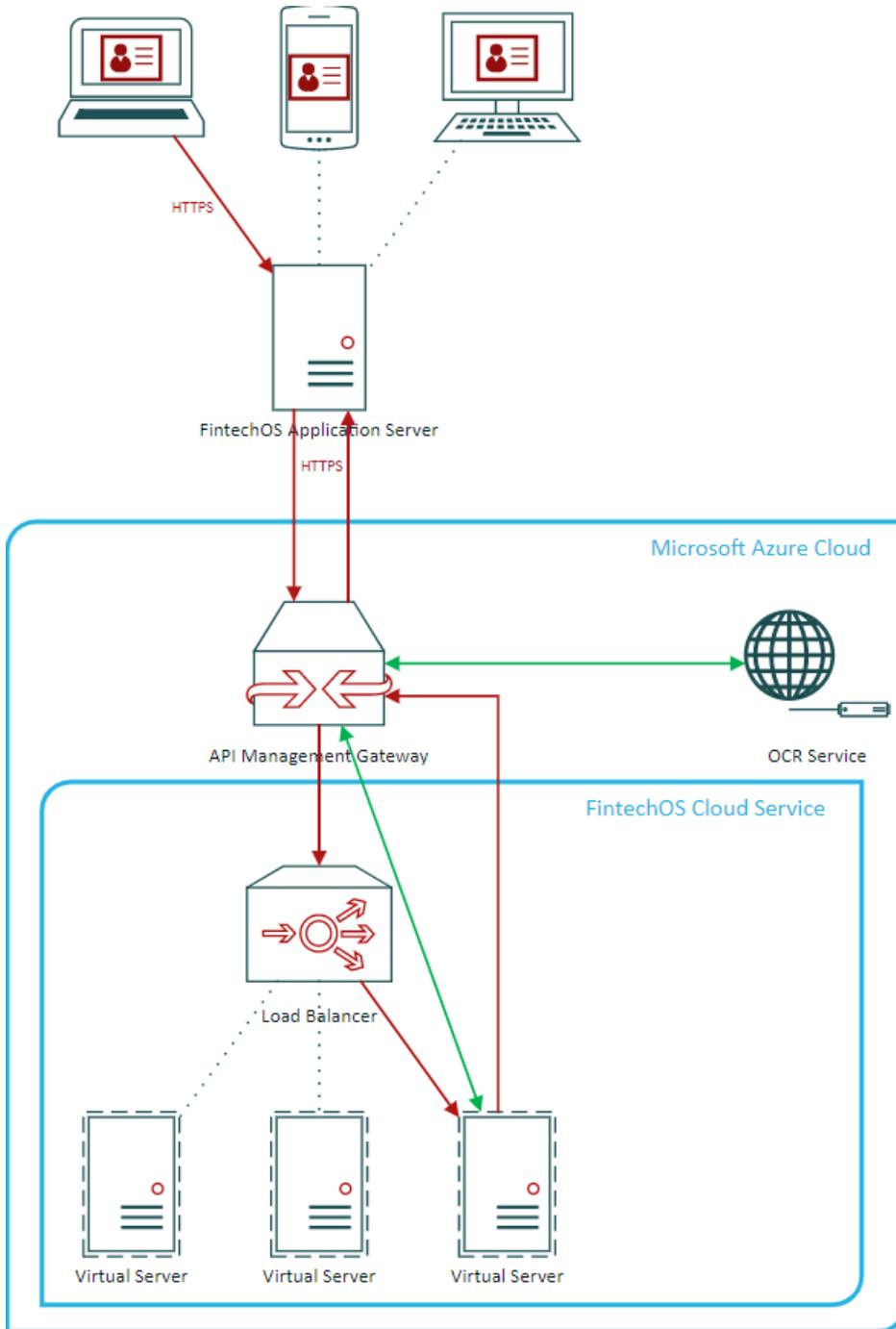
1. The end-user sends the document scan and selfie to the FintechOS application server over secure communication channels (HTTPS encrypted messages, including the HTTP headers and request/response data).

2. The application server sends the files to the FintechOS cloud service via the Azure API Management gateway, also using HTTPS. The API Management gateway ensures secure communication and provides identity and access management to the FintechOS cloud service.

3. The files arrive at the FintechOS cloud service (hosted on a private load-balanced cluster of virtual machines in the Azure cloud). The virtual machines are managed by FintechOS and can be accessed only using the API Management services (no Internet access is allowed to any virtual machine or load-balanced cluster).

4. The FintechOS cloud service processes the ID document (each ID card field is delimited), and forwards the ID picture and selfie for face recognition to the Azure Cognitive Services Face service (also hosted on the Azure cloud).

5. The face recognition service returns the face recognition confidence score to the FintechOS cloud service, which sends the information back to the FintechOS application via the API Management gateway.

> **IMPORTANT!**
> No data is stored in a cloud. All processed information is immediately deleted.

Location

The API Management gateway, the FintechOS cloud service (load balancer and virtual machines), and the face recognition service are provisioned using the Microsoft Azure cloud service in the Western Europe data center (Amsterdam, Netherlands) with fail-over backup services on the Northern Europe data center (Dublin, Ireland). No data leaves the European Union in transit or at rest.

Based on customer requirements, similar services may be provisioned in the future in other regions.

Compliance

For cloud services compliance information, see:

- Overview of Microsoft Azure compliance

- Microsoft Services Trust Portal.

Installing Face Recognition

1 Install Server Configuration

First, make sure you have the right application dependencies installed and configured. Go to the physical location of the site (Portal or B2C Portal) and follow the instructions below:

1. **Portal/ B2C Portal web.config <appSettings> section, configuration**

   If you have a generic key for all the services, add the following keys in `web.config - <appSettings>`:

   ```
   <add key="FTOSServicesEndpoint" value="get-the-url-from-
   portal"/>
   <add key="FTOSServicesAppId" value="get-the-key-from-
   portal"/>
   ```

   If you have different subscription keys for each of the services, you must add the following keys in `web.config - <appSettings>`: (for versions older than v.22), or in Vault (for versions newer than v.22)

   - **OCR Microsoft Azure provider**

     ```
     <add key="FTOSServicesOCR2Endpoint" value="get-the-url-
     from-portal"/>
     <add key="FTOSServicesOCR2AppId" value="get-the-key-
     from-portal"/>
     ```

   - **Face Recognition**

```
<add key="FTOSServicesFaceEndpoint" value="get-the-url-
from-portal"/>
<add key="FTOSServicesFaceAppId" value="get-the-key-
from-portal"/>
```

- **Video**

```
<add key="FTOSServicesVideoFaceEndpoint" value="get-the-
url-from-portal"/>
<add key="FTOSServicesVideoAppId" value="get-the-key-
from-portal"/>
```

- **FaceRecognition With Liveness**

```
<add key="FTOSServicesLivenessEndpoint" value="get-the-
url-from-portal"/>
<add key="FTOSServicesLivenessAppId" value="get-the-key-
from-portal"/>
```

2. **Custom Folder**

   For each installed Portal (B2C or BackOffice) that will use the cognitive video components, copy the `Custom For FintechOS Portal\custom` and `Custom For FintechOS Portal\custom-on-demand` folders from the `Cognitive Processor` pack in the application - portal web application root folder.

3. **Copy to UploadEBS**

   Add the following images to the `Upload EBS folder <portal_EBS_ folder>`:

```
<syspack_file_path>\10 Cognitive Processor Operator -
Vxx.x.xxxx \CopyToUploadEBS\emptyOCR.jpg

<syspack_file_path>\10 Cognitive Processor Operator –
Vxx.x.xxxx\CopyToUploadEBS\emptyPhoto.png
```

4. **In IIS** (for versions older than v.22)

   The following MIME Types must be added on the sites where the SDK was previously added (Portal or B2C Portal):

- . with type `text/xml`

- `.data` with type `text/xml`

- `.wasm` with type `application/wasm`

2 Install Application Configuration

Log into FintechOS Studio, Developer profile, and follow the instructions below:

1. **Import Packs**

   Go to **DevOps** > **Deployment Packages**, and import the received packs. The Cognitive Processor pack contains the services configuration model and scripts for OCR, Face Recognition and Video.

2. **Import data**

   Go to **Evolutive Data Core** > **Data Import Template.** Select the template and import using the `xlxs` data in the packages:

   - Import_01_FTOS_DFP_FlowSettings:

     ```
     - Import_01_FTOS_DFP_FlowSettings.xlsx
     ```

   - Import_FTOS_DFP_ProcessorSettings:

     ```
     - Import_02_FTOS_DFP_ProcessorSettings.xlxs
     ```

3. **Custom Setting**

   Go to **Admin** > **Settings**. Check the **Use Custom Styles** box. Click **Save and close**.

   Log into the Portal.

   > **NOTE** For the OCR, Face Recognition, and Video components to work, the sites must run on HTTPS.

4. **OCR Configuration**

   For configuring the OCR, select **Digital Flow Processing** > **Flow Settings.**

You have 2 flows as examples for OCR Romanian IDs: - " 2 OCR Flow Setting Example ". Here you can find examples of usage, and these processor settings are used by the "Example OCR Pack" from the package. It's an example for 2 step OCR (if your flow has 2 OCR steps in it).

OCR_1 - Reads an area of the ID.

OCR_2 - Reads a different area of the ID.

> **NOTE** You can copy the examples and modify them.

In the **Example Flow Setting**, you can find a full IdRom setting, and mapping examples for edit and insert forms. For other types of OCR: Driving Licence, Passport, IdBG, the examples are the same.

- In The **Processor Setting**, change in the **Setting** field from `DocumentType:IdRom` (the last entry) to one of the types available in the list: `AvailableDocumentTypes` above `DocumentType.`

- Change the mapping as well, with the data received after calling the OCR service.

Example

This is applicable to `Example Flow Setting.`

Client script on edit mode form

To start the OCR component, use the `loadComponent` function from the `FTOS.DFP` library: `loadComponent (componentName, processorSettings, recordId, existingFile).`

```
// For Ecosystem SysPack 2.5.0 and later, use:
var dfpHelper = ebs.importClientScript
('FTOS.ECOS.Utils');

// Prior to Ecosystem SysPack 2.5.0, use:
```

```
// var dfpHelper = ebs.importClientScript
('FTOS.DFP');

var componentName = 'FTOS_DFP_OCR'; //name of the
component

var recordId = formData.id;
var flowSettingsName = formData.FlowSettings;

var p = {};
var accountApplicationId = recordId;
p.accountApplicationId = accountApplicationId;
p.toStatus = "OCR in Progress";
ebs.callActionByName("FTOS_BARET_
AccountApplication_BusinessWorkflow", p,
function(e){

    var params = {};
    params.flowSettingsName = flowSettingsName;
    params.processorSettingsType = 'OCR';
    params.processorSettingsName = 'OCR_
CurrentAccount';

    ebs.callActionByName("FTOS_DFP_
FlowProcessorSettingsByType", params,

    function(f)
        {
            var processorSettingsId =
f.UIResult.Data.ProcessorSettingsId;
            dfpHelper.loadComponent(componentName,
processorSettingsId, recordId, false);
            });

});
```

Client script on insert mode form

To start the OCR component, use the `loadComponent` function from the `FTOS.DFP` library: `loadComponent`

(componentName, processorSettings, recordId, existingFile). The recordId parameter is null, as we are running the component from a form in insert mode.

```
// For Ecosystem SysPack 2.5.0 and later, use:
var dfpHelper = ebs.importClientScript
('FTOS.ECOS.Utils');

// Prior to Ecosystem SysPack 2.5.0, use:
// var dfpHelper = ebs.importClientScript
('FTOS.DFP');

var componentName = 'FTOS_DFP_OCR'; //name of the
component

var flowSettingsName = formData.FlowSettings;

var p = {};
var accountApplicationId = recordId;
p.accountApplicationId = accountApplicationId;
p.toStatus = "OCR in Progress";
ebs.callActionByName("FTOS_BARET_
AccountApplication_BusinessWorkflow", p,
function(e){
    var params = {};
    params.flowSettingsName = flowSettingsName;
    params.processorSettingsType = 'OCR';
    params.processorSettingsName = 'OCR_
CurrentAccount';

    ebs.callActionByName("FTOS_DFP_
FlowProcessorSettingsByType", params,
function(f)
    {
        var processorSettingsId =
f.UIResult.Data.ProcessorSettingsId;
        dfpHelper.loadComponent(componentName,
processorSettingsId, null, false);
    });
});
```

After the OCR process ends, the results are returned in `sessionStorage` in an item called `ocrResult`. After reading the results, we recommend to remove the object. It will be also removed when a new OCR component is instantiated.

```
var ocrResult = sessionStorage.getItem
("ocrResult");
ocrResult = JSON.parse(ocrResult);

if (ocrResult) {
    ebs.setFormAttributeValue
("ebsContainerContent", "LastName",
ocrResult.updateObject.LastName);
    ebs.setFormAttributeValue
("ebsContainerContent", "FirstName",
ocrResult.updateObject.FirstName);
    sessionStorage.removeItem("ocrResult");
    };
```

NOTE The Result of OCR execution will be saved in this entity: FTOS_DFP_OCR.

5. **Face Recognition Configuration**

For configuring Face Recognition, select **Digital Flow Processing** > **Flow Settings.** You have 1 flow as an example for Face Recognition.

Example

Javascript code - After Events

```
var componentName = "FTOS_DFP_
FaceRecognitionLiveness"; //name of the component
    var recordId = ebs.getCurrentEntityId();
    var fileExists = true; //"pictureOcr" argument =
source entity file attribute
    var dfpHelper = ebs.importClientScript
('FTOS.DFP');
```

```
      var flowSettingsName = formData.FlowSettings;

      var p = {};
      p.accountApplicationId = recordId;
      p.toStatus = "Face Recognition in Progress";

      ebs.callActionByName("FTOS_BARET_
AccountApplication_BusinessWorkflow", p,
function(e){

          var params = {};
          params.flowSettingsName = flowSettingsName;
          params.processorSettingsType =
'FaceRecognition';
          params.processorSettingsName =
'FaceRecognitionLiveness_Example';

          ebs.callActionByName("FTOS_DFP_
FlowProcessorSettingsByType", params,
function(f)
              {
                  var processorSettingsId =
f.UIResult.Data.ProcessorSettingsId;
                  console.log("processorSettingsName "
+ processorSettingsId);
                  dfpHelper.loadComponent
(componentName, processorSettingsId, recordId,
fileExists);
              });
      });
```

> **NOTE** The Result of Face Recognition execution will be saved in
> this entity: FTOS_DFP_FaceRecognition.

6. **Video Configuration**

> **NOTE** Make sure you have imported the second pack as well: Cognitive
> Processor Operator pack.

For the configuration of Video Configuration, select **Digital Flow Processing** -> **Flow Settings** . You have 1 flow as an example for Video.

> **NOTE** You can copy the examples and modify them.

3 Upgrade Application Configuration

1. **Import the Packs Again**

   Go to **DevOps** > **Deployment Packages**, and import the received packs. The 01_ FTOS_DFP_OCR_FR pack contains the services configuration model and scripts for OCR, Face Recognition.

2. **Modify the Data**

   Import the data from FTOS_DFP_OCR_FR .xlxs files.

   - Import_01_FTOS_DFP_FlowSettings:

     ```
     - Import_01_FTOS_DFP_FlowSettings.xlsx
     ```

   - Import_FTOS_DFP_ProcessorSettings:

     ```
     - Import_02_FTOS_DFP_ProcessorSettings.xlxs
     ```

   Using the example, please adapt your processors settings with the new structure found in the new examples.

> **NOTE** For the OCR, Face Recognition, and Video components to work, the sites must run on HTTPS.

Setting Up a Face Recognition Automation Processor

> **IMPORTANT!**
> For the Face Recognition component to work, the sites must run on HTTPS.

1 Create a digital flow processor settings

The Face Recognition automation processor must be hosted inside a generic processor settings group. A generic processor settings group can include multiple automation processors and is typically used as a container for the automation processors called by a specific digital journey.

If you already have a generic processor settings group you wish to host your Face Recognition automation processor, skip to " 2 Edit the Face Recognition automation processor" below. Otherwise, follow the instructions below to create a new generic processor settings group:

1. In FintechOS Portal, click the main menu icon at the top left corner.

2. In the main menu, select **Digital Flow processing**.

3. Click **Flow settings**

4. In the Flow settings List page, click **Insert** to add a new flow settings.

5. In the Add Generic Processor Settings window, enter a **Name** for your generic processor settings.

6. Click **Save and Close** to save your flow settings.

2 Edit the Face Recognition automation processor

1. In the Flow settings List, double click the name of the setting created initially.

2. In the **Add Processor Settings** screen, fill in the following fields:

    *   **Name** – Enter a name for your automation processor

    *   **Digital Processor Type** – Select **Face Recognition**.

    *   **Settings** – JSON code for the automation processor's settings. For details, see "Face Recognition Settings" on the next page.

    *   **Mapping** – JSON code for the automation processor's mappings. For details, see "Face Recognition Mappings" on page 229.

3. Click **Save and Close** to save your automation processor.

Face Recognition Settings

The Face Recognition settings are defined in JSON format as key-value pairs. The following settings are available:

Setting	JSON Key	Description
Entity Name	SourceEntityName	The name of the entity where the Face Recognition process. Required only if the Face Recognition process starts from an edit form, to update the business status after the Face Recognition process ends.
	DestinationEntityName	Name of the entity that is populated with the data returned by face recognition.
Name	SourceLookupDestinationName	Name of the SourceEntityName lookup key that points to DestinationEntityName. If they are the same entity, enter the primary key.
File	FileAttributeName	The name of the file attribute where the first picture that will be used in the Compare Process, is saved (the image from the OCR process).
Maximum number of face recognition attempts	MaxRetry	The maximum number of face recognition attempts. If this number is reached, the user will be redirected according to the specifications in the "maskNextStepUrlFail" on page 228.
Confidence	MinimumAcceptedConfidence	The minimum confidence value that the Face Recognition process has to generate in order to consider the compare result a success. Value is a number between 0.00 and 1.00.

Setting	JSON Key	Description
Redirect in case of success	maskNextStepUrlSuccess	Location in the user interface where the user is redirected after a successful face recognition process. • entity – Entity name. • form – Form name of the above entity. • section – Optional parameter for the section name of the above form. The section can be specified using the name of the section or the section's number. Example "section": "Personal Data" and "section": "1" are both valid.

Setting	JSON Key	Description
Redirect in case of failure	maskNextStepUrlFail	Location in the user interface where the user is redirected after the maximum number of failed face recognition attempts is reached (see "MaxRetry" on page 226). • entity – Entity name. • form – Form name of the above entity. • section – Optional parameter for the section name of the above form. The section can be specified using the name of the section or the section's number. Example "section": "Current Account" and "section": "4" are both valid.
Business status update in case of success	businessStatusSuccess	Business workflow status update of the "Entity Name" on page 226 if the face recognition process is successful.
Business status update in case of failure	businessStatusFail	Business workflow status update of the "Entity Name" on page 226 if the face recognition process fails.
Retain SDK logs	DisableLogSDKMessages **(Ecosystem SysPack 2.5.0 or later)**	Set this property to `true` if you do not wish to retain SDK logs.
Log severity level	LogLevel **(Ecosystem SysPack 2.5.0 or later)**	Controls the minimum severity level for the logged messages. Set it to `error` to capture only SDK errors or to `debug` to include all SDK log messages.
Log browser details	DisableSaveBrowserDetails **(Ecosystem SysPack 2.5.0 or later)**	Set this property to `true` to prevent storage of user platform details in the FTOS_DFP_Logging entity.

> **NOTE**
>
> For Liveness, please see "Liveness" on the next page.

Examples

Face Recognition settings

```
{
    "isLiveness": false,
    "DestinationEntityName": "Test1",
    "SourceEntityName": "Test",
    "SourceLookupDestinationName": "Test1id",
    "FileAttributeName": "pictureOcr",
    "MaxRetry": 5,
    "MinimumAcceptedConfidence": 0.2,
    "maskNextStepURLSuccess": {"entity":"Test", "form":
"FaceResponse" },
    "maskNextStepURLFail": {"entity":"Test", "form":
"FaceResponse" },
    "businessStatusSuccess": "Face Recognition Valid",
    "businessStatusFail": "Face Recognition Failed"
}
```

> **NOTE** The Result of Face Recognition execution will be saved in the
> entity: **FTOS_DFP_FaceRecognition**.

Face Recognition Mappings

In the Mapping text-type field, specify the mapping between the attributes obtained by the Face Recognition component and the sourceEntity attributes that call the component.

Setting Name	Description
Map	Key-value pairs that match the field name as returned by the Face Recognition processor (the key) to the attribute name in the destination entity (the value).

Examples

Sample JSON code for Face Recognition mapping

```
{
    "Confidence": "confidence"
}
```

Liveness

Liveness is an optional face recognition feature that improves security by scanning the face of the user. The process detects the face of a human being using a smart-phone camera, webcam, or any incorporated camera without the need for advanced sensors. It is used to ensure the actor running the journey is a real person, not a photograph or an impersonator. This prevents frauds, and helps process clients efficiently.

How the process works

The detection algorithm captures multiple 2D frames over a short time span, then uses AI to recreate a 3D representation of the person. The process involves capturing 30-90 frontal frames to render a 3D object using a camera. It has a Certified Liveness Check (ISO 30107-3, DEA EPCS).

This is not a selfie, but a video that takes snapshots of a human face from different angles to ensure an exact build of a 3D FaceMap. The algorithms pay attention to human features and how they are presented and ask the person to move closer to the camera to take further photos to confirm the presence of a human being.

The liveness detection is not fooled by:

- photos/ videos

- dolls

- masks

- people who look alike

- projections

Install

You can load **sdk/dcs-liveness-component.js** and **sdk/dcs-liveness-component.js.map** in 2 ways:

1. Place them in the **custom-on-demand** folder and import them using **injectScriptAsync** method (recommended), for example:

```
if (window.LivenessComponent == undefined) {
        var slash = ebs.getBaseUrl().slice(-1) === "/" ? "" : "/";
        await ebs.injectScriptAsync(
          ebs.getBaseUrl() +
            slash +
            "custom-on-demand/components/dcs-liveness-component.js"
        );
    }
```

> **NOTE**
> If you're using a Custom Flow that uses ebs.importClientScript, you can not use async/await.

2. Place them in the **custom** folder. In this case, the script will be imported by default.

How to call constructor Liveness Component

In a custom flow, insert the following JavaScript:

```
const livenessConfig: ILivenessConfig = {
    containerElement: document.getElementById("livenessContainer")
    resourcesLocation: "",
    localization: {},
    uiCustomization: {},
    globalState: {},
    afterInitCallback: data => {},
    maxCounter: 3,
    requests: {
```

```
        getSessionToken: (userAgentString) => {
            return
            ebs.callActionByNameAsync("FTOS_DCS_Liveness_
SessionToken", {
                userAgentString: userAgentString
            })
        },
        getServerResponse: (userAgentString, parameters) => {
            return
            ebs.callActionByNameAsync("FTOS_DCS_Liveness_Check", {
                userAgentString: userAgentString,
                parameters: parameters
            })
        },
        cancelInFlightRequests: (() => {});
    };
};
const liveness = new LivenessComponent(livenessConfig);
```

How to call the Liveness processor within the Face Recognition processor

Starting with Ecosystem SysPack 2.5.0, in the Face Recognition processor settings, in the settings code editor, add the following parameters to configure liveness detection:

Setting	JSON Key	Description
Liveness detection method	livenessCheck	Supports the following values: • Liveness3D - Uses a 3D representation of the face constructed from 2D images. • Liveness2D - Simplified liveness detection based only on 2D images. • IDScanOnly - Doesn't perform a liveness check. This converts the Face Recognition processor into an "OCR and Identity Validation" on page 59 processor (with standard OCR settings and mappings). • PhotoIdMatching - Performs an automatic liveness 3D detection followed by ID Scan and Match. You only have to provide "OCR and Identity Validation" on page 59 processor settings and mappings. The face recognition is automatic (you don't provide the `FileAttributeName` and `MinimumAcceptedConfidence` processor settings and `Confidence` processor mapping respectively).

Setting	JSON Key	Description
		• Enrollment - Uses liveness 3D detection to provide a reference ID for future checks. This is useful for advanced flow customizations, e.g. where the liveness detection and ID check are separated by multiple steps.
Face recognition provider	livenessMatch	Sets the service provider for face recognition comparison to either `Microsoft` or `FaceTec`.
Audio guidance	livenessAudio	Provides audio guidance for liveness detection by setting the parameter to a numeric value between 0 (for minimal guidance) and 1 (for full guidance). To customize the audio files, overwrite the *Vocal_Guidance_Audio_Files* folder, but do not change the file names.
Keep all snapshots	saveMultipleFacetecImages	Set it to `true` to save all the snapshots taken during liveness detection instead of saving just the first one.

(Deprecated) Call the Liveness Processor on Releases Prior to Ecosystem SysPack 2.5.0

In the Face Recognition processor settings, in the settings code editor, insert the key `isLiveness : true` to enable the feature.

Example: Processor Settings for 2D Liveness Matching

```
{
    "DestinationEntityName": "FTOS_Test_Facetec_Applicant",
    "SourceEntityName": "FTOS_Test_Facetec",
    "SourceLookupDestinationName": "applicantData",
    "FileAttributeName": "pictureOcr",
    "MinimumAcceptedConfidence": 3,
    "livenessCheck": "Liveness2D",
    "livenessMatch": "Facetec",
```

```
    "DisableSaveBrowserDetails": false,
    "DisableLogSDKMessages": false,
    "LogLevel": "debug",
    "maskNextStepURLSuccess": {
        "entity":"FTOS_Test_Facetec",
        "form": "FTOS_Test_FacetecFDF",
        "section": "Success"
    },
    "maskNextStepURLFail": {
        "entity":"FTOS_Test_Facetec",
        "form": "FTOS_Test_FacetecFDF",
        "section": "Fail"
    },
    "businessStatusSuccess": "Face Recognition Valid",
    "businessStatusFail": "Face Recognition Failed"
}
```

Example: Processor Settings for 3D Liveness Matching with ID Scan and Match

```
{
    "CustomUI": "",
    "SourceEntityName": "FTOS_Test_Facetec",
        "Entities":[
      {
         "DestinationEntityName":"FTOS_Test_Facetec_
Applicant",
         "SourceEntityName":"FTOS_Test_Facetec",
         "SourceLookupDestinationName":"applicantData"
      },
      {
         "DestinationEntityName":"FTOS_Test_Facetec_
ApplicantAddress",
         "SourceEntityName":"FTOS_Test_Facetec",
         "SourceLookupDestinationName":"applicantAddress"
      }
    ],
    "OptionSets":[
      {
         "OptionSetName":"Gender Liveness",
         "MappingName":"sex",
         "OptionSetItems":{
            "M":"Male",
            "F":"Female"
```

```
                }
            }
        ],
        "LookupEntities":[
            {
                "MappingName":"nationality",
                "EntityName":"FTOS_CMB_Country",
                "AttributeKey":"code"
            }
        ],
        "DisableSaveBrowserDetails": false,
         "DisableLogSDKMessages": false,
         "LogLevel": "debug",
         "maskNextStepURLSuccess": {
            "entity":"FTOS_Test_Facetec",
            "form": "FTOS_Test_FacetecFDF",
            "section": "OCR"
        },
         "maskNextStepURLFail": {
            "entity":"FTOS_Test_Facetec",
            "form": "FTOS_Test_FacetecFDF",
            "section": "Fail"
        },
         "maskNextStepURLReview": {
            "entity":"FTOS_Test_Facetec",
            "form": "FTOS_Test_FacetecFDF",
            "section": "Review"
        },
         "businessStatusSuccess": "Face Recognition Valid",
         "businessStatusFail": "Face Recognition Failed",
         "businessStatusReview": "Face Recognition In review",
         "livenessCheck": "PhotoIdMatching",
         "minMatchValue": 3
    }
```

Liveness Configuration

The maxCounter property defines the number of times the user is allowed to retry execution of Liveness. Note that depending on the quality of the picture, alignment, etc., the system will allow for subsequent retries during the Liveness process, until a clear picture is taken.

Starting with v9.2 of liveness SDK, this parameter refers to the number of times the captured data, named FaceScan, is sent to the Liveness server for validation. A FaceScan contains liveness data and still images. The SDK may ask the user to retake the liveness process until the FaceScan captures all needed data at the required quality.

> **NOTE** A 3D Liveness requires the user to perform some steps (placing their face in an oval, moving forward or backwards, standing still for 3 seconds, etc.). These steps are required for computing an encrypted FaceScan that will be sent to the Liveness server. The Liveness server will then process the FaceScan and return the highest quality image based on a variety of metrics.

The 3D FaceScan (~350KB) is an encrypted byte blob that contains reverse engineered 3D data from 100+ video frames captured during ~2 second User Selfie. FaceScans are always encrypted and are not human viewable. 3D FaceScans DO contain Liveness Data.

How to change the text and colour

The Liveness feature makes it possible to edit the text and colour of the UI a client will be interacting with.

To do so, access the client library **Ftos_dfp_liveness** and change the two UI elements using the following JavaScript:

```javascript
interface ILivenessUi {
    // Customize the ZoOm Oval and the ZoOm Progress Spinner
animations.
    ovalCustomization: ZoomOvalCustomization;
    //  Customize the ZoOm Feedback Bar.
    feedbackCustomization: ZoomFeedbackBarCustomization;
    // Customize the ZoOm Frame.
    frameCustomization: ZoomFrameCustomization;
    // Customize the ZoOm Frame exit animation.
    exitAnimationCustomization: ZoomExitAnimationCustomization;
    // Customize the ZoOm Cancel Button.
    cancelButtonCustomization: ZoomCancelButtonCustomization;
    // Customize the time after which the ZoOm Session should
timeout.
    sessionTimerCustomization: ZoomSessionTimerCustomization;
    // Customize the loading Spinner and the text shown to the user
while the camera loads.
```

```
    initialLoadingAnimationCustomization:
ZoomInitialLoadingAnimationCustomization;
    // Customize the New User Guidance and Retry Screens.
    guidanceCustomization: ZoomGuidanceCustomization;
    // Customize the ZoOm Overlay, separating the ZoOm Interface
from the presenting application context.
    overlayCustomization: ZoomOverlayCustomization;
    // Customize the Result Screen.
    resultScreenCustomization: ZoomResultScreenCustomization;
    // Customize the ZoOm Identity Check Screens.
    idScanCustomization: ZoomIDScanCustomization;
    // Show Camera Permissions Denied Screen.
    enableCameraPermissionsHelpScreen: boolean;
    // Force the oval stroke to be drawn as opaque.
    shouldDrawOvalStrokeOpaque: boolean;
    // This function allows special runtime control of the success
message shown when the success animation occurs. Please note that
you can also customize this string via the standard
customization/localization methods provided by ZoOm. Special
runtime access is enabled to this text because the developer may
wish to change this text depending on ZoOm's mode of
operation.Default is in the customizable localization string "zoom_
result_success_message"
    static setOverrideResultScreenSuccessMessage: (message: string)
=> void;
}
interface ZoomOvalCustomization {
    // Color of the ZoOm Oval outline. Default is white.
    strokeColor: string;
    // Color of the animated ZoOm Progress Spinner strokes. Default
is custom ZoOm color.
    progressColor1: string;
    progressColor2: string;
    // Thickness of the animated ZoOm Progress Spinner strokes.
Default is dynamically configured per device at runti
    progressStrokeWidth: number;
    // Thickness of the ZoOm Oval outline. Default is dynamically
configured per device at runtime.
    strokeWidth: number;
}
interface ZoomFeedbackBarCustomization {
    // Color of the ZoOm Feedback Bar's background. Recommend
making this have some transparency.Default is custom ZoOm color.
    backgroundColor: string;
    // Color of the text displayed within the ZoOm Feedback Bar.
Default is white.
    textColor: string;
```

```
    // Font of the text displayed within the ZoOm Feedback Bar.
    textFont: string;
    // Spacing between the characters of the text displayed within
the ZoOm Feedback Bar. Accepts any value assignable to the
letterSpacing CSS attribute. Default is 'normal'.
    textSpacing: string;
    // Corner radius of the ZoOm Feedback Bar. Default is
dynamically configured per device at runtime.
    cornerRadius: string;
    // Shadow displayed behind the ZoOm Feedback Bar. This accepts
box-shadow css attribute string values. Default is a custom sized
black shadow.
    shadow: string;
    // Control whether to enable the pulsating-text animation
within the ZoOm Feedback Bar. Default is true (enabled).
    enablePulsatingText: boolean;
    // Control the percent of the available ZoOm Frame width to use
for the ZoOm Feedback Bar's width on desktop browsers. Relative
width percent is represented in decimal notation, ranging from 0.0
to 1.0. If the value configured is equal to or greater than 1.0,
the ZoOm Feedback Bar will be drawn to at max width within the ZoOm
Frame. If the value configured results in a width that is less than
the minimum width, which is 2x the ZoOm Feedback Bar's height, then
the ZoOm Feedback Bar's width will be set at the minimum. Default
is dynamically configured per device at runtime.
    relativeWidthOnDesktop: string;
    // Control the percent of the available ZoOm Frame width to use
for the ZoOm Feedback Bar's width on mobile browsers. Relative
width percent is represented in decimal notation, ranging from 0.0
to 1.0. If the value configured is equal to or greater than 1.0,
the ZoOm Feedback Bar will be drawn to at max width within the ZoOm
Frame. If the value configured results in a width that is less than
the minimum width, which is 2x the ZoOm Feedback Bar's height, then
the ZoOm Feedback Bar's width will be set at the minimum. Default
is dynamically configured per device at runtime.
    relativeWidth: string;
}
interface ZoomFrameCustomization {
    // Shadow displayed behind the ZoOm Frame. This accepts box
shadow css attribute string values. Default is none.
    shadow: string;
    // Color of the ZoOm Frame's border. Default is white.
    borderColor: string;
    // Corner radius of the ZoOm Frame. Default is dynamically
configured per device at runtime.
    borderCornerRadius: string;
    // Thickness of the ZoOm Frame's border. Default is dynamically
configured per device at runtime.
```

```
    borderWidth: string;
    // Color of the background surrounding the oval outline during
ZoOm. Default is custom ZoOm color.
    backgroundColor: string;
    // Applies a blur effect over the background surrounding the
oval outline during ZoOm. Default is off.
    blurEffectStyle: string;
}
interface ZoomExitAnimationCustomization {
    // Customize the transition out animation for a successful ZoOm
Session. */
    exitAnimationSuccess: 0 | 1 | 2; //     None = 0, RippleOut =
1, FadeOutMin = 2
    // Customize the transition out animation for an unsuccessful
ZoOm Session. */
    exitAnimationUnsuccess: 0 | 1 | 2; //     None = 0, RippleOut =
1, FadeOutMin = 2
}
interface ZoomCancelButtonCustomization {
    // Location, or use, of the ZoOm Cancel Button. Default is
ZoomCancelButtonLocation.TopLeft.
    location: ZoomCancelButtonLocation;
    // The size and location of the cancel button within the
current screen's bounds. Configure using the convenience method
.setCustomLocation(x:number, y:number, width:number,
height:number). Note: In order to use a custom-located cancel
button, you MUST set .location to the enum value
ZoomCancelButtonLocation.Custom. Default is set at origin 0,0 with
a size of 0 by 0.
    customLocation: ZoomRect;
    // Image displayed on the ZoOm Cancel Button. Default is
configured to use image named 'zoom_cancel' located in
'/zoomimages/' directory (or custom configured defaul directory for
ZoOm images).
    customImage: string;
}
interface ZoomSessionTimerCustomization {
    maxTimeOverall: number;
    maxTimeToDetectFirstFace: number;
    maxTimeToDetectFirstFaceInPhaseTwo: number;
    maxTimeBeforeCameraPermissionsError: number;
}
interface ZoomInitialLoadingAnimationCustomization {
    // HTMLElement displayed while camera is loading. Default is a
custom animated loading spinner and text.
    element: HTMLElement;
}
interface ZoomGuidanceCustomization {
```

```
    // Thickness of the action button's border during the New User
Guidance and Retry Screens. Default is dynamically configured per
device at runtime.
    buttonBorderWidth: string;
    // Color of the action button's border during the New User
Guidance and Retry Screens. Default is transparent.
    buttonBorderColor: string;
    // Corner radius of the action button's border during the New
User Guidance and Retry Screens. Default is dynamically configured
per device at runtime.
    buttonCornerRadius: string;
    // Color of the action button's text during the New User
Guidance and Retry Screens. Default is white.
    buttonTextNormalColor: string;
    // Color of the action button's text when the button is pressed
during the New User Guidance and Retry Screens. Default is white.
    buttonTextHighlightColor: string;
    // Color of the action button's text when the button is
disabled during the New User Guidance and Retry Screens. Default is
white.
    buttonTextDisabledColor: string;
    // Color of the action button's background during the New User
Guidance and Retry Screens. Default is custom ZoOm color.
    buttonBackgroundNormalColor: string;
    // Color of the action button's background when the button is
pressed during the New User Guidance and Retry Screens. Default is
custom ZoOm color.
    buttonBackgroundHighlightColor: string;
    // Color of the action button's background when the button is
disabled during the New User Guidance and Retry Screens. Default is
custom ZoOm color.
    buttonBackgroundDisabledColor: string;
    // Font of the title's text during the New User Guidance and
Retry Screens.
    headerFont: string;
    // Spacing between the characters of the title's text during
the New User Guidance and Retry Screens. Accepts any value
assignable to the letterSpacing CSS attribute. Default is 'normal'.
    headerTextSpacing: string;
    // Font of the title's subtext and messages during the New User
Guidance and Retry Screens.
    subtextFont: string;
    // Spacing between the characters of the title's subtext and
messages during the New User Guidance and Retry Screens. Accepts
any value assignable to the letterSpacing CSS attribute. Default is
'normal'.
    subtextTextSpacing: string;
```

```
    // Font of the title's subtext during the New User Guidance and
Retry Screens. Default is a bold system font.
    buttonFont: string;
    // Spacing between the characters of the action button's text
during the New User Guidance and Retry Screens. Accepts any value
assignable to the letterSpacing CSS attribute. Default is 'normal'.
    buttonTextSpacing: string;
    // Control the percent of the available ZoOm Frame width to use
for the action button during the New User Guidance and Retry
Screens for mobile browsers. Relative width percent is represented
in decimal notation, ranging from 0.0 to 1.0. If the value
configured is equal to or greater than 1.0, the action button will
be drawn to at max width within the ZoOm Frame. If the value
configured results in a width that is less than the action button's
height, the action button's width will equal its height. Default is
dynamically configured per device at runtime.
    buttonRelativeWidth: string;
    // Control the percent of the available ZoOm Frame width to use
for the action button during the New User Guidance and Retry
Screens for desktop browsers. Relative width percent is represented
in decimal notation, ranging from 0.0 to 1.0. If the value
configured is equal to or greater than 1.0, the action button will
be drawn to at max width within the ZoOm Frame.If the value
configured results in a width that is less than the action button's
height, the action button's width will equal its height. Default is
dynamically configured per device at runtime.
    buttonRelativeWidthOnDesktop: string;
    // Color of the background for the New User Guidance and Retry
Screens. Default is white.
    backgroundColors: string;
    // Color of the text displayed on the New User Guidance and
Retry Screens (not including the action button text). Default is
custom ZoOm color.
    foregroundColor: string;
    // Color of the Get Ready To ZoOm Screen's oval fill. Default
is transparent.
    readyScreenOvalFillColor: string;
    // Background color of the Get Ready To ZoOm Screen text views
during the New User Guidance and Retry Screens. This will only be
visible when text is detected as overlapping or too close with the
Ready screen oval. Default is a semi-opaque shade of black.
    readyScreenTextBackgroundColor: string;
    // Background corner radius of the Get Ready To ZoOm Screen
text views during the New User Guidance and Retry Screens. This
will only be visible when text is detected as overlapping or too
close with the Get Ready To ZoOm Screen's oval. Default is
dynamically configured per device at runtime.
    readyScreenTextBackgroundCornerRadius: string;
```

```
    // Image displayed as Ideal ZoOm example (right image) during
the first Retry Screen. Default is configured to use image named
'zoom_ideal' located in '/zoom-images/' directory (or custom
configured defaul directory for ZoOm images).
    retryScreenIdealZoomImage: string;
    // Images displayed as Ideal ZoOm examples (right image) during
the first Retry Screen. When configured to a non-empty array, these
images will override the single image configured for
imageCustomization.idealZoomImage. Default is an empty array.
    retryScreenSlideshowImages: string[];
    // Control the time that each image is shown for before
transitioning to the next image. Default is 1500ms.
    retryScreenSlideshowInterval: string;
    // Control whether to allow the slideshow images to appear in a
randomized order during each Retry Screen. Default is true
(enabled).
    enableRetryScreenSlideshowShuffle: boolean;
    // Color of the image borders during the first Retry Screen.
Default is custom ZoOm color.
    retryScreenImageBorderColor: string;
    // Thickness of the image borders during the first Retry
Screen. Default is dynamically configured per device at runtime.
    retryScreenImageBorderWidth: string;
    // Corner radius of the image borders during the first Retry
Screen. Default is dynamically configured per device at runtime.
    retryScreenImageCornerRadius: string;
    // Color of the oval's stroke that overlay's the Ideal image
example during the first Retry Screen. Default is white.
    retryScreenOvalStrokeColor: string;
    // Control whether to layout the Retry Screen's instruction
messages using bullet-points. Applicable localized instruction
message strings include: zoom_retry_instruction_message_1, zoom_
retry_instruction_message_2, zoom_retry_instruction_message_3. If
enabled, each instruction message will be placed on a new line,
proceeded with a bullet-point, and will not extend to multiple
lines. If disabled, all instruction messages will be concatenated
into a multi-line string. Default is true (enabled).
    enableRetryScreenBulletedInstructions: boolean;
    // Image displayed on the Camera Permissions Screen. Default is
configured to use image named 'zoom_camera' located in
'/zoomimages/' directory (or custom configured defaul directory for
ZoOm images).
    cameraPermissionsScreenImage: string;
}
interface ZoomOverlayCustomization {
    // Color of the ZoOm Overlay background. Default is white.
    backgroundColor: string;
```

```
    // Color of the text shown on ZoOm Overlay. This includes the
Low Light Mode Toggle's text color, which only applies to desktop
browsers. Default is custom ZoOm color.
    foregroundColor: string;
    // Applies a blur effect over the background of the ZoOm
Overlay. Default is off.
    blurEffectStyle: string;
    // Control whether to show the branding image the ZoOm Frame on
top of the ZoOm Overlay.<br> Default is true (shown).
    showBrandingImage: boolean;
    // Image displayed below the ZoOm Frame on top of the ZoOm
Overlay. Default is configured to use image named 'zoom_your_app_
logo' located in '/zoom-images/' directory (or custom configured
defaul directory for ZoOm images).
    brandingImage: string;
}
interface ZoomResultScreenCustomization {
    // Color of the Result Screen's background. Default is white.
    backgroundColors: string;
    // Color of the text displayed on the Result Screen. Default is
custom ZoOm color.
    foregroundColor: string;
    // Color of the result animation's background. Default is
custom ZoOm color.
    resultAnimationBackgroundColor: string;
    // Color of the result animation's accent color. Default is
white.
    resultAnimationForegroundColor: string;
    // Image displayed behind the result foreground animation for
success scenarios. If image is configured, default result
background animation will be hidden. Default is set to an empty
string and will fallback to using the default result background
animation, which respects the color assigned to
.resultAnimationBackgroundColor.
    resultAnimationSuccessBackgroundImage: string;
    // Image displayed behind the result foreground animation for
unsuccess scenarios. If image is configured, default result
background animation will be hidden. Default is set to an empty
string and will fallback to using the default result background
animation, which respects the color assigned to
.resultAnimationBackgroundColor.
    resultAnimationUnsuccessBackgroundImage: string;
    // Font of the message text displayed on the Result Screen.
    messageFont: string;
    // Spacing between the characters of the message text displayed
on the Result Screen. Accepts any value assignable to the
letterSpacing CSS attribute. Default is 'normal'.
    messageTextSpacing: string;
```

```
    // Color of the activity indicator animation shown during
server-side work. Default is custom ZoOm color.
    activityIndicatorColor: string;
    // Image displayed and rotated during server-side work. If
image is configured, default activity indicator will be hidden.
Default is set to an empty string and will fallback to using
default activity indicator animation.
    customActivityIndicatorImage: string;
    // Control the speed of the rotation for your custom activity
indicator image. Only applicable when image is configured for
.customActivityIndicatorImage. This value indicates the duration of
each full rotation. Default is 1s.
    customActivityIndicatorRotationInterval: string;
    // Control whether to show or hide the upload progress bar
during server-side work. Default is true (shown).
    showUploadProgressBar: boolean;
    // Color of the upload progress bar's fill. Default is custom
ZoOm color.
    uploadProgressFillColor: string;
    // Color of upload progress bar's track. Default is a semi
opaque shade of black.
    uploadProgressTrackColor: string;
}
interface ZoomIDScanCustomization {
    // Image displayed on the ID Scan Select ID Document page
Default is configured to use image named 'zoom_branding_logo_id_
check' located in '/zoom-images/' directory (or custom configured
defaul directory for ZoOm images).
    showSelectionScreenBrandingImage: boolean;
    // Color of the text displayed on the Identity Document Type
Selection Screen (not including the action button text). Default is
off-black.
    selectionScreenForegroundColor: string;
    // Font of the title during the Identity Document Type
Selection Screen.
    headerFont: string;
    // Spacing between the characters of the title's text during
the Identity Document Type Selection Screen. Accepts any value
assignable to the letterSpacing CSS attribute. Default is 'normal'.
    headerTextSpacing: string;
    // Font of the message text during the Identity Document
Capture and Review Screens.
    subtextFont: string;
    // Spacing between the characters of the title's subtext and
messages during the Identity Document Capture and Review Screens.
Accepts any value assignable to the letterSpacing CSS attribute.
Default is 'normal'.
    subtextTextSpacing: string;
```

```
        // Font of the action button's text during the Identity Check
    Screens.
        buttonFont: string;
        // Spacing between the characters of the action button's text
    during the Identity Check Screens. Accepts any value assignable to
    the letterSpacing CSS attribute. Default is 'normal'.
        buttonTextSpacing: string;
        // Thickness of the action button's border during the Identity
    Check Screens Default is dynamically configured per device at
    runtime.
        buttonBorderWidth: string;
        // Color of the action button's border during the Identity
    Check Screens Default is transparent.
        buttonBorderColor: string;
        // Corner radius of the action button's border during the
    Identity Check Screens. Default is dynamically configured per
    device at runtime.
        buttonCornerRadius: string;
        // Color of the action button's text during the Identity Check
    Screens. Default is white.
        buttonTextNormalColor: string;
        // Color of the action button's text when the button is pressed
    during the Identity Check Screens. Default is white.
        buttonTextHighlightColor: string;
        // Color of the action button's text when the button is
    disabled during the Identity Check Screens. Default is white.
        buttonTextDisabledColor: string;
        // Color of the action button's background during the Identity
    Check Screens. Default is custom ZoOm color.
        buttonBackgroundNormalColor: string;
        // Color of the action button's background when the button is
    pressed during the Identity Check Screens. Default is custom ZoOm
    color.
        buttonBackgroundHighlightColor: string;
        // Color of the action button's background when the button is
    disabled during the Identity Check Screens. Default is custom ZoOm
    color.
        buttonBackgroundDisabledColor: string;
        // Control the percent of the available ZoOm Frame width to use
    for the action button during the Identity Check Screens for mobile
    browsers. Relative width percent is represented in decimal
    notation, ranging from 0.0 to 1.0. If the value configured is equal
    to or greater than 1.0, the action button will be drawn to at max
    width within the ZoOm Frame. If the value configured results in a
    width that is less than the action button's height, the action
    button's width will equal its height. Note: The Identity Document
    Review Screen action buttons will be drawn at half the configured
    width. Default is dynamically configured per device at runtime.
```

```
    buttonRelativeWidth: string;
    // Control the percent of the available ZoOm Frame width to use
for the action button during the Identity Check Screens for desktop
browsers. Relative width percent is represented in decimal
notation, ranging from 0.0 to 1.0. If the value configured is equal
to or greater than 1.0, the action button will be drawn to at max
width within the ZoOm Frame. If the value configured results in a
width that is less than the action button's height, the action
button's width will equal its height. Note: The Identity Document
Review Screen action buttons will be drawn at half the configured
width. Default is dynamically configured per device at runtime.
    buttonRelativeWidthOnDesktop: string;
    // Color of the Identity Document Type Selection Screen
background. Default is white.
    selectionScreenBackgroundColors: string;
    // Applies a blur effect over the background of the Identity
Document Type Selection Screen. Default is off.
    selectionScreenBlurEffectStyle: string;
    // Image displayed on the Identity Document Type Selection
Screen. Default is configured to use image named 'zoom_branding_
logo_id_check' located in '/zoom-images/' directory (or custom
configured defaul directory for ZoOm images).
    selectionScreenBrandingImage: string;
    // Color of the text displayed on the Identity Document Capture
Screen (not including the action button text). Default is white.
    captureScreenForegroundColor: string;
    // Color of the text view background during the Identity
Document Capture Screen. Default is custom ZoOm color.
    captureScreenTextBackgroundColor: string;
    // Color of the text view background border during the Identity
Document Capture Screen. Default is transparent.
    captureScreenTextBackgroundBorderColor: string;
    // Thickness of the text view background border during the
Identity Document Capture Screen. Default is 0.
    captureScreenTextBackgroundBorderWidth: string;
    // Corner radius of the text view background and border during
the Identity Document Capture Screen. Default is dynamically
configured per device at runtime.
    captureScreenTextBackgroundCornerRadius: string;
    // Color of the Identity Document Capture Screen's background.
Default is white.
    captureScreenBackgroundColor: string;
    // Color of the Identity Document Capture Frame's stroke.
Default is custom ZoOm color.
    captureFrameStrokeColor: string;
    // Thickness of the Identity Document Capture Frame's stroke.
Default is dynamically configured per device at runtme.
    captureFrameStrokeWidth: string;
```

```
    // Corner radius of the Identity Document Capture Frame.
Default is dynamically configured per device at runtime.
    captureFrameCornerRadius: string;
    // Color of the text displayed on the Identity Document Review
Screen (not including the action button text). Default is white.
    reviewScreenForegroundColor: string;
    // Color of the text view background during the Identity
Document Review Screen. Default is custom ZoOm color.
    reviewScreenTextBackgroundColor: string;
    // Color of the text view background border during the Identity
Document Review Screen. Default is transparent.
    reviewScreenTextBackgroundBorderColor: string;
    // Thickness of the text view background border during the
Identity Document Review Screen. Default is 0.
    reviewScreenTextBackgroundBorderWidth: string;
    // Corner radius of the text view background and border during
the Identity Document Review Screen. Default is dynamically
configured per device at runtime.
    reviewScreenTextBackgroundBorderCornerRadius: string;
    // Corner radius of the ID Document Preview image displayed on
the Identity Document Review Screen. Default is dynamically
configured per device at runtime.
    reviewScreenDocumentPreviewCornerRadius: string;
    // Color of the Identity Document Review Screen background.
Default is white.
    reviewScreenBackgroundColors: string;
    // Applies a blur effect over the background of the Identity
Document Review Screen. Default is off.
    reviewScreenBlurEffectStyle: string;
    // Image displayed below the ZoOm Frame during Identity Check
when the Identity Document Type selected is an ID Card. This image
acts as a placeholder to show a status of incomplete for capturing
the ID Card's front side. This only applies to desktop browsers.
Default is configured to use image named 'zoom_id_card_placeholder_
front' located in '/zoom-images/' directory (or custom configured
defaul directory for ZoOm images).
    captureScreenIDFrontPlaceHolderImage: string;
    // Image displayed below the ZoOm Frame during Identity Check
when the Identity Document Type selected is an ID Card. This image
acts as a placeholder to show a status of incomplete for capturing
the ID Card's back side. This only applies to desktop browsers.
Default is configured to use image named 'zoom_id_card_placeholder_
back' located in '/zoom-images/' directory (or custom configured
defaul directory for ZoOm images).
    captureScreenIDBackPlaceHolderImage: string;
```

```
    // Image displayed below the ZoOm Frame during Identity Check
when the Identity Document Type selected is a Passport. This image
acts as a placeholder to show a status of incomplete for capturing
the Passport. This only applies to desktop browsers. Default is
configured to use image named 'zoom_passport_placeholder' located
in '/zoom-images/' directory (or custom configured defaul directory
for ZoOm images).
    captureScreenPassportPlaceholderImage: string;
    // Image displayed below the ZoOm Frame during Identity Check
when the Identity Document Type selected is an ID Card. This image
acts as a placeholder to show a status of complete for capturing
the ID Card's front side. This only applies to desktop browsers.
Default is configured to use image named 'zoom_id_front_checkmark'
located in '/zoom-images/' directory (or custom configured defaul
directory for ZoOm images).
    captureScreenIDFrontCheckmarkImage: string;
    // Image displayed below the ZoOm Frame during Identity Check
when the Identity Document Type selected is an ID Card. This image
acts as a placeholder to show a status of complete for capturing
the ID Card's back side. This only applies to desktop browsers.
Default is configured to use image named 'zoom_id_back_checkmark'
located in '/zoom-images/' directory (or custom configured defaul
directory for ZoOm images).
    captureScreenIDBackCheckmarkImage: string;
    // Image displayed below the ZoOm Frame during Identity Check
when the Identity Document Type selected is a Passport. This image
acts as a placeholder to show a status of complete for capturing
the Passport. This only applies to desktop browsers.Default is
configured to use image named 'zoom_passport_checkmark' located in
'/zoom-images/' directory (or custom configured defaul directory
for ZoOm images).
    captureScreenPassportCheckmarkImage: string;
}
```

Customization of Localization

It is possible to target the Liveness feature to a specific cultural group by translating the messages from a language to another, setting the dates in a particular manner and complying with local customs.

```
interface ILivenessLocalization {
    zoom_accessibility_cancel_button: string, // 'Anulare'
        zoom_feedback_center_face: string, // 'Centrati
    fata'
```

```
        zoom_feedback_face_not_found: string, // 'Incadrati
fata in chenar',
        zoom_feedback_move_phone_away: string, //
'Indepartati-va',
        zoom_feedback_move_away_web: string, //
'Indepartati-va',
        zoom_feedback_move_phone_closer: string, //
'Apropiati-va',
        zoom_feedback_move_phone_to_eye_level: string, //
'Mutati telefonul la nivelul ochilor',
        zoom_feedback_move_to_eye_level_web: string, //
'Uitati-va direct in camera',
        zoom_feedback_face_not_looking_straight_ahead:
string, // 'Uitati-va drept in fata',
        zoom_feedback_face_not_upright: string, // 'Tineti
capul drept',
        zoom_feedback_face_not_upright_mobile: string, //
'Tineti capul drept',
        zoom_feedback_hold_steady: string, // 'Stati
nemiscat',
        zoom_feedback_move_web_closer: string, //
'Apropiati-va',
        zoom_feedback_move_web_even_closer: string, // 'Mai
aproape',
        zoom_feedback_use_even_lighting: string, //
'Iluminati fata uniform',
        zoom_instructions_header_ready: string, //
'Pregatiti-va pentru selfi-ul video',
        zoom_instructions_message_ready: string, //
'Incadrati-va fata in ovalul mic si dupa in ovalul mare',
        zoom_action_im_ready: string, // 'SUNT PREGATIT',
        zoom_result_facemap_upload_message: string, //
'Incarcare<br/>Criptata<br/>3D FaceMap',
        zoom_result_idscan_upload_message: string, //
'Incarcare<br/>Criptata<br/>ID Document',
        zoom_retry_header: string, // 'Hai sa mai incercam',
        zoom_retry_subheader_message: string, // 'Dar mai
intai, uitati va la selfi-ul dumneavoastra si corectati
mediul',
        zoom_retry_your_image_label: string, // 'Selfi-ul
dumneavoastra',
        zoom_retry_ideal_image_label: string, // 'Pozitie
ideala',
        zoom_retry_instruction_message_1: string, //
'Expresie Neutra, Fara Zambete',
```

```
        zoom_retry_instruction_message_2: string, // 'Fara
stralucire sau iluminare excesiva',
        zoom_retry_instruction_message_3: string, // '',
        zoom_action_ok: string, // 'OK',
        zoom_camera_permission_header: string, // 'Activati
Camera',
        zoom_camera_permission_message: string, //
'Permisiunile pentru camera sunt dezactivate. Va rugam sa
verificati sistemuldumneavoastra de operare si setarile de
browser. Pentru mai multe detalii accesati urmatorul link:',
        zoom_browser_camera_help_action_link: string, //
'https://dev.zoomlogin.com/zoomsdk/#/browser-camera-help',
        zoom_camera_permission_launch_settings: string, //
'Lanseaza Ajutorul de Camera',
        zoom_initializing_camera: string, // 'Initializare
Camera...',
        zoom_idscan_type_selection_header: string, //
'Selecteazar<br>Tipul Documentului',
        zoom_action_select_id_card: string, // 'CARTE
IDENTITATE',
        zoom_action_select_passport: string, // 'PASAPORT',
        zoom_idscan_capture_id_card_front_instruction_
message: string, // 'Aratati Fata Cartii de Identitate',
        zoom_idscan_capture_id_card_back_instruction_
message: string, // 'Aratati Spatele Cartii de Identitate',
        zoom_idscan_capture_passport_instruction_message:
string, // 'Aratati Pagina cu Poza din Pasaport',
        zoom_action_take_photo: string, // 'FOTOGRAFIAZA',
        zoom_idscan_review_id_card_front_instruction_
message: string, // 'Confirmati ca documentul este lizibil',
        zoom_idscan_review_id_card_back_instruction_message:
string, // 'Confirmati ca documentul este lizibil',
        zoom_idscan_review_passport_instruction_message:
string, // 'Confirmati ca documentul este lizibil',
        zoom_action_accept_photo: string, // 'ACCEPTARE',
        zoom_action_retake_photo: string, // 'RELUATI',
        zoom_result_idscan_unsuccess_message: string, //
'Poza din Document<br/>Nu se potriveste<br>Cu Selfi-ul',
        zoom_result_success_message: string, // 'Succes!',
}
```

Adding Face Recognition to a Digital Journey

There are two ways to add a Face Recognition processor to a digital journey: with a custom processor step or manually.

Add Face Recognition to a Journey with Custom Processor Steps (No Code)

This no-code approach is the easiest way to add Face Recognition to your journey. Use a custom processor step to create a dedicated flow step that triggers the processor.

Add Face Recognition to a Journey Manually

1. Open the form step where you wish to trigger the processor.

2. In the **Advanced** section, open the **After Section Save** tab and use the following model to add the processor code:

```javascript
// For Ecosystem SysPack 2.5.0 and later, use:
var dfpHelper = ebs.importClientScript('FTOS.ECOS.Utils');

// Prior to Ecosystem SysPack 2.5.0, use:
// var dfpHelper = ebs.importClientScript('FTOS.DFP');

ebs.removeFormEditButton('ebsContainerContent');
context.stopNextNavigation = true;

var componentName = 'FTOS_DFP_FaceRecognition';
var entitydata=ebs.getCurrentEntityData();
var recordId = formData.id;
var flowSettingsName = formData.FlowSettings;

var params = {
    flowSettingsName: flowSettingsName,
    processorSettingsType: 'FaceRecognition',
    processorSettingsName: ''
};

var typeFaceRecId = entitydata.FTOS_Test_FaceRecognition_
typeFaceRecId_displayname;
switch (typeFaceRecId){
```

```
        case 'Liveness':
            params.processorSettingsName='FTOS_Test_
    FaceRecognition_Liveness';
            componentName='FTOS_DFP_FaceRecognitionLiveness';
            break;
        case 'LivenessMultipleImages':
            params.processorSettingsName='FTOS_Test_
    FaceRecognition_LivenessMultipleImages';
            componentName='FTOS_DFP_FaceRecognitionLiveness';
            break;
        case 'LivenessOCR':
            params.processorSettingsName='FTOS_Test_
    FaceRecognition_Liveness_OCR';
            componentName='FTOS_DFP_LivenessOCR';
            break;
        case 'LivenessOCRMultipleImages':
            params.processorSettingsName='FTOS_Test_
    FaceRecognition_Liveness_OCR_MultipleImages';
            componentName='FTOS_DFP_LivenessOCR';
            break;
        default:
            params.processorSettingsName='FTOS_Test_
    FaceRecognition_Selfie';
            break;
    };

    dfpHelper.loadComponent(componentName, params, recordId,
    true);
```

3. In the form driven flow's **Advanced** section, in the **Before Events** tab, use the following model to add code that assigns the Face Recognition flow settings to the form driven flow:

```
if (sessionStorage.getItem("B2CSessionIdParam")) {
    formData.setSaveEndpoint("FTOS_Test_SaveOnboarding");
}

formData.FlowSettings = "FTOS_Test_FaceRecognition";
```

Video Streaming

Video Streaming is the continuous transmission of video content between a customer and a server. It facilitates business processes such as digital onboarding. The customer can start a live video call with a bank consultant/ call center operator using the FintechOS Video Identification embedded capability. The Video Streaming automation processor provides a seamless experience for customers and businesses enabling a predefined process to complete the customer identity verification or provide advice.

The video streaming flow:

1. The customer initiates a video streaming session.

2. The FintechOS Gateway tells the Video Streaming Service to create a video session.

3. The Video Streaming Service creates a session and sends the session ID back to the FintechOS Gateway.

4. The FintechOS Gateway creates an unique token and sends the session information to the FintechOS Portal and the customer is added into the Queue.

5. When an operator picks up the customer from the Queue, the FintechOS Gateway sends the session ID and token to the customer.

6. The customer uses the token to connect to the session.

7. The video session starts and the participants (customer and operator) can publish and subscribe to the video files being transmitted in real-time in the session.
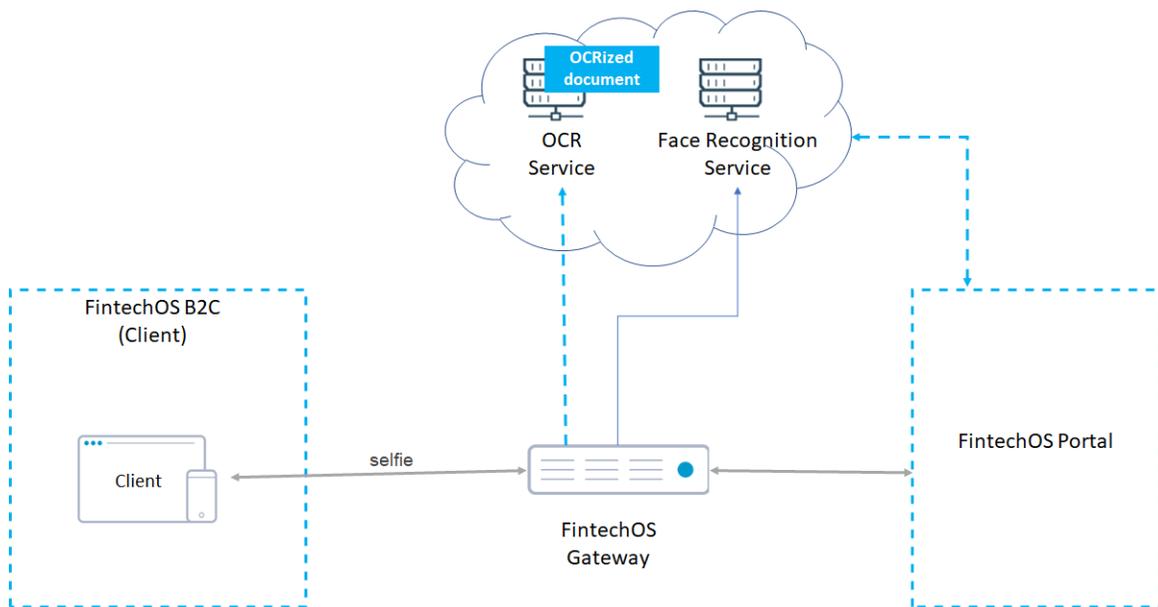
Video Streaming Processor Features

- Embedded high quality and scalable video communications in the context of FintechOS web and mobile applications.

- Dynamically prioritize audio in response to network quality.

- Audio detection to control stream layout and display.

- Media streams in transit and at rest are encrypted using AES 128-bit encryption.

Applications

- Customer onboarding

- Account opening

- Loan applications

- Compliance related processes

- Claims handling

- Mortgage processing.

Installing Video Streaming

1 Install the SysPacks

1. Download the **SySDigitalSolutionPackages.zip** archive.

2. Unzip the archive and follow the instructions from the SysPacks Installation page.

> **NOTE** We recommend that you load *sdk/dcs-video-component.js* and *sdk/dcs-video-component.js.map* by placing them in the **_custom-on-demand_** folder, and import them using the **injectScriptAsync** method. See example below:

```
if (window.VideoComponent == undefined) {
    var slash = ebs.getBaseUrl().slice(-1) === "/" ? "" : "/";
    await ebs.injectScriptAsync(
      ebs.getBaseUrl() +
        slash +
        "custom-on-demand/components/dcs-video-component.js"
    );
  }
```

2 Set up the Video Streaming Processor subscription key(s)

In order to configure the processors to make the requests correctly to DCS, you must add in web.config / FTOS Vault (Portal / B2C - depending where the server side script is executing) the following keys:

Automation Blocks Processor service subscription keys:

```
<add key="FTOSServicesVideoFaceEndpoint" value="URL to the
services endpoint"/>
<add key="FTOSServicesVideoAppId" value="service
authentication key"/>
```

In case of using a proxy server:

```
<add key="FTOSServicesVideoAppRequiresProxy" value="https://<proxy-
address>"/>
```

Setting Up a Video Streaming Automation Processor

1 Add queues and operators

For every anonymous digital journey which require a video validation (onboarding, credit card loan, etc.), add a queue and operators who should handle the queue.

> **IMPORTANT!**
> For Video Streaming to work, the sites must run on HTTPS.

1. Log into the FintechOS Portal.

2. Click the main menu icon at the top left corner.

3. In the main menu, click **Digital Onboarding Configuration** > **Queues** . The Queues List page appears.

4. Click **Insert**. The Add FTOS_DFP_QUEUE page appears.

5. Provide a **Name** for the queue and optionally a **Hello Message Text** to be displayed when customers initialize a video call with the operators.

6. Click **Save and close** to save the queue.

7. Click the main menu icon at the top left corner.

8. In the main menu, click **Digital Onboarding Configuration** > **Operators**. The Operators List page appears.

9. Click **Insert**. The ADD FTOS_DFP_OPERATOR page appears.

10. Type the operator **Name** and from the **Related User** field, select the FintechOS Portal user account of the person who will be fulfilling the operator role.

11. Click **Save and reload**. The EDIT FTOS_DFP_OPERATOR appears and the QUEUES section is unlocked.

12. In the QUEUES list, click **Insert existing**. A pop-up appears listing the existing queues.

13. In the pop-up, double click the queue (you added following steps 4 to 6) . The selected queue is listed in the QUEUES section.

14. Click **Save and Close** to save the settings.

The user who you selected to be operator for the queue will see the queue by clicking in the main menu **Digital Onboarding** > **My Queues**.

2 Create a digital flow processing settings group

The Video Streaming automation processor must be hosted in a flow settings group. A flow settings group can include multiple automation processors and is typically used as a container for the automation processors called by a specific digital journey.

If you already have a flow settings group you wish to host your Video Streaming automation processor, skip to " 3 Add the Video Streaming automation processor to flow settings group" on the next page. Otherwise, follow the instructions below to create a new flow settings group:

1. In FintechOS Portal, click the main menu icon at the top left corner.

2. In the main menu, select **Digital Flow Processing**.

3. Click **Flow Settings**.

4. In the Flow Settings List page, click the **Insert** button at the top right corner to add a new flow settings group.

5. In the Add Flow Settings window, enter a **Name** for your flow settings group.

6. Click **Save and Close** to save your flow settings group.

3 Add the Video Streaming automation processor to flow settings group

1. In FintechOS Portal, click the main menu icon at the top left corner.

2. In the main menu, select **Digital Flow Processing**.

3. Click **Flow Settings**.

4. In the **Flow Settings List** page, double click the flow settings group you wish to host your automation processor.

5. In the **Edit Flow Settings** window, under the **Processor Settings** section, click **Insert** to add a new automation processor.

The Add Processor Settings page appears. In this page, configure the video streaming automation processor settings as described in the next step.

4 Configure the automation processor's settings

1. In the **Add Processor Settings** screen, fill in the following fields:

    - Name – Enter a name for your automation processor

    - Digital Processor Type – Select **Video Streaming**.

    - Settings – JSON code for the automation processor's settings. For details, see "Video Streaming Settings" on page 268.

2. Click **Save and Close** to save your automation processor.

Set Up an Operator Form

1. Create a new entity for applications, for example, **FTOS_Test_Operator_ Applicant**. Add the attributes needed for your journey. Picture OCR and Selfie are usually displayed on the Operator page, so they are

recommended. (For details on how to create an entity, see Business Entities; for details on how to add attributes, see Add Attributes).

email	Email	Text	FTOS_Test_Operator_Applicant	10
pictureOcr	Picture OCR	File	FTOS_Test_Operator_Applicant	11
imgFaceOCR	Selfie	File	FTOS_Test_Operator_Applicant	12
phone	Phone Number	Text	FTOS_Test_Operator_Applicant	13

2. Create a new entity, **FTOS_Test_Operator**, and add the following attributes: videoCallResult, applicandId, and operatorType.

videoCallResult	VideoCall Passed	Bool	FTOS_Test_Operator	10
applicantId	Applicant Id	Lookup	FTOS_Test_Operator	14
operatorType	Operator Component	Option Set	FTOS_Test_Operator	15

3. Extend entity and add virtual attributes (for details, see Extend platform data entities with transient data entities).

1 General		2 Virtual Attributes	

VIRTUAL ATTRIBUTES

	Name	Display Name	Related Attribute	Updatable
	Q	Q	Q	(All)
	applicantId_email	applicantData Email	email	✓
	applicantId_imgFaceOCR	applicantData Selfie	imgFaceOCR	✓
	applicantId_phone	applicantData Phone Number	phone	✓
	applicantId_pictureOcr	applicantData Picture OCR	pictureOcr	✓

4.

5. Create **FTOS_Test_Operator_Client** form driven flow on the **FTOS_Test_Operator** entity which will collect the relevant data. For details on how to create a form driven flow, see Form Driven Flows). For the video step, add the following code in the **After Section Save** section.

```
// For Ecosystem SysPack 2.5.0 and later, use:
var dfpHelper = ebs.importClientScript
('FTOS.ECOS.Utils');

// Prior to Ecosystem SysPack 2.5.0, use:
// var dfpHelper = ebs.importClientScript('FTOS.DFP');
```

```
ebs.removeFormEditButton('ebsContainerContent');

context.stopNextNavigation = true;
var componentName = 'FTOS_DFP_VideoStreaming';

var params = {};
params.flowSettingsName = formData.FlowSettings;
params.processorSettingsType = 'VideoStreaming';
params.processorSettingsName = 'FTOS_Test_Operator_
VideoComponent';

ebs.callActionByNameAsync("FTOS_DFP_
FlowProcessorSettingsByType", params).then(function(f)
{
    console.log(f);
    var processorSettingsId =
f.UIResult.Data.ProcessorSettingsId;
    dfpHelper.loadComponent(componentName,
processorSettingsId, formData.id, false);
});
```

6. Flow settings will be set on the form driven flow's **Before Events** section:
`formData.FlowSettings = "FTOS_Test_Operator";`. Example of
Flow settings:

```
{
    "DestinationEntityName": "FTOS_Test_Operator_
Applicant",
    "SourceEntityName": "FTOS_Test_Operator",
    "SourceLookupDestinationName": "applicantId",
    "maskNextStepURLSuccess": { "entity":"FTOS_Test_
Operator", "form": "FTOS_Test_Operator_Client",
"section": "Finished" },
    "maskNextStepURLFail": { "entity":"FTOS_Test_
Operator", "form": "FTOS_Test_Operator_Client",
"section": "Finished" },
    "ContextForm" : "FTOS_Test_Operator",
    "QueueParameters":
    [
        {
            "ParamName": "Name",
            "ParamValue": "QueueOperator"
        }
```

```
        ]
    }
```

7. Add `QueueOperator` to your queues list, then add the new queue to all operators that have access to this queue:

FTOS_DFP_OPERATOR

Name	host
Related User	host ↓ ✎

QUEUES

`+ Insert existing`   `✕ Remove existing`

☐	Name
	🔍
	QueueOperator
	VideoQueueVideoCOB

8. Create the **FTOS_Test_Operator** form driven flow on the **FTOS_Test_Operator** entity and set it as default and default for edit.

Example: Use VideoComponent for the Operator Journey

```
formScope.videoTokBoxComp = new VideoComponent({
    sessionContainer: document.getElementById
("videoOperatorContainer"),
    sessionConfig: {
      isOperator: true,
      connectData: {
        apiKey:
formScope.videoTokBoxCredentials.apiKey,
        sessionId:
formScope.videoTokBoxCredentials.sessionId,
        token:
formScope.videoTokBoxCredentials.token,
        tokenId:
formScope.videoTokBoxCredentials.tokenId,
```

```
        },
      },
      sessionConnectToken: connectToken,
      externalDependenciesLocation: "/custom-on-
demand",
      backgroundFilters: {
        isFeatureEnabled: true,
        autorun: true,
        imagePath: "custom/assets/video-bg.jpg", //
path for dev mode
        defaultType: "blur",
      },
    });
    formScope.videoTokBoxComp.events.addEventListener
('stateChange', function(event){
        console.log(event);
    });

    formScope.videoTokBoxComp.events.addEventListener
('publisherChange', function(event){
        console.log(event);
    });

    formScope.videoTokBoxComp.events.addEventListener
('subscriberChange', function(event){
        console.log(event);
    });
```

Example: Use OperatorComponent

```
formScope.videoTokBoxComp = new OperatorComponent({
    container: "videoOperatorContainer",
    videoTokBoxCredentials: {
        apiKey:
formScope.videoTokBoxCredentials.apiKey,
        sessionId:
formScope.videoTokBoxCredentials.sessionId,
        token:
formScope.videoTokBoxCredentials.token,
        tokenId:
formScope.videoTokBoxCredentials.tokenId,
```

```
        },
    });
  formScope.videoTokBoxComp.initSession();
```

In order to obtain credentials, you need to call the `FTOS_DFP_` `VideoStreaming_OperatorCredentials` endpoint. Credentials are saved into the `FTOS_DFP_QueueItem` entity, so in case of page reload, you won't try to obtain new credentials.

Example: Use/Toggle Filters

```javascript
// filters
$("#videoFilterSwitch").on("click", function(){
    formScope.videoTokBoxComp.toggleFilters();
    deactivateButtons();
    setTimeout(updateFilters, 3000);
});

$("#videoTypeFilter").on("click", function(){
    formScope.videoTokBoxComp.toggleFilterType();
    deactivateButtons();
    setTimeout(updateFilters, 3000);
});

function deactivateButtons(){
    document.getElementById
("videoFilterSwitch").disabled = true;
    document.getElementById("videoTypeFilter").disabled
= true;
}

function activateButtons(){
    document.getElementById
("videoFilterSwitch").disabled = false;
    document.getElementById("videoTypeFilter").disabled
= false;
}

function updateFilters(){
    if (typeof formScope.videoTokBoxComp.hasFilters !==
undefined){
```

```
        var filters =
formScope.videoTokBoxComp.hasFilter();
        if (filters.filter && filters.filter.type){
            document.getElementById("video-
filters").innerHTML = "Your filter type is: " +
filters.filter.type;
        } else {
            document.getElementById("video-
filters").innerHTML = "You currently do not have video
filters.";
        }
        activateButtons();
    }
}
```

Example: Save Logs

```
// set logLevel to "error" to log only errors
var logLevel = "debug";
if (typeof dcs !== 'undefined'){
    var loggingService =
dcs.common.EventsCommunicationService.getInstance();
    loggingService.listenForEvents(saveSDKLogs);
}

function saveSDKLogs(data){
    // save logs part
    if (data.load.message === 'Init TokBox Video Call')
{
        // save browser info in entity: send correct id
        data.id = ebs.getFormData().id;
        ebs.callActionByNameAsync("FTOS_DFP_SaveInfo_
Endpoint", data);
    }
    if (data.load.type !== 'error' && logLevel ===
'error') {
        return;
    };
    ebs.callActionByNameAsync("FTOS_DFP_SDK_Log_
Endpoint", data);
}
```

Example: Save the Form and Destroy the Video Component

```javascript
// save form data
function saveForm(){
  var formData = ebs.getFormData();
  ebs.saveEditForm("ebsContainerContent", function () {
    p.passed = true;
    p.flowSettingsName = formData.FlowSettings;
    p.queueItemId = formScope.queueItemId;
    p.videoCredentials =
formScope.videoTokBoxCredentials;
    console.log("parameters: ", p);
    updateOperator();
  });
}

// update
function updateOperator(){
  ebs.callActionByNameAsync("FTOS_
OperatorFailedPassed", p).then(function () {
    endVideo();
  });
}

// close video call client and redirect
function endVideo(){
  var parameters = {};
  parameters.customActionName = "FTOS_VideoQueue_
CurentQueueItems";
  ebs.callActionByNameAsync(
    "FTOS_GetCustomActionByName_Endpoint",
    {
      parameters: parameters,
    }).then(
    function (result) {
      console.log("saved form: ", result);
      if (result.UIResult.Data.results.length > 0) {
        var urlBase = ebs.getBaseUrl();
        var customActionId =
result.UIResult.Data.results[0].a_customActionid;
        var customActionAddress = urlBase +
"/Main#/customaction/" + customActionId;
        try {
```

```
        formScope.videoTokBoxComp.closeCall();
      } catch (e) {
        console.log("Video didn't close: ", e);
      }
      ebs.goToUrl(customActionAddress);
    }
  }
 );
}
```

Example: On Refresh, Play a Sound If a New Item Was Added to the Queue

```
function reloadGrids(type) {
    //notify client on new queue item
    var grid = $("#allocatedCall" + type).dxDataGrid
("instance");
    if (!grid) {
        return;
    }

    var mostRecentItem = grid.getTopVisibleRowData();
    var localStorageKey = "topQueueItem";
    var audio = new Audio("custom/notification.mp3");

    updateStatusText();
    updateQueueText();

    if (
        $("#allocatedCall" + type).hasClass("dx-
widget") &&
        $("#currentQueueItems" + type).hasClass("dx-
widget")
    ) {
        reloadAll();
    }

    if (!(mostRecentItem && mostRecentItem.Q_FTOS_DFP_
QueueItemid)) {
        return;
    }
```

```
    var originalValue = localStorage.getItem
(localStorageKey);
    if (originalValue) {
        if (originalValue == mostRecentItem.Q_FTOS_DFP_
QueueItemid) {
            return;
        }

        localStorage.setItem(
            localStorageKey,
            mostRecentItem.Q_FTOS_DFP_QueueItemid
        );
        audio.play();
    } else {
        localStorage.setItem(
            localStorageKey,
            mostRecentItem.Q_FTOS_DFP_QueueItemid
        );
        audio.play();
    }
}
```

Video Streaming Settings

The Video Streaming settings are defined in JSON format as key-value pairs. The following settings are available:

Setting	JSON Key	Description
Workflow entity	SourceEntityName	Name of the entity on which you created the user journey.
Populated entity	DestinationEntityName	Name of the entity that is populated with the data returned by video streaming.
Name	SourceLookupDestinationName	Name of the SourceEntityName lookup key that points to DestinationEntityName. If they are the same entity, enter the primary key.
	use_EU_proxy	If set to True, video streaming is done through Vonage.

Setting	JSON Key	Description
	QueueParameters	Defines a video streaming queue. Select a video queue either by ParamName and values, ParamValue: • **ParamName** – the attribute from FTOS_DFP_QUEUE that will identify the process queue • **ParamValue** - the value stocked on the attribute above that will unique identify the queue For example, if you want to have all video calls in a queue, then the Queue Parameters will be VideoQ (or any other name). If you want to have video calls coming from a flow which has this automation processor, to be added to a VIPQ, then set the Queue Parameters VIPQ and the video calls will enter this queue instead of the generic one, which in this case is VideoQ.

Setting	JSON Key	Description
Redirect in case of success	maskNextStepUrlSuccess	Location in the user interface where the user is redirected after a successful video streaming process: • entity – Entity name. • form – Form name of the above entity. • section – Optional parameter for the section name of the above form. The section can be specified using the name of the section or the section's number. Example "section": "Personal Data" and "section": "1" are both valid.
Redirect in case of failure	maskNextStepUrlFail	Location in the user interface where the user is redirected If the process did not successfully pass: • entity – Entity name. • form – Form name of the above entity. • section – Optional parameter for the section name of the above form. The section can be specified using the name of the section or the section's number. Example "section": "Current Account" and "section": "4" are both valid.
Retain SDK logs	DisableLogSDKMessages **(Ecosystem SysPack 2.5.0 or later)**	Set this property to `true` if you do not wish to retain SDK logs.

Setting	JSON Key	Description
Log severity level	LogLevel **(Ecosystem SysPack 2.5.0 or later)**	Controls the minimum severity level for the logged messages. Set it to `error` to capture only SDK errors or to `debug` to include all SDK log messages.
Log browser details	DisableSaveBrowserDetails **(Ecosystem SysPack 2.5.0 or later)**	Set this property to `true` to prevent storage of user platform details in the FTOS_DFP_Logging entity.

> **HINT**
>
> The Video Streaming processor does not have mappings because the operator decides if the application is approved or not, not a value stored in an attribute in the source entity.

Examples

Video Streaming settings

```
{
        "DestinationEntityName": "FTOS_BNKAP_
RetailApplicantData",
        "SourceEntityName": "FTOS_BARET_AccountApplication",
        "SourceLookupDestinationName": "retailApplicantId",
        "maskNextStepURLSuccess": { "entity":"FTOS_BARET_
AccountApplication", "form": "FTOS_BARET_AccountApplication_
UserJourney", "section": "Contract " },
        "maskNextStepURLFail": { "entity":"FTOS_BARET_
AccountApplication", "form": "FTOS_BARET_AccountApplication_
UserJourney", "section": "Video Call Unsuccessful " },
        "QueueParameters":
            [
                {
                    "ParamName": "Name",
                    "ParamValue": "bankAgencyA"
                }
            ]
}
```

Adding Video Streaming to a Digital Journey

Using this micro-service in a form driven flow renders the trip to the branch redundant. A customer no longer has to go to a physical store to contract a service. By simply clicking on a icon to launch the journey, and during some point the user has a call with the operator to approve or reject the application. Follow the steps to integrate the automation processor into a flow:

1. In FintechOS Studio, create a custom journey to define a button to call the Video Streaming automation processor. For information on how to create a custom journey, see FintechOS Studio User Guide, section Custom Flows.

2. Go to the form driven journey or form step on which you want to add the button to call the Video Streaming automation processor. This is the "SourceEntityName" on page 268 you specified when configuring the automation processor's settings.

3. Click the **Advanced** tab.

4. Click the **After Events** tab (for Steps, it is displayed by default, being the only tab available).

5. In the JavaScript field, provide the following code to call the video streaming processor:

```javascript
// For Ecosystem SysPack 2.5.0 and later, use:
var dfpHelper = ebs.importClientScript('FTOS.ECOS.Utils');

// Prior to Ecosystem SysPack 2.5.0, use:
// var dfpHelper = ebs.importClientScript('FTOS.DFP');

//call VideoStreming component custom form
$(".<video streaming button name>").click(function() {
    var componentName = 'FTOS_DFP_VideoStreaming';

    //name of the component
    var recordId = ebs.getCurrentEntityId();

    var p = {};
    p.flowSettingsName = formData.FlowSettings;
    p.processorSettingsType = 'VideoStreaming';
    ebs.callActionByName("FTOS_DFP_
FlowProcessorSettingsByType", p, function(e)
    {
        var processorSettingsName =
e.UIResult.Data.ProcessorSettingsName;
        dfpHelper.loadComponent(componentName,
processorSettingsName, recordId, false);

    });
```

6. Click **Save and Close** to save your digital journey.

Test Connectivity

When the journey is initialized, a video test connectivity starts. The test runs for 30 seconds, so in case the operator starts the call before the test connectivity finishes, they will need to wait until the test ends. If you want to disable this feature, you can set the `DisableTestConnectivity` parameter to `True`. The messages displayed to the user are the following:

Message	Context
accessDenied	The user did not allow camera/microphone access. You will need to provide an image named "blocked-camera.jpg" or "blocked-microphone.jpg", and place it in the **/custom/assets** folder.
test-connectivity	This message is displayed during the connectivity test.

Message	Context
slow-internet	Message displayed if the internet connection is slow and video/audio may be interrupted.
video-recording	Message displayed if the video call is being recorded.

HINT

- If there are issues with the video call, a report is made immediately and the id of the report is saved in the `FTOS_DFP_VideoIssue` entity.

- Info about the client's browser is saved automatically in the `FTOS_DFP_Logging` entity. To disable this, simply comment the `saveBrowserDetails` function call.

- If you don't want to allow the user to control the microphone/camera devices and be able to turn them off, you can set the `DisableCameraSelection` parameter to True.
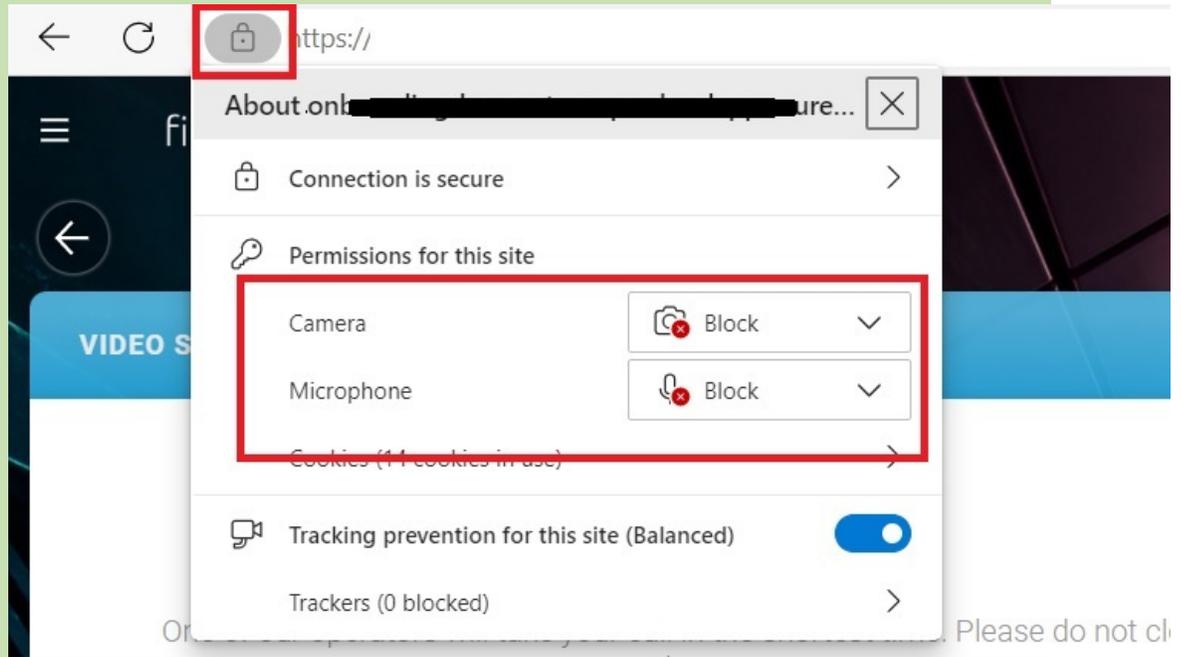
Operator Events

When the journey is initialized, a credentials request is sent. The Operator will see a counter until they get the credentials. If the credentials are not retrieved, a `Retry credentials` message will be shown, so the operator can retry to get them.

If the credentials are retrieved, a message is displayed to the operator and the `Start video` button is displayed. The credentials will be saved in the `FTOS_DFP_ QueueItem` entity, so in case the window is refreshed, the video can be restored.

The Operator can select the camera, microphone and speakers sources before starting the call. It is also possible for the operator to start video with the camera turned on.

Publisher/Subscriber Event

Events about video state, publisher and subscriber can be displayed, so the operator is warned about a potential problem:

```
formScope.videoTokBoxComp.events.addEventListener(
    "publisherChange",
    function (event) {
      if (document.getElementById("publisher-status")) {
        document.getElementById("publisher-
status").innerHTML =
          event.detail.message;
      }
    }
  );

formScope.videoTokBoxComp.events.addEventListener(
    "subscriberChange",
    function (event) {
      if (document.getElementById("subscriber-status")) {
        document.getElementById("subscriber-
status").innerHTML =
          event.detail.message;
      }
    }
  );
```

Archive Event

There is an state event that is emitted when the archive starts, so you can save the `archiveId` using this event:

```
formScope.videoTokBoxComp.events.addEventListener(
    "stateChange",
    function (event) {
      console.log(event.detail);
```

```
        if (event.detail.value === 10 &&
formScope.queueItemId) {
            // archive started
            var archiveStoreEntity = {
                name: "FTOS_DFP_QueueItem",
                id: formScope.queueItemId,
                archiveId: event.detail.id,
                archiveAttr: "archiveId",
            };
            ebs
                .callActionByNameAsync(
                    "FTOS_DFP_VideoStreaming_GetArchives",
                    archiveStoreEntity
                )
                .then(function () {
                    console.log("archive id added",
archiveStoreEntity);
                });
        }
        if (document.getElementById("state-status")) {
            document.getElementById("state-status").innerHTML +=
                "<br/>" + event.detail.message;
        }
    }
  );
```

Slow Connection Event

When internet connection is very slow, you can display a message to the operator:

```
formScope.videoTokBoxComp.events.addEventListener(
    "subscriberStats",
    (event) => {
        console.log("subscriberStats: ", event.detail);
        if (event.detail.video) {
            document.getElementById("slow-internet").hidden =
                event.detail.video.supported;
        }
    }
  );
```

Co-browsing

Co-browsing (also known as collaborative browsing) is a technology that allows peer-to-peer communication between two browsers and delivers instant contextual communication.

Co-browsing could be used in a number of digital journeys, both for banking and insurance use cases:

- Customer onboarding;

- Loan application;

- Mortgages;

- Compliance related processes;

- Claims handling and many more.

With Co-browsing, customers and operators can interact in real-time, streamlining an in-person experience. Operators can see the customers' screens in real-time and guide them remotely though forms, transactions, and processes by either highlighting relevant areas on the customers' screens or by taking control of the customers' web sessions and performing actions on behalf of the customers (if the customer allows it).

Co-browsing uses WebRTC (Web Real Time), an open framework for the web that enables Real-Time Communications (RTC) capabilities in the browser. This provides a 100% web-based experience that requires no downloads, installations, or plugins. For additional information on system requirements for components that use WebRTC (Web Real Time), see the System Requirements page from the Administration Guide.

FintechOS enables you to add Co-browsing to your digital journeys allowing you to connect operators and customers in real-time. This increases operators' efficiency by reducing call-handling time and provides faster customer service, enhanced customer satisfaction, and improved business performance.

Features

- **Enhanced User Experience**. High quality and scalable video communications for your FintechOS web and mobile applications;

- **Quality of Service**. Dynamically prioritize audio traffic over video on slow network connections;

- **Adaptive Layout**. Adapt stream layout and display based on audio detection;

- **Browser sharing in real time**. Operators and customers share their active web session while in a video call;

- **Visual drawing tool**. Operators can highlight a specific area on the customer's screen to instantly point the customer to specific actions;

- **Chat**. Customer and operator can interact via text messages;

- **Control switching**. The leader or the participant(s) can take control or request control of the session in seconds, and aid the other call participant by navigating on the screen in real-time.

Security

Secure Co-browsing sessions are important, especially when taking into account that personal data is exchanged in banking or insurance digital journeys. The FintechOS Co-browsing capability ensures data protection and security:

- **Data in transit is encrypted**. Co-browsing sessions use HTTPS connections, SHA-256 SSL certificate and AES 128-bit encryption to protect sensitive data in transit.

- **No data is stored**. FintechOS does not store Co-browsing session data. The data lives in the memory during the Co-browsing session.

- **Behavior control.** The customer controls the operator's permissions.

- **Isolated control.** The person who controls the session can restrict other participants' access to session secrets by using elements removal options.

- **Data Privacy.** Sensitive customer data is protected using field masking. The fields containing customer sensitive data are obfuscated, not shown in plain text to the operators and other session participants (if any were invited).

- **White/Black Listing**. Allow or deny access and privileges to specific members.

- **Action audit**. Track all actions performed during the Co-browsing session.

Installing Co-browsing

1 Install the SysPacks

1. Download the **SySDigitalSolutionPackages.zip** archive.

2. Unzip the archive and follow the instructions from the SysPacks Installation page.

> **NOTE** Make sure the following packages are deployed:
>
> - 10_01 FTOS Cognitive Processor OperatorDM - v20.2.11x1
>
> - 10_02 FTOS Cognitive Processor OperatorScripts - 20.2.11x1
>
> - 100 DFP Common Scripts - 21.2.11x0
>
> Also, make sure that the DCS vault for Co-browsing has been configured to accommodate your FTOS instance and install the latest *dcs-sdk* vanilla.

> **NOTE** We recommend that you load *sdk/dcs-cobrowsing-component.js* and *sdk/dcs-cobrowsing-component.js.map* by placing them in the ***custom-on-demand*** folder, and import them using the **injectScriptAsync** method. See example below:

```
if (window.CobrowsingComponent == undefined) {
    var slash = ebs.getBaseUrl().slice(-1) === "/" ? "" : "/";
    await ebs.injectScriptAsync(
      ebs.getBaseUrl() +
        slash +
        "custom-on-demand/components/dcs-cobrowsing-component.js"
    );
}
```

2 Set up the Co-browsing Service Subscription Key

In order to configure the processors to make the requests correctly to DCS, you must add in web.config / FTOS Vault (Portal / B2C - depending where the server side script is executing) the following keys:

Key Path	Key	Value
kv/<environment>/<FintechOS Portal instance>/app-settings	FTOSServiceCobrowsingEndpoint	DCS web app endpoint URL provided by FintechOS.
kv/<environment>/<FintechOS Portal instance>/app-settings	FTOSServicesCobrowsingAppId	ID for the Surfly Co-browsing service subscription.
kv/<environment>/<FintechOS Portal instance>/app-settings	FTOSServicesCobrowsingSubscription Key	Subscription key for the Surfly Co-browsing service.
kv/<environment>/<Fintech OS Portal instance>/app-settings	FTOSServicesCobrowsingenable Mock	Optional and *false* by default. Set this to *true* and the processor will use mock functionalities starting with Syspack 22.1.4003.

> **IMPORTANT!**
> Make sure that the Vault configurations are done and that the webhook is created
> (see Getting Status Changes Notifications Using Webhooks).

The configuration required by Co-browsing consists of the following:

- Serilog Configurations

- EbsSqlServer: Connection string pointing to the database where configurations are stored.

To correctly identify the sub-account configuration, Co-browsing requires an extra configuration to be made. This helps retrieve the Surfly Api Key based on the subscription key. For this, an entry in the FintechOS management instance, the ApiKeyRelation entity has to be edited accordingly, similar to the image below:

Field	Description
ApiTypeId	The ID type. It needs to be Cobrowsing.
Name	The name given session name. Must be unique.
SubscriptionKey	Represent the display name of the given subscription key. Must be different from Name.
ApiKey	The API key to be sent to the Co-browsing session.

3 Set up the Processor Settings

Configure the following **ProcessorSetting**:

```
{
```

```
    "CustomUI": "",
    "SourceEntityName": "FTOS_BARET_AccountApplication",
    "QueueParameters": [
        {
            "ParamName": "Name",
            "ParamValue": "VideoQueue",
        }
    ]
}
```

- SourceEntityName is the entity from which the Co-browsing session is initiated.

- QueueParameters, the ParamValue is the queue value item of the Co-browsing session.

In the exposed journey, on the steps where you'd like to expose start sessions, add the following snippet of code in the *After-generate* section of the step (note that you need to add a button with the id cobrowsingButton inside the UI editor as well):

```
if (typeof dcs !== 'undefined'){
    var loggingService =
dcs.common.EventsCommunicationService.getInstance();
    loggingService.listenForEvents(saveSDKLogs);
}

if(typeof(__surfly) == 'undefined'){
    var csl = ebs.importClientScript("FTOS.DFP.Cobrowsing")
    console.log("sessionStorage.B2CSessionIdParam",
sessionStorage.B2CSessionIdParam);
    $("#cobrowsingButton").on("click", function() {
        csl.createCobrowsingSessionEvent(
            {
                id: formData.id,
                entityName: formData.entityName,
                entityId: formData.entityId,
                formName: formData.formName,
                pageNo: formData.pageNo
            },
            window.location,
            sessionStorage.B2CSessionIdParam,
            {
                settings: {
                    recordId: formData.model.FTOS_Test_
Processorsid,
```

```
                        ProcessorSettings: "Test_Processor_
    CobrowsingSettings"
                    }
                }
            )
        })
    }
    else {
        $("#cobrowsingButton").hide();

    }

    function saveSDKLogs(data){
        // save browser info in entity
        if (data.load.message === 'Cobrowsing was initiated with
    success.'){
            // save browser info in entity: send correct id
            data.id = formData.model.FTOS_Test_Processorsid;
            ebs.callActionByName("FTOS_DFP_SaveInfo_Endpoint", data);
        }
        // set logLevel to "error" to log only errors
        var logLevel = "debug";
        if (data.load.type !== 'error' && logLevel === 'error') {
            return;
        };
        ebs.callActionByName("FTOS_DFP_SDK_Log_Endpoint", data);
    }
```

Co-browsing Streaming Flow

Co-browsing is the continuous transmission of video content between a customer and a server. The customer can start a Co-browsing session with a bank consultant or call center operator, receive real-time assistance during onboarding journeys by browsing and filling out information together with the consultant or operator.

Find below the Co-browsing streaming flow:

1. The customer initiates a Co-browsing session.

2. The FintechOS gateway sends instructions to the Co-browsing Service to create a Co-browsing session.

3. The Co-browsing Service creates a session and sends the session ID back to the FintechOS gateway.

4. The FintechOS gateway creates a unique token and sends the session information to the FintechOS Portal and the customer is added to the queue.

5. When an operator picks up the customer's session from the queue, the FintechOS gateway sends the session ID and token to the customer.

6. The customer uses the token to connect to the session.

7. The Co-browsing session starts and the participants (customer and operator) can start interacting in real-time.

Example

Let's take an example of an loan origination journey. The customer, John launched the journey on his laptop at home. After going through several steps, including identity verification, John now needs to choose the best loan offer for him. However, John needs help with picking an offer. John follows the next steps:

1. From the customer journey, John initiates a Co-browsing request.

2. The bank operator picks up the Co-browsing call from the queue.

3. The bank operator then clicks **Take call** to join the Co-browsing session.

During the session, John can add more users to the session, like his wife if he decides to add a coborrower to the journey. John can also switch control to the bank operator, thus allowing them to assist by explaining each options available in the flow's step.

When given control, the bank operator gets the same permissions as the customer.

With real-time assistance from a bank operator, the customer is able to get all the information they need and complete the journey in good time.

Adding Co-browsing to a Digital Journey

The Co-browsing automation block can be added at any step of the customer journey. Follow the steps below to integrate it in a flow:

1. In FintechOS Studio, create a custom journey to define a button to call the Co-browsing automation block. For information on how to create a custom journey, section Custom Flows.

2. Go to the form driven form or step on which you want to add the button to call the Co-browsing automation block. Note that you need to add a button with the id "cobrowsingButton" inside the UI editor as well.

3. Click the **Advanced** tab.

4. Click the **After Events** tab (for Steps, it is displayed by default, being the only tab available).

5. In the JavaScript field, provide the following code to call the Co-browsing processor:

```javascript
if (typeof dcs !== 'undefined'){
    var loggingService =
dcs.common.EventsCommunicationService.getInstance();
    loggingService.listenForEvents(saveSDKLogs);
}

if(typeof(__surfly) == 'undefined'){
    var csl = ebs.importClientScript("FTOS.DFP.Cobrowsing")
    console.log("sessionStorage.B2CSessionIdParam",
sessionStorage.B2CSessionIdParam);
    $("#cobrowsingButton").on("click", function() {
        csl.createCobrowsingSessionEvent(
            {
                id: formData.id,
                entityName: formData.entityName,
                entityId: formData.entityId,
                formName: formData.formName,
                pageNo: formData.pageNo
            },
            window.location,
            sessionStorage.B2CSessionIdParam,
            {
                settings: {
                    recordId: formData.model.FTOS_Test_
Processorsid,
                    ProcessorSettings: "Test_Processor_
CobrowsingSettings"
                }
            }
        )
    })
}
else {
    $("#cobrowsingButton").hide();

}

function saveSDKLogs(data){
    // save browser info in entity
    if (data.load.message === 'Cobrowsing was initiated with
success.'){
        // save browser info in entity: send correct id
        data.id = formData.model.FTOS_Test_Processorsid;
```

```
        ebs.callActionByName("FTOS_DFP_SaveInfo_Endpoint",
data);
    }
    // set logLevel to "error" to log only errors
    var logLevel = "debug";
    if (data.load.type !== 'error' && logLevel === 'error') {
        return;
    };
    ebs.callActionByName("FTOS_DFP_SDK_Log_Endpoint", data);
}
```

6. Click **Save and Close** to save your digital journey.

> **IMPORTANT!**
>
> - If the journey contains multiple processors, if the Co-browsing session is closed in a step including a processor, then the flow is automatically redirected to the first step containing a processor.
>
> - After the Co-browsing session ends, the user needs to be redirected to the step in which the session was closed. For this, the journey needs to have a Business Workflow behind it, as well as a custom code for redirecting.

Troubleshooting

- if `ebs.importClientScript` does not load in a B2C environment and you get the following error message: "clientScriptLibray not found: FTOS.DFP.Cobrowsing", then use the following workaround:

    - On the form driven flow entity call `"formScope.csl = ebs.importClientScript("FTOS.DFP.Cobrowsing"`.

    - On the button, instead of "`csl.createCobrowsingSessionEvent`" call "`formScope.csl.createCobrowsingSessionEvent`".

- for *recordid*, instead of `formData.model.myAccountApplicationid`, you must add the Id of the entity used for launching the Co-browsing session. The following can also be used: `recordId: ebs.getCurrentEntityId()`.

- `ProcessorSettings` value is the name of the file configured after installation here.

- In the `FTOS.DFP.Cobrowsing` client script library, at the `buildURLFromFormData` and `buildURLFromCustomAction` functions, for obtaining the URL you must take into account if the `location.host` has proxy or not. The initial code is:

```
location.protocol +
            "//" +
            location.host +
            "/Main" +
            continueToUrl;
```

If the environment's URL contains "proxy" or "b2cproxy", then the following must be added:

```
continueToUrl = location.protocol +
            "//" +
            location.host +
            "/proxy/Main" +
            continueToUrl;
// or
continueToUrl = location.protocol +
            "//" +
            location.host +
            "/b2cproxy/Main" +
            continueToUrl;
```

- On the environment, the IPs obtained from this URL must be whitelisted.

Document Signing

Electronic signature or e-signature technology acts as a replacement for handwritten signatures indicating the customer's acceptance of any official document. Using a qualified electronic signature, you are able to verify the authorship of a declaration in electronic data exchange over long periods of time.

The eSign component enables you to identify the person who signed the document and verify that no one tampered with the contents of the document. In addition, you can add the Digital Documents Processor to you digital journey to automatically generate customized contracts and agreements, or other essential business documents.

eSign Processor

An electronic signature enables you to identify the person who signed the document and verify that no one tampered with the contents of the document. It is an electronic indication of a person's intent to agree to the content of a document or a set of data to which the signature relates.

Using a qualified electronic signature, that is an electronic signature compliant to the eIDAS Regulation, you are able to verify the authorship of a declaration in electronic data exchange over long periods of time.

A qualified electronic signature ensures that:

- the data in electronic form is attached to or logically associated with electronic data and is used by the signatory to sign

- it is uniquely linked to and capable of identifying the signatory

- it is created in a way that allows the signatory to retain control

- it is linked to the document in a way that any subsequent change of the data is detectable

- it is created by a qualified signature creation device

- is based on a qualified certificate for electronic signatures.
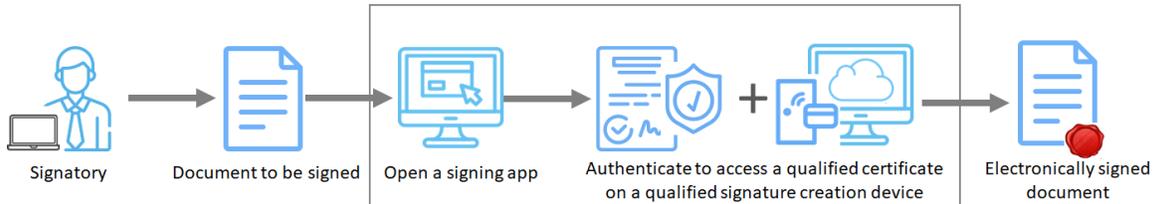
Signature creation devices, either physicality owned by signatory (smartcards, SIM cards) or remote (managed by providers), protect the electronic signature creation data of the signatory. The qualified certificates and cryptographic keys for electronic signatures are provided by providers which have been granted a qualified status by a national competent authority.

You can use the eSign processor with qualified electronic signature providers.

Every time a signature is captured, a digital signature is also applied, which turns the document into a sealed, tamper-evident PDF. This tamper evidence begins when the document is initialized and maintained through document completion.

The figure below presents a high level overview of eSign architecture:
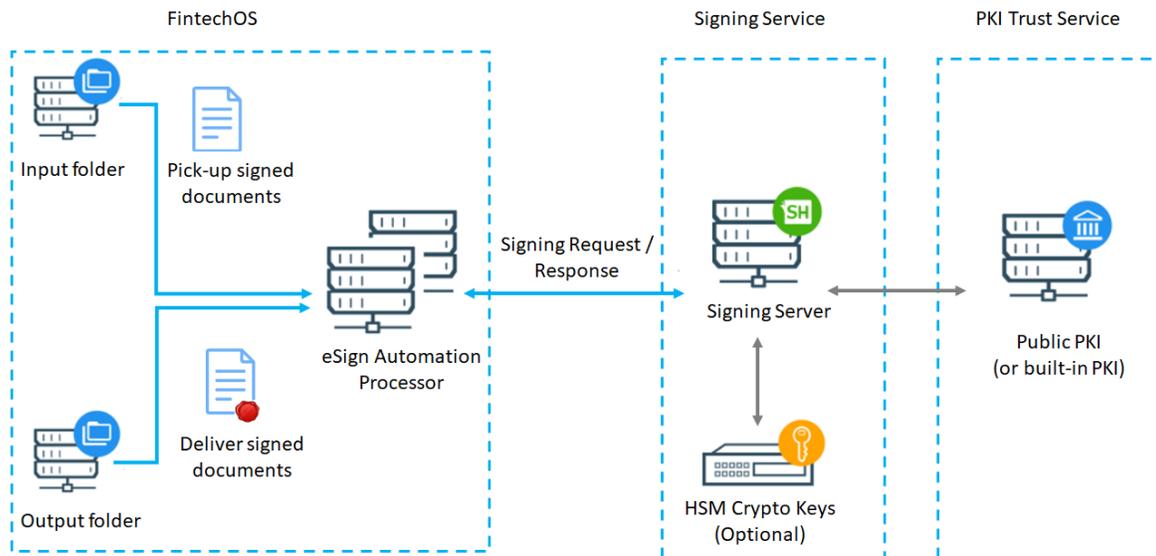
eSign Automation Processor Features

- Remote e-signing

- Image signature with Click-, Type-, or Draw-to-Sign

- Real-Time identification of the signatory

- Disposable certificates (valid for 60 min)

- Base64 signed files encoding

- Detailed audit trail of who signed the document and when, including all transactions
  and events performed on the document, emails and notifications sent

- Tracking the status of your signature requests

- Download envelope log.

Applications

eSign can be used to simplify paper-driven financial or insurance processes, such as:

- Customer onboarding

- Account opening

- Loan applications

- Compliance related processes

- Claims handling

Installing eSign

Install Server Configuration

First, make sure you have the right application dependencies installed and configured.

In order to configure the processors to make the requests correctly to DCS, you must add in web.config / FTOS Vault (Portal / B2C - depending where the server side script is executing) the following keys:

```
<add key="FTOSServicesESignEndpoint" value="get-the-url-from-
portal"/>
<add key="FTOSServicesESignAppId" value="the subscription key"/>
<add key="DDMESawToken" value="ApiToken"/>
```

Install Application Configuration

Log in to FintechOS Studio:

1 Import Packs

Import in Deployment Package the packs from the Pack received. The **08 eSign_ Processor - vxx.x.xxxx.zip** pack contains the services configuration model and scripts for ESign.

2 Modify data

Import the **Pkg08_ESignProcessor_01_FlowSetting_Example_vx.x.xml.zip** from

..\02 ConfigurationDataDeploymentPackages form **DevOps -> Configuration data deployment package**.

Log in to FintechOS Studio:

> **IMPORTANT!**
>
> For version smaller than v21.1.x, the Flow Settings menu is in the FintechOS Portal: **Digital Flow Processing** -> **Flow Settings**.

3 ESign Configuration

For the configuration of Automation Blocks, select **Digital Flow Processing > Flow Settings**.

In the "Example Flow Setting Esign" you can find an eSign setting and mapping examples. You can copy the examples and modify them.

Processor Settings fields

Settings

Key	Settings
DestinationEntityName	Name of the destination entity.
SourceEntity Name	Name of the source entity; Needed only if the Face Recognition process starts from an edit form; if so, the entity name is needed to update the business status after the Face Recognition process ends.
SourceLookpDestination	Name of the lookup key from SourceEntityName that points to DestinationEntityName.
fileAttributeName	The name of the attribute on the entity which will store the file to be signed.
MaxRetry	The maximum number of signing attempts.
signedDocumentName	The name of the attribute which will store the signed file.
"WebhookUrl"	"Getting Status Changes Notifications Using Webhooks" on page 317
"WebhookStatusUrl"	"Getting Status Changes Notifications Using Webhooks" on page 317
order	The order of the signatures from the workflow. They can be sent in parallel.
signatureTag	The tag from the pdf that will be replaced with the signature field, E.g.: "#esaw#"
signatureTypeTemplate	The signature type. This setting cannot be null, but can be an empty string if there is no specific signature type required.
fileToBeSignedName	The name of the file that needs to be signed.

Key	Settings
signatureType	The type of the signature: • QualifiedElectronicSign • Click2Sign • AutomaticSign • OTPSign • NoSign • RemoteSign.
ClearSignatureString	• True - The signature string is cleared after a signature is applied. Implies changing the initial file which can cause issues with a document that has already been signed before the signing flow began. • False - Keeps the initial signature string.

automaticProfile	```{ "attributeKey":"YourAttribute" }```
	
	OR
	
	```{ "attributeKey": null }```
	
	- See details here " 5 ESign Configuration for Automatic Signature Profile" on page 299

OTP_SMS_S howNoInSignature	true : will display the phone number on the signature. false : will not display the phone number on the signature.
languageCode	The code of the language used for the signature.

Key	Settings
email	The email address of the person that will sign.
phoneMobile	The Phone Number of the person that will sign. - If set, the signature won't ask for your phone number, will send the OTP to this number. - If not set (send null or does not exist in list), the recipient will be asked to enter the phone number where the OTP will be sent.
firstName	The first name of the person that will sign.
lastName	The last name of the person that will sign.
countryResidence	The country code where the customer has residence. Not mandatory for OTP Sign.
documentType	The type of document used for signing ("CI") . Not mandatory for OTP Sign.
documentIssuedBy	The institution that issued the ID/ Pass. Not mandatory for OTP Sign.
socialSecurityNumber	The Social Security Number of the client. Not mandatory for OTP Sign.
documentExpiryDate	The expiration date of the ID/ Pass. Not mandatory for OTP Sign.
documentIssuedOn	The issue date of the ID/ Pass. Not mandatory for OTP Sign.
documentNumber	The document number of the ID. Not mandatory for OTP Sign.
smsText	The text that the client will receive. Not mandatory for OTP Sign.
clickMsg	The message displayed to the person responsible with signing the document. Not mandatory for OTP Sign.
maskNextStepURLSuccess	Information used to create the link loaded after the Face Recognition process ends successfully.
entity	Entity name.
form	Form name.
section	Optional field, can be either the section number or the section name.
maskNextStepURLFail	Information used to create the link loaded after the OCR process ends with errors.
entity	Entity name.
form	Form name.

Key	Settings
section	Optional field, can be either the section number or the section name.
businessStatusSuccess	Business status name applied to SourceEntity if Face Recognition process ends successfully; Needed only if the Face Recognition process runs on form in edit mode.
businessStatusFail	Business status name applied to SourceEntity if Face Recognition process ends with errors; Needed only if the Face Recognition process runs on form in edit mode.

Mappings

Key	Settings
FileAttributeName	
Map	Area of actual mappings.
key	Name of the field as received from Face Recognition Process.
value	Name of the field as declared in the entity where the result is saved.

ESign Load component examples

Example Flow Setting: Javascript code - After Events:

```javascript
// For Ecosystem SysPack 2.5.0 and later, use:
var dfpHelper = ebs.importClientScript('FTOS.ECOS.Utils');

// Prior to Ecosystem SysPack 2.5.0, use:
// var dfpHelper = ebs.importClientScript('FTOS.DFP');

var componentName = "FTOS_DFP_ESign"; //name of the
component
var recordId = ebs.getCurrentEntityId();
var fileExists = true; //"documentToBeSigned" argument =
source entity file attribute

var flowSettingsName = formData.FlowSettings;

var p = {};
p.flowSettingsName = formData.FlowSettings;
p.processorSettingsType = 'ESign';
p.processorSettingsName = 'ESign_Example';
```

```
ebs.callActionByName("FTOS_DFP_FlowProcessorSettingsByType",
p, function(e)
    {
        var processorSettingsId =
e.UIResult.Data.ProcessorSettingsId;
        dfpHelper.loadComponent(componentName,
processorSettingsId, recordId, fileExists);
    });
```

NOTE

The Result of ESign execution will be saved in this entity: **FTOS_DFP_ESign**.

4 ESign Download Configuration

For the configuration of Esign, select **Digital Flow Processing -> Flow Settings**.

In "Example Flow Setting Esign" you can find a Esign setting and mapping examples. You can copy the examples and modify them.

Processor Settings fields

Settings

Key	Settings
EntityName	The entity that will have the file saved to.
ESignFlowSettingName	The name of the Flow Setting used to host the processor for the eSign request.
ESignProcessorName	The name of the processor setting used to send sign request.
maskNextStepURLSuccess	`{ "entity":"NemOf entity", "form": "Name of UserJourney", "section": "NameOfSuccessSection" },` The step that will be deisplayed if the download is successful.

Key	Settings
maskNextStepURLFail	{ "entity":"NemOf entity", "form": "Name of UserJourney", "section": "NameOfailSection" }, The step that will be displayed if the download has failed.

Mappings

Key	Settings
DownloadFilesMapping	The list of the files that will be downloaded.
FileAttributeName	Where will the file be downloaded to, the name of the attribute.
FileName	The name that will the downloaded file will have after download.

ESign Load component examples

Example Flow Setting: Javascript code - After Events:

```
// For Ecosystem SysPack 2.5.0 and later, use:
var dfpHelper = ebs.importClientScript('FTOS.ECOS.Utils');

// Prior to Ecosystem SysPack 2.5.0, use:
// var dfpHelper = ebs.importClientScript('FTOS.DFP');

var componentName = "FTOS_DFP_ESign_Download"; //name of the
component
var recordId = ebs.getCurrentEntityId();
var fileExists = true;

var flowSettingsName = formData.FlowSettings;
var p = {};
p.flowSettingsName = formData.FlowSettings;
p.processorSettingsType = 'ESign';
```

```
var businessStatusName = ebs.getFormData
().model.businessStatus.name;

if (businessStatusName == "Documents Signed") {
    p.processorSettingsName = 'ESign_Download_Documents';
}
else if (businessStatusName == "Contract Signed") {
    p.processorSettingsName = 'ESign_Download_Documents';
}
console.log("p.processorSettingsName "+
p.processorSettingsName);
if (p.processorSettingsName) {
    ebs.callActionByName("FTOS_DFP_
FlowProcessorSettingsByType", p, function (e) {
        var processorSettingsId =
e.UIResult.Data.ProcessorSettingsId;
        dfpHelper.loadComponent(componentName,
processorSettingsId, recordId, fileExists);
    });
}
```

5 ESign Configuration for Automatic Signature Profile

The automatic signature has a key value that must be set, this key value is the form the Namirial Account that has activated the automatic signature option.

This key value is inserted in the table: **FTOS_DFP_ESignKey**

Name and Key Type are not relevant for the flow to work, but will help you organize your records.

The most important attribute is **Key Value** and is the value described above.

The key is provided by Namirial when you configure the **Automatic Remote Signature Profiles**. More than one profiles can be set, depending on the needs.

Auto Profile Case 1

If there is only one automatic profile set in Namirial, then you can fill in only the **Name** and **Key Value** for that profile.

In The Processor Setting field the configuration will look like this:

```
"signatureType":"AutomaticSign",
        "automaticProfile":{
            "attributeKey":""
        }
```

Auto Profile Case 2

If there is more than one automatic profile set in Namirial then we will fill in all fields **Name**, **Key Record Id** and **Key Value** for that profile. The Key type is for you to fill in to know from where that Key Record Id is from. (e.g. In the **Key Type** you can fill in **systemuser** if the Key Record Id is the id of the user).

In The Processor Setting field the configuration will look like this:

```
"signatureType":"AutomaticSign",
        "automaticProfile":{
            "attributeKey":"userId"
        }
```

For example:

If you have more users from FintechOS with the right to sign automatically, then the configuration is like this:

userId: will be then name of the attribute from your entity that stores the userid from FintechOS.

In **FTOS_DFP_ESignKey**, the **Key record id** will be the id of the **userid** form the **systemuser** table.

Auto Profile Case 3

You can set other tables (e.g. **CustomProfileTable**) for your profiles, apart from systemuser. This means that the **Key record id** will be the id from the record form that table, and **yourAttribute_From_EntityName:** will be the name of the attribute from your entity that stores the Record ID from the table created.

(In the Key Type you can fill in **CustomProfileTable**)

Example:

```
"signatureType":"AutomaticSign",
        "automaticProfile":{
            "attributeKey":"yourAttribute_From_EntityName"
        }
```

yourAttribute_From_EntityName= CustomProfileTableId (the lookup from your entity to the CustomProfileTable for example or just an attribute that stores that RecordId).

This way the system will know witch Automatic Profile to use to sign.

Upgrade Application Configuration

1 Import Again Packs

Import in **Deployment Package** the packs from the Pack received.

2 Modify data

> **IMPORTANT!** |
> Using the example, please adapt your processors settings with the new structure found in the new examples.

The **Pkg08_ESignProcessor_01_FlowSetting_Example_v1.0.xml.zip** from **..\02 ConfigurationDataDeploymentPackages** from **DevOps** -> **Configuration data deployment package**.

Setting Up an eSign Automation Processor

The list of available signatures are:

- qualified electronic signature

- automatic signature

- OTP

- Click2Sign

- RemoteSign.

1 . Create a digital flow processing settings group

The Automation Blocks automation processor must be hosted inside a flow settings group. A flow settings group can include multiple automation processors and is typically used as a container for the automation processors called by a specific digital journey.

If you already have a flow settings group you wish to host your eSign automation processor, skip to " 2 . Add the eSign automation processor to a generic processor settings group" on the next page. Otherwise, follow the instructions below to create a new flow settings group:

1. In FintechOS Portal, click the main menu icon at the top left corner.

2. In the main menu, select **Digital Flow Processing**.

3. Click **Flowr Settings**.

4. In the Flow Settings List page, click the **Insert** button at the top right corner to add a new flow settings group.

5. In the Add Flow Settings window, enter a **Name** for your flow settings group.

6. Click the **Save and Close** button at the top right corner to save your flow settings group.

2. Add the eSign automation processor to a generic processor settings group

1. In FintechOS Studio, click the main menu icon at the top left corner.

2. In the main menu, select **Digital Flow Processing**.

3. Click **Flowr Settings**.

4. In the Flow Settings List page, double click the flow settings group you wish to host your automation processor.

5. In the Edit Flow Setting window, under the Processor Settings section, click the **Insert** button to add a new automation processor.

The Add Processor Settings page appears. In this page, configure the video streaming automation processor settings as described in the next step.

3. Configure the automation processor's settings

1. In the **Add Processor Settings** screen, fill in the following fields:

   - Name – Enter a name for your automation processor

   - Digital Processor Type – Select **Electronic Signature**.

   - Settings – JSON code for the automation processor's settings. For details, see "eSign Settings" below.

   - Mapping – JSON code for the automation processor's mappings. For details, see "eSign Mappings" on page 308.

2. Click the **Save and Close** button at the top right corner to save your automation processor.

eSign Settings

The eSign settings are defined in JSON format as key-value pairs. The following settings are available:

JSON Key	Description
SourceEntityName	The entity associated with the business workflow (digital journey) that calls the ESign process. Needed only if the ESign process is used on an edit form (to alter an existing record) to update the workflow entity's business status after the signing (see "businessStatusSuccess" on page 307 and "businessStatusFail" on page 307).
DestinationEntityName	The name of the entity on which the E-sign results are mapped.
SourceLookupDestinationName	The name of the SourceEntityName lookup key that points to DestinationEntityName. This is the source entity of the user journey from which the automation processor gathers data. If they are the same entity, enter the primary key.
fileAttributeName	The name of the attribute on the entity which will store the file to be signed.
maxRetry	The maximum number of signing attempts. If this number of failed signing attempts is reached, the user will be redirected according to the specifications in the "maskNextStepUrlFail" on page 307.
SignedDocumentName	The name of the attribute which will store the signed file.
order	The order of the signatures from the workflow. They can be sent in parallel.
signatureTag	Marks the place where the signature will be done in the PDF file. It is a tag within the document to be signed on which customers will click to sign.
signatureTypeTemplate	The signature type. This setting cannot be null, but can be an empty string if there is no specific signature type required.
checkCertificate	Checks whether or not the client has a valid certificate.
fileToBeSignedName	The name of the file that has to be signed.

JSON Key	Description
languageCode	The code of the language used for the signature. For information on how to add a new language, see the FintechOS Studio User Guide, section *Adding New Languages*.
email	The attribute that stores the email provided by the customer. The email address of the customer where the document to be signed will be sent to.
phoneMobile	The attribute which stores the phone number provided by the customer. It is the phone number that will receive the "textMessage" provided in the "eSign Settings" on page 303 attribute.
prefixPhoneMobile	The attribute that stores the country prefix of the mobile phone number provided by the customer.
firstName	First Name of the customer.
lastName	Last Name of the customer.
countryResidence	The attribute which stores the country code where the customer has residence.
documentType	The type of the document processed by the OCR processor if customer data has been gathered using an OCR automation processor.
documentIssuedBy	Country/ Institution that issued the document.
socialSecurityNumber	The name of the attribute that maps the customer's social security number. For example, CNP for Romania and SSN for other countries. If on an entity, this info is stored in an attribute called PIN, then put PIN here.
documentExpiryDate	The name of the attribute which stores the expiration date of the contract.
documentIssuedOn	The name of the attribute which stores date when the document to be signed is issued.
documentNumber	The name of the attribute which stores the number of the identity document.

JSON Key	Description
smsConfiguration	The name of attribute that stores the text that is sent to the specified mobile phone number. Supported only for Qualified Electronig Signature & OTP Signature types. • Text: the text body to be sent. - for QES it needs to contain the `{tId}` parameter placed inside the text message. When sent, it is replaced with transaction ID. - for OTP it needs to contain the `{tId}` and the `{Token}` parameters placed inside the text message. When sent, they are replaced with the corresponding transaction ID and Token value. • LanguageCode: The language code corresponding to the `SignatureSteps`.
clickMsg	The name of the attribute that stores the message displayed to the person that is responsible to sign the document.
maskNextStepUrlSuccess	Location in the user interface where the user is redirected after a successful scan. • entity – Entity name. • form – Form name of the above entity. • step – Optional parameter for the step name of the above form. The step can be specified using the name of the step or the step's number. Example "step": "Personal Data" and "step": "1" are both valid.

JSON Key	Description
maskNextStepUrlFail	Location in the user interface where the user is redirected after the maximum number of failed scan attempts (see "maxRetry" on page 304). • entity – Entity name. • form – Form name of the above entity. • step – Optional parameter for the step name of the above form. The step can be specified using the name of the step or the step's number. Example "step": "Personal Data" and "step": "1" are both valid.
businessStatusSuccess	Indicates that the contract has been signed.
businessStatusFail	Indicates that the contract has been rejected.
DisableLogSDKMessages **(Ecosystem SysPack 2.5.0 or later)**	Set this property to `true` if you do not wish to retain SDK logs.
LogLevel **(Ecosystem SysPack 2.5.0 or later)**	Controls the minimum severity level for the logged messages. Set it to `error` to capture only SDK errors or to `debug` to include all SDK log messages.
DisableSaveBrowserDetails **(Ecosystem SysPack 2.5.0 or later)**	Set this property to `true` to prevent storage of user platform details in the FTOS_DFP_Logging entity.

Examples

eSign settings

```
{
        "DestinationEntityName": "FTOS_BNKAP_
RetailApplicantData",
        "SourceEntityName": "FTOS_BARET_AccountApplication",
        "SourceLookupDestinationName": "retailApplicantId",
        "FileAttributeName": "contract",
        "fileToBeSignedName": "esign.pdf",
        "MaxRetry": 3,
        "signedDocumentName": "signedContract",
        "SignatureSteps": [{
          "order": "1",
          "signatureTag": "#esaw#",
          "signatureTypeTemplate": "",
          "SignatureData": [{
            "languageCode":"EN",
```

```
            "email": "email",
            "phoneMobile": "mobilePhone",
            "firstName": "firstName",
            "lastName": "lastName",
            "countryResidence": "RO",
            "documentType":"CI",
            "documentIssuedBy":"IdIssueInstitution",
            "socialSecurityNumber": "PIN",
            "documentExpiryDate": "IdExpirationDate",
            "documentIssuedOn": "IdIssueDate",
            "documentNumber": "IdCardSeries",
            "OverrideHolderMismatch": true/false,
        }],
        "smsConfiguration": { "Text": "your text goes
    here, to sign transaction {tId} use the following code: ",
    "LanguageCode": "" // RO, EN }
            "clickMsg": "Click here to sign",
        }],
        "maskNextStepURLSuccess": { "entity":"FTOS_BARET_
    AccountApplication", "form": "FTOS_BARET_AccountApplication_
    UserJourney", "section": "Contract Successful " },
        "maskNextStepURLFail": { "entity": "FTOS_BARET_
    AccountApplication", "form": "FTOS_BARET_AccountApplication_
    UserJourney", "section": "Contract Fail " },
        "businessStatusSuccess": "Contract Signed",
        "businessStatusFail": "Contract Rejected"
    }
```

eSign Mappings

The eSign mapping match the field name as returned by the ESign (keys) with the name of the document that needs to be signed.

Setting Name	Description
fileAttributeName	The name of the document that needs to be signed.

Examples

Sample JSON code for eSign mapping

```
{
    "fileAttributeName": "contractSigned"
}
```

E-sign with tags or coordinates or both

To configure the signing of a document that was either configured with FintechOS' Digital Documents Processor or a document generated externally by a bank of insurance company, it is possible to sign it by placing a tag or with coordinates or both on a PDF file by creating a request in two ways:

- in FinetchOs directly using workflow library FTOSServices by calling the getWorkstepUrl

- by calling the url in Azure directly without going to FintechOS.

Using workflow library FTOSServices

The request can look like this:

```
{
  "Authentication": {
    "Username": "john.smith@company.com",
    "Key": "72b2f349-b5c7-4df7-847d-efd8a7f4a6c4"
  },
  "SignedDocumentName": "signedContract",
  "WorkstepConfigs": [
    {
      "SignatureTag": "#esaw#",
      "SignatureType": "1",
      "SignatureCoordinates": [{
        "FileName": "testR_fa303a83-6f33-49d5-b747-f4bcd2aed258_
09dfefbd-296d-4247-aa1b-b4811a557632.pdf",
        "PageNumber": 1,
        "X": 225.23,
        "Y": 225.23
      }],
      "SignatureTypeTemplate": "",
      "Recipient": {
        "LanguageCode": "RO",
        "Email": "example@mail.com",
        "FirstName": "John",
        "LastName": "Doe",
        "CountryResidence": "RO",
        "PhoneMobile": "07000000000",
        "DocumentType": "CI",
        "DocumentIssuedBy": "RO",
        "SocialSecurityNumber": "19000000000",
        "DocumentExpiryDate": "2050-01-01",
        "DocumentIssuedOn": "2010-01-01",
```

```
            "DocumentNumber": "XYZ000000"
        },
        "ClientActionUrl": "https://www.google.ro",
        "SmsText": "<TransactionCodeConfiguration
trConfId='disposableCertificateEnrolAndSignSmsText'
language='ro'><Message>Prin acest cod iti exprimi acordul pentru
semnarea documentului prin intermediul certificarii digitale,codul
tranzactiei:
{tId}</Message><hashAlgorithmIdentifier>Sha256</hashAlgorithmIdenti
fier></TransactionCodeConfiguration>",
        "ClickMsg": "Click pt semnare",
        "Order": 1,
        "SignatureProperties": {
          "Width": 120.0,
          "Height": 80.0
        },
        "SubTaskList":[{
            "Id":"ann1",
            "DisplayName":"Anotare display",
            "AdditionalInfo":"Anotare ann",
            "TextConfig":{
                "DocRefNumber":1,
                "PageNumber":1,
                "TextAlign":"Left",
                "PositionX":"100",
              "PositionY":"100",
              "Editable":"0",
              "DefaultText":"##ClientTime##",
              "Format":"dd/MM/yyyy",
              "FontId":"FtosFontId1"

            }
        }]
    },
    {
      "SignatureTag": "#esawo#",
      "SignatureType": "1",
      "SignatureCoordinates": [{
        "FileName": "testFileName.pdf",
        "PageNumber": 1,
        "X": 325.15,
        "Y": 325.15
    }],
        "Recipient": {
          "LanguageCode": "RO",
          "Email": "example@mail.com",
          "FirstName": "John",
```

```
            "LastName": "Doe",
            "CountryResidence": "RO",
            "PhoneMobile": "07000000000",
            "DocumentType": "CI",
            "DocumentIssuedBy": "RO",
            "SocialSecurityNumber": "19000000000",
            "DocumentExpiryDate": "2050-01-01",
            "DocumentIssuedOn": "2010-01-01",
            "DocumentNumber": "XYZ000000"
          },
          "ClickMsg": "Apasa aici",
          "ClientActionUrl": "https://showcase.fintech-os.com/dcs",
          "SmsText": "<TransactionCodeConfiguration
    trConfId='disposableCertificateEnrolAndSignSmsText'
    language='ro'><Message>Prin acest cod iti exprimi acordul pentru
    semnarea documentului prin intermediul certificarii digitale,codul
    tranzactiei:
    {tId}</Message><hashAlgorithmIdentifier>Sha256</hashAlgorithmIdenti
    fier></TransactionCodeConfiguration>",
          "Order": 2,
          "SignatureProperties": {
            "Width": 120.0,
            "Height": 80.0
          }
        }
      ],
      "Files": [
        {
          "Name": "testFileName.pdf",
          "FtosFile": "
    [{\"Name\":\"test.pdf\",\"RealName\":\"test.pdf\"}]",
          "Base64Content": "base64StringWithTheFile"
        }
      ]
    }
```

In order to correctly identity where we are adding the signature via coordinates, the SigntureCoordinates object contains:

- FileName: this needs to be the same as the Name property of the file in the Files array of the given request

- PageNumber: the number of the page on which we wish to add the signature in the chosen file

- X and Y: coordinates of where to put the signature. The 0,0 coordinate of the file is in the bottom left corner. The X and Y are the coordinates that start from the bottom left corner of the PDF file.

Click2Sign

This type of signature available offers a quick method of digital signature by presenting a button with a message configured in the request, a URL where the user is taken after signing and the properties of the signature itself. Once clicked, unlike the OTP type, there is no SMS sent. The location of the signature is configured placing a tag or with coordinates or both on a PDF file by creating a request.

Add the following work step in the request.

```
{
      "SignatureTag": "#esaw#", //the tag from the document where
you want to place a signature field
      "SignatureType": "2", //2 - for Click2Sign
      "Recipient": {
        "LanguageCode": "RO",
        "Email": "joe.doe@fintechos.com",
        "FirstName": "Joe",
        "LastName": "Doe",
        "CountryResidence": "RO",
        "PhoneMobile": "",
        "DocumentType": "",
        "DocumentIssuedBy": "",
        "SocialSecurityNumber": "",
        "DocumentExpiryDate": "",
        "DocumentIssuedOn": "",
        "DocumentNumber": ""
      },
      "ClickMsg": "Click Here",//the message from the signature
field, before signing
      "ClientActionUrl": "url_for_redirect_after_signing",
      "SmsText": "",
      "Order": 2, //the order of the signatures from the whole
request
      "SignatureProperties": {
        "Width": 120.0,
        "Height": 80.0
      }
    }
```

RemoteSign

This type of signature available offers access to remote certificates such as Advanced Electronic Signature or Qualified Electronic Signature to sign the document.

Add the following work step in the request.

```
{
      "SignatureTag": "#esawo#",
      "SignatureType": "5",
      "Recipient": {
        "LanguageCode": "RO",
        "Email": "maria.conache@fintechos.com",
        "FirstName": "Maria",
        "LastName": "Conache"
      },
      "ClickMsg": "Apasa aici",
      "ClientActionUrl": "https://showcase.fintech-os.com/dcs",
      "SmsText": "<TransactionCodeConfiguration
trConfId='disposableCertificateEnrolAndSignSmsText'
language='ro'><Message>Prin acest cod iti exprimi acordul pentru
semnarea documentului prin intermediul certificarii digitale,codul
tranzactiei:
{tId}</Message><hashAlgorithmIdentifier>Sha256</hashAlgorithmIdenti
fier></TransactionCodeConfiguration>",
      "Order": 1,
      "SignatureProperties": {
        "Width": 120.0,
        "Height": 80.0
      }
    }
```

The following steps are taken to use the RemoteSign capability:

Configurations for signature when the sender has not filled in the dates (if the sender defines the user ID, the user has to sign without selecting the ID) :

- Clicking on the remote signature field.

- Filled in the user Id, select the device ID from the drop-down list and request a OTP.

Adding eSign to a Digital Journey

1. In FintechOS Studio, create a custom journey to define a button to call the eSign automation processor. For information on how to create a custom journey, see FintechOS Studio User Manual, section *Creating Custom Journeys*.

2. Go to the form driven journey or form step on which you want to add the button to call the eSign automation processor.

3. Click the **Advanced** tab.

4. Click the **After Events** tab (for Steps, it is displayed by default, being the only tab available).

5. In the JavaScript field, provide the following code:

```javascript
// For Ecosystem SysPack 2.5.0 and later, use:
var dfpHelper = ebs.importClientScript('FTOS.ECOS.Utils');

// Prior to Ecosystem SysPack 2.5.0, use:
// var dfpHelper = ebs.importClientScript('FTOS.DFP');

//call ESign component custom form
var componentName = "FTOS_DFP_ESign"; //name of the component
var recordId = ebs.getCurrentEntityId();
var fileExists = true; //"document" argument = source entity
file attribute.It only contains the true value considering
that the document already exists
var p = {};
p.flowSettingsName = formData.model.FlowSettings;
p.processorSettingsType = 'ESign';
ebs.callActionByName("FTOS_DFP_FlowProcessorSettingsByType",
p, function(e) {
    var processorSettingsName =
e.UIResult.Data.ProcessorSettingsName; //configuration of the
component
    dfpHelper.loadComponent(componentName,
processorSettingsName, recordId, fileExists);
});
```

6. Click **Save and Close** to save your form driven journey (If you're in a form step, save the step, then save the form driven journey)

This is what the customers see in the user journey:
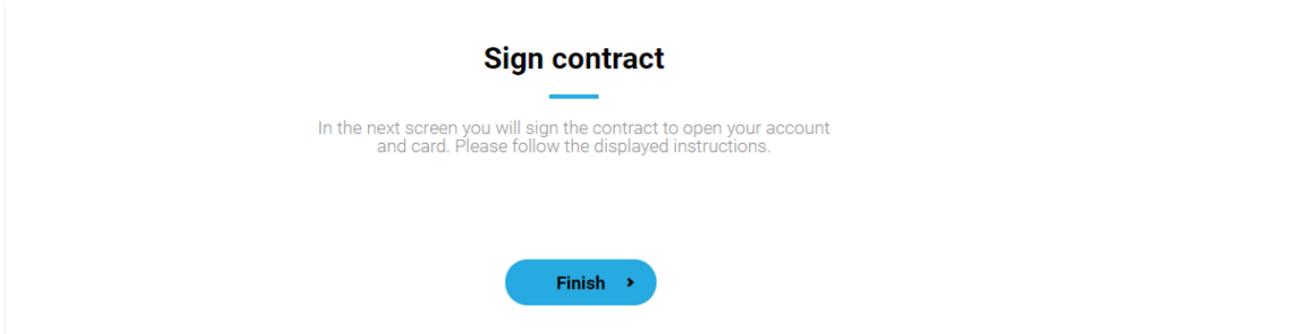
After they click **Finish**, they will be prompted to accept request for signature.

The contract/agreement .pdf will be displayed. On the last page of the document, the customers will have to sign the document by clicking the button displayed next to the Account Holder Signature.
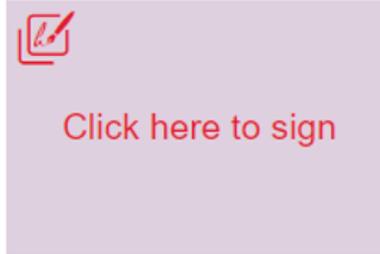
Once they sign it, the customer will have to accept the terms and agreements.

Once they've given their consent for electronic signature and data processing they will have to click **Accept**. They will receive an OTP code via SMS.

Once they provide the received OTP code within the code validity timeframe and click **Confirm**, the document is successfully e-signed and returned to the FintechOS platform in real-time.

Getting Status Changes Notifications Using Webhooks

Webhooks allow you to get programmatical notifications from FintechOS about status changes of your envelope as they happen.

For every envelope event, webhooks will send the notifications as an HTTP POST request, with a JSON body, to the endpoint you specify. They will push information to your endpoint.

Using FintechOS webshooks you can receive notification for the following events:

- the client opened the document

- the signature for client is finished

- the whole document is signed

To Get Envelope Status Changes Notifications Using Webhooks

Step 1. Configure webhooks

Prerequisite: You need to know the webhook ID received from FintechOS.

To get notifications on envelope status changes using webhooks, in the sign request, add the webhook finish URL (WebhookUrl) and webhook for status URL (WebhookStatusUrl).

Example

In this example, we set notifications for all events that occur on the document 'signedContract'.

```
{
        "Authentication": {
            "Username": "john.doe@fintechos.com",
            "Key": "72b2f349-b5c7-4df7-478d-efd8a7f4a6c9"
        },
```

```
        "SignedDocumentName": "signedContract",

        "WebhookUrl":"{FTOSHook}/hookId_
receivedFromFTOS?test=12345&asdf=abc&envelopeId=##EnvelopeId
##&recipientEmail=##RecipientEmail##&recipientOrder=##Recipi
entOrder##&action=##Action##",
        "WebhookStatusUrl":"{FTOSHook}/hookId_
receivedFromFTOS?test=12345&asdf=abc&envelopeId=##EnvelopeId
##&recipientEmail=##RecipientEmail##&recipientOrder=##Recipi
entOrder##&action=##Action##",

        "WorkstepConfigs": [
            {
            ...
            }
        ]
}
```

Where:

- **{FTOSHook}** is the webhook ID received from FintechOS. It is a constant value for all the requests from your app. In the query parameters of the WebHookUrl (after the ? mark) you can add custom values, for example test=12345 and you will receive the same value on the notification.

- **WebhookUrl** will be called only when the envelope is finished (all worksteps have been completed) and you can download the signed document.

- **WebhookStatusUrl** will be called for every status change of the envelope.

Step 2. Create an endpoint for the webhook

Create the endpoint (action) that contains the logic for receiving the webhook. In most of the cases, in the server automation scripts, call the request **downloadSignedDocument** and get the intermediate URL for the second workstep or download the signed document (the pdf file).

The example request provided at Step 1 returns the following data in the server automation script:

WebhookStatusUrl Return Example

```
{
    "UserId": "4afdc8a9-eb91-4359-81d6-c3a462fae866",
    "Ids": null,
    "Id": "00000000-0000-0000-0000-000000000000",
    "EntityName": null,
    "PreviousBusinessStatus": null,
    "PreviousBWS": null,
    "BusinessStatus": null,
    "CurrentBWS": null,
    "Values": null,
    "AdditionalValues": null,
    "PropertyBag": {},
    "ExecutionDepth": 0,
    "MessageSuccess": false,
    "Message": null,
    "ReloadPage": false,
    "NavigateToUrl": null,
    "NavigateToEntityPage": false,
    "NavigateToEntityPageOnEdit": false,
    "NavigateToEntityName": null,
    "NavigateToEntityFormName": null,
    "NavigateToEntityId": null,
    "NavigateToEntityInsertDefaults": null,
    "Data": {
        "test": "12345",
        "asdf": "abc",
        "envelopeId": "7bfa100a-f52c-4915-b25d-
210e6bb82f48",
        "recipientEmail": "",
        "recipientOrder": "",
        "action": "workstepOpened"
    },
    "Fetch": null,
    "BeforeValues": null,
    "MergedValues": {}
}
```

WebhookUrl Return Example

```
{
    "UserId": "4afdc8a9-eb91-4359-81d6-c3a462fae866",
    "Ids": null,
    "Id": "00000000-0000-0000-0000-000000000000",
    "EntityName": null,
```

```json
        "PreviousBusinessStatus": null,
        "PreviousBWS": null,
        "BusinessStatus": null,
        "CurrentBWS": null,
        "Values": null,
        "AdditionalValues": null,
        "PropertyBag": {},
        "ExecutionDepth": 0,
        "MessageSuccess": false,
        "Message": null,
        "ReloadPage": false,
        "NavigateToUrl": null,
        "NavigateToEntityPage": false,
        "NavigateToEntityPageOnEdit": false,
        "NavigateToEntityName": null,
        "NavigateToEntityFormName": null,
        "NavigateToEntityId": null,
        "NavigateToEntityInsertDefaults": null,
        "Data": {
            "test": "12345",
            "asdf": "abc",
            "envelopeId": "7bfa100a-f52c-4915-b25d-
    210e6bb82f48",
            "recipientEmail": "",
            "recipientOrder": "",
            "action": "envelopeFinished",
            "FTOSIsFinishCallback": "1"
        },
        "Fetch": null,
        "BeforeValues": null,
        "MergedValues": {}
    }
```

Example Flow Settings - Java Script code After Events

```javascript
// For Ecosystem SysPack 2.5.0 and later, use:
var dfpHelper = ebs.importClientScript
('FTOS.ECOS.Utils');

// Prior to Ecosystem SysPack 2.5.0, use:
// var dfpHelper = ebs.importClientScript
('FTOS.DFP');
```

```
var componentName = "FTOS_DFP_ESign_Download"; //name
of the component
var recordId = ebs.getCurrentEntityId();
var fileExists = true;

var flowSettingsName = formData.FlowSettings;
var p = {};
p.flowSettingsName = formData.FlowSettings;
p.processorSettingsType = 'ESign';

var businessStatusName = ebs.getFormData
().model.businessStatus.name;


if (businessStatusName == "Documents Signed" ||
businessStatusName == "Contract Signed") {
var entitydata=ebs.getCurrentEntityData();
var signatureType=entitydata.FTOS_Test_Processors_
SignatureTypeId_displayname;

switch (signatureType){
    case 'NamirialQES':
    p.processorSettingsName='ESign_Download_
Documents_CurrentAccount';
    break;
    case 'NamirialMergeCoordEQS':
    p.processorSettingsName='ESign_Download_
Documents_MergeEQS';
    break;
    case 'NamirialC2S':
    p.processorSettingsName='ESign_Download_
Documents_ClickSign';
    break;
     case 'NamirialRemoteSign':
    p.processorSettingsName='ESign_Download_
Documents_RemoteSign';
    break;
    case 'NamirialCoord':
    p.processorSettingsName='ESign_Download_
Documents_Coordinates';
    break;
    case 'NamirialOTPSign':
    p.processorSettingsName='ESign_Download_
Documents_OTPSign';
```

```
        break;
         case 'NamirialC2S75':
        p.processorSettingsName='ESign_Download_
    Documents_ClickSign_140Tgs';
        break;
        case 'CertSignAutomaticQES':
        p.processorSettingsName='CertSign';
        break;
        case 'CertSignQES':
        p.processorSettingsName='CertSignQES';
        break;
    };
    }

    if (p.processorSettingsName) {
        ebs.callActionByName("FTOS_DFP_
    FlowProcessorSettingsByType", p, function (e) {
            var processorSettingsId =
    e.UIResult.Data.ProcessorSettingsId;
            dfpHelper.loadComponent(componentName,
    processorSettingsId, recordId, fileExists);
        });
    }
```

Download Envelope Log

The fourth pillar of security, logging provides you with comprehensive audit trail of what happened at any given time and who performed the action.

> **NOTE**
> The audit trail displays all the information about the document and it can be downloaded from Namirial in PDF format together with the signed document. This is done when the property downloadLog is set to true. The configurations are made in the processor settings. If the processor is not used, then this field is sent in the body of the request to DCS.

The envelope log file shows information about the envelope:

- the general information

- status of the envelope

- the creation date

- the recipients and the changes they made to the document, e. g., which signature fields were placed on the document

- the time when the workstep was finished.

How to download the envelope log

To download the envelope log:

1. Log in the FintechOS Studio in developer mode.

2. In the **Main Menu**, click **Advanced** > **Server Automation Scripts**. The Server Automation Scripts List page appears.

3. Search for the **FTOS_DFP_ESign_Download_OnDemand** server automation script and add double-click it. The Edit Server Automation Script page appears.

4. In the **Code** field, search for the code written for downloading the document::

```
var downloadlRequest = {
    "envelopeList": [envelopeId]
};
var downloadResponse = JSON.parse(serialize
(dcs.downloadSignedDocument(downloadlRequest)));
```

5. Edit the **downloadlRequest** as follows:

```
var downloadlRequest = {
    "envelopeList": [envelopeId],
    "downloadLog": [true]
};
```

The response will also contain the LogFile in base64 format.

Example

Envelope Log in base64 format

```
{
    "Envelopes": [
        {
            "Name": "signedContract",
            "EnvelopeStatus": "Completed",
            "ExpirationDate": "2019-01-18T09:04:36.16Z",
            "SendDate": "2019-01-16T09:04:36.16Z",
            "MetaData": null,
            "SubEnvelopes": [
                {
                    "RecipientEmail": "",
                    "FinishedDocuments": {
                        "DocumentList": [
                            {
                                "DocumentId": "6ba9636e-
ef75-425f-8b39-47f428ed7801",
                                "DocumentName": "test.pdf",
                                "FormFieldValues": null
                            }
                        ],
                        "LogDocId": "505598f5-e138-4336-
8ce8-3c553dcfec1f"
                    },
                    "Recipients": []
                }
            ],
            "EnvelopeId": "684551f2-f5b9-4eb1-a514-
c7eea0be83dd",
            "Files": [
                {
                    "FileName": "test.pdf",
                    "Data": "base 64 file"
                }
            ],
            "LogFiles": [
                {
                    "FileName": "EnvelopeLog_03a5fbfc-480a-
4a6d-a796-a7121e46d794.pdf",
                    "Data": "base 64 file"
                }
            ]
```

```
          }
      ],
      "IsSuccess": true,
      "ErrorMessage": null
  }
```

Digital Documents Processor

The Digital Documents Processor enables you to leverage intelligent document automation to reduce errors, boost productivity and maximize business outcomes.

Easy to use, this automation processor allows you to automatically generate dynamic, personalized and accurate essential business documents – including customized contracts and agreements, by merging real-time data. You can later use these documents in digital journeys to minimize the paperless flows, reducing workload and completion times, as well as increasing the customer's satisfaction.

Installation

FintechOS Studio comes with the Digital Documents Processor automation processor pre-installed.

Applications

The Digital Documents Processor can facilitate business processes, such as:

- Customer onboarding

- Account opening

- Policy application

- Retail Current Account Onboarding

- Loan applications.

Creating Reports for Digital Documents

Before creating and working with digital documents, you first need to create a report which you will later attach to an entity. Follow the steps below to create a report:

1. In FintechOS Studio, create a file attribute within the entity you wish to attach the document.

2. In the main menu, click **Analytics** > **Reports**. The **Reports list** opens.

3. Click **Insert** and fill in the following fields:

Field	Description
Name	Type in a name for the report.
Display Name	The report name to be displayed in the UI.
Scope	Select the scope **Entity**.
Type	Select the type **Document**.
Entity	Select the entity which holds the tokens and which is linked to the actual documents. Tokens are used in document templates.
Output Method	Select **Attach to entity**.
Destination Field	Select the name of the attribute created in step 1. **IMPORTANT!** The attribute must be of type File.
Destination Field Name	Insert the name of the file that will be created.

Field	Description
Report Render Format	Select the document's extension type: • DOCX • PDF.

4. Click **Save and reload**.

5. Click **Report Items** > **Insert** to configure the report fields:

Field	Description
Name	Insert a name for the item.
StartDate	Select a start date from when the item is available.
EndDate	Select an end date from when the item is no longer valid.
Report Document	Select the document template or create a new one. For details, see "Creating Document Templates" below.
IsDefault	Tick the box to set the item as the default one for the report.
Report	This field is read-only and shows the name of the report created in the previous steps.

6. Click **Save and reload**.

Creating Document Templates

Before creating a digital document in FintechOS Studio, you should create a template using MS Word or MS Excel. Digital document templates are useful for journeys that offer personalized documents to customers, such as GDPR documents with the name of the customer on them.

> **IMPORTANT!** To generate digital documents properly, after creating the document templates, make sure that:
>
> • comments are removed;
>
> • changes are accepted and tracking changes are stopped;

> • the signature details fit within the page, signature tokens should be
>
>   centered.

When creating the template, use tokens for fields and tables. The template automatically fills in with data from the database, as it is going to be attached to a digital document.

> **NOTE**
> The digital document's data source is an SQL procedure or Fetch Collection.
> The SQL procedure has to be defined in advance, while the Fetch Collection is defined after attaching the template to the digital document.

Use token fields

A token field is a text field that includes a block of text (token) that can be easily selected and manipulated. To use token fields within your report template, include them within curly brackets {} without leading or trailing spaces.

In the SQL procedure, you can use `<b> </b>` markups to apply bold styling to your tokens:

```
SELECT '<b>' + Name + '</b>' as Solicitant,
       Age as Age
FROM ebs.Contract
```

Use table tokens in DOCX templates

In case of a table token, the SQL procedure call must contain two select queries separated by comma:

- The first SELECT should follow this pattern: SELECT 'tokenName' as 'table' to specify that the 'tokenName' token represents a table.

- The second SELECT will return effective data for the table. The document table columns name must be identical to the attributes name returned by query.

Example:

```
select 'views' as 'table',
select entityviewid as 'entityviewid', Data as 'Data'
from EbsTestEntityView
```

Format tables in DOCX and XLSX templates

You can format tables in templates in many ways, by: table size, border size, cell padding, add/delete header and border color. You can also include datasets within the table by using table tokens handled through SQL procedures or Fetch Collections.

To automatically fill-in table rows with data from the DB, add a new row to the table and provide the table token in the following format: `{tableName.columnAlias}`

Example

How to configure a table in the .xlsx template:

HEADER col 1	Header col 2	Header col3	Header col 4
{table2.col1}	{table2.col2}	Static text	{table2.col4}
{table1.column1}	{table1.column1}	{table1.column1}	

This row will be replaced by the data returned as per the provided SQL procedure. You will provide both `tableName` and `columnAlias` in the SQL procedure.

In the SQL procedure, you can use `<b> </b>` HTML tags to apply bold styling to your text:

SQL procedure

```
CREATE PROCEDURE [dbo].[uspTest]
    @Id uniqueidentifier
AS
BEGIN
    --the first data set should return only one row
    select 1 as 'abc'

    select 'table1' as 'table' --tableName
    -- data set for table1
    select name as column1
    ,createdOn as column2
    from ebs.TestTable1
```

```
    select 'table2' as 'table' --tableName
    -- data set for table2
    select ContractName as col1
    ,CreatedDate as col2,
    ,'This is the <b>description</b> of the Contract.' as
col4
    from Ebs.Contract
END
```

Table from the generated document based on the SQL procedure provided in the example above:

HEADER col 1	Header col 2	Header col3	Header col4
Test1	TestCol2	Static text	This is the **description** of the Contract.
Test2	Test2Col2	Static text	This is the **description** of the Contract.
Table1 Info			
Table1 Info 2			
Table1 Info 3			

NOTE

- There must be only one `tableName` per table row, otherwise, the rows will be duplicated based on the data from the first table provided in the SQL procedure.

- You can add as many `tableName` tags in a table as long as they are on different rows.

- If the procedure returns no dataset, the row is removed from the table within the template which contains the specific tag.

Table from the document generated with dataset table2 with no rows

HEADER col 1	Header col 2	Header col3
Table1 Info		

Table1 Info 2

Table1 Info 3

Insert a Bar Code in your DOCX Templates

In order to insert a bar code in your DOCX template, go to FintechOS Studio> **Admin** > **System Parameters** and change the value of the `sys-documentreport-should-read-barcode-from-userfiles-storage` system parameter to:

- 0 - in order to declare in the SQL procedure the absolute path to the barcode image. E.g.:

```
select 1 as Txt1, 'custom/document-report-
azure.png' as 'barCode128'
```

- 1 - in order to declare in the SQL procedure the relative path to the barcode image. E.g.:

```
select 1 as Txt1,
    'document-report-azure.png' as 'barCode128'
```

Add the {barCode128} token in your template along with the rest of the token fields and upload the template in your Digital Document.

> **NOTE**
> Each template must contain only one {barCode128} token.

Show or hide objects in Word document templates

You can show or hide objects, such as paragraphs or tables, in Word document templates only.

> **NOTE**
> The option to show or hide objects is available only in Word document templates, and not Excel.

To do so, use the following token: {show=var1}, where **var1** is provided in the SQL procedure in the first dataset. In the SQL procedure, the possible values for **var1** are **1** (show object) and **0** (hide object); whereas, the default value is **1**. If the **var1** value is not provided within the first dataset of the procedure, the object will be displayed. To hide an object, in the SQL procedure set the value of **var1** to **0**.

Example

Word document template with the show token:

{Show=var1}

Contract No : {table2.col1}

OverdraftLimit Amount : {DocumentNo}

Currency : {table1.col1}

{var1}

SQL procedure with var1 set to value 1

```
alter PROCEDURE [dbo].[testDocReport]
    @Id uniqueidentifier
AS
BEGIN
    select 'Doc00001' as 'DocumentNo'
    , 'NEW_Doc00001' as 'FtosReportFileName'
    ,1 as 'var1'

    select 'table1' as 'table'
    -- data set for table1
    select 1 as 'col1'
    ,2 as col2
    ,3 as col1
    from ebs.Test

    select 'table2' as 'table'
    -- data set for table2
    select 2 as 'col1'
    ,1 as col2
    from ebs.Test

END
```

The document generated based on the template and SQL procedure provided in the previous examples looks like this:

Contract No : 396986

OverdraftLimit Amount : 123

Currency : EUR

Word document template with the hide token:

{Show=var1}

Contract No : {table2.col1}

OverdraftLimit Amount : {DocumentNo}

Currency : {table1.col1}

{var1}

SQL procedure with var1 set to value 0

```
BEGIN
    select 'Doc00001' as 'DocumentNo'
    , 'NEW_Doc00001' as 'FtosReportFileName'
    ,0 as 'var1'

    select 'table1' as 'table'
    -- data set for table1
    select 1 as 'col1'
    ,2 as col2
    ,3 as col1
    from ebs.Test

    select 'table2' as 'table'
    -- data set for table2
    select 2 as 'col1'
    ,1 as col2
    from ebs.Test

END
```

The document generated based on the template and SQL procedure provided in the previous examples looks like this:

> OverdraftLimit Amount : 123
>
> Currency : EUR

Creating Digital Documents

In FintechOS Studio, you can create three types of digital documents based on the data source used for document generation, as follows:

- Stored SQL procedures - gathers data from a stored SQL procedure.

- Entities - gathers data from the entity on which the digital document is generated.

- Fetch collections - gathers data as per defined fetch collection.

You can move your digital documents, either standalone or attached to report items, from one environment to another. To do so, create your documents in the context of a digital asset and include them in a digital solution package that you can then export from the environment and import in the destination environment.

For information on how to add and configure digital documents, see below the section corresponding to the data source that you want to use:

Defining Digital Documents using Stored SQL Procedures

The document is created based on the template attached while gathering the source data for a SQL procedure, batch of statements grouped as a logical unit and stored in the database with parameters or one at all.

Prerequisites

- You should have created the SQL procedure that you want to use when creating the report document.

- The SQL procedure should control the Date and Numeric formatting (culture specific).

Add a digital document using SQL Procedure

1. Open FintechOS Studio.

2. Click the Main Menu icon at the top left corner.

3. Click **Fintech Automation** > **Digital Documents**. The Digital Documents List page is displayed.

4. At the top-right corner of the page, click **Insert**. The Add Digital Document page is displayed.

5. Enter a **Name** for the digital document.

6. By default, the selected **Data Source Type** is **Stored SQL Procedure**.

7. In the **Stored procedure** field, provide the name of the SQL procedure following this convention: *procedure_name_as_stored_in_DB* .

8. In the **Template** field, upload the document template to be used. The word document will be uploaded into the system and linked to the current digital document. The uploaded document template is saved into the "DocumentReportTemplates" folder which is a sub-folder of "UploadEbs".

9. Click the **Save and Close** button at the top right corner of the page.

Defining Digital Documents using Entity Data

The document is created based on the template attached while gathering the source data for an entity and its attributes.

1. Open FintechOS Studio.

2. Click the Main Menu icon at the top left corner.

3. Click **Automation Blocks** > **Digital Documents**. The Digital Documents List page is displayed.

4. At the top-right corner of the page, click the **Insert** icon. The Add Digital Document page is displayed.

5. Enter a **Name** for the digital document.

6. From the **Data Source Type**field, select **Entity**.

7. Optionally, from the **Date and Numeric Formatting** field, select the culture that will apply to dates and numbers.

8. In the **Template** field, upload the document template to be used. The word document will be uploaded into the system and linked to the current digital document.

The uploaded document template is saved into the "DocumentReportTemplates" folder which is a sub-folder of "UploadEbs".

9. Click the **Save and Close** button at the top right corner of the page.

Defining Digital Documents using Fetch Data

The document is created based on the template attached while gathering the source data using Fetch Designer, a FintechOS Studio feature which pulls data in a no-code manner. It can join entities while adding conditions with the operands ''AND'' and ''OR''.

Add a Digital Document:

1. Open FintechOS Studio.

2. Click the Main Menu icon at the top left corner.

3. Click **Automation Blocks** > **Digital Documents**. The Digital Documents List page is displayed.

4. At the top-right corner of the page, click the **Insert** icon. The Add Digital Document page is displayed.

5. Enter a **Name** for the digital document.

6. From the **Data Source Type** field, select **Fetch collection**.

7. Optionally, from the **Date and Numeric Formatting** field, select the culture that will apply to dates and numbers.

8. In the **Template** field, upload the template to be used. The MS Word or Excel document will be uploaded into the system and linked to the current digital document.

The uploaded document template is saved into the "DocumentReportTemplates" folder which is a sub-folder of "UploadEbs".

9. Click the **Save and Reload** button at the top right corner of the page. The Edit Digital Document page is displayed.

> **IMPORTANT!** You have to define at least one fetch; otherwise the digital document cannot be generated.

The digital document will get its data from the entity record that is opened when generating the document.

Define Fetches

Prerequisites

- Make sure that there are at least two entities in the system.

- Create relationships between the entities on which you do the fetch.

- Add custom attributes to each entity for which you do the fetch; the attributes that you will use when defining the fetch.

For more information on entities, attributes and relationships, see the Data Model Explorer.

To define a fetch, follow these steps:

1. In the Edit Digital Document page, scroll-down to the Fetch Collection section and click the **Insert** button. The Add Fetch Definition page is displayed.

2. Enter a **Name** for the digital document.

3. In the **Fetch definition** field, fetch the data which will be used for generating the report.

   To retrieve the value of a document parameter when the document is generated, use the `getParameter` function.

Example: Retrieve the value of document parameter param1

```
var p1 = getParameter("param1");
return {
    "entity": {
        "alias": "base",
        "name": "entity",
        "attributelist": [
                {
                        "name": "displayName",
                        "alias": "",
                        "attributeType": 3
                },
                {
                        "name": "name",
                        "alias": "",
                        "attributeType": 3
        }
    ]
    },
    "where": {
        "type": "and",
        "conditionlist": [
                {
                        "first":
"base.tableName",
                        "type": "equals",
                        "second": "val(" + p1+
")"
                }
        ]
    }
}
```

You can also define a fetch by using the Fetch Designer (clicking the **Show Fetch Designer** button). For information on how to use the Fetch Designer, see Data Views.

4. The fetch definition is saved into the system and it displays in the Fetch Collection section.

The following fetch parameters are automatically mapped to specific values, as described in the table below.

Parameter	Value mapped to
Id	The record ID of the entity item that has the Report linked to the Report Document.
EntityName	The name of the entity that has the Report linked to the Report Document;
UserId	The ID of the user that runs the Report linked to the Report Document.

Set the fetch collection execution order

If you have multiple fetches defined in the Fetch Collection, you can set their execution order by drag and dropping rows in the Fetch Collection section, whereas the first fetch has the order index 1, that is, will be executed first.

The placeholders in the document template (Word document) will be replaced following these rules:

1. The first fetch (with order index 1), will always return one record which is used to define the Headers.

   - If the fetch attribute does not have an alias, then the placeholder name is based on entity alias and fetch attribute name. The format is

     `{entityalias_attributename};`

   - If the fetch attribute has an alias then the placeholder is the alias,

     `{alias};`

     Using the example above: for the "name" attribute the placeholder should be {base_name} and for "entityid" attribute the placeholder should be {exampleAlias}.

2. Fetches other then the first one (with order index higher than 1) will be used to populate tables; therefore, they might return many records.

   - If the fetch attribute does not have an alias then the placeholder name is based on fetch name, entity alias and fetch attribute name. The

format is {`fetchname.entityalias_attributename`};

- If the fetch attribute has an alias then the placeholder name is based on fetch name and attribute alias, {`fetchname.alias`};

Attaching a Report to the Entity pointing to the Document

To create a document successfully, you need to create a report type ''document'' where a report item will be added.

1. Open FintechOS Studio.

2. Click the Main Menu icon at the top left corner.

3. Click **Evolutive Data Core** > **Data Model Explorer**. The Business Entities List page is displayed.

4. Search for the entity to attach the document to. Double-click the entity to open its configurations.

5. Navigate to the **Data Model** with the attributes you need.

6. At the top of the grid, click **Insert**.

7. Fill in the fields for the attribute where the documents will be stored.

Field	Data type	Description
Name	Text	Insert a name.
Attribute type	Option set	Select from the from-down list, the **File** type.
Display name	Text	Insert a name.
Description	Text Area	Insert a description.

Field	Data type	Description
Tooltip	Text Area	Insert a message to be rendered on the field when hovering over it.
Table column name	Text	This field is automatically filled in.
Restrict files number	Boolean	If true, then the number of files to be stored here is restricted to a specific number, e.g. 10578 documents.
Maximum number of files	Whole number	If the boolean from above is true, insert the number here. If false, ignore this field.
Required Level	Option set	Select where this attribute is required in a data form: • none • recommended • required.
Is readonly	Boolean	If true the field cannot be modified.
Is securable	Boolean	If true, only the specific security roles are allowed to see it. For details, see Creating Security Roles.

ADD DIGITAL DOCUMENT

DIGITAL DOCUMENT

Name	ContractFetchData
Data Source Type	Fetch collection
Stored procedure	
Date and Numeric Formatting	
Template	Insurance Policy.docx ✖
	Add file or Drop file here

FETCH COLLECTION

8. Click **Save and Close**.

9. Navigate to **Analytics**.

10. Select **Reports**. The Reports List page is displayed.

11. Click **Insert**. The Add Report page is displayed.

Field	Data type	Description
Name	Text	Insert a name.
Display name	Text	Insert a name.
Scope	Option set	Select **Entity**.
Type	Option set	Select **Document**.
Entity	Lookup	Select the entity with the attribute - type file.
Output method	Option set	Select attach to entity.
Destination field	Text	Insert the name of the attribute- type file- created earlier.
Destination File Name	Text	It is the name of the folder in the server where the document will be downloaded.

Field	Data type	Description
Report Document Type	Option set	Select **PDF**.

12. Click **Save and reload**. The Edit report page is displayed.

13. To match the documents processor with the report, navigate to the **Report items** grid. Click **Insert** to add an item.

14. The page Add Report item is displayed. Fill in the following fields:

Field	Data type	Description
Name	Text	Insert a name.
Start date	Date	Select the date when the report item will start.
End date	Date	Select the date when the report item will end.
Report document	Lookup	Select from the list the document template created in this automation processor.
Is default	Boolean	If the boolean is true, then the document template will be the default one for this report.
Report	Lookup	It is automatically filled in with the name from the report.

15. Click **Save and close**.

Using the Document in the Form Driven Flow

Calling the generation of a document is done by:

1. Open FintechOS Studio.

2. Click the Main Menu icon at the top left corner.

3. Click **Digital Journey** > **Form driven Flow**. The Form Driven Flow List page is displayed.

4. Search for the form driven flow where to use the document.

5. Click the **Actions** tab.

6. In the grid, click the **Insert** button to add a new action.
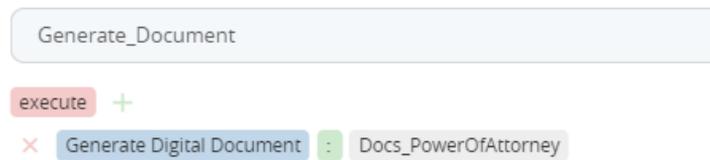
7. Click the **Save** button on the right-hand corner of the page.

8. Navigate to the step where the action will take place. Select the step from the **Steps** tab.

9. Navigate to the UI tab of a particular step. Open the UI designer.

10. Add a button in the layout. Its configurations open in the right-hand part of the screen.
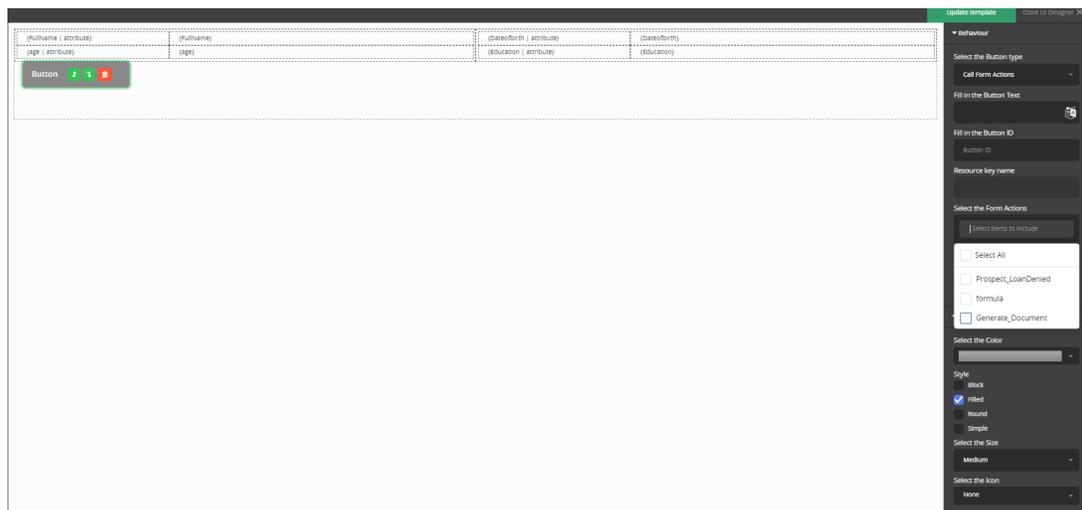
11. Select the type **call form action** and in the **Select from action field** tick the action created earlier which generates the document.

12. Click the **Apply changes**, then click **Update template**, and lastly **Save and close**.

Automatically Generate Customer Contracts

In this example, we set up a button on a customer edit form that generates a services agreement automatically populated with the customer's name.

1 Prepare the contract template.

Create a contract template in Microsoft Word. Enclose between curly brackets any entity attribute names that must be populated automatically. For more details, see "Creating Document Templates" on page 327.

2 Set up a digital document based on the contract template.

> **IMPORTANT!**
> For the entity you wish to attach the document, create a file-type attribute where to store the document itself.

Create a new entity-based digital document using the template created earlier.

3 Attach a report to the entity based on the digital document.

1. Make sure that the target entity (in this case *Investor*) has a file attribute defined in which to store the contract (in this case *contract*).

2. In FintechOS Studio, go to **Reporting & Analytics** > **Reports** and create a new report attached to the contract file storage attribute defined in the target entity.

   - Name – Unique name used to identify the report in the system.

   - Display Name – How the report name will be displayed in the user interface.

   - Scope – Entity.

- Type – Document.

- Entity – Name of the entity to which you wish to attach the report (in this case *Investor*).

- Output Method – Attach to entity.

- Destination Field – Name of the entity attribute that will store the report (in this case *contract*). The attribute must be of file type.

- Destination File Name – File name under which the report will be saved.

- Report Document Type – File type under which the report will be saved.

3. Click the **Save and Reload** button at the top right corner of the page.

4. In the Report Items section, insert a new entry for the digital document you created at Step 2.

   - Name – Enter a custom name for the report item, or leave the default name in place.

   - Start Date and End Date – Upon the report generation, it will gather data within the specified time interval (between the start date and the end date).

   - Report Document – Select the digital document created at Step 2.

   - IsDefault – Select the checkbox so that the report item is used when generating the report.

5. Click the **Save and Close** button at the top right corner of the page.

4 Create a button to generate the customer contract.

1. In FintechOS Studio, open the customer's entity form or form driven flow where you want to generate the contract.

2. In the UI designer, add a button to generate the contract.

3. In the **Advanced** tab, in the **After events** section, edit the button click event to trigger the report generation.

```
/* Click event for the generateCotract button */
$('#generateCotract').on('click', function (event) {
        ebs.callReportByName('wealthManagementContract', formData.id);
});
```

4. Click the **Save and Close** button at the top right corner of the page.

5 How to generate a customer contract from the user interface

1. Open FintechOS Portal.

2. Open the entity form or form driven flow where the button to generate the customer contract is located.

3. Make sure the data required to generate the contract is populated and saved (in this case the *name* field).

4. Click the button to generate the customer contract.

5. The customer contract will be generated and saved in the designated file attribute.

6. You can click the file name to download the file locally.

Campaign Management

Campaign management is the process of planning, organizing, executing, and tracking different types of campaigns that serve multiple purposes: marketing, sales, administrative, and so on.

Throughout the buying journey, customers bounce between different digital channels (mobile devices, laptops, etc.) so marketers need to ensure that customers receive the same seamless experience no matter which channel they use. Moreover, the content needs to be personalized based on each customer needs.

Use the below FintechOS components to easily create, manage, and personalize your campaign.

Omnichannel Campaigns

Fintech marketing campaigns are essential for customer engagement, loyalty, and most importantly they can inform and educate the customer when it comes to lending and loan processes, financial application updates, or any other banking or insurance processes.
These campaign types can be primarily directed towards bank clients through regular campaigns such as fall/ winter season, holiday season campaigns, or internal campaigns that concern financial institutions employees.

In this day and age, customers bounce between channels (mobile devices, laptops, etc.) throughout the buying journey, so marketers need to ensure that no matter which channel the customers use, the message is seamless - customers receive the same experience and messaging through each and every channel.

Omnichannel campaigns has the customer at the core to ensure a unified experience at every touch point in the buying journey, fostering an effortless buying experience for customers.

The Omnichannel Campaigns automation processor empowers you with the ability to create effective and user-tailored ways of interacting with the customer. Using this automation processor, you can automate completely personalized campaigns, populate unique emails for each individual, ensuring personalized communication with your customers based on their needs.

This is done in a cost-effective manner, and through the modular design of the FintechOS High Productivity Financial Infrastructure (HPFI), it ensures both encapsulation and integration. You can easily change how interaction with a certain audience is done via campaigns, seasons, and marketing tools.

Omnichannel Campaigns Features

- Uniquely identify the members of imported audience lists

- Anti-spam functionality, with options to skip or delay message on bank days or after previous communication

- Staged campaign execution, with distribution variations on channel, content template and A/B Control Group

- Redirecting messaging to campaign controlling group

- Advanced recurrence settings per stage

- Previewing scheduled activities and exceptions (exceeded length, no data available for token, etc.)

- Approval workflow to manage campaign authoring

- Previewing and exporting execution plan and campaign activities, logs and A/B variation counters for each run

Applications

The Omnichannel Campaigns module can aid business processes such as:

- Loan applications

- Quote applications

- Mortgage processing.

Installing Omnichannel Campaigns

Follow the steps described below to perform an automatic installation of the Omnichanel Campaigns. This is a process of running install_SysPack.bat files on your environment.

Dependencies

In order to install Omnichanel Campaigns, the following needs to be installed first:

- **FintechOS Studio** minimum version v22.1

- **Standard SysPack** minimum version v22.1.0001

- **FTOS.Foundation - Project**

Pre-Installation Checklist

The SysPack has a unique constrain on the following entities: FTOS_MKT_ AudienceSegments, FTOS_MKT_Audience.
If you have already moved data using the **Configuration Data Deployment Package** menu, then you probably have already configured some unique constraints.

Before running the script, make sure you:

1. Disable the constraints that you have created on your environment, allowing the system to create the new one after Omnichanel Campaigns is imported.

2. Use the new **Configuration Data Definitions** imported with the Omnichanel Campaigns file when you export the data.

Installation Steps

1. Download the **SySDigitalSolutionPackages.zip** archive.

2. Unzip the archive and follow the instructions from the from the SysPacks Installation page.

Creating the Organizational Structure

Having an organizational structure is necessary in order to achieve the organization's objectives as it outlines not only each employee's role and how it fits within the system, but also a bank's internal organizational structure.

To create the organizational structure, log into the FintechOS Portal and follow the steps from the below pages:

- Adding System User Information

- Adding Business Unit Branches

The example below helps you understand a bank's internal organizational structure:
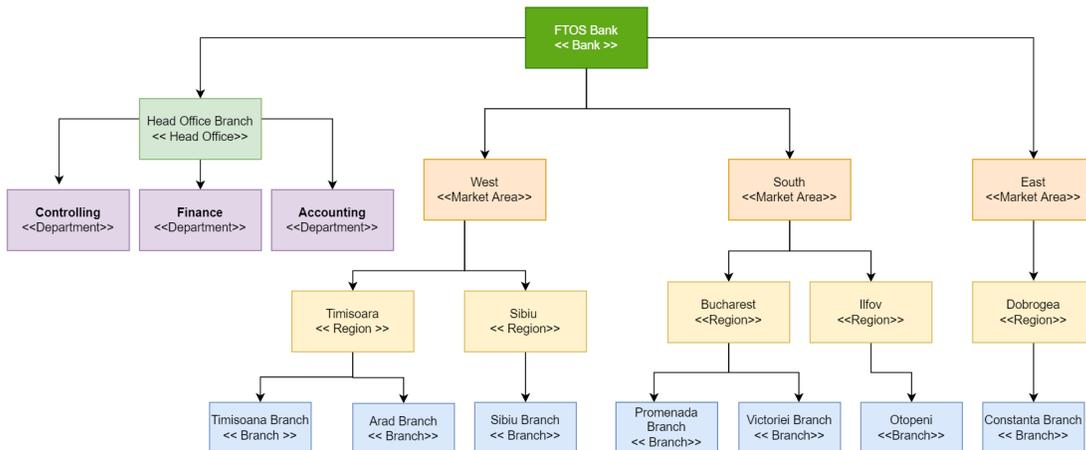
Adding System User Information

Follow the below steps when adding system user information:

1. Go to the FintechOS Portal.

2. Open the **General** menu in the top left corner.

3. Select the **System User Information** menu option. The **System User Information List** page is displayed.

4. Click the **Insert** button in the top right corner. The **Add System User Information** page is displayed.

5. Fill in the following fields:

ADD SYSTEM USER INFORMATION

SYSTEM USER INFORMATION

Branch	Hub Sector 4
Function	Relationship Manager
Manager	host
Managers Path	DocTest
Name	DocTest

Field	Type	Required	Description
Branch	Lookup	No	The branch that the user belongs to. Select from the list or create a new record. For additional details see the Adding Business Unit Branches section.
Function	Text	No	The user's function.

Field	Type	Required	Description
Manager	Lookup	No	The manager name. Select from the list or create a new user based on the steps from the System Users documentation.
Manager Path	Text	No	The manger path.
Name	Text	No	The user's name.

6. Click **Save and close** to return to the **System User Information List** page.

Adding Business Unit Branches

Business unit branches represents a great way to set up a bank internal organizational structure. Follow these steps to add new business unit branches:

1. In FintechOS Studio, go to **Security** > **Business Unit Branches**.

2. Click the **Insert** button. The **Add Business Unit Branch** page opens..

3. Fill in the following fields:

Field	Type	Description
Name	Text	The name of the branch.
Unit Type	Lookup	The unit type of the record. Lookup to `FTOS_ ACC_UnitType`.
Parent Unit Type	Lookup	The parent type of the current record. Lookup to `FTOS_ACC_UnitType`.
Status	Dropdown	Select one of the following statuses: • Inactive • Active • Draft

7. Click **Save and reload**. The **Business Lines** section is displayed.

8. Click the **Insert existing** button to add a business line or create a new one. The following options are available:

- Corporate

- Individuals

- Insurance

- WM

9. Click **Save and close** to return to the **Business Unit Branches List** page.

Omnichannel Campaigns Management

Campaigns typically aim to reach consumers in a variety of ways to promote a specific purpose such as reminder for a bank transfer, policy termination and various client notifications about product releases as well.

This chapter covers the following topics:

Managing Campaign Types

Campaign types are a quick and convenient way of categorizing campaign data. For example, campaigns for the fall/ winter season, holiday season campaigns, and so on. Each campaign can be assigned a certain type and subtype. Campaign types can contain multiple campaign subtypes.

Each campaign can be assigned a certain type (fall/ winter season, Easter, etc.) and subtype (mail, SMS campaign, etc.). Campaign types might contain multiple campaign subtypes.

Adding Campaign Types and Subtypes

To add a campaign type, follow these steps:

1. Expand the main menu icon at the top left corner.

2. In the main menu, navigate to the **Omnichannel Campaigns** menu and select **Campaigns Types**. The **Campaigns Types List** page is displayed.

3. Click the **Insert** button at the top right corner of the page. The **Add Campaign Type** page is displayed.

4. Fill in the following fields:

Field	Required	Type	Description
Code	Yes	Text	The code of the campaign.
Name	Yes	Text	The name of the campaign. For example: fall/ winter season campaign.

5. To add subtypes to the campaign type, click the **Save and reload** button at the top right corner of the page. The **Campaign Subtype** section is displayed.

6. Click the **Insert** button. The **Add Campaign Subtype** page is displayed.

7. Fill in the following fields:

Field	Required	Type	Description
Code	Yes	Text	The code of the campaign subtype.
Name	Yes	Text	The name of the campaign subtype.
Campaign Type	Yes	Lookup	Select from the existing campaign types or create a new one.

Field	Required	Type	Description
Priority	No	Option Set	To differentiate and decide between the importance of different campaign subtypes, select the campaign priority. The following options are available: • High • Medium • Low • Very Low

8. Click **Save and Reload**. The **Edit Campaign Subtype** page is displayed.

9. Click **Save and Close** once the campaign type and subtype have been created. Follow this procedure to add as many campaign subtypes as you need.

Editing Campaign Types

To edit a campaign type, in the **Campaign Types List** page, double-click on a record to open it. The **Edit Campaign Type page** is displayed.

On this page, the campaign name and description can be changed but also campaign subtypes, if any, can be added, edited or deleted. Click the **Save and Close** button at the top right corner to save the changes.

Deleting Campaign Types

To delete a campaign type, in the **Campaign Types List** page, select the desired record and click the **Delete** button at the top right corner of the page. A confirmation dialog appears. Click **Yes** to delete the selected record.

Managing Status Reasons

Campaigns have different purposes, for example loan sales campaigns, savings products sales campaigns, customer activation campaigns, administrative campaigns, and so on. Thus, for generated internal campaigns activities, dedicated reasons must be set when closing campaign activities with an **In progress** or **Cancelled** reason. With this feature a user can define status reasons and status reason templates to cover the need for any type of internal campaigns. Users can set one or multiple status reasons that later can be added to a reason template.

There are two steps that need to be followed when managing status reasons: create the status reasons list and afterwards, set up the reasons template where the status reasons can be included. To create dedicated status reasons and also status template reasons, see the below pages:

- Defining Status Reasons

- Defining Status Reasons Template

Defining Status Reasons

Here, a list of status reasons is defined. These reasons are later used when closing an internal campaign activity with an **In Progress** or **Cancelled** status that can be later added to a status reasons template. To add a new status reason, in the FintechOS Studio main menu, go to **Automation Blocks**> **Omnichannel Campaigns** > **Status Reasons**. The **Status Reasons List** page appears. Select a status from the list or create a new one.

Click the **Insert** button from the right upper corner. The **Add Status Reason** page is displayed. Fill in the following fields:

ADD STATUS REASON

STATUS REASON

Status Reason Code

DocTest

Status Reason

Client didn't answer

Field	Required	Type	Description
Status Reason Code	No	Text	A unique identifier associated to corresponding the status reason value.

Field	Required	Type	Description
Status Reason	Yes	Option Set	The business status reason set by the person responsible for the campaign activity. This status is set when the campaign status is **In Progress** or **Cancelled**. The predefined status reasons are: • Assigned • System Aborted • Unassigned • Converted • Completed **NOTE** Status reasons can be selected from the existing option set values or a new one can be added. To add a new status reason item to the option set, click the edit button. For more details on inserting option set items, see the Adding Option Set Attributes

Field	Required	Type	Description
			page.

Click the **Save and Reload** button. The **Used For Cancelled**, **Used For In Progress**, and **Campaign Activities** sections are displayed.

Used for Cancelled

This section displays the reasons templates that have a **Cancelled** status reason, or where other templates using these status reasons can be added.
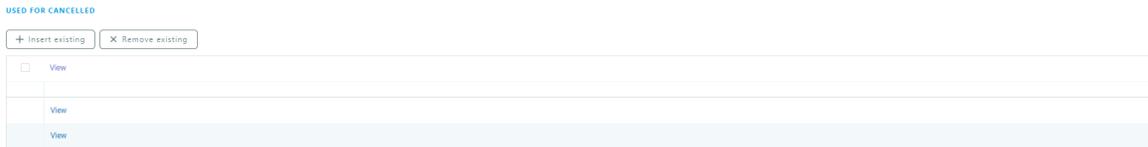
Used for In Progress

This section displays the reasons templates that have an **In Progress** status reason, or where other templates using these status reasons can be added.

Campaign Activity

This section displays a list of internal campaign activities set with an **In Progress** or **Cancelled** status reason that used a specific status reason. For example, cancelled campaigns with the **Client Refused Offer** status reasons.

Defining Status Reasons Template

Here, a status reasons template is defined using the status reasons created in the **Add Status Reason** page. To add a new status reason template, in the FintechOS Studio main menu, go to **Automation Blocks**> **Omnichannel Campaigns** > **Reasons Templates**. The **Status Reasons List** page appears. Select a template from the list or create a new one.

Fill in the following fields:

Field	Required	Type	Description
Activity Type	Yes	Option Set	The campaign activity type. The following options are available: • Sales • Administrative
Stage	No	Lookup	The campaign stage. Select from the available records or add a new one. For details on adding campaign stages, see the Scheduling the Campaign in Stages page.

Field	Required	Type	Description
Template Name	Yes	Text	The template name.

Click the **Insert** button from the right upper corner. The **Add Status Reasons Templates** page is displayed. Fill in the following fields:

ADD REASONS TEMPLATE

REASONS TEMPLATE

Activity Type	Administrative
Stage	
Template Name	Doc

Click the **Save and Reload** button. The **Used For Cancelled**, **Used For In Progress**, and **Campaign Stages** sections are displayed.

> **NOTE**
> Created templates are available for selection when defining a stage for internal campaigns, filtered by activity type.

Used for Cancelled Status Reason Template

In this section the user can add **Cancelled** status reasons applicable for the current template.

CANCELLED STATUS REASONS

+ Insert existing   ✕ Remove existing

View
View
View
View
View

Used for In Progress Status Reason Template

In this section the user can add **In Progress** status reasons for the current template.

IN PROGRESS STATUS REASONS

☐	View
	View
	View

Campaign Stages

This section is displays the stages that have a certain reasons template set. The reasons template is selected at stage level and the reasons from that template are available when the campaign activities generated from that stage are set to **In Progress** or **Cancelled**.

CAMPAIGN STAGES

	Name	Start Date	End Date	Campaign
☐	🔍 stage	🔍 📅	🔍 📅	🔍
	Stage 1	28/10/2021	29/10/2021	testc399_Cloned_2021-10-28-9-45
	stage1	01/11/2021	01/11/2021	ext camp
	stage run for x days	01/11/2021	02/11/2021	testc399
	test stage 1	15/11/2021	15/11/2021	test-c3198_one internal stage 1
	stage 1	25/11/2021	25/11/2021	Silviu3_booster

| 5 | 10 | 20 | | 1 | 2 | 3 | 4 | 5 | 6 |

Managing Seasonal Campaigns

Seasonal campaigns enables you to create product bundling campaigns that resonate with the sentiments your customers have around that time of the year.

The seasonal campaigns provides you with the following key advantages:

- Increase brand awareness among customers

- Enhance chances to convert one-time customers into loyal customers

- Boost profit in an otherwise quiet period.

FintechOS enables you to go a step further, split your seasonal campaign into various instances. This is particularly useful if you want to offer different levels of promotional discounts at different times during the seasonal campaign (e.g. offer higher discounts the last 2 days prior the winter campaign ends).

Add seasons

To add a season, follow these steps:

1. Click the main menu icon at the top left corner.

2. In the main menu, click **Business Automation**> **Omnichannel Campaigns** > **Seasons**.
    The **Seasons List** page appears.

3. Click the **Insert** button at the top right corner of the page. The **Add Season** page
    appears.

4. Type the **Name** of the campaign type (e.g. Winter).

5. Type in the **Description** for the season.

6. If you want to split your seasonal campaign into instances, click the **Save and reload**
    button at the top right corner of the page. The **Edit Season** page appears. To add an
    instance:

1. In the Instances section, click the **Insert** button. The **Add Season Instance** page
    appears.

2. Type a **Year** and **Name** . Select the season instance **Start Date** and **End Date**.

3. Click the **Save and Close** button at the top right corner to save the campaign subtype. The **Name** of the instance is automatically set as the concatenation of the season name and the instance year.

   Follow this procedure to add as many season instances as you need.

7. Click the **Save and Close** button at the top right corner to save the season settings.

Edit seasons

To edit a season, in the Seasons List page, double-click the record that you want to edit. The Edit Season page appears.

You can edit the name, description and also add, edit or delete season instances (if any), then click the **Save and Close** button at the top right corner to save the changes.

Delete seasons

To delete a campaign type, in the Seasons List page, select the desired record and click the **Delete** button at the top right corner of the page. A confirmation dialog appears. Click **Yes** to delete the selected record.

Managing Marketing Team Members

Storing information about the marketing team members is very easy. This feature is used to record the person responsible for sending specific messages and keeps a log of the number of messages sent. In addition to that, personal information like name, email and phone are also stored along with an associated user to allow an easy way of contacting that person and to promote ownership.

Add marketing team members

To create your marketing team responsible with the customer communication and omnichannel campaigns, follow these steps:

1. Click the main menu icon at the top left corner.

2. In the main menu, click **Business Automation**> **Omnichannel Campaigns** > **Marketing Team Members**. The **Marketing Team Members List** page appears.

3. Click the **Insert** button at the top right corner of the page. The **Add Marketing Team Member** page appears.

4. Set the following fields:

Field	Description
Account	An account that already exists in the database.
Attached User	The user attached to the account.
First Name	The first name associated with the account.
Last Name	The last name associated with the account.
Email	The email associated with account.
Phone	The phone number associated with the account.
Team Member Function	Select a function for that team member: • manager • account manager.

5. Click the **Save and Close** button at the top right corner to save the team member. Repeat the procedure above to add as many members as you need for your marketing team.

Edit marketing team member details

To edit a marketing team member's details, in the Marketing Team Members List page, double-click the record that you want to edit. The **Edit Marketing Team Member** page appears.

Make the desired changes and click the **Save and Close** button at the top right corner to save the changes.

Delete marketing team member

To delete a marketing team member from the list, in the Marketing Team Members List page, select the desired record and click the **Delete** button at the top right corner of the page. A confirmation dialog appears. Click **Yes** to delete the selected record.

Creating Campaigns

The following chapter of this guide is meant to explain the steps taken when a campaign is created.

> **IMPORTANT!**
> Prior to creating campaigns, you need to create personalized content and define audiences using the Hyper-Personalization Automation processor; otherwise, you won't be able to create campaigns. For information on how to create personalized and audiences, see the Hyper-Personalization Automation Guide.

To begin creating the campaign, log into the FintechOS Studio and expand the main menu icon at the top left corner.
In the main menu, navigate to **Automation Blocks**> **Omnichannel Campaigns** > **Campaigns**. The **Campaigns List** page appears. Follow the steps from the below pages:

Setting up a Campaign

To set up a new campaign, click the **Insert** button at the top right corner of the page. The **Add Campaign** page appears by default on the **Setup** tab. Fill in the following fields:

Field	Required	Type	Description
Name	Yes	Text	The name of the campaign that uniquely identifies it.
Start Date	Yes	Date	The date when the campaign starts. This field is mandatory.
End Date	Yes	Date	The date when the campaign ends. This field is mandatory.
Campaign Type	Yes	Lookup	The campaign type. It allows financial institutions to better organize between their campaigns. For example: Easter campaign, Summer campaign, or even a campaign that offers a special interest rate for a limited time period. For additional details, see the Managing Campaign Types page.

Field	Required	Type	Description
Campaign Subtype	No	Lookup	The campaign subtype. It allows financial institutions to categorize the campaign types. For example, bank customers can be notified about a current campaign via email, telephone, text messages, and so on. For additional details, see the Managing Campaign Types page.
Campaign Priority			The campaign's priority. The following options are available: • High • Medium • Low • Very Low
Campaign Identifier	No	Text	Specific to each customer, this is an unique identifier of the campaign.
Total Number of days	No	Numeric	Insert the number of days that the campaign will be taking place.
No days since start	No	Numeric	The number of days since the campaign has started.

Field	Required	Type	Description
Remaining Days	No	Numeric	The number of remaining days, the campaign has until it ends.
Description	No	Text	The purpose of the campaign, how it works, intended audience, etc.
Created by user	No	Text	This field is read-only. It displays the name of the user once saved.
Created On	No	Text	This field is read-only. It displays the date once saved.

Click the **Save and reload** button. The **Edit Campaign** page is displayed. To navigate between sections, click on the bullets from the bullet list which renders the section tabs.

Defining the Campaign Content

Click the **Content** tab. In this section, the way that the audience is contacted is defined.

The content is selected by choosing a template. Content templates are essential to the content creation process as they provide the means to interact with customers in

a meaningful manner. Special options exist for anti-spam, namely the possibility to select delays for weekends and special holidays. Thus, a delay for the communication is added if a message is scheduled to be sent on a weekend or on a holiday.

In addition, there is the option to exempt the communication from anti-spam rules. This is useful for critical messages that need to reach the audience right away.

The table below describes the settings for defining the campaign content:

Field	Type	Description
Template	Lookup	Select the personalized content to use from the list of available templates. For details, see "Managing Personalized Content" on page 456.
Type of delay for holidays	Option Set	The type of delay to be added to the communication date, if the communication date occurs on a holiday. The following values are available: • Do not send • Send anyway • Send After
Type of delay for weekend	Option Set	The type of delay to be added to the communication date, if the communication date occurs during the weekend. The following values are available: • Do not send • Send anyway • Send After
Exclude From AntiSpam	Bool	If **true**, it excludes the communication from the anti-spam rules. This is used for highly important messages that need to be sent to the customer as fast as possible.

Field	Type	Description
Create Activities On Activity Date	Bool	If **true**, then the activities are created at the moment when the messages are sent to the recipients. If **false**, then the activities are created at the moment when the message are scheduled to be sent to the recipients. For example, if the **Type of delay for weekend** field is set to **Send After** and the messages are scheduled to be sent over the weekend, then: • when set to **true**, the activities are created on the first day after the weekend (the day when the messages are sent to the recipients). • when set to **false**, then the activities are created in the weekend (the day when the messages are scheduled to be sent to the recipients) and sent to the recipients the first day after the weekend.
Max Delay Days No	Whole Number	Insert the maximum days available for delay of campaign.

Marketing Anti-spam Settings

To avoid spamming the audience or being unnecessarily disruptive to the clients, a special set of rules and conditions have been created in order to help bank employees choose the best course of action (anti-spam rules).

> **HINT**
> The anti-spam rules can be set also after saving the campaign.

For all the different types of communication channels available in FintechOS, certain triggers can be defined. These can include the number of days to delay the communication. Click on the **Insert** button to create a new anti-spam rule. The **Add Antispam Settings** page is displayed. Fill in the following fields:

ADD ANTISPAM SETTINGS

ANTISPAM SETTINGS

Communication Channel	email
Source Campaign	DocTest
Delay Days No	7

Field	Type	Description
Communication Channel	Lookup	The communication channel for which the anti-spam rules apply. For example: SMS, email.
Source Campaign	Lookup	The campaign according to which the anti-spam rules are set. The existing campaign does not start until the campaign selected in this field ends.
Delay Days No	Whole Number	The number of days that communications will be delayed in order to prevent spamming the audience with the same message in a short period of time.

Click the **Save and reload** button. The **Edit Campaign** page is displayed. To navigate between sections, click on the bullets from the bullet list which renders the section tabs.

Defining the Campaign Audience

Audience is any specific person that exists in the database that agreed to a data processing consent for marketing purposes and which fulfills any conditions that might be set. To define the campaign audience, click the **Audience** tab. The content of the **Audience** section varies based on the **Audience Type** selected. The Audience field filters the available audience with certain rules data in order to deliver a customizable marketing experience. The data source for the audience is the audience type, which can be:

Imported

An imported list behaves similar to a static list with the exception that it is a list from an outside source for example, a marketing partner. When choosing to import an audience list, the following fields are displayed:

ADD CAMPAIGN

Audience Type	Imported List	Audience List
File ID Field Name		Audience Name Field
Import File	Book1.xlsx ✖ Select file or Drop file here	

NOTES:
For **Dynamic** or **Static** List Audience Type, the audience must provide 2 mandatory tokens: **RECEIVER_EMAIL** and **RECEIVER_PHONE** (even when no data will be provided for one of the tokens)!
In case you use the audience in an **Internal Campaigns**, depending on distribution type, the audience must also provide the following 2 tokens: **ACTIVITY_BRANCH** and/or **ACTIVITY_OWNER**.
For **Imported** List Audience Type, the audience must provide 4 mandatory tokens (excel columns):
- A column that will represent the unique idetification of a record (File ID Field Name)
- A column for the Audience "Name" Field
- Two columns called exactly **phone** and **email**, even when no data will be provided for all or some of the cells in the column.
In case the audience is used in **Internal Campaigns**, the Excel must include five additional columns named exactly **branch**, **owner**, **accountName**, **accountPIN** and **accountFiscalRegistrationNo**, even if no data will be provided for some cells of the column.

Field	Description
Audience Type	The type of audience which can be imported, static, or dynamic.
Audience List	Displayed only for
File ID Field Name	After the audience list is generated, the field is no longer displayed at form level. Based on the information from this field, the system identifies which is the unique ID of each record from the import file. The user needs to fill-in the name of the column (from the imported audience list) that contains the unique ID of the record. **NOTE** If this field is not completed, the following error message is displayed: `File ID Field Name'` and `'Audience Name Field' are mandatory!`
Audience Name Field	After the audience list is generated, the field is no longer displayed at form level. Based on the information from this field, the system identifies which is the name of each record from the import file. The user needs to fill-in the name of the column (from the imported audience list) that contains the name of the record. **NOTE** If this field is not completed, the following error message is displayed: `File ID Field Name'` and `'Audience Name Field' are mandatory!`
Import File	After the audience list is generated, the field is no longer displayed at form level. Select or drag and drop the Excel format file with the audience list.

For Imported List audience type, four mandatory Excel columns, or tokens, must be provided for the audience:

- A column that represents the unique identification of a record: File ID Field Name.

- A column for the **Audience Name** field.

- And two columns called exactly **"phone"** and **"email"**, even if data is provided for only one of these columns.

> **IMPORTANT!**
> For internal campaigns, five additional Excel columns, or tokens, must be provided for the audience. These columns must be called exactly **"branch"**, **"owner"**, **"accountName"**, **"accountPIN"** and **"accountFiscalRegistrationNo"**, even if no data is provided for one of the columns.

Static

A static audience list is a list that remains the same over time. When choosing to use a static audience list, the following fields are displayed:

NOTES:
For **Dynamic** or **Static** List Audience Type, the audience must provide 2 mandatory tokens: **RECEIVER_EMAIL** and **RECEIVER_PHONE** (even when no data will be provided for one of the tokens)!
In case you use the audience in an **Internal Campaigns**, depending on distribution type, the audience must also provide the following 2 tokens: **ACTIVITY_BRANCH** and/or **ACTIVITY_OWNER**.
For **Imported** List Audience Type, the audience must provide 4 mandatory tokens (excel columns):
- A column that will represent the unique identification of a record (File ID Field Name)
- A column for the Audience "Name" Field
- Two columns called exactly **phone** and **email**, even when no data will be provided for all or some of the cells in the column.
In case the audience is used in **Internal Campaigns**, the Excel must include five additional columns named exactly **branch**, **owner**, **accountName**, **accountPIN** and **accountFiscalRegistrationNo**, even if no data will be provided for some cells of the column.

Field	Description
Audience Type	The type of audience which can be imported, static, or dynamic.
Audience List	This field is read only. If the audience type is **Imported**, then the name of the audience list and the imported template is displayed.
Audience	The audience type.

For **Dynamic** and **Static** list audience type, two attributes must be provided for the Audience Segment: **RECEIVER_EMAIL** and **RECEIVER_PHONE**, even if no data is provided for one of the tokens.

> **IMPORTANT!**
> For internal campaigns, one of the following additional Excel columns, or tokens, must be provided for the audience: **ACTIVITY_BRANCH** and **ACTIVITY_OWNER**. These tokens are provided depending on the distribution type. The mandatory tokens based on the distribution type are:
>
> - If the distribution type is set to **Assign To Account Responsible**, then the mandatory token is **ACTIVITY_OWNER**
>
> - If the distribution type is set to **Assign To Account Branch**, then the mandatory token is **ACTIVITY_BRANCH**

Dynamic

A dynamic audience list is a list that changes over time.

Field	Description
Audience Type	The type of audience which can be imported, static, or dynamic.
Audience List	This field is read only. If the audience type is **Imported**, then the name of the audience list and the imported template is displayed.
Audience	The audience type.

For **Dynamic** and **Static** list audience type, two attributes must be provided for the Audience Segment: **RECEIVER_EMAIL** and **RECEIVER_PHONE**, even if no data is provided for one of the tokens.

> **IMPORTANT!**
> For internal campaigns, one of the following additional Excel columns, or tokens, must be provided for the audience: **ACTIVITY_BRANCH** and **ACTIVITY_OWNER**. These tokens are provided depending on the distribution type. The mandatory tokens based on the distribution type are:
>
> - If the distribution type is set to **Assign To Account Responsible**, then the mandatory token is **ACTIVITY_ OWNER**
>
> - If the distribution type is set to **Assign To Account Branch**, then the mandatory token is **ACTIVITY_BRANCH**

Click **Save and reload**. The **Edit Campaign** page is displayed. To navigate between sections, click the bullets from the bullet list which renders the section tabs.

Scheduling the Campaign in Stages

A campaign can have multiple stages and each stage has a stage instance. Each time a stage executes, a stage instance is created. If it's a one time only campaign, it has one stage, one instance.

Click the **Schedule** tab and define the starting dates and end dates along with all the campaign stages. New campaign stages can be easily added or modified. Campaign stages have additional options that can be configured and support AB testing.

> **HINT**
> Simple AB tests can also be created. A/B testing (bucket tests or split-run testing) is a randomized experiment with two variants, A and B.

Campaign stages can be scheduled at **Campaign Level** or at **Stage Level** through the **Control Group Behaviour** field.

For stage level campaigns the control group members are kept for the entire campaign and for all stages. For campaign level campaigns the control group members are different for each stage.

Setup
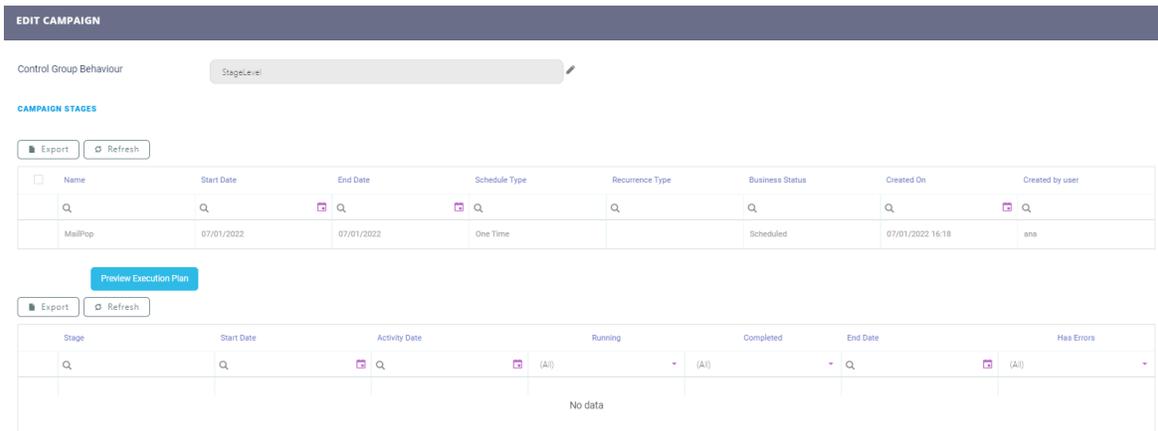
To add a stage, click the **Insert** button from the **Campaign stages** section. The **Add Campaign Stage** page is displayed.

Setting up the campaign stage is done similarly to setting up a campaign. This includes fields for the campaign stage name and the **Content Template**, but also personalized content to be used during the campaign stage.

> **NOTE**
>
> If at stage level, the communication channel has the **Is Campaign Activity Type** field set to `true`, then the stage generates internal campaign activities. For more details on communication channel configurations, see "View Channel Configurations" on page 443.

Field	Description
Name	Insert a suggestive name for the stage.
Content Template	Select a template for the stage. It can be a different template than the template selected for the whole campaign.
Culture	The campaign culture. For example: RO, GB. The available values are the ones form the selected content template.
Time zone	Select from the list the time applicable.
Activity type	This field is displayed when the content template selected has a communication channel with the **Is Campaign Activity Type** field set to `true`. To configure a communication channel , see "View Channel Configurations" on page 443. The following options are available: • Sales • Administrative
Activity subtype	The list of attributes that can be selected is defined by the admin user. **NOTE** This field is displayed if the **Activity type** field value is set to **Administrative**.
Convert Activity Option	If true, the **Convert** button and the **Related Journey** lookup field are displayed at the Campaign Activity form level. For more information see the Actions Buttons page. **NOTE** This field is displayed if the **Activity type** field value is **Sales**.
Status Reasons List	This field is displayed when an activity type is selected. To add a status reasons list, select from the available options or create a new one by following the steps from the "Managing Status Reasons" on page 359 page.

Click the **Save and reload** button. The page **Edit Campaign Stage** is displayed.

Schedule

This section tab has configurations which apply to only one stage, the stage the user is creating. The stage configurations are found in the global **Schedule** section tab of the whole campaign.

Moreover, the schedule is fully customizable, you can define a starting and ending date along with a recurrence type. You can also have a different schedule type that allows many different combinations to occur: daily, monthly, every X day, where X can be a number, every specific day combination of the week, and others. Previewing these settings offers a powerful way to set up an in-depth strategy of communication in order to provide your audience with the most effective possible way of receiving content updates.

Field	Description
Controlled By Execution Plan	If true, the fields used to define the stage schedule are hidden and the stage can be started only from an execution plan.

Field	Description
Schedule Type	The type of recurrence that the campaign stage will run on: • one time • campaign life time • Fix dates • Run for ''X'' days • Run for ''X'' weeks • Run for "X'' months • Run for ''X'' times.
No. of X	Number of recurrences. **IMPORTANT!** Depending on this number you insert, the period of the stage will grow. If it is too big, it may become bigger than the date period for the whole campaign, in which case it will not allow you to save the stage.
Start Date	Starting date for the campaign stage.
End Date	Ending date for the campaign stage.
Recurrence Type	Type of recurrence that will be executed by the campaign stages. Depending on the selection of these types, certain fields appear. Select from the list: • at every "'X'' minutes • at every ''X'' days • in every day of week • week of month • at day of month • at season concurrence.

Field	Description
Refresh Control Group On Recurrence	This field is not displayed if the recurrence interval type is set to One Time. If set to true, then the control group is refreshed before every recurrence of the stage. If set to false, then the control group is the same for all stage recurrences.
Activity Validity Days	By default, activities generated in a stage are active for one day before they expire. If this time frame is not sufficient, you can manually enter the number of days you wish to keep activities valid.
Client Timezone Offset	The client's time zone. This field is read only.
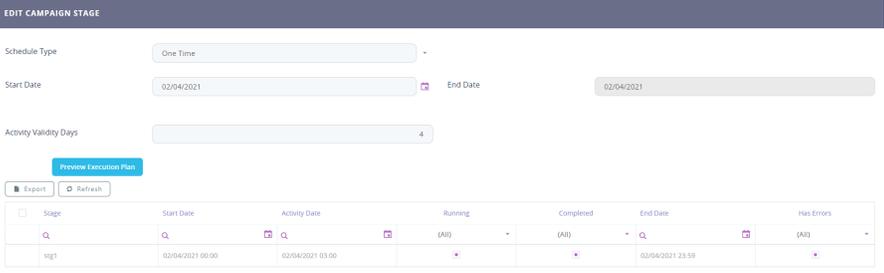
For each type of recurrence a new field or fields open.

Type of recurrence	Fields	Description
At every X Days	No of X	How many days.
	Daily No of Days	The gap between those X, e.g. No of X 3 and Daily No of Days 5, renders three days when the campaign is sent with 5 days in between each of those three days.
At every x Minutes	No of X	How many minutes.
	No of Minutes	The gap between those minutes.

Type of recurrence	Fields	Description
In every day of week	No of X	The number of days.
	Checkboxes with Weekdays	The week days: Monday to Sunday.
Week of Month	No of X	The number of weeks.
	Week No (1-5)	In which week the month the campaign will be executed.
At day of month	No of X	The number of days.
	Day No.	the actual calendar number of the day, from 1 to 31. e.g. 4 will render every day with the calendar structure 04/m/y.
At season occurrence	No of X	number of seasons.
	Season	Select one of the seasons: • Spring • Summer • Autumn • Winter
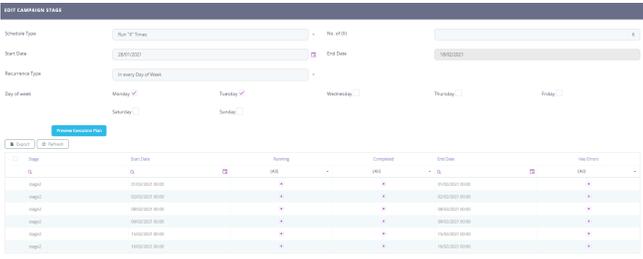
Click the **Save and reload** button. By clicking on the **Preview Execution plan**, the grid below the button populates with stage instances simulations in order to have a perspective on how the stage instances run.

If the stage is set to run one time, only one stage instance is displayed while for stages set to run with a certain recurrence, the stage instances are created based on how many times the stage runs.

IMPORTANT!
This is the plan for one stage only. To see the plan of all stages return to the **Schedule** section tab of the whole campaign.

Campaign Stage Instances (Actual Run)

At stage level, this section populates once the campaign is in an **Approved** business status and when a stage instance is created for every stage run, showing the actual history of the stage instances that were run, not only a simulated preview. If the stage has a recurrence set, then a stage instance is created for every time that recurrence runs.

To access additional information, double-click on a record. Three section tabs open.

Stage Instance

On this section tab, the following information can be found:

Field	Description
Campaign	The name of the campaign.
Stage	The name of the stage.
Start Date	The date the stage began running.
End Date	The date the stage stopped running.
Multi Stage Plan Instance	The name of the multi-stage execution plan instance composed from the multi-stage execution plan name and the time the instance began to run. **NOTE** The **Multi Stage Plan Instance** field indicates if the stages instance is created at campaign level or if it's part of an execution plan.
IsPreview	If true, it indicates that the stage instance has been generated based on an execution plan preview. For more details on this topic, see the Previewing the Execution Plan page.
Delivery status	The delivery status. The following options are available: • Suspended: this status is displayed when the **Suspend delivery** button is used. • Allowed: this status is displayed when any other button than **Suspend delivery**.
Running	If **true**, the multi-stage stage execution plan is running.
Cancelled	If **true**, the multi-stage execution plan is cancelled.
Completed	If **true**, all the activities at stage instance level are created.

Field	Description
Sent	If **true**, all the messages generated by the stage instance are sent to the recipients.

Here, campaign managers have the possibility to pause, resume, or cancel the delivery of the messages generated by a stage instance by using the below options:

- **Suspend delivery**: Use this button to stop the delivery of all the remaining messages that have not been sent to the recipient on that stage instance. In this case, messages are still created but are no longer sent to the recipients.

  This button is displayed if the **Sent** field is set to `false` and the **Delivery Status** field value is **Allowed**.

- **Resume delivery**: Use this button to resume the delivery of the messages that haven't been sent to the recipient.

  This button is displayed if the **Delivery Status** field value is **Suspended**.

- **Cancel processing**: Use this button to cancel the creation and delivery of the messages that have not been created or sent to the recipient. This button is displayed if the **Sent** field is set to `false`.

The **Stage Instance Running Counters** section indicates the total number of communications sent to the recipients, the channels used, if the messages were delivered, the queued messages sent, and so on.

Campaign Activities

This section tab displays the activities and action items created and at stage instance level.

Execution Errors

This section tab shows if any errors occurred while running the execution plan.

Distribution

> **IMPORTANT!**
> The campaign stage distribution step is displayed only for internal campaigns. A campaign that generates internal campaign activities cannot be approved without selecting the distribution type.

This tab allows campaign managers to set up a distribution logic when creating an internal campaign. Thus, having the flexibility to assign the campaigns activities either to certain responsible persons or to certain branches.

EDIT CAMPAIGN STAGE

Distribution Type   Custom Assignment Logic

Assignment Logic   Distribute Uniform to Branch Users

Field	Description
Distribution Type	Select the target responsible for the campaign activities. The following options are available: • Assign To Account Responsible: in this case, the activity is distributed to the account responsible. For static and dynamic audience lists, each activity is assigned to the account owner. For imported audience lists, each activity is assigned to the account responsible from the imported audience list. • Assign To Responsible Branch: in this case, the activity is distributed to the responsible branch. For static and dynamic audience lists, each activity is assigned to the responsible branch responsible. For imported audience lists, each activity is assigned to the account responsible branch from the imported audience list. • Custom Assignment Logic: in this case, the activity is distributed to a user from the responsible branch. This is a custom stored procedure. For static and dynamic audience lists, each activity is assigned to the account responsible, based on a logic that is defined at the time of implementation. For imported audience lists, each activity is assigned to the account responsible from the imported audience list, based on a logic that is defined at the time of implementation. This option in the distribution logic gives the possibility of assigning activities to the person responsible considering their competencies and workload based on the following scenarios: • Assign activities to users from the activity responsible branch ensuring a uniform random distribution per campaign. Activities are allocated equally to all team members, taking into account the activities from the

Field	Description
	current campaign.
	• Assign activities to users from the activity responsible branch that have specific role, function, or competence (for example relationship manager, teller, account manager) ensuring a uniform random distribution per campaign. Activities must be allocated equally to all team members, taking into account the activities from the current campaign.
	• Assign activities to users from the activity responsible branch that have specific role, function, or competence (for example relationship manager, teller, account manager) ensuring a uniform random distribution taking into account the number of all open (activities with the **In progress** or **Assigned** status) campaign activities already allocated. In this case, the activities are allocated equally to all team members, taking into account the open activities of all ongoing campaigns.

Field	Description
Assignment Logic	This field is displayed only for **Custom Assignment Logic** distribution type. The assignment logic runs for each internal campaign activity when the campaign manager or segment manager selects the **Custom Assignment Logic** option and uses one of the available custom stored procedures. The following parameters are taken into account when defining the stored procedures: • activity responsible branch, • users from responsible branch, • users role, function, or competence, • number of activities that are already allocated per current campaign, • number of activities already allocated with **In Progress** or **Assigned** status, per all in progress campaigns.

Click the **Save and Reload** button.

The following warning message is displayed if the **Distribution Type** field is not set in the following instances: `Before approving the campaign, select the distribution type for the stage: "stage name"`. This message appears in the below instances:

- If the field is not set for at least one stage that generates internal campaign activities.

- For a campaign with two stages where one generates internal activities and the other external ones, if both stages do not have the field set, the same message is displayed, showing the name of the internal campaign stage.

The message is not displayed in the below situations:

- For campaigns that generate only external campaign activities.

- For campaigns with two stages, a stage with internal activities and one with external ones, and where the field is set for the stage that generates internal activities.

> **HINT**
> Stored procedures templates can be modified or new ones can be added at product implementation, depending on the customer's business needs.

Define A/B variations of a stage

Depending on the template created and selected for the campaign, certain channels are rendered here:

- email

- SMS.

This tab contains the following fields:

Field	Description
Allow recurrence Duplicates	If true, it allows any recurring messages to be duplicates of previous messages.
Channel Variations list	The proportion for sending differentiated communications.
Content and Channel Variations list	The proportion for sending differentiated communications of the same type.

> **IMPORTANT!**
> These variations apply to only one stage.

Edit the:

Field	Description
Send channel %	There is the percentage used for the usage of the channel.
Start time (hh)	The starting hour.

Field	Description
Start time (mm)	The starting minutes.
End time (hh)	The ending hour.
End time (mm)	The ending minute.

Example

A company with a customer database of 2,000 people decides to create an email campaign with a discount code in order to generate sales through its website. It creates two versions of the email with different call to action (the part of the copy which encourages customers to do something — in the case of a sales campaign, make a purchase) and identifying promotional code. To 1,000 people it sends the email with the call to action stating, "Offer ends this Saturday! Use code A1", and to another 1,000 people it sends the email with the call to action stating, "Offer ends soon! Use code B1".

All other elements of the emails copy and layout are identical. The company then monitors which campaign has the higher success rate by analyzing the use of the promotional codes.

The email using the code A1 has a 5% response rate (50 of the 1,000 people emailed used the code to buy a product), and the email using the code B1 has a 3% response rate (30 of the recipients used the code to buy a product).

The company therefore determines that in this instance, the first Call to Action is more effective and will use it in future sales.

A more nuanced approach would involve applying statistical testing to determine if the differences in response rates between A1 and B1 were statistically significant (that is, highly likely that the differences are real, repeatable, and not due to random chance).

There are many A/B testing case studies which show that the practice of testing is increasingly becoming popular with small and medium-sized businesses as well.

You can define send channel percentages in order to distinguish between different channels. The view to be sent can be previewed along with the starting and end times. Further differences might be set in order to differentiate between two versions of the same channel communication. For example, you can have two versions of the same email and split those to determine the results.

Click the **Save and reload** button.

Refining Audience of a stage

EDIT CAMPAIGN STAGE	

EXCLUDE SEGMENT

+ Insert existing	✕ Remove existing

☐	Name	Context Entity
	🔍	🔍
	DocTest	Account
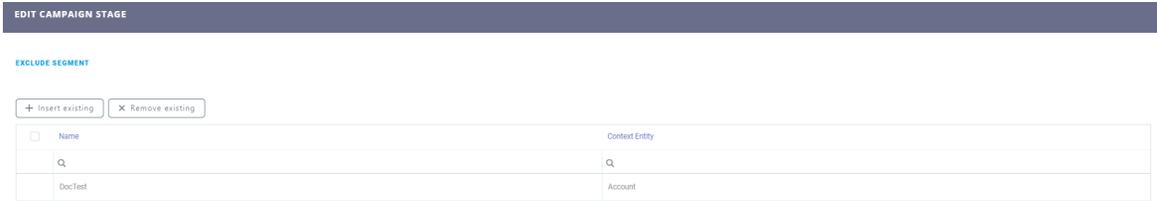
Configuring the selected audience can be further changed from the **Refining Audience** tab, by excluding specific segments from the initial data set available. These are a set of conditions that will further filter the selected audience (examples include: customers under 20, customers without children, etc.).

From the audience selected it is possible to eliminate certain people depending. Click the ''Insert existing'' and select from the pop-list the audience which will not receive the campaign messages.

> **HINT**
> Create the list with the audience to be excluded before arriving to this step.

Activities of a stage

This tab contains the actions, activities, and campaign activities generated at stage level.

Actions

ACTIONS

⟳ Refresh

☐	Stage	Identity	Date	End Date	Email	Phone Number	Channel	Status	Message Status	Message Template	Name	Not Sent	Not Sent Reason	ChannelProviderParams	List M
	🔍	🔍	🔍 📅	🔍 📅	🔍	🔍	🔍	🔍	🔍	🔍	🔍	🔍 ▾	🔍	🔍	🔍
	test0702	SQL3645184	10/02/2022 02:00	11/02/2022 02:00	hard drive_66@iDaniel - Feeney.com		TCA	InProgress	New	content11intern	content11intern	☐			Chandl
	test0702	IB2130955	10/02/2022 02:00	11/02/2022 02:00	hard drive_66@Schroeder, Miller and Barrows.com	1-276-595-0099 x07837	TCA	InProgress	New	content11intern	content11intern	☐			Anna M
	test0702	SSL2648749	10/02/2022 02:00	11/02/2022 02:00	hard drive_66@Halvorson and Sons.com		TCA	InProgress	New	content11intern	content11intern	☐			Macey
	test0702	SMTP9306727	10/02/2022 02:00	11/02/2022 02:00	hard drive_66@Bosco- Cole.com	632-736-7722 x7794	TCA	InProgress	New	content11intern	content11intern	☐			Maybel

Actions can be used (**Actions** tab) to automatically send email or SMS messages, based on user configuration, and place them in a system queue which will then deliver them to the intended audience. The difference between actions and activities is that activities are not sent to the audience.

Activities

Activities can be viewed at campaign or stage level. In this tab, all the campaign activities generated at stage level are displayed.

Campaign Activities

This section contains the internal campaign activities generated within the stage level. For more details see the Internal Campaign Activities page.

A/B Control Group of a stage

This section tab displays the messages or actions kept at control group level and not sent to the targeted audience.

Execution Log of a stage

The **Execution Log** tab displays a list of all the actions undertaken in this category along with the associated stage and ending dates. This allows you to easily track and see what happens under the system.

Previewing the Execution Plan

When the user is done adding all the stages, he/ she returns to the **Schedule** section tab of the whole campaign and clicks on **Preview execution plan** to see the plan for all stages.

Preview campaign stage instances

Once you have defined and saved a campaign stage, you can generate an Excel file that lists all the data for an instance of that stage. The preview is generated asynchronously by a job scheduler and you have the option to receive an email notification when the Excel file is ready. To create a stage instance preview:

1. In FintechOS Studio, open a campaign and select the **Schedule** tab.

2. If the execution plan is not displayed, click the **Preview Execution Plan** button to generate it.

3. Double click a stage instance from the execution plan to open it. Four section tabs open. The fields are read-only.

4. In the stage instance form, select the **Activities Preview List** tab.

5. Click **Insert** to create a new stage instance preview.

6. In the Add Generated Preview window, enter a **Begin Date** for when you wish to schedule the processing for the preview and select the **Send Mail** checkbox if you wish to send an email notification when the preview is ready.

7. Click **Save and Reload** at the top right corner of the page.

8. In the Edit Generated Preview page, you can modify the **Begin Date** and **Send Mail** options and customize the **Email Address** where you wish to receive the notification

once the preview is ready.

9. Click **Save and Close** at the top right corner of the page.

To cancel a preview, click on the **Cancel** button found on the Generated preview and confirm.

The Activities Preview List tab lists all the stage instance previews tasks that have been finished, are in progress, have failed, or are scheduled to run in the future.

	1 Stage Instance	2 Campaign Activities	3 Activities Preview List	4 Execution Erorrs

GENERATED PREVIEWS

+ Insert   X Delete   ■ Export   ⟳ Refresh

	Name	Status	Begin Date	End Date	Preview Type	Found Records	Created On	Has Errors
	🔍	🔍	🔍 📅	🔍 📅	🔍	🔍	🔍 📅	(All) ▾
	activity_Campaign...	Finished	30/04/2021 11:16	30/04/2021 11:16	Activity	19	30/04/2021 11:16	■
	activity_Campaign...	Finished	19/05/2021 14:14	19/05/2021 14:14	Activity	19	19/05/2021 14:13	☐
	activity_Campaign...	Scheduled	19/05/2021 14:25		Activity		19/05/2021 14:17	■

Once a preview generation is finished, if you select it from the list, you will be able to download the Excel file containing stage instance preview data.

EDIT GENERATED PREVIEW

GENERATED PREVIEW

Name	activity_CampaignDinamicET1_stg2_05-19-2021_14:16:19
Status	Finished
Preview Type	Activity
Begin Date	19/05/2021 14:25
End Date	19/05/2021 14:25
Found Records	19
Send mail	✓
Email Address	john.doe@fintechos.com
File	FTOS_MKT_StageInstance.xlsx
Campaign	CampaignDinamicET1
Stage	stg2
Has Errors	
Error Message	

Controlling Campaign Activities

This section allows you to control the associated campaign activities and actions that can be sent. These behave in a similar fashion to the activities and actions configured for the campaign stages only these should occur once the campaign has ended.
This feature is used to record the person responsible for sending specific messages and keeping a log of the number of messages sent. In addition, personal information such as name, email, and phone number are also stored along with an associated user to allow an easy way of contacting that person and to promote ownership.

Campaign Team Members

Team members can be added to the campaign team member list by allowing them to be entered in the **Control** tab. The Control section allows you to select the number of messages that will be sent and varying the control message by selecting the random message option. Each message number is associated to a campaign user.

Field	Description
Control Message Count	The maximum number of messages that are sent to the control group members, if the team members are defined at the campaign level.
Random Control Message	If `true`, and the control message count is smaller than the number of the messages that the system generates in case the **Control Message** field is `null`, then the system randomly selects the messages that are sent to the control group members.

> **HINT**
> In the **Campaign Team Members** section, it is possible to select the member who can control the campaign.

Viewing Activities

The **Activities** tab has four sections: **Actions**, **Activities**, **Internal Campaign Activities**, and **Control Group** for an overview of the campaign. In this step, the generated activities at campaign level are displayed.

Actions

This section displays the actions generated through a campaign. The following data is displayed:

Field	Description
Stage	The campaign stage.
Identity	The unique campaign identifier.
Date	The campaign actions start date.
End Date	The campaign actions end date.
Email	The client's email address.
Phone Number	The client's phone number.
Channel	The communication channel.
Status	The campaign status: Scheduled, In progress, Notified, Cancelled, Error.

Field	Description
Message Status	The message status.
Message Template	The message template.
Name	The campaign number.
Not Sent	If selected, the campaign messages are not to be sent for this account.
Not Sent Reason	The reason why messages are not to be sent for this account.
List Member	The audience list member.
CC Email Addresses	Alternative email address to be added in the CC field.
BCC Email Addresses	Alternative email address to be added in the BCC field.
Account Name	The name of the account.
PIN	The account's PIN number.
Fiscal Registration No	The fiscal registration number of a corporate account.
Commercial Registration	The commercial registration number.

Activities

This section displays the activities generated through a campaign. The following data is displayed:

Field	Description
Stage	The campaign stage.
Identity	The unique campaign identifier.
Date	The campaign activities start date.
End Date	The campaign activities end date.
Email	The client's email address.
Phone Number	The client's phone number.
Channel	The communication channel.
Status	The campaign status: Scheduled, In progress, Notified, Cancelled, Error.
Message Status	The message status.
Message Template	The message template.
Assigned User	The user the campaign activity is assigned to.
Not Sent	If selected, the campaign messages are not to be sent for this account.
Not Sent Reason	The reason why messages are not to be sent for this account.
List Member	The audience list member.
Name	The campaign number.
Account Name	The account name.

Field	Description
PIN	The account's PIN number.
Fiscal Registration No	The fiscal registration number of a corporate account.

Internal Campaign Activities

This section displays sales or administrative internal campaign activities.

> **NOTE**
>
> The **Internal Campaign Activities** section is populated only if a campaign generates internal campaigns activities. For additional details, see the Internal Campaign Activities page.

Field	Description
Activity Type	The activity type: sales or administrative.
Activity Subtype	The activity subtype.
Activity status	The activity status.
Account Name	The name of the account.
Account PIN	The account PIN.
Stage	The campaign stage.

Control Group

This section displays the control group team members. The following data is displayed:

Field	Description
Stage	The campaign stage.
Activity Date	The date when the activity is created.
List Member	The audience list member.
Entity Type	The entity type.
Customer	The customer name.

Saving the Campaign

Before saving the campaign, go to the **Generated Previews** tab to preview it. The following data is displayed:

Field	Description
Name	The campaign name.
Status	The campaign status.
Begin Date	The date the campaign started.
End Date	The date the campaign ended.
Preview Type	The preview type. Possible values are: segment, audience, activity, campaign plan.
Found Records	The number of records found.
Created on	The system date when the campaign record is inserted.

To save the campaign, click the **Save and Close** button at the top right corner.

Internal Campaigns

Campaigns are made through typical communication channels namely email, text messaging, online chat messaging, phone calls, mail, or even through the banking mobile application that the customer is using. Once these campaigns are started, they generate certain campaign activities that need to be handled internally.

The **Internal Campaigns** module comes as an add-on to the Omnichannel Campaigns automation processor and it's meant as an extension to the current customer interaction channels. Along with email, text messaging, online messaging, and other means of communication, there are times when human interaction is needed, especially in certain sales actions. Besides sales activities, administrative actions can be assigned and managed also through this module. In these situations, a bank employee reaches out to a client with administrative purposes, for example, data or document collection.

These types of internal campaign activities are distributed to internal roles: relationship manager, account manager, contract center agent, teller, and so on.

> **HINT**
> Campaigns generate internal or external activities based on the communication channel set at the content used at stage level. When defining a communication channel, the **Default Action Type** field must be set. If at **Action Type** level, the **Is Campaign Activity Type** field is true, then the campaign generates internal activities. For more information on adding communication channels, see "Managing Personalized Content" on page 456.

FintechOS offers the possibility of distributing targeted campaign activities more efficiently to internal users on top of the existing platform features for audiences, personas, contents, templates, actions, and activities. This feature allows bank employees to assign tasks in a practical manner and keep track of updates or to add the activity to a queue if it's necessary to contact certain clients. All of these actions are monitored at user and centralized level. Internal campaigns are needed for a better structure on the generated campaign activities. They can be sales or administrative actions that can be assigned and managed at manager or execution level.

For more details on internal campaign activities, see the following pages:

- Internal Campaign Activities

- Dashboards

The images below are UML diagrams showing the sales and administrative campaigns workflows:

- Sales workflow
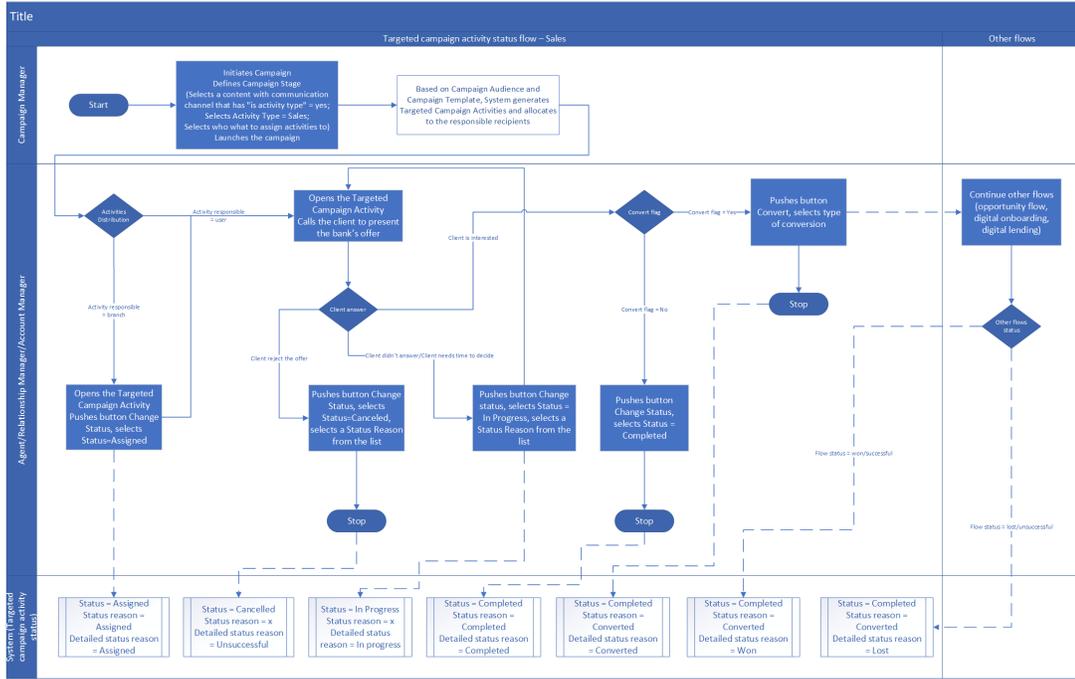
- Administrative workflow
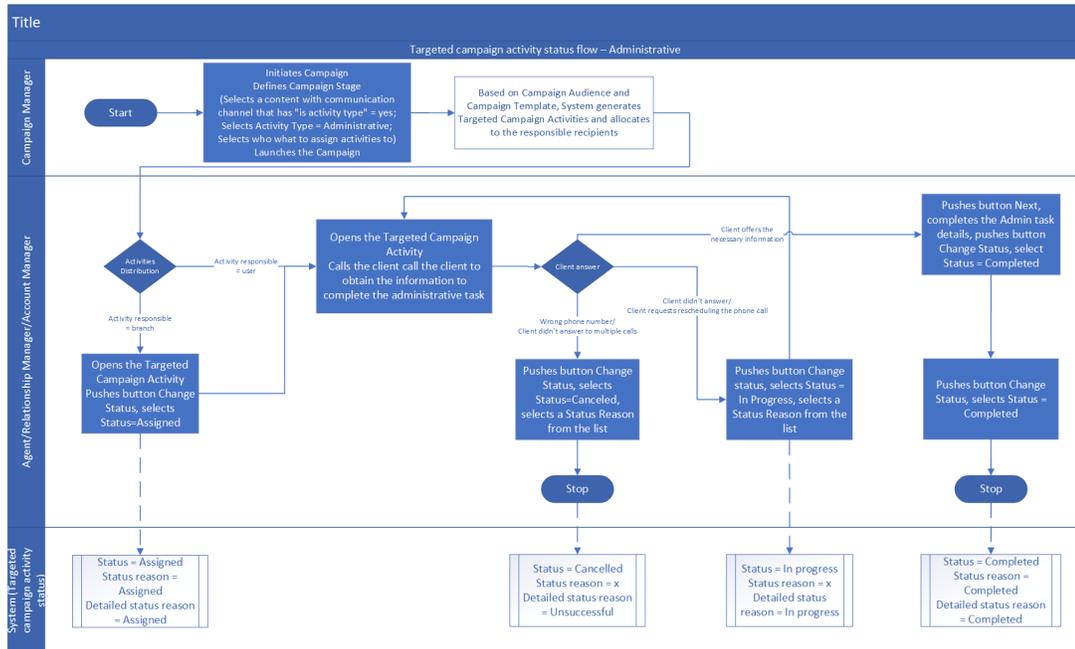
Internal Campaign Activities

After for an internal campaign, sales or administrative campaign activities are generated. Internal campaign activities are generated after a campaign that generates internal activities is defined and approved. The person responsible for contacting the clients can access each campaign activity and based on the information presented on the activity level, the client is contacted. After the client feedback is received, the status of each campaign activity is updated. For both sales and administrative campaign types, the below data is displayed:

Field	Description
Campaign	The campaign number.
Activity Type	The activity type: sales or administrative.
Activity Subtype	The activity subtype.
Activity status	The activity status.
Account Name	The name of the account.
Account PIN	The account PIN.
Fiscal Registration No	The fiscal registration number of a corporate account.
Responsible User	The person responsible of the campaign activity.
Responsible Branch	The bank branch responsible of the campaign activity.
Campaign Priority	The campaign priority.
Activity date	The date the campaign activity begins.
End Date	The date the campaign activity ends.
Detailed Status	A detailed status of the campaign activity.
Status Reason	The status reason.
Closed On	The date the campaign was closed on.
Completed	If **True**, it indicates the campaign activity is completed.

HINT
The data from the activities grid can be filtered for a faster record search.

There are two types of generated internal campaign activities:

- Sales activities where bank clients are contacted for different product or services promotions.

- Administrative activities where bank clients are contacted whenever additional data or documents are needed.

> **NOTE**
>
> Administrative campaign activities can have different subtypes. For example, there can be an administrative campaign with the role of collecting or updating client personal data or documents. Administrative activity subtypes are dynamic and can be set during the product implementation.

For the person that launches and manages the campaign, these activities can be viewed in the **Activities** tab and are displayed only when the campaign generates sales or administrative internal campaign activities. The person responsible with handling the campaign activities can access and view them from the Dashboards area.

The below steps indicate how to access additional internal campaign activities as a campaign manager in charge of launching the campaign.

1. From the **Internal Campaign Activities** section, select a campaign activity to open it. The **Edit Campaign Activity** page is displayed.
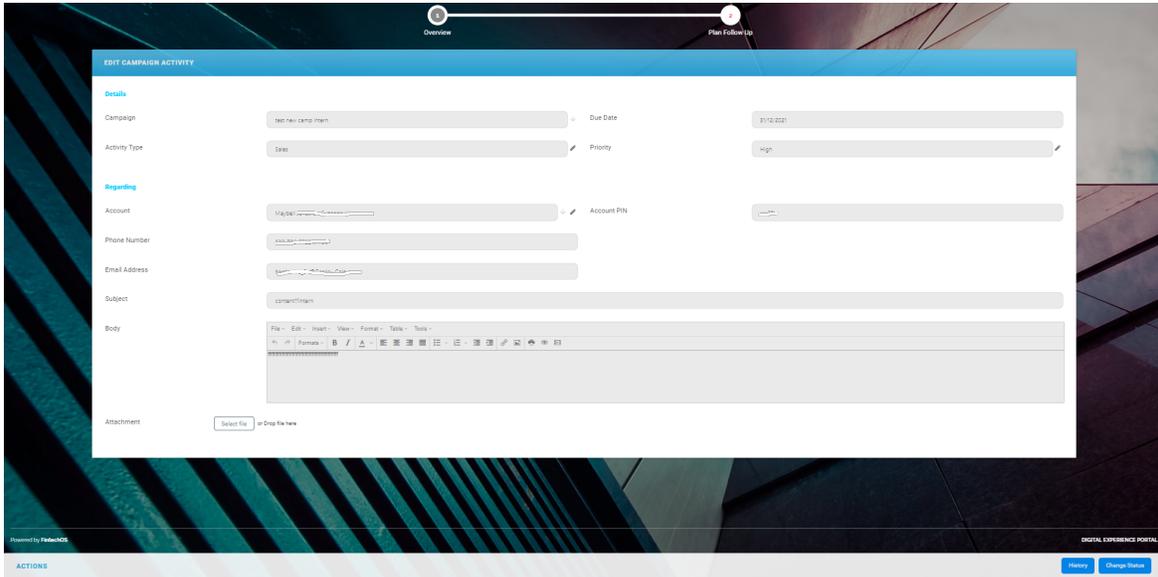
2. The following data can be viewed:

> **NOTE**
>
> In case of campaigns that generate administrative campaign activity, a new tab that contains the defined activity subtype data is displayed.

Overview Tab

Field	Required	Type	Description
Account	No	Read Only	The account number. If no value is set for this fields, the **Account Name** field value is displayed instead.
Account name	No	Read Only	The name of the account. Displayed only if the **Account** field is **null**.
Responsible User	No	Read Only	The person responsible of the campaign activity.
Responsible Branch	No	Read Only	The bank branch responsible of the campaign activity.
Status Reason	No	Read Only	The status reason. For additional information, see the "Managing Status Reasons" on page 359 page.
Campaign	No	Read Only	The campaign number.

Field	Required	Type	Description
Due Date	No	Read Only	The end date of the campaign and the date by which the activity must be closed. If the system date is greater than or equal to the campaign due date, all internal campaign activities are closed and the statuses are changed as follows: • The **Activity status** value is changed to **Cancelled** • The **Status reason** value is change to **System aborted** • The **Detailed status** value is changed to **Unsuccessful** **NOTE** If there are internal campaign activities with **Activity status** different than **Unassigned**, **Assigned**, or **In Progress**, then the campaign activities' original status is not changed.
Activity Type	No	Read Only	The activity type. Displayed only for **Sales** campaigns.
Type	No	Read Only	The administrative activity type. Displayed only for **Administrative** campaigns.
Priority	No	Read Only	The campaign priority. The following options are available: • High • Medium • Low • Very Low
Subject	No	Read Only	The email subject.

Field	Required	Type	Description
Body	No	Read Only	The email body.
Phone Number	No	Read Only	The client's phone number.
Email Address	No	Read Only	The client's email address.
Account PIN	No	Read Only	The account's PIN number. Displayed only if no value is set.
Fiscal Registration Number	No	Read Only	The fiscal registration number of a corporate account.
Closed On	No	Read Only	This filed is displayed only if the activity status is **Cancelled** or **Completed**. The system date value is automatically updated when the activity status is **Cancelled** or **Completed**.
Related Journey	No	Read Only	System input after converting a sales activity to an Opportunity/ Digital lending/ Digital onboarding. This field is displayed only for sales activity types.

Field	Required	Type	Description
Current Status	No	Read Only	The current status of the campaign. The following options are available: • Unassigned: set automatically by the system when the campaign is started and the activities are distributed to the responsible branch • Assigned: set automatically by the system when the campaign is started and the activities are distributed to a user (account responsible/ a user from the responsible branch) **NOTE** When a user changes the status from **Unassigned** to **Assigned**, the responsible user changes automatically with the person who changed the status. These statuses can be set manually by the user: • Cancelled • In progress • Completed

Field	Required	Type	Description
Detailed Status	No	Read Only	A detailed status of the campaign activity. • If **Activity Status** is **Unassigned**, then **Detailed status** is **Unassigned** • If **Activity Status** is **Assigned**, then **Detailed status** is **Assigned** • If **Activity Status** is **In progress**, then **Detailed status** is **In progress** • If **Activity Status** is **Cancelled**, then **Detailed status** is **Unsuccessful** • If **Activity Status** is **Completed** and **Related Journey** is **null** and **Opportunity status** is **Open**, then **Detailed status** is **Completed** • If **Activity Status** is **Completed** and **Related Journey** is not **null** and **Opportunity status** is **Won**, then **Detailed status** is **Won** • If **Activity Status** is **Completed** and **Related Journey** is not **null** and **Opportunity status** is **Lost**, then **Detailed status** is **Lost**
Add file	No	File	Allows the upload of necessary documents.

At the bottom of the page the following action buttons are displayed: **Change Status**, **History**, **Assign to user**, **Assign to me**. For additional details, see the Action buttons page.

Plan Follow Up Tab

In this tab, meeting and call follow-up activity types are displayed.

IMPORTANT!

When a campaign activity is either in completed or cancelled status, the following fields and buttons become read-only:

• all the fields from the **Activity** section of the **Overview** tab
• all the following buttons: **Change Status** and the standard platform buttons as well (**Save & Close**, **Save & Reload**, etc.)

Dashboards

Automation Blocks offers the possibility of viewing centralized campaign activities at execution and manager level. This feature aids campaign managers assign campaign tasks in a practical manner and keep track of updates. In addition, execution users can view their assigned activities.

To access the dashboard, log into the FintechOS Portal with the given credentials and select the **Internal Campaigns** tab. In this page, the following tabs are displayed:

NOTE
The activities displayed are based on the user role. For example, a manager can view the activities related to their team, while a user with an execution role views their activities or their branch's unassigned activities.

Sales Activities

In this tab, all relevant information related to an internal sales activity is displayed. This allows users to contact retail or corporate clients in order to promote company products or services. Here, the following tasks can be viewed:

- **My sales activities/ My team's sales activities**:

  1. The open sales activities option displays the active sales campaign activities list that have the following statuses: **Assigned** or **In progress**.

  2. The closed sales activities option displays the sales campaign activities list that have the following statuses: **Completed**, **Converted**, **Won**, **Lost**, or **Unsuccessful**.

- **My branch unassigned activities/ My team's unassigned activities** displays the activities that are not allocated to a user. Here, users can assign tasks based on their user role using the Assign to me (execution view) or Assign to user (manager view) buttons.

Administrative Activities

In this tab, all the relevant information related to an internal administrative activity is displayed in order to help the person in charge of the campaign understand and finalize the campaign activity. Here, the following tasks can be viewed:

- **My administrative activities/ My team's administrative activities**:

  1. The open administrative activities option displays the active administrative campaign activities list that have the following statuses: **Assigned** or **In progress**.

  2. The closed administrative activities option displays the administrative campaign activities list that have the following statuses: **Completed** or **Unsuccessful**.

- **My branch unassigned activities/ My team's unassigned administrative activities** displays the activities that are not allocated to a user. Here, users can assign tasks based on their user role using the Assign to me (execution view) or Assign to user (manager view) buttons.

> **NOTE**
> For analysis and reporting purposes select the desired records from the campaign list and click the **Export** button to download the data set. If the grid is filtered or truncated (displaying 5, 10, 20, etc. entries per page out of a larger set), the current set export includes only the displayed values.

On both tabs the following data is displayed:

Field	Description
Campaign	The campaign number.
Activity Type	The activity type: sales or administrative.
Activity Subtype	The activity subtype.
Activity status	The activity status.
Account Name	The name of the account.
Account PIN	The account PIN.
Fiscal Registration No	The fiscal registration number of a corporate account.
Responsible User	The person responsible of the campaign activity.
Responsible Branch	The bank branch responsible of the campaign activity.
Campaign Priority	The campaign priority.
Activity date	The date the campaign activity begins.
End Date	The date the campaign activity ends.
Detailed Status	A detailed status of the campaign activity.
Status Reason	The status reason.

Field	Description
Closed On	The date the campaign was closed on.
Completed	If **True**, it indicates the campaign activity is completed.

HINT
The data from the activities grid can be filtered for a faster record search.

Viewing Activities Dashboard Charts

Dashboard charts are useful tools that can be used to identify which activities are assigned to a certain bank branch or employee to easily see the status of each task.

To view the charts, select either the **Sales** or **Administrative** tab and then click the **Show Charts** button from the upper left corner. The displayed is filtered by default for the last three months.
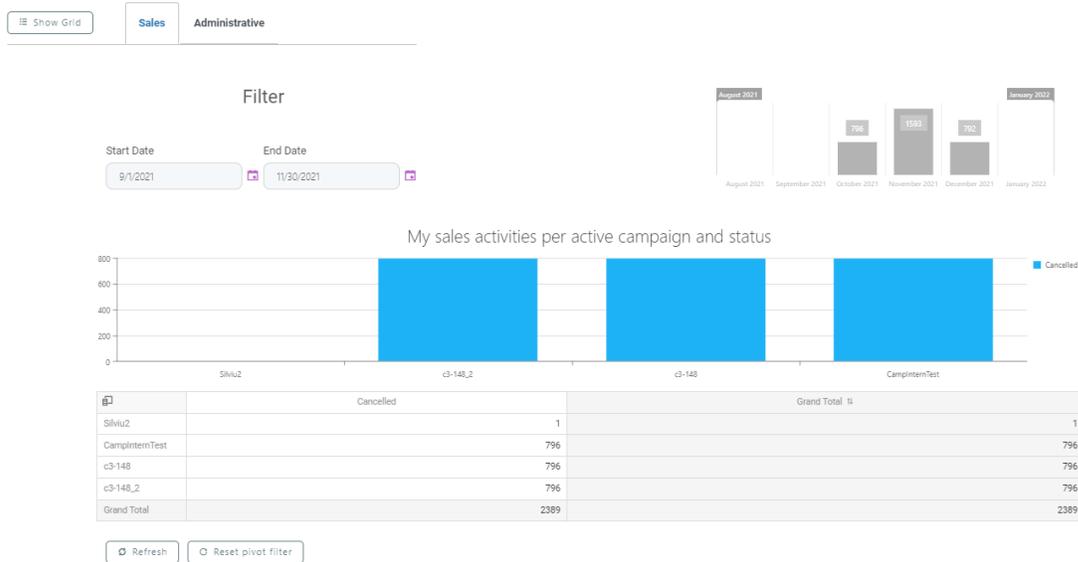
To filter the display period , change the **Start Date** and the **End Date**.
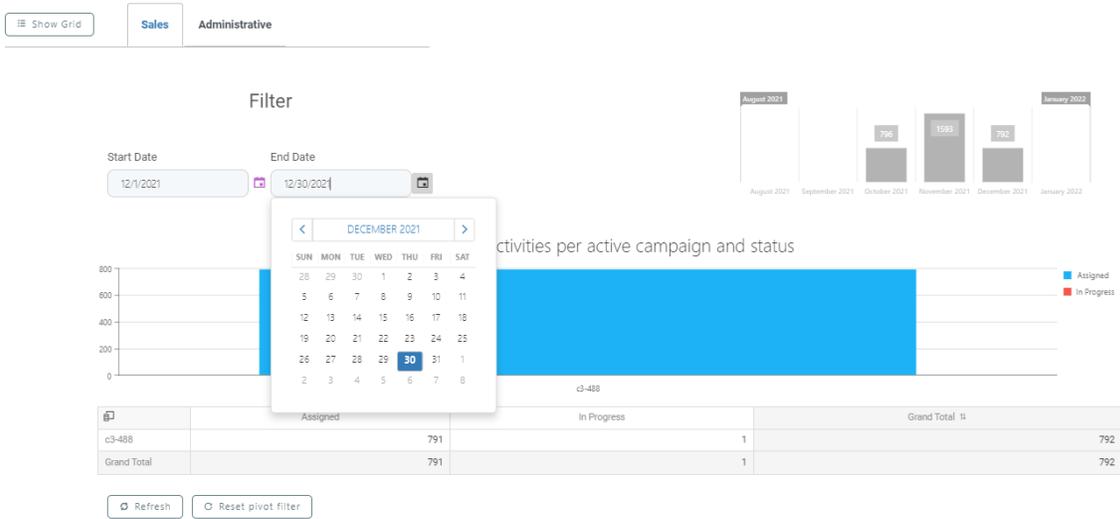
Filtering Dashboard Data

To change the way the information from the pivot table is viewed, select the **Show Field Chooser** option. A pivot filter is displayed with the following default settings:

- The row fields display the **Campaign**, **Branch**, and **User** fields.

> **NOTE**
>
> The default settings are different depending on the user's role. In case of a user with execution role, the **Branch** and **User** fields are not displayed.

- The column fields display the **Status** field.

- The data fields display the **Total** field.
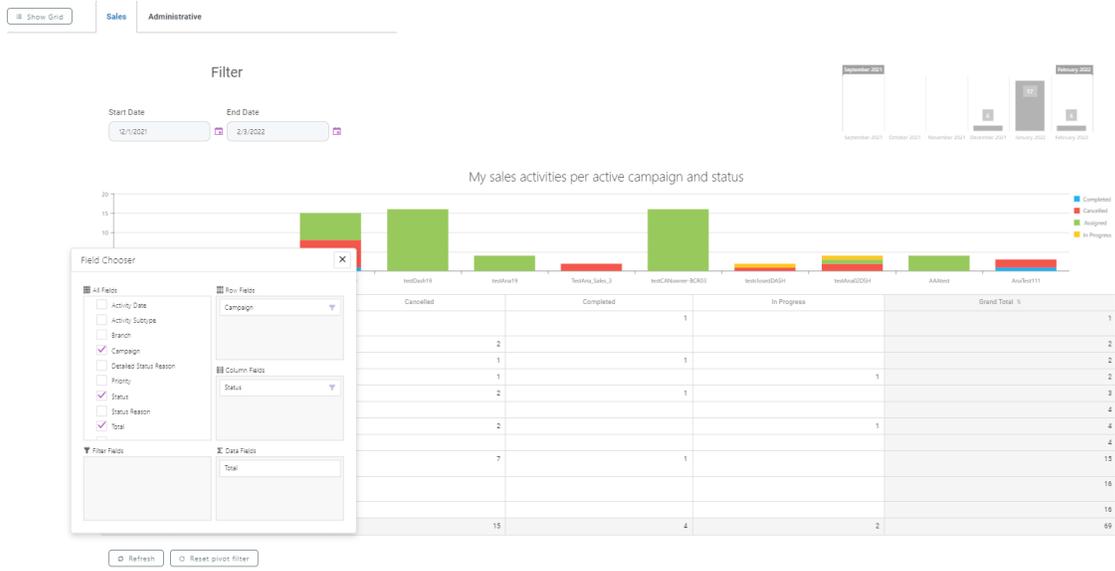
The pivot option is customizable depending on the data needed. To return to the default settings, click the **Reset pivot filter** button.

The **Campaign/ Branch/ User**, **Status**, and **Total** fields are displayed based on the rules set in the pivot table option. For example, each manager sees only the activities assigned to direct or indirect subordinates and the activities assigned to their branch or to the branch that is a direct or indirect child of their branch. The same rules apply to the person the campaign activity is assigned to. They are able to view only the activities assigned to them.

> **HINT**
> The pivot settings are saved for each particular user and are not reset after logging off.

To return to the grid view, click the **Show Grid** button from the upper left corner.

Actions Buttons

Action buttons are meant to help the user better manage the internal campaign activities generated. The following actions buttons are displayed at the bottom of the screen when handling internal campaign activities:

- **Change Status**: allows the user to change the status of the campaign to: **In Progress**, **Cancelled**, or **Completed**.
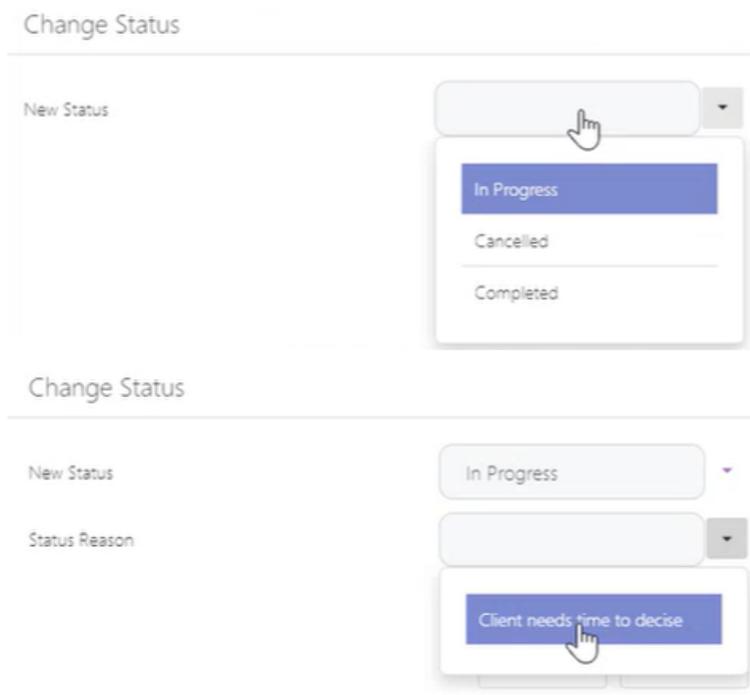
When changing the status reason, only the reasons from the template set up at stage setup level can be selected.

- **History**: displays a tracking history of the actions taken on the campaign for the following fields:

  ◦ Activity Status

  ◦ Status Reason

  ◦ Detailed Status

  ◦ Activity Owner (User)

  ◦ Responsible Branch

- **Assign to user**: used by users with manager role to select a user to assign campaign activities to. Only campaign activities that have **Unassigned**, **Assigned**, or **In progress** activity status can be assigned.

  The manager allocates the unassigned activities, in bulk or one at a time, to one of the users that are part of the campaign activity responsible branch or between users from the same branch.

  > **HINT**
  >
  > This option is available either from the Dashboard view or at campaign activity level.

  If a manager tries to assign campaign activities to a user that is not part of the campaign activity responsible branch, the following message is displayed: `You are not allowed to assign campaign activities to a user from a different branched.`
  If a manager tries to assign campaign activities between users from different branches the following message is displayed: `You are not allowed to assign campaign activities between user from different branched.`

  In the case of a bulk assign, if only some of the activities meet the assign conditions, the activities that meet the assign conditions are reallocated and the following message is displayed: `Campaign activities that meet the reallocation conditions have been reallocated. The following campaign activities did not meet the assignment conditions:`

- **Assign to me**: used by users with execution role to self assign, in bulk or one at a time, campaign activities that are assigned to the branch that they are part of and are unassigned.

> **HINT**
>
> This option is available either from the Dashboard view or at campaign activity level.

> **IMPORTANT!**
>
> For both **Assign to user** and **Assign to me** buttons, there is a possibility to display or hide these options depending on the user role and the activity status. These conditions are disabled by the technical team at the time of implementation.

Creating Multi-Stage Execution Plans

Campaign managers have the possibility of creating a multi-stage execution plan for the campaign stages that can be started manually, set to run automatically at a certain date and time, or with a defined recurrence. To set up a multi-stage execution plan, in the FintechOS Studio main menu, go to **Automation Blocks**> **Omnichannel Campaigns** > **Multi-Stage Execution Plan**.

> **IMPORTANT!**
>
> Multi-stage execution plans can be set up only if at stage level the stages included in the execution plan have the **Controlled By Execution Plan** field set to $true$ and the business status of the campaign is **Approved** with the closing date set in the future.

There are two ways to start an execution plan:

- Manually, by using the **Start Now** button after setting the transition and schedule type.

- Automatically, by defining the schedule rules for a date set in the future, or with a certain recurrence.

Follow the below steps to define and run a multi-stage execution plan.

1. In the **Multi-Stage Execution Plan List**, click the **Insert** button from the right upper corner. The **Multi-Stage Execution Plan** page is displayed.

2. Fill in the fields:

Field	Required	Type	Description
Name	No	Text	The name of the execution plan.

Field	Required	Type	Description
Stage Transition	Yes	Option Set	Establish when to move from one stage to another. This setting applies only when two stages are codependent and it determines when the second stage begins. The available options are: • **When Stage Completed**: the transition occurs when all the messages have been created but have not been yet sent to the recipients. • **When Stage Sent**: the transition occurs when all the generated communications from the message queue are sent to the recipients.

Field	Required	Type	Description
Schedule Type	Yes	Option Set	Schedule when to run the execution plan. The available options are: • **Manual**: The execution plan starts when the **Start Now** button is pressed. • **One Time**: The execution plan is scheduled to start at a date and time set in the future but only if the execution plan has an **Approved** business status. • **Recurrent**: Define a recurrence for when new multi-stage execution plan instances are created.

Field	Required	Type	Description
Scheduled Date	Yes	Date	Schedule the date and time when to run the execution plan. **NOTE** This field is available only if the **Schedule Type** field is set to **One Time**.
Cron Expression	No		Schedule a recurrence for the execution plan. For example, the execution plan can be scheduled to run every day at 9 AM. **NOTE** This field is available only if the **Schedule Type** field is set to **Recurrent**.

Field	Required	Type	Description
Scheduled Timezone	Yes	Option Set	Select the timezone that applies to the execution plan scheduled date. **NOTE** This field is available only if the **Schedule Type** field is set to either **Recurrent** or **One Time**.

Stages Available

This section displays the stages that can be used when running the execution plan.

Field	Description
Campaign	The campaign name that is part of the stage.
Campaign Code	The campaign code.
Stage	The name of the stage.

Execution Tree

This section displays the stages selected when running the execution plan. By default, the execution plan runs the stages from the execution tree from top to bottom. Stages can be sequentially ordered by using the drag and drop option to place one

stage after another.

Field	Description
Stage	The name of the stage.
Campaign	The name of the campaign.

After the schedule rules are defined, the campaign manager can set different business statuses for the execution plan based on the business workflow transitions. The execution plan can have the following statuses: **Draft**, **Pending Approval**, **Approved**, **Stopped**, **Denied**.
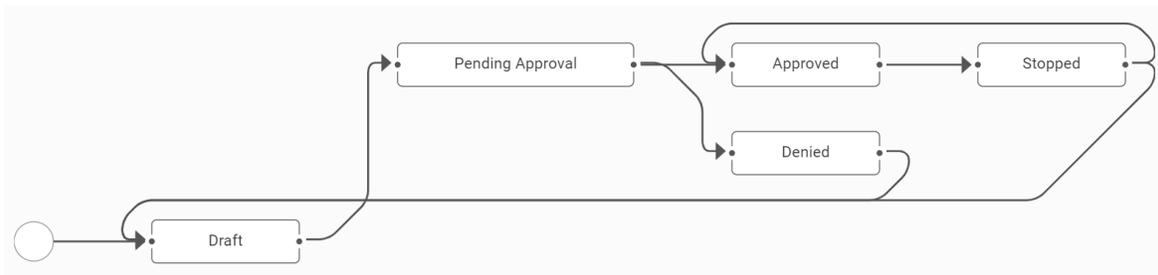
When the execution plan is in **Draft** status, changes can be made to it by campaign managers. From the **Pending Approval** status, it can be either approved or denied. If it's in **Approved** status, then the execution plan can be run, creating new execution plan instances.

> ### HINT
> The **Start Now** button is functional only for execution plans in **Approved** statuses

with the **Schedule Type** field set to **Manual**.
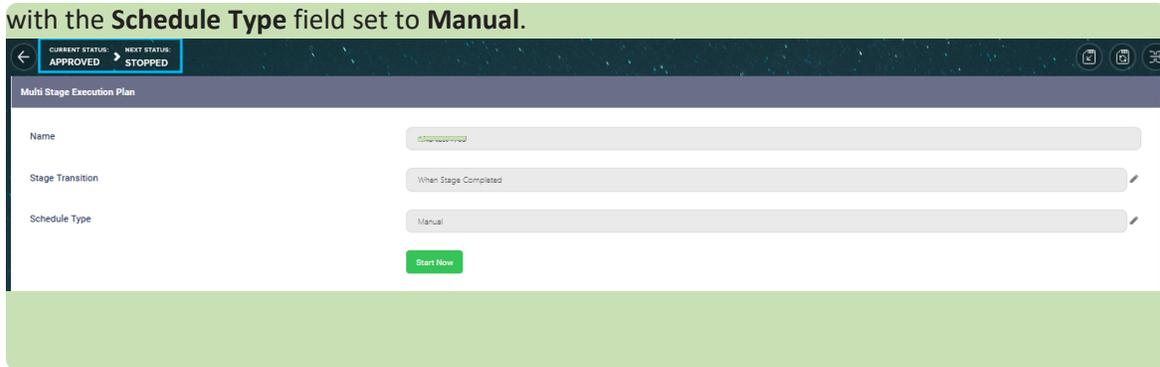
If the status is changed to **Stopped**, then another execution plan instance does not start running on that execution plan. In case an execution plan instance is running while the campaign manager changes the status to **Stopped**, then the execution plan instance runs until the end.

After clicking the **Start Now** button, campaign managers can pause, resume, or cancel the delivery of the messages generated by an execution plan instance by using the following options:

- **Pause delivery**: Use this button to stop the delivery of all the remaining messages that have not been sent to the recipient on that stage instance. In this case, messages are still created but are no longer sent to the recipients.

    This button is displayed if an execution plan instance is in progress.

- **Resume delivery**: Use this button to resume the delivery of the messages that haven't been sent to the recipient.

    This button is displayed if an execution plan instance is paused.

To stop the instance execution process while the execution plan is running, click on the **Stop current instance execution** button. This button is visible both at multi-stage execution plan and multi-stage plan instance level.

When clicking the **Stop current instance execution** button at execution plan level, the stage that is currently running stops. The process of creating and delivering messages is cancelled and the messages that remain to be sent to the recipients are no longer sent.

The **Stop current instance execution** button that stops running the multi-stage execution plan instance, can be used regardless of the multi-stage execution plan status.

After the multi-stage execution plan starts running, a summary showing the statuses of the execution stage instances that are running is displayed.

Use the **Refresh** button to manually update the running statuses of the execution plan.

> **NOTE**
> The execution plan form is automatically updated once the execution plan starts running and the execution plan instance is created.

Field	Description
Campaign Name	The name of the stage.
Campaign Code	The code of the campaign.
Stage Name	The name of the stage.

Field	Description
Status	The status of the stage: • Not Started • Started • Running • Completed • Cancelled
Start Date	The start date of the multi-stage execution plan instance.
End Date	The end date of the multi-stage execution plan instance.

Multi-Stage Execution Plan Instances

This section displays the history log of every execution plan run. If, for example, the execution plan has a scheduled recurrence, then every recurrence log is displayed.

Double-click on a record for additional details. A summary of the execution plan is showed:

MULTI-STAGE EXECUTION PLAN INSTANCE

Name	Demo5 - 2022-02-28 01:39	Parent Execution Plan	Demo5
Execution Status	Completed	Finished At	28/02/2022 15:41

Execution Tree

Stage	Campaign
▾ Demo1Stage2	DemoCampaign1
Demo2Stage2	DemoCampaign2
Demo1Stage1	DemoCampaign1
Demo2Stage1	DemoCampaign2

EXECUTION LOG

Date ↓1	Time ↓2	Event	Stage	Campaign	Details
2/28/2022	3:40:15 PM	Stage Instance Executed	Demo1Stage2	DemoCampaign1	Stage Instance executed in 0:00:00.874223 (dd:hh:mm:ss).
2/28/2022	3:40:00 PM	Stage Instance Created	Demo1Stage2	DemoCampaign1	
2/28/2022	3:40:00 PM	Stage Instance Created	Demo2Stage1	DemoCampaign2	
2/28/2022	3:40:00 PM	Stage Instance Created	Demo1Stage1	DemoCampaign1	
2/28/2022	3:39:45 PM	Plan Started			Triggered start manually on demand

5 10 20   1 2 3

CAMPAIGN STAGE INSTANCES

Export Refresh

	Campaign	Stage	Start Date	Activity Date	Completed	End Date	Activity Cre...	Activity Fini...	Has Errors	Run Log
	DemoCamp...	Demo2Stag...	28/02/2022...		✓	28/02/2022...			☐	Stage comp...
	DemoCamp...	Demo1Stag...	28/02/2022...		✓	28/02/2022...			☐	Stage comp...
	DemoCamp...	Demo2Stag...	28/02/2022...		✓	28/02/2022...			☐	Stage comp...
	DemoCamp...	Demo1Stag...	28/02/2022...		✓	28/02/2022...			☐	Stage comp...

Field	Description
Name	The name of the multi-stage execution plan instance composed from the multi-stage execution plan name and and the time the instance began to run.

Field	Description
Parent Execution Plan	The parent multi-stage execution plan name.
Execution Status	The multi-stage execution plan instance status.
Finished At	The date and time the multi-execution plan instance finished running.
Execution Tree	A snapshot of the execution tree.

Execution Log

This section displays the actions taken along with the associated stage and ending dates.

Field	Description
Date	The date the execution plan started.
Time	The time the execution plan started
Event	The stage instances events created. For example: Stage Instance Created, Activities/ Actions Created, Queue Items Created, etc.
Stage	Hyperlink to the stage.
Campaign	Hyperlink to the campaign.
Details	Details regarding the execution plan.

Campaign Stage Instances

This section displays information regarding the campaign stage instances. The below data is available.

Field	Description
Campaign	The name of the stage.
Stage	The code of the campaign.
Start Date	The start date of the stage instance.
Activity Date	The date of the campaign activity.
Completed	If true, the stage is completed.
End Date	The end date of the execution plan.
Activity Creation Date	The date the activity is created.
Activity Finish Date	The date the activity is finished.
Has Errors	If true, errors occurred when running the execution plan.
Run Log	The run log of the execution plan.

HINT
To view information regarding campaign stage instances or to pause, resume, or

cancel the delivery of the messages generated by a stage instance, select a record from the list and open it. For more details, see the Campaign Stage Instances (Actual Run) section.

Omnichannel Communication Automation

This automation processor allows you to use the FintechOS Gateway as email server and send emails on your company's behalf. You can handle email delivery and track real-time email events directly from within the FintechOS platform. The email communication with your customers is reliably sent and delivered as needed.

Features

- Easy configuration

- Open Email & Click URLTracking

- Email Template Engine.

Installation

FintechOS Studio comes with the Omnichannel Communication Provider processor pre-installed.

Applications

- Omnichannel campaigns for notifying customers.

Use the Communication Processor

The available channel providers for email are:

- FTOSEmailGateway

- GatewayEmail

- GatewayEmailOTP.

The available list in the FintechOS Studio for SMS is:

- GatewaySMS

- GatewaySMSOTP

- FTOSApiSMS.

Email provider configurations

1 Add Communication Channel

1. In Studio, from the main menu, click **Admin** > **Omnichannel Communication Automation** > **Communication Channels.** The Communication Channels List is displayed. Click **Insert** to create a new one.

2. Provide a **Code** and **Name** for the communication channel.

3. From the **Default Action Type** field, select **Email**.

4. From the **Bus Communication Channel** field, select **Email**. For Bus Communication Channel, see details "View Channel Configurations" on page 443.

5. From the **Bus Communication Provider** field, select **FTOSEmailProvider**. For details, see "Configure Channel Providers" on page 443.

6. From the **Extended Properties Entity**, select from the list the entity. Through certain channels, it allows sending some properties with the JSON format, using this channel as API.

7. At the top-right corner of the page, click **Save and close** to save the communication channel.

You can now add messages to the Message queue and send them using the Omnichannel Communication Automation processor.

2 Add message

You can add messages to the FintechOS email server gateway to be processed within the specified time interval.

1. Go to the **Message Queues** List page (*#/entity/FTOS_DPA_MessageQueue/list*).

2. At the top-right corner of the page, click **Insert** to add a new message queue. The **Add Message Queue** form is displayed.

3. Provide the **ToAddress**, the email address where the email should be sent.

4. Provide the **CC Addresses**, one or more carbon copy email addresses separated by semicolons.

5. Provide the **BCC Addresses**, one or more email addresses separated by semicolons.

6. Fill in the email **Subject** and **Body**.

7. Optionally, add an attachment to the email. Leave the **Channel Provider Params** field empty, as it is not used.

8. From the **Communication Channel** field, select **Email.**

9. From the **Channel Provider** field, select **GatewayEmail**.

10. Set the interval (date and time) when you want the message to be sent.

11. Select the **Start Date**, **End Date**, **Interval Min (Time UTC)** and **Interval Max (Time UTC)** (for example: 00:00:00, 23:00:00).

12. Set the priority and the **Retry Max Attempt**, which is the maximum number of times the server tries sending the message if the message status is 'Error'. Set the **Pool Time Retry (Time UTC)**, which is the time interval the server waits until it attempts to send the message that has previously failed (message status is 'Error'). The format is HH:MM:SS (hours:minutes:seconds).

13. From the **Message Status** drop-down, select **New**.

14. From the **Channel Provider Status** field, select **200.**

15. Set the **Retry Attempt, Last Attempt,** and **External Id**.

16. At the top-right corner of the page, click the **Save and close** icon to save the message queue.

When the message is sent (for example, when running omnichannel campaigns), if you have configured the Omnichannel Communication Automation processor to track open emails and URL clicks, the **Message Events** section (Edit Message Queue Page), lists all open and click events, together with the event date and message status. For URL click events, it also displays the URL which has been clicked.

SMS provider configurations

Add Communication Channel

1. From the main menu, click **Admin** > **Omnichannel Communication Automation** > **Communication Channels.** The Communication Channels List is displayed.

2. Provide a **Name** for the communication channel.

3. From the **Default Action Type** and **Bus Communication Channel** fields, select **SMS**.

4. From the **Bus Communication Provider** field, select **FTOSApiSMS**.

5. At the top-right corner of the page, click the **Save and close** icon to save the communication channel.

You can now add messages to the Message queue and send them using the Omnichannel Communication Automation processor.

For details on how to implement a new provider for sending SMS through FTOS service, see Configure the FTOSApiSMS provider.

For details regarding the SMS-based Two-Factor Authentication, see SMS-based Two-Factor Authentication.

View Channel Configurations

1. Log into the FintechOS Studio.

2. From the menu, click **Admin** > **Omnichannel Communication Automation** > **Channel Configurations**.

3. The **Channel Configurations List** is displayed.

4. In the **Add Channel Configurations** form, double click a configuration to view:
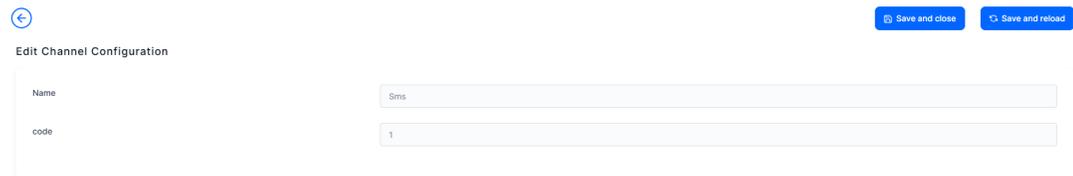
Configure Channel Providers

The FtosProvider uses SendGrid in order to send emails. SendGrid is a cloud-based platform that solves the challenge of email delivery. SendGrid provides and manages an email server on your company's behalf, so your communications with customers are reliably sent and delivered as needed.

1 Apply for subscription key

Go to the FintechOS Services Portal and apply for a subscription key for the FintechOS Omnichannel Communication Automation processor. You need the subscription key to configure the automation processor, which is editing the FTOSEmailGateway channel provider so that it uses this processor.

2 Edit the FTOSEmailGateway channel provider

To configure the Automation Blocks you need to edit the FTOSEmailGateway channel provider:

1. Log into the FintechOS Studio. From the menu, click **Admin** > **Omnichannel Communication Automation** > **Channel Providers**.

2. Double click the 'FTOSEmailGateway' record.
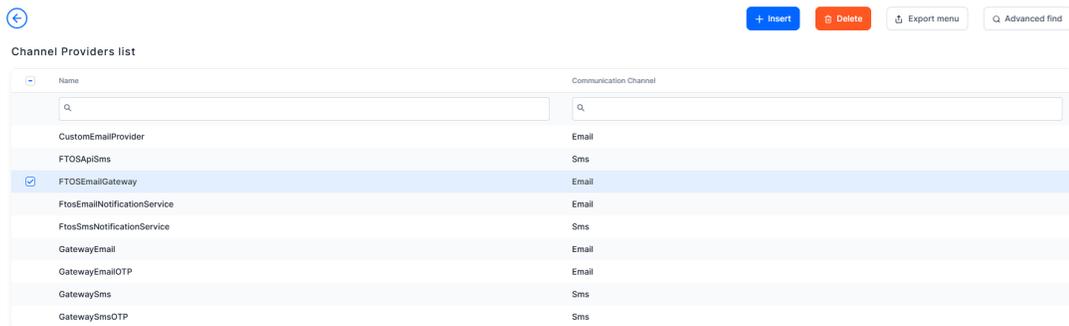
3. Fill in the following mandatory fields:
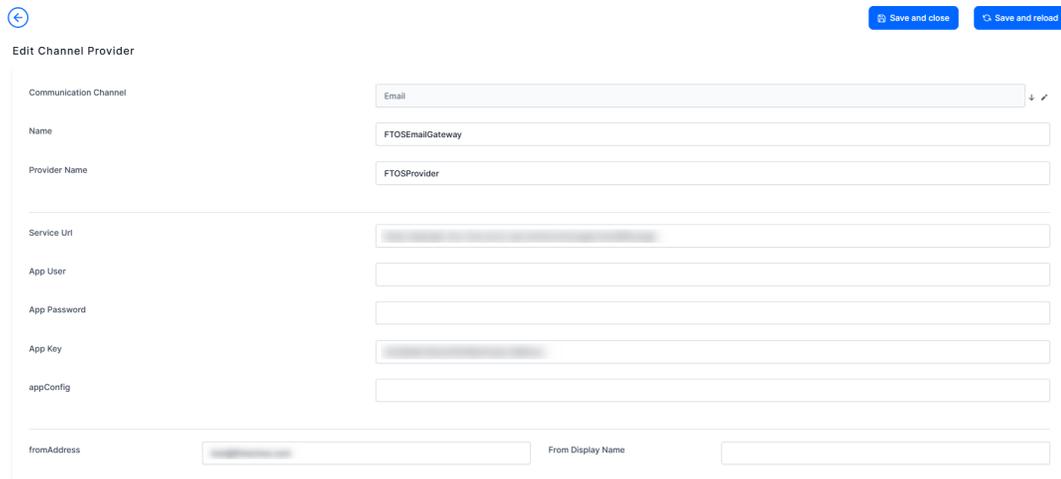
Field	Data type	Description
Communication Channel	Option set	Select email from the option set. For details, see "View Channel Configurations" on the previous page.

Field	Data type	Description
Name	Text	The FTOSEmailGateway name is filled in.
Provider Name	Text	Insert the name of the provider.
Service Url	Text	The URL provided by FintechOS
App user	Text	It is the user credentials given by the provider.
App Password	Text	It is the password given by the provider.
App Key	Text	The subscription key provided by the FintechOS Services Portal for the FintechOS Omnichannel Communication Automation processor.
appConfig	Text	The configuration file.
From Address	Text	The email address from which the emails will be sent to customers. It is the email address displayed in the From field of the email sent to customers. **IMPORTANT!** Please, be sure to consult FintechOS to create an email address with the name of the company.
From Display Name	Text	The name that appears next to the sender's email address in the recipient's inbox.
Bulk No	Whole Number	The number of emails that are processed in one step.

Field	Data type	Description
Days Before Expire	Whole Number	How many days are left before the email expires.
Interval Min	Text	It is the limit for sending messages. The job will send messages only in this time frame (HH:MM:SS) (UTC time).
Interval Max	Text	It is the limit for sending messages. The job will send messages only in this time frame (HH:MM:SS) (UTC time).
Retry Max Attempt	Whole number	The maximum number of times the server tries sending the message if the message status is 'Error'.
Pool Time Retry	Text	The time interval the server waits until it attempts to send the message that has previously failed (message status is 'Error'). The format is HH:MM:SS (hours:minutes:seconds).
Open Setting	Bool	Tracks the open email events.
Click Setting	Bool	Tracks the clicked links within the email body events.

4. At the top-right corner of the page, click the **Save and reload** icon to save the changes.

5. The **Channel Provider Statuses** section displays the list of channel provider statuses. Failed requests return an error that contains: a response code, a message explaining the reason for the error and a link to any relevant documentation that might help you troubleshoot the problem.

   Double-click a status to edit it.

The list of statuses and their codes is below. Please keep in mind that each email provider might have other codes, therefore if you're using an email provider different than SendGrid, the below list might not apply.

Error Code	Error reason	Description
200	OK	Your message is valid, but it is not queued to be delivered.
202	ACCEPTED	Your message is both valid, and queued to be delivered.
400	BAD REQUEST	
401	UNAUTHORIZED	You do not have authorization to make the request.
403	FORBIDDEN	
404	NOT FOUND	The resource you tried to locate could not be found or does not exist.
405	METHOD NOT ALLOWED	
413	PAYLOAD TOO LARGE	The JSON payload you have included in your request is too large.
415	UNSUPPORTED MEDIA TYPE	
429	TOO MANY REQUESTS	The number of requests you have made exceeds the rate limitations.

Error Code	Error reason	Description
500	SERVER UNAVAILABLE	An error occurred on the server.
503	SERVICE NOT AVAILABLE	The Email Gateway v3 Web API is not available.
bounce	ERROR	The receiving server could not accept the message.
delivered	OK	The email was sent successfully delivered to the recipient.
dropped	ERROR	athe email will not be sent.

Message Queue and JobServer OCB Integration

DCI VonageSMS supports a new route specifically designed for MessageQueue > JobServer OCB > DCI Vonage SMS integration.

Follow the steps below to integrate DCI Vonage SMS to function with MessageQueue & JobServer OCB:

1. In Studio, from the main menu, click **Admin** > **Omnichannel Communication Automation** > **Channel Providers**. If FTOSApiSms does not exist, you can create it.

Channel Providers list

Name	Communication Channel
CustomEmailProvider	Email
FTOSApiSms	Sms
FTOSEmailGateway	Email
FtosEmailNotificationService	Email
FtosSmsNotificationService	Sms
GatewayEmail	Email
GatewayEmailOTP	Email
GatewaySms	Sms
GatewaySmsOTP	Sms

2. Configure **FTOSApiSms** in the Channel Provider:

- Set Communication Channel to SMS

- Set Name (if not already created)

- ProviderName = FTOSProvider

- Set the Service URL according to the environment type from the top of the page

- Set the subscription key, provided to you by CloudOps via ticket

Edit Channel Provider

Communication Channel	Sms
Name	FTOSApiSms
Provider Name	FTOSProvider
Service Url	▓▓▓▓▓▓▓▓▓▓
App User	
App Password	
App Key	▓▓▓▓▓▓▓
appConfig	

- Configure **fromAddress**: Make sure you don't set something that has @ in it. Depending in which countries you will be sending your SMS, some carriers may block / reject / hard bounce messages that have an email address in the **fromAddress** field

fromAddress	test	From Display Name	test

- **Configure Bulk Number**: Must be set to a value (represents the amount of bulk items that can be sent at once; i.e. a value of 50 will let the job server take 50 records at once and send them instead of 1 by 1)

- Set **Days Before Expire**: The maximum number of times the server tries sending the message if the message status is 'Error'.

- Set the **Interval Min (Time UTC)** and **Interval Max (Time UTC)** (for example: 00:00:00, 23:00:00).

- Set the priority and the **Retry Max Attempt**, which is the maximum number of times the server tries sending the message if the message status is 'Error'. Set the **Pool Time Retry (Time UTC)**, which is the time interval the server waits until

it attempts to send the message that has previously failed (message status is 'Error'). The format is HH:MM:SS (hours:minutes:seconds).

- Set the **Open Setting**, which tracks the open email events and the **Click Setting**, which tracks the clicked links within the email body events.

- Scroll down to the final section, **Channel Provider Statuses**, and add all channel provider statuses shown in this picture and assign proper Message Status IDs to each Status:

In Progress: 200, 202, bounce

Sent: delivered

Error: 400, 401, 403, 404, 405, 413, 415, 429, 500, 503, dropped

3. Go to Azure Portal → your FTOS Resource Group → JobServer OCB app service → app service editor → and edit:

- services.config. Inside <serviceList></serviceList> add the following sections:

```
<!-- FTOSSmsProvider -->
    <service>
        <name>FTOS.OCB.SendMessagesServiceFTOSSMS</name>
        <type>class</type>
        <method></method>
        <class>FTOS.MessageBus.ScheduledServices.SendMes
sagesService</class>
        <assembly>FTOS.MessageBus.ScheduledServices</ass
embly>-->
        <execParams>provider=ftosProvider;providerSettin
g=FTOSApiSms</execParams>
        <!--<sendNotification>true</sendNotification>-->
```

```
        </service>

        <service>
            <name>FTOS.OCB.UpdateExpiredMessageServiceFTOSSM
S</name>
            <type>class</type>
            <method></method>
            <class>FTOS.MessageBus.ScheduledServices.UpdateE
xpiredMessageService</class>
            <assembly>FTOS.MessageBus.ScheduledServices</ass
embly>-->
            <execParams>provider=ftosProvider;providerSettin
g=FTOSApiSms</execParams>
            <!--<sendNotification>true</sendNotification>-->
        </service>
```

- schedule.config. in triggers section, update the trigger to include the newly defined services

4. Request via Ticket to CloudOps to add webhook configuration to your DCI configuration.

5. Send message via Message Queue by following the steps detailed in the page of this guide.

Sendinblue Email Provider

Sendinblue is an email provider which you can integrate with FintechOS to create and send transactional emails, such as newsletters and release announcements, "triggered" emails such as order confirmations, password resets, confirmation messages, and more.

Models

Multi Account:

- used with shared IP for each sub-account

- there will be a master account that give the possibility to create the sub-accounts. Practically, the Master Account(1 fintechOs account) is used to create

sub-accounts(for each fintechOS' client). Each sub-accounts is a completely independent entity with fully rights.

Configuration

Get API Key

Each sub-account has an API KEY. It is possible to create as many API KEY as we want on each sub-account, without limitation. FintechOS configures 3 API-Key per each sub-account (TEST, UAT, PRD).

Domain and IP

Sub-accounts can be configured on shared IPs. This is configured by CSM team based on performances. The IP is configured and pointed it to the domain and then configured the sender.

> **HINT**
> If needed, a subdomain can be added to the Sendinblue functionality. For example:
>
> - sender address: hello@**example**.ex.org
>
> - domain signiture (DKIM): **example**.ex.org

Each sub-account can have as many senders as need as long as they belong to the defined domain. In case of share IP, the sub-account does not need to be pointed to the domain.

Sub-accounts are created from the master account, each sub-account can have different plan.

Capabilities

The dashboard for monitoring the service displays the transactional activities available in the corresponding account.

The status of sending and the logs are available real time. You are always in control of the reporting by being able to filter per logs, tags (transactional), sender (transactional), as well as set limits per account.

Transactional

Available via interface(UI) and API.

Statistics can filter per sender, tag, and are displays all the logs. Each log has all the history of the e-mails. It is not possible to filter by API key.

Webhooks

Webhooks are sent by Sendinblue each time an event occurs on the email message sent to the client. These events can be:

- `request` - Triggered once the e-mail is sent

- `click` - Triggered when user clicks in the e-mail

- `opened` - Triggered each time the user opens the e-mal

- `unique_opened` - Triggered when the user opens the e-mail for the first time

- `delivered` - Triggered when the e-mail is received by the user

- `deferred`

- `soft_bounce` -> If there was something wrong sending the e-mail. Will retry 3 times.

- `complaint`

- `hard_bounced`

- `invalid_email`

- `blocked`

- `error`

- `unsubscribed`

These statuses, alongside all the original request data can be found in the Url attribute in `MessageEvent` list for the given Message Queue. In order to update the status of the message in `FTOS_DPA_MessageQueue`, we create a mapping to the existing statuses in Fintech.

Personalized Content Management

The Hyper-personalization Automation processor empowers you with the ability to create effective and user-tailored ways of interacting with the customer. It can also be customized to better suit your needs if information should be extended to a desired communication channel.

FintechOS grants access to intuitive omni-channel content templates that can be personalized with dynamic tokens.

The Hyper-personalization Automation provides the following main content management features:

- Improved usability, with user interface complemented by tips & tricks and usage guidelines;

- Remaining characters counter based on defined message length;

- Tokens available for multiple data sources, available for insert directly in the context of the content template;

- Formatted tokens for numeric and date fields based on content culture;

- Approval workflow for managing content templates authoring;

- Preview messages exceeding the allowed length, during campaign simulation.

This section provides information on how to configure and use the personalized content features to their fullest extent:

- Personalized Content Types - allow you to have different types of content templates;

- Content Settings - allow you to automatically return attribute values in the content templates;

- Personalized Contents - allow you to start digital content campaigns with quick reusable content templates.

You might have communication channels to which you need to send more information to be used on the destination. You can do so by extending the app. For information on how to do this, see Extend Personalized Content Management.

Content Settings

Content tokens (herein referred as content settings) are an easy way to further personalize content in business audience outreach. They can be used in the HTML body of a personalized content item in order to act as a variable that returns an attribute associated with the source entity. More specifically, this can be used to make a single personalized content that when read by the customer will display their name, instead of a generic greeting. This functionality can be used on many different kinds of attributes in order to create a truly impressive experience and display precisely the kind of information a customer needs.

Content settings can be easily managed and empower the business user to channel their creativity towards meaningful content creation.

Add Content Settings

To add a content setting, follow these steps:

1. Click the main menu icon at the top left corner.

2. In the main menu, click **Hyper-Personalization** > **Content Settings**. The **Content Tokens List** page opens.

3. Click the **Insert** button at the top right corner of the page. The **Add Content Token** page opens.

4. Fill in the fields.

Field	Description
Name	The name of the token that will be used in personalized content. This field is mandatory.

Field	Description
Context Entity	The name of the entity associated with the required data. This field is mandatory.
Attribute Name	The name of the returned data. This field is mandatory.
Description	Description of what the token is and what it might be used for.

ADD CONTENT TEMPLATE TYPE

CONTENT TEMPLATE TYPE

Name   winterContent

5. Click the **Save and close** button at the top right corner to save the content token The record is added to the **Content Tokens List** page.

Delete button at the top right corner of the page. A confirmation dialog appears. Click **Yes** to delete the selected record.

Managing Personalized Content

Communicating with customers on a personal level is critical, but getting too personal can be very intrusive. Marketers need to be able to keenly interpret available customer data to extract the right insights.

Governance around the frequency of marketing messages and degree of personalization is also essential. In order to support such requirements, and help businesses overcome the challenges of the digital age, FintechOS provides a powerful tool to create and manage customer engagement campaigns, giving you the means to interact with customers in a meaningful manner.

Personalized content templates are essential to the content creation process. They allow you to remain on track by guiding you with useful fields, and minimizing the chance of mistakes by omission, and can also help the content team think strategically and holistically about the content they're creating for each page.

View Personalized Content Templates

To view the list of personalized contents, follow these steps:

1. Click the main menu icon at the top left corner.

2. In the main menu, click **Hyper-Personalization** > **Personalized Content**.

The **Content Template List** opens. If personalized content has already been created, this page displays relevant information: the ID and name of the template to quickly identify and distinguish between campaigns. The template type is also displayed along with the user who created it, the date, and the content template status.

This page provides you with the means to add, edit, or delete personalized contents.

Add Personalized Content Templates

> **NOTE**
> In order to create a personalized content template, you should first create content types. For information on how to do this, see Creating Personalized Content Types.

To add personalized content, in the **Content Template List** page, click the **Insert** icon in the top right corner of the page. The **Add Content Template** page opens.

Adding a personalized content template is a two-step process.

1 Define content template

By default, the **Add Content Template** page opens on the **Define** step.

Fill in the fields:

Field	Description
Name	The name of the content template. This field is mandatory.
Reference Id	The number associated with the content template.
Template Type	Select between existing content types in order to categorize.
Attachment	Add an attachment to the content template.

ADD CONTENT TEMPLATE

+ Tips & Tricks
- define a template item for each **channel** and **language**
- organize your templates under the same **template type**

Name	ContentTemplate

Reference Id	22332	Template Type	winterContent
Created On		Created by user	

Attachment	Add file or Drop file here

Click the **Save and reload** button at the top right corner of the page to save the record. The page reloads and the **Add Content Template** page opens.

Continue with the next step.

2 Manage content template items

Click **Manage Template Items** and follow these steps:

1. Select the **Communication Start Hour**, the hour when the communication can start.

2. Select the **Communication End Hour**, that is the hour when the communication ends.

3. Add content template items to differentiate between different user types and cultures in order to deliver personalized content.

Content templates contain multiple content template items. Each content template item represents the structure of the message to be sent, it contains fields like name and subject. These items also help determine the most important thing about communication campaigns, namely customer personalization done via the culture and channel fields, and can determine the specificity and period of messages.

Another important field is the body, where the template is rendered and can be modified. A very useful tool to have are the tokens, these are used to personalize the message with name, address, etc. The last checkboxes provide support for textual or HTML type of messages or enable analytics via tracking. Content templates are used to provide audiences with personalized content in a quick and efficient manner.

To add a content template item, follow these steps:

1. Click the **Insert** button. The **Add Content Template Item** page appears.

2. Fill-in the fields:

Setting	Description
Name	The name of the content template item. This field is mandatory.
Subject	The main content of the message. This field is mandatory.
Channel	Select a communication channel (e.g., mail, SMS, etc.). This field is mandatory. **NOTE** You need to add channels (main menu > **ADMIN** > **Omnichannel Communication Automation** > **Communication Channels**) in order to be able to select one in this field.
Culture	Select the nationality of the user.
Max Message Length	The maximum length of the message to be sent. It is important for channel SMS.
Characters Remained	The number of remaining characters.
Body	The main body that displays the message that will be sent. This field is of type HTML. Use the HTML Editor toolbar to format text as per your preference and insert tokens within the body by clicking **Tokens** from the editor's toolbar and selecting the desired token .
Send Message as Text	Switches between HTML and text.

3. Click the **Save and close** button at the top right corner to save the content template item.

4. Continue adding as many content template items as you need, then click the **Save and close** button at the top right corner to save the content template.

Extend Personalized Content

You might have communication channels to which you need to send more information to be used on the destination. You can extend the personalized content with the following types of information:

- **Statics** – The values are added on content item and are persisted with the same values when a campaign uses the content.

- **Dynamics** – On content item level, the user will add information as tokens and the values are composed from audience at runtime moment (when a campaign is launched).

In order to extend the information on a desired communication channel (add extended properties), you need to add in message a generic attribute formatted as key/value pairs.

To extend the information on a desired communication channel, follow these steps:

1. Create a new entity and add all the needed attributes. We recommend you to use the following naming convention: `FTOS_CMB_CommChannel_[channel name]`.

> **NOTE**
>
> The new entity should meet the following prerequisites:
>
> - Contains at least one attribute lookup to `ebs.FTOS_CMB_ActionTemplateContent` named `contentItemId`.
>
> - Static attributes are added as standard entity attributes.
>
> - Dynamic attributes are added as lookup to `FTOS_CMB_ContentToken`.

2. On the desired communication channel, choose the newly created entity as value for `extendedPropertiesEntityId`.

3. On the content item, if the selected channel is the one that you set up, add all the desired values to be used by campaigns.

On the `FTOS_DPA_MessageQueue` entity, you will find for each message which uses the below channel, an attribute named `ChannelProviderParams` with all key/value pairs.

Extended Properties Example

Let's assume that you need to communicate from a campaign custom information to an endpoint on a mobile channel.

This section shows you how to extend Personalized Content to communicate from a campaign to an endpoint on a mobile channel the following custom information: first name, last name with some extra details like campaign type, availability date, and maximum credit amount:

1. Create an entity named `FTOS_CMB_CommChannel_MobileApp` with the following attributes:

   - `FTOS_CMB_CommChannel_MobileAppid` - PK

   - `contentItemId` – lookup to `ebs.FTOS_CMB_ActionTemplateContent`

   - `campaignType` – OptionSet

   - `availabilityDate`– Date

   - `maxCreditAmount`– lookup to FTOS_CMB_ContentToken

2. Add the Mobile App communication channel (**ADMIN** > **Omnichannel Communication Automation** > **Communication Channels**) and make sure that for the Extended Property attribute you select `FTOS_CMB_CommChannel_MobileApp`.

3. Create a new content and a new content item by following these steps:

   I. On the content template item, choose the **Mobile App communication** channel.

   II. Click the **Edit Channel Extended Properties** button. The **Edit AppMobile Extended Properties** page opens.

   III. From the **Content Item ID** field, select the campaign type (Notification).

   IV. From the **tokenDate** field, select a fixed date (e.g.,30.11.2019) and from the tokens list, select **MaximumCreditAmount**.

> **NOTE**
>
> You must add the token from the Audience.

     V. Save the form and return to the content template item.

4. Confirm the template and use it in a campaign.

5. Start the campaign.

For each attendee, you will find a message in the **Message Queue** entity. In **ChannelProviderParams** you will find a key/value pair; for example: {campaignType: notification, availabilityDate: 31.03.2019, maxCreditAmount: 2500}. You can use these values to send a proper message to the mobile app endpoint.

Task Management

FintechOS Task Management is designed to provide the tools necessary to organize allocation, prioritization, and oversight for workflows that operate with tasks. Such workflows are procedures undergone within banks and insurance companies, usually when they involve certain checks that must be done when onboarding new customers, whether when creating an account or contracting an insurance policy.

One such common procedure is compliance verification on a loan application. If during the loan application journey, the applicant is found within the bank's risk list, a series of verifications need to be done, sometimes by several individuals from the bank's compliance department.

Task Management accommodates this procedure by automatically defining queues based on several criteria and assigning such tasks to certain operators, based on their competence levels. This is all configured once within the journey and done automatically every time an application from a customer in the risk list is received in the system. However, this is only one use case. Task Management can be used in a number of scenarios depending on your company's business needs.

Task Management Features

Task Management has three major components:

1. **Task Management Admin Menu**: This is the menu where users with the security role of Task Management Admin can configure operators, queues, profiles, competence levels, and filters to define the allocation process.

2. **Task Management Coordinator Dashboard**: This is the work environment for users with a Task Management Admin security role, allowing them to view, review, and submit resolutions for the tasks.

3. **Task Management Operator Dashboard**: This is the work environment for users with the Task Management Operator security role, allowing them to view, review, and submit resolutions for the tasks.

Task Management Flow

The following diagram is a high level understanding of what **Task Management** module addresses. The diagram showcases a number of automatic processes that occur when allocating a user to a specific queue.
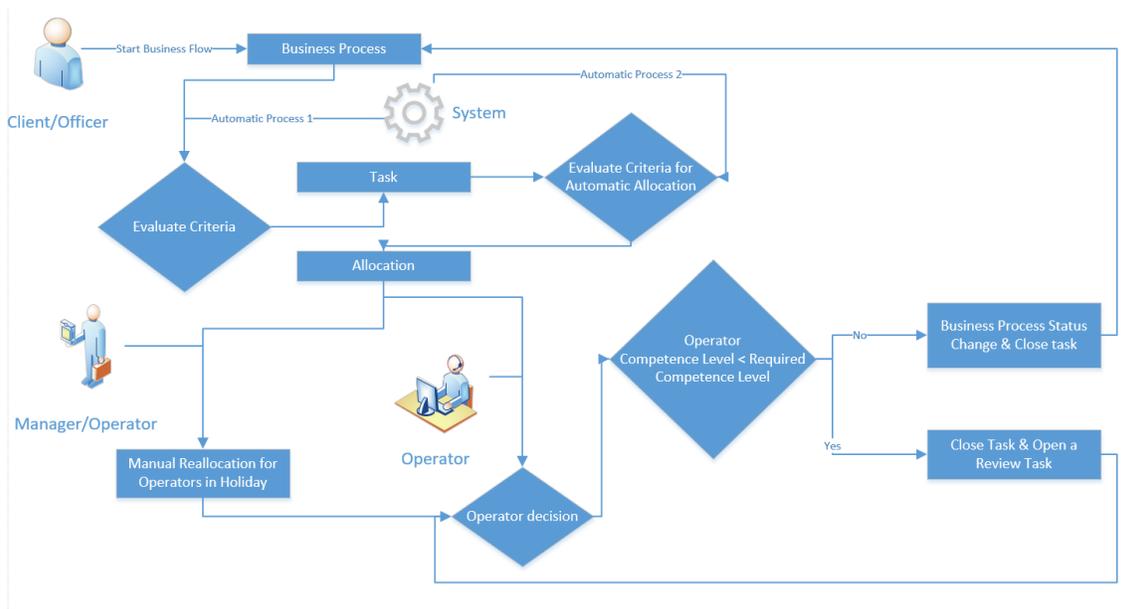
In some digital processes, there is a need for action or decision from certain departments in order to fulfill a business need. In this context, the Task Management module can be configured to meet multiple such requirements.

Certain components need to be configured:

- Queue Type

- "Queues" on page 473

- "Operators" on page 483

- "Competence Levels" on page 485

- "Filters" on page 486

- "Profiles" on page 487

Creating Queues and Tasks

The **Queue Type** is designed to separate technical areas related to the data model. Several queues can be defined with the same queue type that can meet different criteria. In addition, filters can be defined to identify a specific queue.

For example, a loan origination journey would be split between personal loans and mortgages because different back-office departments handle such loans. To do this, we can create two queues, one with the filter specifying term loan as the product type, while the other with the filter mortgage as the product type. Both queues would use a queue type named retail loans with the master entity Retail Loan, and both would use the same form to display information to the back office user in an aggregated way. In this way, we make sure that mortgage applications are assigned to the right compliance officer, the one that would not usually handle personal loan applications.

FintechOS SDK identifies the queue based on the queue type and queue filter. Using the `RecordID` information and processor settings belonging to the Task Management, FintechOS Studio can translate record values into queue filter and competence level files of type .json. Using this information, the proper queue is identified and the needed competence level is automatically set. This step is represented by the Automatic Process 1 in the above diagram.

After the queue is identified, the task is automatically created, and its value is stored in the Queue Item entity. The task's status is set to **New**. Referring to the SDK, the task is created with the `FTOS_CMB_TaskManagement_ CreateAndAllocateQueueItem` endpoint that identifies the right queue and creates a task with the required competence level.

Allocating Tasks to Operators

Another automatic process allocates the task to an available operator. This process needs the following configurations:

- Profiles with specific filters;

- Attached operators to queues.

The automatic allocation process considers the previously identified queue and performs the following iterations:

1. If the task is in the **Review** status, the process searches for an operator with the required competence level. If no operator is found, the allocation is not done, because tasks with the **Review** status must be processed only by operators with a specific competence level.

2. If the task is in the status **New**, the algorithm of allocation executes the following steps in the specified order. If an operator is found regardless of the step, the algorithm stops:

   a. The system searches for old tasks with the same `RecordID`, orders them by creation date (**createdOn**) in a descending order, gets the operator from the first one, the first in the list, and checks if the operator is available.

   b. If the `ReturnToSameOperator` flag is set to *true* for the queue, the algorithm searches for a task with the same Unique ID in the last X months (system parameter: `LastXMonths`) and if the operator is available, the allocation is made.

   c. Identifies all available operators with the required competence level that are attached to the task's queue. From this list of operators, only those with the number of active tasks allocated less than max allocation active task (if any is set) are selected and they are ordered ascending based on the last allocation date (attribute for each **Queue** attached to **Operator**).

   d. If an operator isn't found and the required competence level has a replacement competence level, the system tries to find an available operator using the **Replacement Competence Level**, and takes into consideration the maximum number of active tasks that an operator has (if any is set), and orders operators by last allocation date.

If an operator is found, the task's status is automatically changed to **Allocated** and the operator assigned to the task. For the operator, the fields **Last Allocation Date** and **Item Count** are updated. The task is visible on the **Task Management** dashboard tab **My active task** of the operator identified and allocated to the task.

If an available operator isn't found, then the task remains unallocated and can be seen in the **Task Management Dashboard** on the tab **Unallocated Tasks** by all the operators that are attached to that queue, and have the proper profile and proper competence level. From this tab, the operators can **Pick Up** tasks and the system

changes the status of the picked up tasks to **Allocated**. An admin user or manager can also manually allocate an operator by accessing tasks through the menu **Queue Item**, open a task and manually selecting the operator. When the operator is saved on the task, the system automatically changes the status of the task to **Allocated**. The **Last Allocation Date** and **Item Count** for an operator is automatically updated in the **Queue** context.

If the **Holiday** flag for an operator is set to *true*, then all their active tasks are changed to the status **AllocatedButHoliday** and they appear in the **Task Management Dashboard** on the tab **My colleagues tasks**. These tasks are visible to the following:

- all operators that are designated as replacement for the operator on holiday;

- all operators that have the profile matched with the one defined as replacement.

If an operator decides to work on a task allocated to another colleague, who, for example, may be on holiday, they can **Pick Up** the task. The system will change the assignee to the new operator.

When an operator works on a task and gives a resolution, the business process changes the status to Closed. The system automatically determines if the operator who operated the task has a lower competence level than the required competence level and, if so, the task is closed and a new task is created with the status Review. The automatic allocation process tries to identify operators who are available, have the required competence level and have the number of active tasks less than max allocation active task (if any are set). They are ordered ascending by last allocation date and get the first in the list. Tasks in status Review can be seen on the **Task Management Dashboard** on the tab **Tasks that need review**.

An operator can be attached to multiple Queues and for this reason work priorities need to be set. For this purpose **Task Management Dashboard** grids use the **Priorities for Queue** attribute to order the tasks for operators and further on, for a particular **Queue**. Tasks are ordered by using the **Queue Priority** configured for the **Queue**. For an operator, all tasks from all queues are presented in the same grids and each task opens the designated entity with the configured edit form.

The steps for creating and configuring queues, operators, filters and so on are detailed further in this guide.

Configuring Task Management

Before starting to work with Task Management, you should perform a series of configurations mostly in the **Task Management Settings Panel**. You can access it in the Portal, navigate to the main menu > Task Management Settings Panel:

1. Create a Digital Journey in Studio.

2. In the **Task Management Settings Panel**, create a Queue Type.

3. Create Filters for Queues (mandatory if you assign more than one Queue on the Queue Type), Profiles (mandatory if you define at least one Profile) and Competence Levels (mandatory if you add Competence Levels on Queues).

4. Create Queues.

5. Create Competence Levels.

6. Create an Operator Profile if needed.

7. Configure the Operator and allocate it on queues.
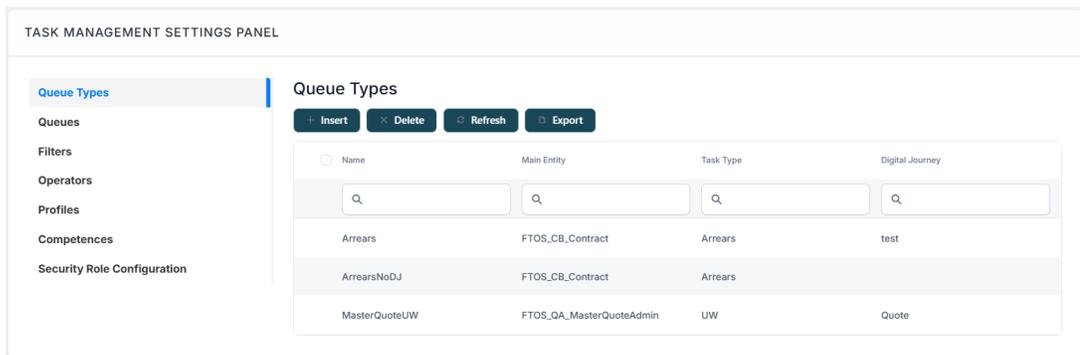
> **NOTE**
> Perform all the steps above for all operators.

8. Go to **FintechOS Studio** > **Digital Experience** > **Digital Flow Processing** and click **Insert** to create a new **Flow Settings**.

9. On the **Add Flow Settings** page, select the **Digital Journey** created in step 1.

10. Add a **Name** for the flow settings.

Edit Flow Settings

Flow Settings

Digital Journey	ContractJourney
Name	Task Management

11. Click **Save and Reload**

12. In the **Processor Settings** section, click **Insert** to add the processor settings used for Task Management.

13. On the newly displayed **Add Processor Settings** page, set the following fields:

- **Name:** Enter the name of your processor.

- **Digital Processor Type:** Select the **Task Management** type.

- **Settings:** Enter the JSON code for the processor's settings.

Main Rules for Adding the Settings JSON

- QueueFilter, ProfileFilter, CompetenceLevelFilter should match the filters from Queue, Profile and CompetenceLevel.

- In case no filters are added on Queue, Profile or Competence, there should be left an empty array (e.g. "QueueFilter": [],"ProfileFilter": [], "CompetenceLevelFilter": []

- The entity name should be related to the main entity from QueueType, but only in one direction it should be a lookup in the entity from filters.

- Extra identification is used only in case you don't want to identify that specific attribute by the lookup from the main entity:

- IdentificationEntityName: The entity name.

- IdentificationAttributeId: The attribute from the entity on which the identification is made.

- IdentificationParamName: The parameter name given when calling the endpoint **FTOS_CMB_TaskManagement_ CreateAndAllocateQueueItem**.

- When setting a filter, you should always set the:

  - filterName: Add the name of the same filter set on Queue or Profile, or CompetenceLevel.

  - entityName: Add the name of the entity from which the attribute is retrieved. It can be the main entity from the Queue Type or a related entity.

  - attributeName: The name of the attribute used on the filter.

  - isOptionSet: Two options are available, true or false. In case true is set, the optionSetName is mandatory as well.

  See the example below:

```
{
    "ExtraIdentification": [],
    "QueueFilter": [
        {
            "filterName":"ProductType",
            "isOptionSet":true,
            "optionSetName":"bankingType",
            "entityName":"FTOS_CB_
ContractApplication",
            "attributeName":"productType"
        },
        {
            "filterName":"currency",
            "isOptionSet":false,
            "optionSetName":"",
            "entityName":"FTOS_CB_
ContractApplication",
            "attributeName":"currencyId"
        },
```

```json
        {
            "filterName":"Period",
            "isOptionSet": false,
            "entityName":"FTOS_CB_
ContractApplication",
            "attributeName":"period"
        }],
    "ProfileFilter": [
        {
            "filterName":"currency",
            "isOptionSet":false,
            "optionSetName":"",
            "entityName":"FTOS_CB_
ContractApplication",
            "attributeName":"currencyId"
        },
        {
            "filterName":"accountType",
            "isOptionSet":false,
            "optionSetName":"",
            "entityName":"FTOS_CB_
ContractApplication",
            "attributeName":"accountTypeId"
        },
        {
            "filterName":"FinancedAmount",
            "isOptionSet": false,
            "entityName":"FTOS_CB_
ContractApplication",
            "attributeName":"financedAmount"
        }
    ],
    "CompetenceLevelFilter": [
        {
            "filterName":"Period",
            "isOptionSet": false,
            "entityName":"FTOS_CB_
ContractApplication",
            "attributeName":"period"
        },
        {
            "filterName":"FinancedAmount",
            "isOptionSet": false,
```

```
                 "entityName":"FTOS_CB_
ContractApplication",
                 "attributeName":"financedAmount"
            }
        ]
    }
```

Working with Task Management Admin Menu

Use the Task Management Admin Menu for making the initial configurations, such as defining queues, creating users for operators, defining competence levels, and so on. This menu is designed for administrators for initial configurations, but also for managing queues, competence levels, filters and more.

Follow these steps to access the Admin Menu:

1. In the FintechOS Portal, click the main menu. The list of items opens.

2. From the list of items, click Task Management. The list of features opens.

To view instructions on how to configure each feature, check the topics below:

Queues

In the case of a loan origination journey, for user applications to be displayed as tasks and assigned to an operator, a queue must be created of a certain type. The first step is to create a queue type, then a queue with that type.

Creating a Queue Type

Queue types can be created for data retrieved from an entity, a data form, or for a certain digital journey linked to a specific banking product. For example, if you have multiple banking products defined, like a credit card and a mortgage loan, you can create queues for each of these individually and assign them to certain operators.

1. In FintechOS Portal, click the main menu and access **Task Management** > **Task Management Settings Panel** > **Queue Types**. The list of defined queues types opens.

2. Click the **Insert** button to add a new queue type and fill in the following information:

   - **Name:** Enter the name of the queue type.

   - **Task Type:** Select the type of task, pick between Compliance, UW, Chaser, Arrears, and Mortgage.

   - **Due Days:** Enter the number of days until the queue type must receive a resolution.

   - **Main Entity:** Select the main entity from which tasks are to be assigned to this queue type.

   - **Master Form:** Select the master form from the main entity.

   - **Digital Journey:** Select the digital journey for this queue type.

   - **Visible Close Task Buttons:** Select which of the task closing buttons should be visible within the queue details pages:

     - `Close Without Resolution` - The button closes the task without providing a resolution;

     - `Additional Information` - The button closes the task while requiring more information;

     - `Approved` - The button closes the task with the Approved resolution;

     - `Rejected` - The button closes the task with the Rejected resolution.

   - **Use MainEntity Context (Task Detail Page):** If you select it Use MainEntity Context (Task Detail Page) = True, then the queue item is displayed in the context of the Main Entity set at the used data form level. Task Management can be displayed embedded in a side panel, on the right side of your pages, sliding in and out of the page as needed, if you add the following code into the first step of your form:

> Place this code into the first step of your form to display Task management embedded in a right side panel
>
> ```
> formScope.taskWidget = ebs.importClientScript('FTOS_CMB_
> TaskDetailWidget');
> formScope.taskWidget.generateTaskDetailWidget();
> ```


Click to slide in and out of the page
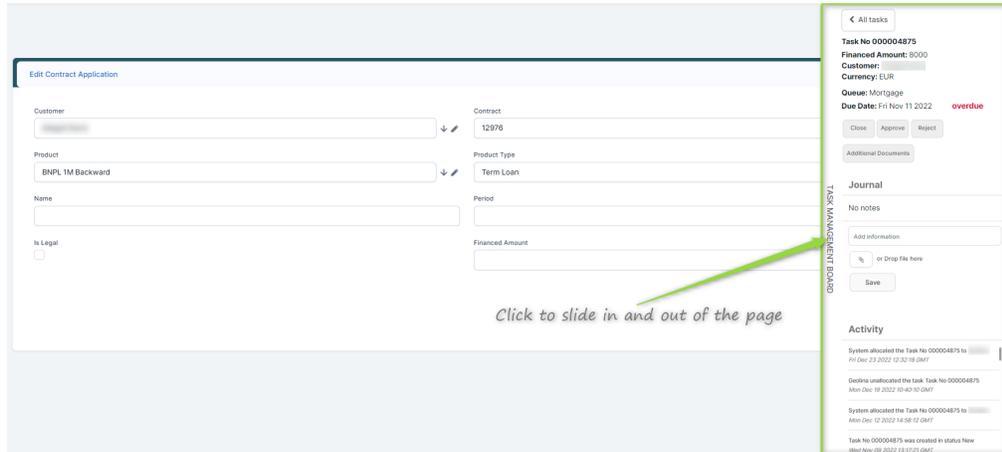
If not selected (`Use MainEntity Context (Task Detail Page) = False`), then the queue item is displayed in the context of the `Queue Item` entity. The Task Management-specific information is displayed in the same page, as separate fixed sections on the right side of the form.
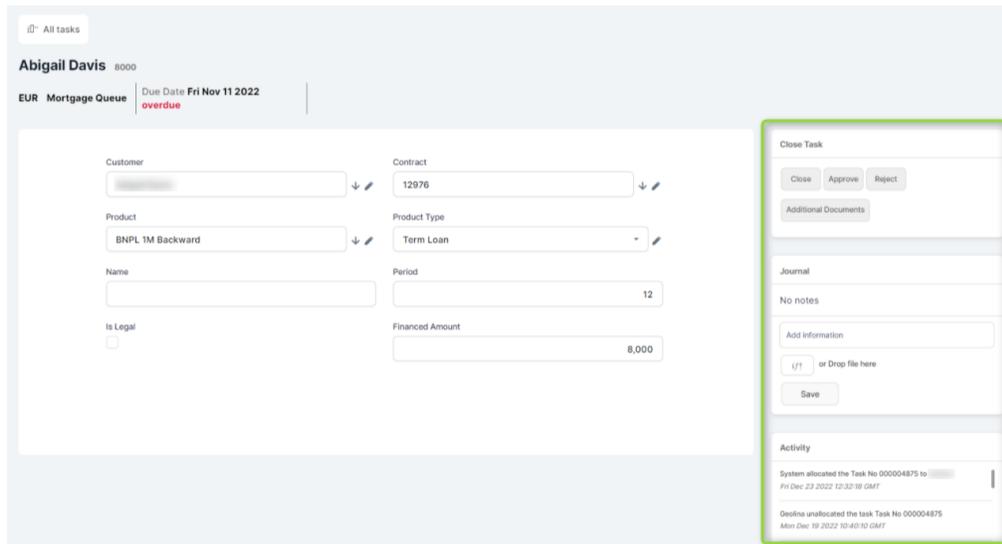
> **IMPORTANT!**
>
> When `Use MainEntity Context (Task Detail Page) =`
> `False`, we recommend that you use the displayed information **only**
> **for viewing** and you don't perform any changes.
>
> Set the `Use MainEntity Context (Task Detail Page) =`
> `True` if you wish to perform changes to the information, using the
> displayed Task Management side panel.

- **Use Queue Type Map:** map processor settings to the Queue Type entity. Tick the button to display the following fields:

  - **Extra Identification Map**: list of identification elements such as the name of the entity, attribute, parameters, etc.

  - **Queue Filter Map**: list of queue filters. A filter is identified by an objevt with the following properties: filter name, is option set, option set name, entity name, or attribute name.

  - **CompetenceLevel Filter Map**: list of competence level filters. A filter is identified by the following properties: filter name, is option set, option set name, entity name, or attribute name.

  - **Profile Filter Map**: list of queue profile filters. A filter is identified by the following properties: filter name, is option set, option set name, entity name, or attribute name.

- **Display Info:** Add a list of attributes to be displayed as columns in the Task Management Dashboards. You can add fields that are attributes of an entity related with the main entity. See the example below where:

  - `attributeName` is the name of the attribute from the entity from which the values are taken.

  - `entityName` is the entity from which the values are taken. Add it if entityName is different from the main entity.

  - `relationAttrName` is the link attribute to the entity from the Main entity. Add it if entityName is different from the main entity.

Example of display info

```
[
        {"attributeName" : "financedAmount"},
        {"attributeName" : "customerId"},
        {"attributeName" : "currencyId"},
        {"attributeName" : "startDate"},
        {"attributeName" : "isLegal"},
        {""attributeName" : "product_type"},
        {"attributeName" : "name","entityName":"<entity_
name>","relationAttrName":"accountTypeId" },
        {"attributeName" :
"isPerson","entityName":"<entity_
name>","relationAttrName":"accountTypeId"}
]
```

NOTE

If the operator is allocated on different queues, then the columns displayed in the Task Management Dashboards are the union from all the queue types.

IMPORTANT!

For optimal performance, we don't recommend operators to be allocated to multiple queues of different types. The information within **Display Info** is displayed as new columns in the dashboard grids and such multiple allocation would result in many columns that clutter the operator's grids.

3. Click **Save** after adding the information.

Creating a Queue

After the queue type was created, you need to create a queue and assign it to the type.

1. In FintechOS Portal, click the main menu and access **Task Management** > **Queue**. The list of defined queues opens.

2. Click the **Insert** button to add a new queue and fill in the information:

   - **Name:** Enter the name of the queue.

   - **Queue Type:** Select the type of the current queue.

   - **Return to Same Operator:** Tick the box if you want tasks to return to the same operator after exiting another queue.

   - **Visible Tabs:** Select the filters you want to be the displayed in the Task Management Dashboards. The following options are available: Active Tasks, Returned Tasks, Older Active Tasks, Closed Tasks, Unallocated Tasks, Colleagues Tasks. If you do not make any selection, then all the tabs are displayed. If in <OperatorXQueue> there are at least 2 queues assigned for one Operator, then the display of the tab will be done if at least one queue has the parameter for displaying the Tab, TRUE.

3. After adding the information, click **Save and reload**. The **Queue Filters** and **Queue Priorities** sections are now editable.

4. In the **Queue Filters** section, click **Insert**, pick one of the available filters, and add a description depending on the nature of the queue. Click **Save and reload**.

> **NOTE**
> If there is only one queue assigned to the queue item, then the filter is not mandatory.

5. In the **Queue Priorities** section, click **Insert** and fill in the following information:

   - **Name:** Enter the name of the queue priority.

   - **Use Queue Main Entity:** Tick the box to use the main entity of the queue.

   - **Use Queue Item Entity:** Tick the box to use the queue item entity.

   - **Field:** Pick a field based on which the priority is to be made.

   - **Order By Type:** Select an option between **Ascending** or **Descending** for ordering the data.

6. In the **OperatorXQueue** section, click **Insert** and fill in the following information:

   - **Operator:** Pick the operator from the list of all the available operators.

   - **Competence Level:** Set the competence level for the operator in this queue

   - **Last Allocation Date:** This remains blank.

   - **Max Active Item Allocation Number:** Can be used to limit the number of tasks an operator can receive from this queue.

   - **Item Count:** This remains blank.

7. Click **Save and close** to return to the **Queue** table.

8. The **Queue Items** section is automatically populated with items.

9. Click **Save and close**. The **Queue** window opens. Click **Save and close** to save your queue.
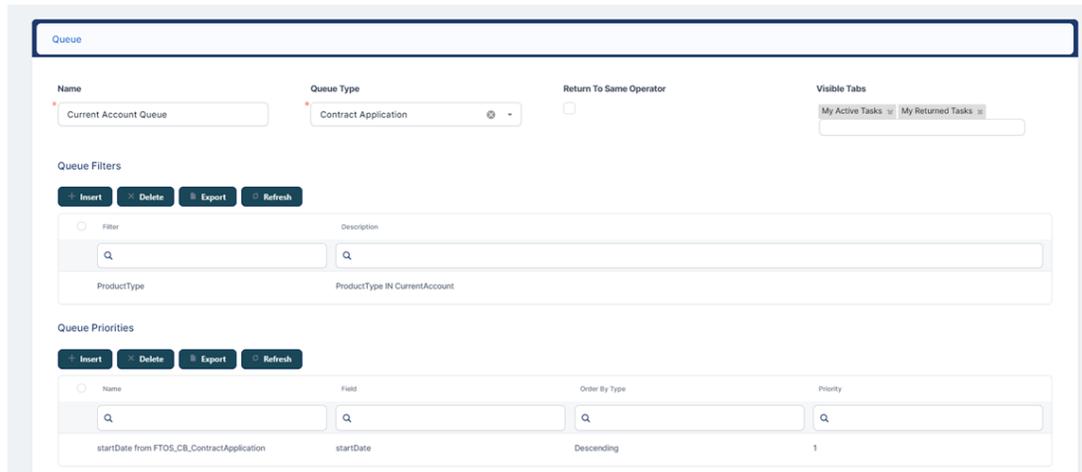
Managing Queue Items

The list of queue items is automatically populated with applications after Task Management is set up. However, there are cases when certain details about a specific queue item may need to be changed, such as the queue item to be renamed or allocated to a different operator. To manage queue items, follow these steps:

1. In FintechOS Portal, click the main menu and access **Task Management** > **Queue Item**. The list of available queue items opens.

2. Double-click a queue item and the following options open:

Option	Validation	Description
Name	Editable	The name of the queue item.
Required Competence Level	Editable	The needed competence level to review the task. This is calculated automatically by the rules set for the allocation process but the admin ca edit the required competence level for specific items.
To Review	Read-only	Tick the box if the queue item needs review from the original competence level in case it was reviewed by a replacing competence level operator.

Option	Validation	Description
Returned	Read-only	Tick the box if the queue item was returned to the original operator, in case there were additional documents or information needed to finalize the request.
Operator	Editable	The current operator assigned to that task. The admin can use this field to manually set a different operator for that task.
Operator Profile	Editable	The operator's profile.
Operator Competence Level	Editable	The operator's competence level.
Created On	Read-only	The date and time when the queue item was created.
Allocation Date	Read-only	The date and time when the task was allocated to the operator.
Resolution Date	Read-only	The date and time of the last resolution set on the task.
Due Date	Editable	The date and time of the
Replacement Operator	Read-only	This field is filled if a replacement operator has been assigned with that task.

Option	Validation	Description
Previous Queue Item	Editable	This field helps identify previous tasks that were correlated to the current one. For example, if a task was sent back to the originator for further clarification using the Request More Documents feature, when a new task is created, the previous queue item has the name of the related task.
Description	Editable	The description of the queue item.

NOTE

If the business status of the queue item is closed, then all fields are read-only.

3. Click **Save** after changing the information.

Operators

For tasks to be automatically assigned to a bank employee, operator profiles must be created in the system. These operator profiles hold information like the system user, whether they are on holiday or not, the last task allocation date, competence level, and so on. Follow the steps below to create an operator profile.

Create Operators

Follow the steps below to create an operator profile.

In FintechOS Portal, click the main menu and access **Task Management** > **Task Management Settings Panel** > **Operators**. The list of defined operators is opened.

1. Click **Insert** to add a new operator and fill in the following information:

   - **Name:** The name of the operator.

   - **Security User:** The security user assigned to this operator.

   - **In Holiday:** Tick the box if the operator is in holiday.

   - **Last Task Date:** The last date when the operator was assigned a task.

2. In the **Operator Replacements** section, click the **Insert** button to add an operator that would replace the current one in case they are not available. Fill in the following information:

   - **Name:** Enter the name of the replacement operator.

   - **Operator:** Pick a replacement operator from the available ones.

   - **Queue:** Pick the queue for the replacement operator.

   - **Replacement Operator:** Enter the replacement operator.

   - **Profile:** Pick a profile for the replacement operator.

   - **Valid From Date:** Enter the date from which this operator is a replacement.

- **Valid To Date:** Enter the date until which this operator is a replacement.

3. Click the **Save and reload** button.

Allocate Operators

1. In the **OperatorXQueue** section, click **Insert** to add one or more queues to the current operator. Fill in the following information:

   - **Name:** Enter the name of the queue.

   - **Queue:** Pick the queue.

   - **Operator:** Pick a replacement operator from the available ones.

   - **Competence Level:** Select the competence level of the operator.

   - **Last Allocation Date:** Enter the last allocation date.

   - **Max Active Item Allocation Number:** Enter the maximum number of tasks that can be allocated to this operator.

   - **Item Count:** Enter the number of tasks allocated to the operator

2. Click the **Save and close** button.

3. In the **Profiles** section, click the **Insert existing** button to insert a profile for this operator.

4. Click **Save and close**. The operator is created and is available in the list.

> **NOTE**
> After the filter criteria are applied and, multiple Operators remain equally valid to receive the task automatically, the workload (the number of active or returned tasks) is compared and assigned to the team member with the lowest workload.
>
> If there are at least two members with the same workload, the system looks at the timestamp of the last request allocated to each of the members, and allocates the request to the user who has the oldest request out of the two.
>
> All assignments are made at the same queue level.

This is applicable for Task Management version 4.1.

IMPORTANT!
For optimal performance, we don't recommend operators to be allocated to multiple queues of different types. The information within **Display Info** is displayed as new columns in the dashboard grids and such multiple allocation would result in many columns that clutter the operator's grids.

Competence Levels

Competence levels are used for defining the importance of tasks that are assigned to certain queues. Some tasks may need to be evaluated by operators with certain skill sets belonging to more than one queue. If a bank employee simply checks if the application has all relevant data, a compliance officer needs to verify if the applicant is in a risk list. For these cases, two competence levels may need to be defined.

1. In FintechOS Portal, click the main menu and access **Task Management** > **Task Management Settings Panel** > **Competence Level**. The list of defined competence levels is opened.

2. Click **Insert** to add a new competence level, and fill in the following information:

   - **Name:** Enter the name of the competence level.

   - **Queue:** Select the queue for this competence level.

   - **Level:** Enter the level of this competence.

   - **Replacement Competence Level:** Select a replacement for the competence level.

3. Click **Save and close**.

4. In the **Competence Level Filters** section, click **Insert**.

5. Pick a filter from the list and add a description.

6. Click **Save and close**. The new competence level is now available in the list.

Filters

Some tasks can be assigned to different queues automatically, based on a certain filter such as the operator skill, competence level, the application date, the requested loan amount for a loan and so on. Filters are also used when defining competence levels.

1. In FintechOS Portal, click the main menu and access **Task Management** > **Task Management Settings Panel** > **Filter**. The list of available filters opens.

2. Click **Insert** to add a new filter.

3. Fill in the **Name** of the filter and pick a **Filter Type**. Depending on the chosen type, certain options are displayed, such as **Entity View** or **Lookup** for a filter of type lookup.

4. After completing the fields, click **Save and close**. The new filter is now available in the **Filter** list.

Profiles

Some operators have specialized skill sets and thus are required to review certain applications. For example, a certain operator verifies if an applicant is on the risk list, while another would approve the loan. Therefore, each operator must have at least one profile.

1. In FintechOS Portal, click the main menu and access **Task Management** > **Task Management Settings Panel** > **Profiles**. The list of defined profiles is opened.

2. Click **Insert** to add a new profile and add a name.

3. Under **Profile Filters** section, click **Insert**.

4. Pick a filter for the profile and add a description.

5. Click **Save and close**.

Security Role Configuration

To decrease the manual workload in setting up the operator queues, competence level, and workload, you can associate a security role to fill the required information automatically in the **Security Role Configuration** menu.

The **Security Role Configuration** allows the Admin users to allocate one or more Operators with a certain Security Role, with a Competence Level, profile to a certain Queue. For example, you can allocate all system users with Loan Admin Officer security role to a queue such as Loan Term and set the Competence Level 1, the Profile Operator, and a maximum active item allocation number.

Bulk Allocate Operators

Follow the steps below to automatically allocate operators to a queue:

1. In FintechOS Portal, click the main menu and access **Task Management** > **Task Management Settings Panel** > **Security Role Configuration**. The list of security role configurations is displayed.

2. Click **Insert** to add one or more operators with specific security role to a queue.

    All the details below, the Security Role, Queue, Competence Level, and Operator Profile, must be already defined in the system.

    Fill in the following information:

    - **Name:** Enter the name of the queue.

    - **Security Role:** Select the security role.

    - **Queue:** Select the queue.

    - **Competence Level:** Select the competence level of the operator.

    - **Operator Profile:** Select a profile from the available ones.

    - **Max Active Item Allocation Number:** Enter the maximum number of tasks that can be allocated to this operator.

    - **Update Propagation:** Tick this to apply the above changes to existing operators with the previously selected security role. Leave this unticked to apply changes only for new operators.

3. The `Automatic Operator Configuration` job runs every 10 minutes and updates the changes made in the **Operators Board.**

4. Once this is completed, the Operators are automatically allocated to Queues.

5. To see the allocated operators, go to **Task Management > Queue** menu and select the allocated Queue.
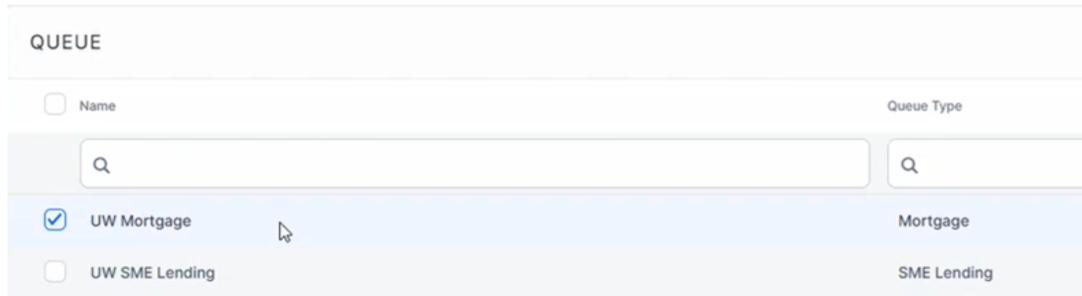
6. Go to the **OperatorXQueue** section to view the Operators that were automatically allocated to the selected Queue.
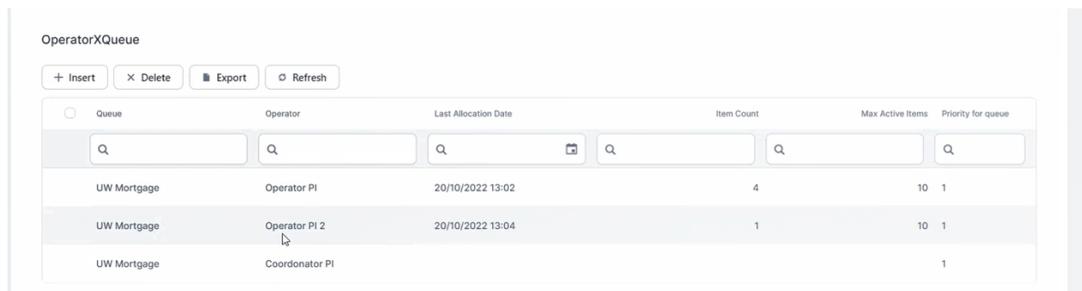
Task Management Endpoints

The below endpoints have been implemented to return the queue type Id, create, allocate queue items, and add the queue item to a queue.

FTOS_CMB_GetQueueTypeId

Returns the Queue Type Id.

Call Example

```
var digitalJourneyName = 'ContractJourney';
var taskTypeId = ebs.getOptionSetItemIdByName("FTOS_CMB_
TaskType", "Chaser");
var dataQueueType = {};
dataQueueType.digitalJourneyName = digitalJourneyName;
dataQueueType.taskTypeId = taskTypeId;
dataQueueType.mainEntityName = "FTOS_CB_
ContractApplication";
var queueTypeIdReturned = null;
```

```
ebs.callActionByNameAsync('FTOS_CMB_GetQueueTypeId',
dataQueueType).then(function (result) {
    if (result.UIResult != null && result.UIResult.Data !=
null) {
            queueTypeIdReturned = result.UIResult.Data;
            console.log(queueTypeIdReturned);
    }
});
```

Input

Below is a list of the available parameters:

Parameter	Description
digitalJourneyName	The name of the digital journey.
taskTypeId	The option set Id of the Task Type (FTOS_CMB_ TaskType).
mainEntityName	The main entity name.

Output

The output is the queueTypeId.

FTOS_CMB_TaskManagement_ CreateAndAllocateQueueItem

Creates a queue item, adds the queue item to a queue and allocates the queue item to an operator.

Call Example

```
var endpointParams = {};
var endpointParams.extraIdentifications  = {
  retailApplicantDataId: "631def4a-c0ab-4c3f-9a23-
f5ffc4488f13",
  riskLogId: "2437faec-3f44-437d-a7d7-fcbdd0907d15"
};
var endpointParams.queueTypeId = 'e398ff08-9127-482d-b126-
3758bb42b08d';
```

```
var endpointParams.recordId= '64f1c182-d329-4d94-892e-
c3cf4556d186';
var endpointParams.uniqueId= '1313131313';
var endpointParams.blnIsReview = false;
var endpointParams.digitalProcessorTypeName =
'ComplianceFilters';

ebs.callActionByNameAsync("FTOS_CMB_TaskManagement_
CreateAndAllocateQueueItem", endpointParams);
```

Input

Below is a list of the available parameters:

Parameter	Description
extraIdentifications	An array of objects with the following attributes: • `IdentificationEntityName`: the entity name. • `IdentificationAttributeId`: the attribute from the entity on which the identification is made. • `IdentificationParamName`: the parameter name which will be given when calling endpoint.
queueTypeId	The queue Type Id.
recordId	The record Id.
uniqueId	The unique Id.
isReview	Possible values: True or False.
digitalProcessorTypeName	The digital processor type name.
operatorId	The Operator Id.
operatorProfileId	The Operator Profile Id.
dueDays	The number of days until the task is due.
masterRecords	Array type, not mandatory. An insert is done for each item in the object masterRecords. If the masterRecordId is not provided, then recordId is used.

Output

The output is the created queue item.

FTOS_CMB_TaskManagement_AttachToQueue

Adds the queue item to a queue, which means that the followings are updated: `queueId`, `description` and `requiredCompetenceLevelId`.

Call Example

```
var endpointParams = {};
var endpointParams.queueTypeId = 'e398ff08-9127-482d-b126-
3758bb42b08d';
var endpointParams.recordId= '64f1c182-d329-4d94-892e-
c3cf4556d186';
var endpointParams.uniqueId= '1313131313';

var queueFilter= [];
var productTypeFilter = {};
productTypeFilter.name = "ProductType";
productTypeFilter.value = "MG";
queueFilter.push(productTypeFilter);

var competenceLevelFilter= [];
var requestedLoanAmountFilter = {};
requestedLoanAmountFilter .name = "RequestedLoanAmount";
requestedLoanAmountFilter .value = "57000";
competenceLevelFilter.push(requestedLoanAmountFilter );

var endpointParams.JSON_filterQueue= queueFilter;
var endpointParams.JSON_filterCompetence=
competenceLevelFilter;

ebs.callActionByNameAsync("FTOS_CMB_TaskManagement_
AttachToQueue", endpointParams);
```

Input

Below is a list of the available parameters:

Parameter	Description
queueTypeId	The queue type Id.
taskTypeId	The task type Id.
recordId	The record Id.
JSON_filterQueue	The JSON filter Queue.
JSON_filterCompetence	The JSON filter Competence.
uniqueId	The unique Id.

Output

No result as output, but the outcome of this function is that the queue item is added to a queue, which means that the following are updated: `queueId,` `description`, and `requiredCompetenceLevelId`.

FTOS_CMB_ChangeTaskStatusClosed

Changes the business workflow status in Closed and sets up a value on the <QueueItem>Resolution field (Approved, Rejected or Additional Information). It is used on the Task Details page when clicking one of the following buttons: **Approve, Reject** or **Additional Documents.**

> **NOTE**
> The **FTOS_CMB_ChangeTaskStatusClosed** endpoint is available in the Task Management package 4.1.

Call Example

```
let resolutionId = ebs.getOptionSetItemIdByName('FTOS_CMB_
TaskManagementResolution', resolutionName); //
resolutionName can be: 'approved or 'rejected or
'additionalInformation;
ebs.callActionByNameAsync('FTOS_CMB_ChangeTaskStatusClosed',
{ queueItemId: ebs.getCurrentEntityId(), resolutionId:
resolutionId }).then(function (e) {
    ebs.showMessage(e.UIResult.Data.message, 'success');
    setTimeout(function () {
        location.reload();
    }, 3000);
});
```

Input

Below is a list of the available parameters:

Parameter	Description
queueItemId	ebs.getCurrentEntityId()
resolutionId	The resolution Id.

Output

The output is the displayed message. For example: "Status changed to Closed with resolution Approved".

Working with Coordinator Dashboard

The Task Management comes by default with the Task Management Admin role. The Coordinator Dashboard is the main overview page for users with the associated role of Task Management Admin, allowing them to manage all queue items in one place and view the assigned queue items of each Operator.

The Coordinator Dashboard displays all the queue items from all the queues allocated to the logged-in user, for example, if a manager is allocated to three out of five queues, only the queue items from the queues allocated to that user are visible.

> **NOTE**
> For users with **security role** = Task Manager Admin, the `Automatic Operator Configuration` job marks the **isManager** as True.

This dashboard is designed to:

1. View the total number of tasks, total number of not allocated tasks, total number of tasks due in 5 days, and the total number of overdue tasks.

2. View all previously processed tasks in the **Returned Tasks** section with the following details: Name, Customer, Product, Type, Due Date (the due date when the queue item must receive a resolution), and Operator.

> **NOTE**
>
> Customize the first three columns, in the example above, Name, Customer, and Product, by modifying the **Display Info** details from the **Queue Type**. Add any other attributes in the **Display Info** details, and then they are displayed on the **Dashboard**.

3. View all tasks assigned to all operators in the **Active Tasks** section with the following details: Name (the name of the queue item), Customer, Product, Type, Due Date, and Operator.

4. Select one of the following options to view the:

- **Older Active Tasks:** If selected, displays older active tasks that can be filtered by date of allocation. The following details are displayed: Name (the name of the queue item), Customer, Product, Type, Due Date, and Operator.

- **Closed Tasks:** If selected, displays all closed tasks. The following details are displayed: Name (the name of the queue item), Customer, Product, Type, Resolution Date, and Operator.

- **Unallocated Tasks:** If selected, displays the list of unallocated tasks. The following details are displayed: Name (the name of the queue item), Customer, Product, Type, Due Date, Pick Up and Last Update. You can use the **Pick-up** button to assign the task to yourself.

- **Colleagues Tasks:** If selected, displays tasks allocated to colleagues who are on holiday. The status of these queue items is **AllocatedButHoliday**. You can use the **Pick-up** button to assign the task to yourself and the queue item status changes from **Allocated** to **ClosedReallocated**.

- **Tasks That Need Review:** If selected, displays all allocated tasks that need review.

- **Unallocated Tasks That Need Review:** If selected, displays the list of unallocated tasks that need review. You can use the **Pick-up** button to assign the task to yourself.
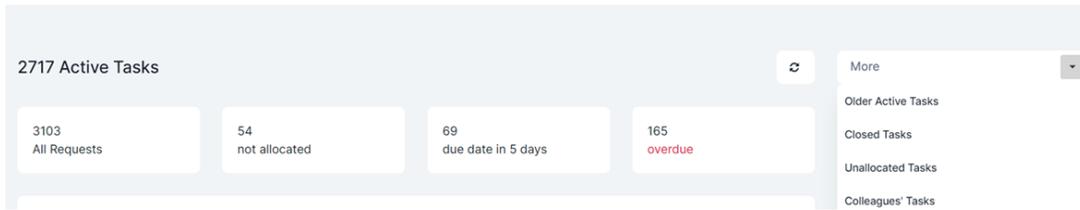
> **NOTE** These tasks sections are displayed on the dashboard only if they were selected by the administrator in FintechOS Portal > main **menu** > **Task Management** > **Queue** > **Visible tabs.**

If a certain queue item is close to or surpassed its deadline, you are informed that:

- the task due date has passed:

- the task is due today.

- the due date is in X days, where X = the number of days from today to the due date.

5. View the total number of your **Closed** Tasks and the analytics of your **Returned, Approved,** and **Rejected** Tasks from the current week.

My week   ▾

3   0%
Closed   Returned

66.67%   33.33%
Approved   Rejected

For each of the views (My Week, My Month, My Year, Last Week, Last Month, or Last Year), the percentages for Returned, Approved, and Rejected tasks are calculated as detailed below.

- for the **Returned Tasks**: the queue items in the period (with ResolutionDate in the period) of the view that have `<QueueItem>Resolution` = `Additional Information`, divided by the number of Queue Items that have `<QueueItem>ResolutionDate` in the period of the view.

- for the **Approved Tasks**: the queue items in the period of the view that have `<QueueItem>Resolution = Approved`, divided by the number of Queue Items that have `<QueueItem>ResolutionDate` in the period of the view.

- for the **Rejected Tasks**: the queue items in the period of the view that have `<QueueItem>Resolution = Rejected`, divided by the number of Queue Items that have `<QueueItem>ResolutionDate` in the period of the view.

> **NOTE**
> To see only your Closed, Returned, Approved or Rejected Tasks, click the Closed, Returned, Approved or Rejected text and the dashboard displays only the desired tasks.

6. View the total number of your Closed Tasks and the analytics of your Returned, Approved, and Rejected Tasks in the current month, current year, previous week, previous month or previous year by selecting one of the following options: my week, my month, my year, last week, last month or last year.
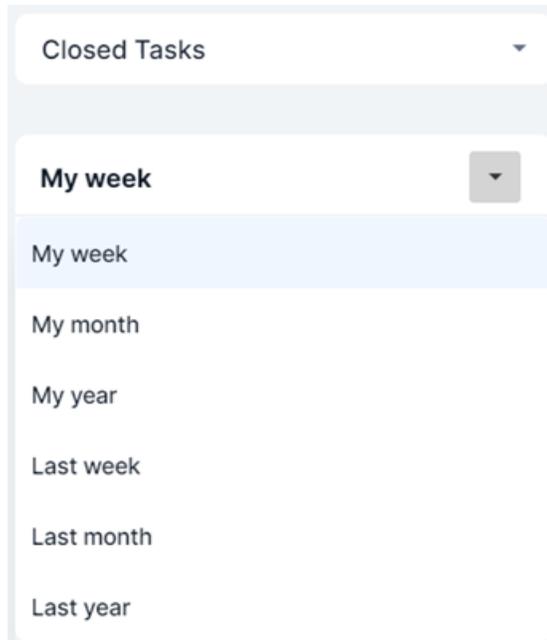
> **NOTE**
> The analytics of the **Returned, Approved** and **Rejected** tasks are only
> available in the Task Management package version 4.1.

7. To export the tasks available on the dashboard, select the tasks you want to export and click the **Export** button. Only the selected queue items are exported in .xlsx format.
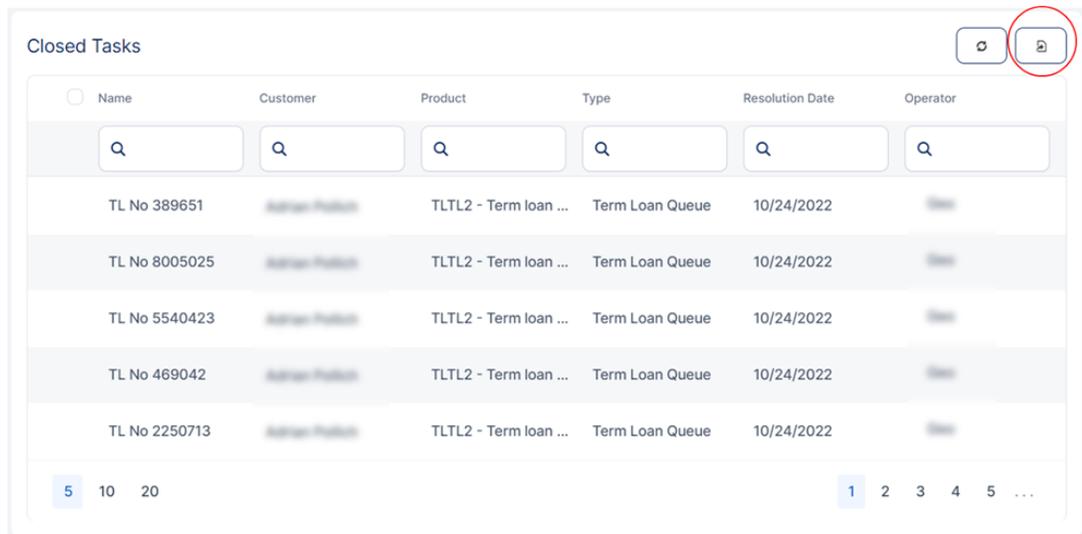
8. Use the **Refresh** button to manually refresh the task list.
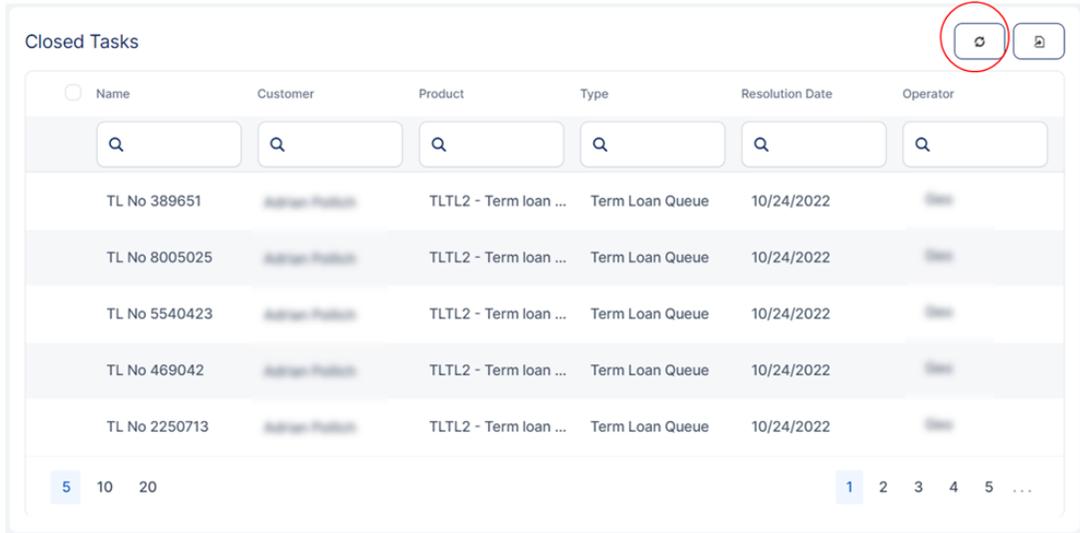
9. Re-assign/unassign one or more tasks by following the steps below (this is only applicable for Task Management version 4.1):

- Select the task(s) you want to re-assign/unassign and then click the **Re-Assign** button.
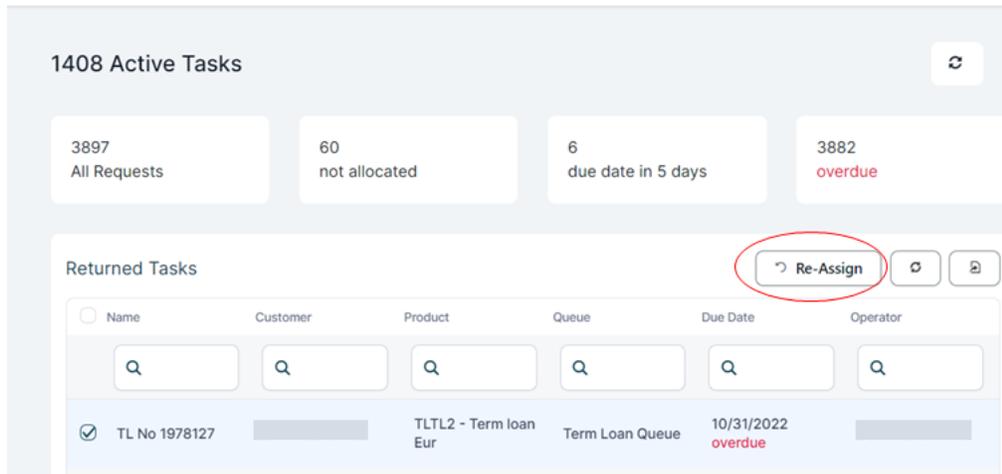
NOTE

You can bulk re-assign/unassign only the tasks from the same queue.

- In the newly displayed window, **select** the **Operator** you want to re-assign the task(s) to and/or **select** the **Queue** you want the task(s) to be reallocated, then click **Re-Assign**.
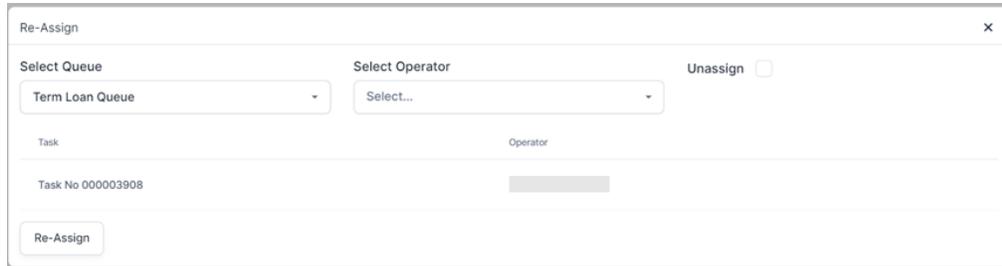
- To unassign the selected tasks, tick the **Unassign** checkbox, then click **Re-Assign**. The tasks are added in the Unallocated status.

10. View the tasks assigned to all available Operators from the **Tasks load** section.

View Task Details

1. Double-click on a task to display the queue item in view mode, together with the form used for generating that queue item.

If at the queue type level Use MainEntity Context (Task Detail Page) = False, then the queue item is displayed in the context of the Queue Item entity. The Task Management-specific information is displayed in the same page, as separate fixed sections on the right side of the form.

If at the queue type level Use MainEntity Context (Task Detail Page) = True, then the queue item is displayed in the context of the Main Entity set at the used data form level. Task Management is displayed embedded in a side panel, on the right side of your pages, sliding in and out of the page as needed.

NOTE

This view needs to be in connection to a digital journey so that details about applications can be displayed.

You can review the application and give a resolution by clicking one of the following buttons: **Approve**, **Reject**, **Close** to close the task without a resolution, or **Additional Documents** to close the task asking for additional informative documents.

If you click one of the above buttons, the business workflow status changes to `Closed` and the resolution is displayed in the header section.

IMPORTANT!

When `Use MainEntity Context (Task Detail Page) = False`, we recommend that you use the displayed information **only for viewing** and you don't perform any changes.

Set the `Use MainEntity Context (Task Detail Page) = True` if you wish to perform changes to the information, using the displayed Task Management side panel.

2. In the **Journal** section, you can add a note in the **Add information** box or attach a file, then click **Save.** A label with the timestamp of the note and the operator who left the note is added in the **Journal** section.

3. In the **Activity** section, view the activity history on the selected task. The ones marked in blue are for other queue items that have the same unique Id of the main entity, and the ones in black refer to the current queue item.

Working with Operator Dashboard

The Task Management comes by default with the Task Management Operator role. The Operator Dashboard is the main overview page for users with the associated role of Task Management Operator, allowing them to manage and track all their tasks in one place. Using filters, the Operators can view all unresolved tasks and quickly prioritize what matters most.

This dashboard is designed to:

1. View all your tasks in the **Active Tasks** section with the following details: Name (the name of the queue item), Customer, Product, Type, Due Date, and Last Update.
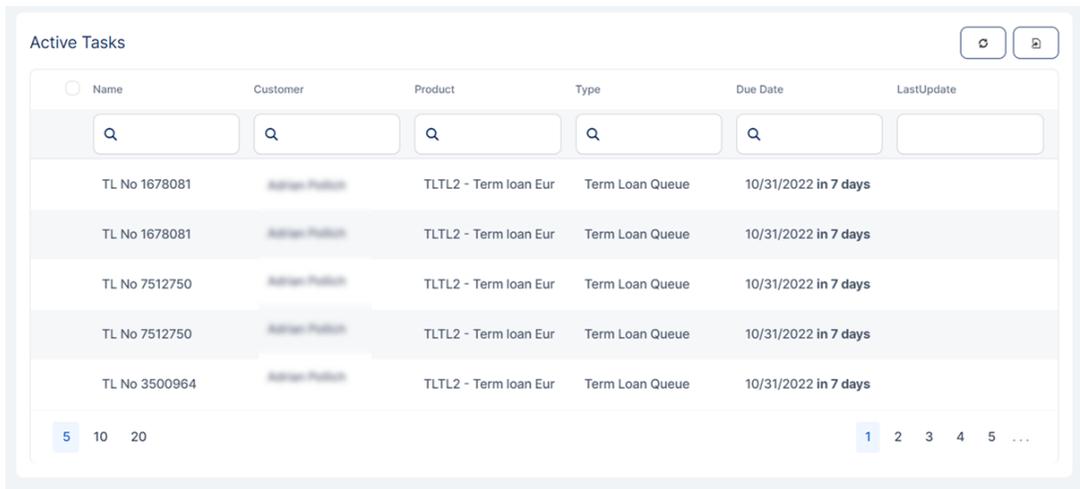
2. View the total number of your tasks.
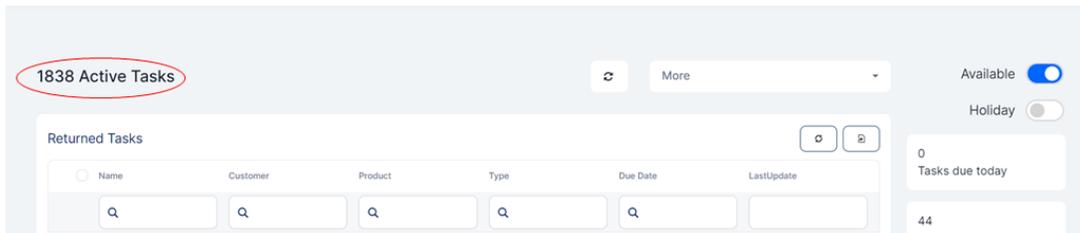
3. View all your previously processed tasks in the **Returned Tasks** section with the following details: Name, Customer, Product, Type, Due Date (the due date when the queue item must receive a resolution), and Last Update.

> **NOTE**
> Customize the first three columns, in the example above, Name, Customer, and Product, by modifying the **Display Info** details from the **Queue Type**. Add any other attributes in the **Display Info** details, and then they are displayed on the **Dashboard**.

4. Select one of the following options to view the:
   - **Older Active Tasks:** If selected, displays older active tasks that can be filtered by date of allocation. The following details are displayed: Name (the name of the queue item), Customer, Product, Type, Due Date, and Last Update.

   - **Closed Tasks:** If selected, displays all your closed tasks. The following details are displayed: Name (the name of the queue item), Customer, Product, Type, Resolution Date, and Last Update.

   - **Unallocated Tasks:** If selected, displays the list of unallocated tasks. The following details are displayed: Name (the name of the queue item), Customer, Product, Type, Due Date, Pick Up and Last Update. You can use the **Pick-up** button to assign the task to yourself.

- **Colleagues Tasks:** If selected, displays tasks allocated to colleagues who are on holiday. The status of these queue items is **AllocatedButHoliday**. You can use the **Pick-up** button to assign the task to yourself and the queue item status changes from Allocated to ClosedReallocated.

- **Tasks That Need Review:** If selected, displays all allocated tasks that you need to review. They are ordered by queue allocation and based on the set queue priority.

- **Unallocated Tasks That Need Review:** If selected, displays the list of unallocated tasks that need review. You can use the **Pick-up** button to assign the task to yourself.

5. If a certain queue item is close to or surpassed its deadline, you are informed that:

- the task due date has passed:

- the task is due today.

- the due date is in X days, where X = the number of days from today to the

due date.

> **NOTE** These tasks sections are displayed on the dashboard only if they were selected by the administrator in FintechOS Portal > main **menu** > **Task Management** > **Queue** > **Visible tabs.**

6. Change your status by clicking one of the 2 buttons below:
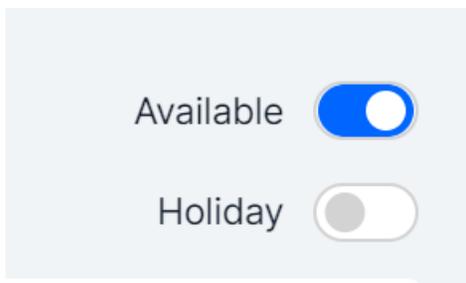
- **Available:** Changes your status to Ready and all your tasks with the AllocatedButHoliday status will be updated to the Allocated status. In addition, if your status is Ready, then new tasks are automatically assigned.

- **Holiday:** Changes your status to NotReadyHoliday and all your tasks with Allocated status will be updated to the AllocatedButHoliday status.

You can automatically receive tasks only if their status is **Ready.** The allocation process is done based on the operator. If an operator is available, a task is allocated to them based on their competency levels.

7. View the total number of tasks due today.

```
1
Task due today
```
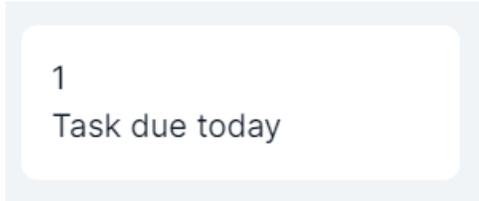
8. View the total number of tasks overdue (due date < today).

```
44
Tasks overdue
```

9. View the total number of your **Closed** Tasks and the analytics of your **Returned, Approved,** and **Rejected** Tasks from the current week.

```
My week                          ▼

3                    0%
Closed               Returned

66.67%               33.33%
Approved             Rejected
```

For each of the views (My Week, My Month, My Year, Last Week, Last Month, or Last Year), the percentages for Returned, Approved, and Rejected tasks are calculated as detailed below.

- for the **Returned Tasks**: the queue items in the period (with ResolutionDate in the period) of the view that have `<QueueItem>Resolution = Additional Information`, divided by the number of Queue Items that have `<QueueItem>ResolutionDate` in the period of the view.

- for the **Approved Tasks**: the queue items in the period of the view that have `<QueueItem>Resolution = Approved`, divided by the number of Queue Items that have `<QueueItem>ResolutionDate` in the period of the view.

- for the **Rejected Tasks**: the queue items in the period of the view that have `<QueueItem>Resolution = Rejected`, divided by the number of Queue Items that have `<QueueItem>ResolutionDate` in the period of the view.

To see only your Closed, Returned, Approved or Rejected Tasks, click the Closed, Returned, Approved or Rejected text and the dashboard displays only the desired tasks.

10. View the total number of your Closed Tasks and the analytics of your Returned, Approved, and Rejected Tasks in the current month, current year, previous week, previous month or previous year by selecting one of the following options: my week, my month, my year, last week, last month or last year.
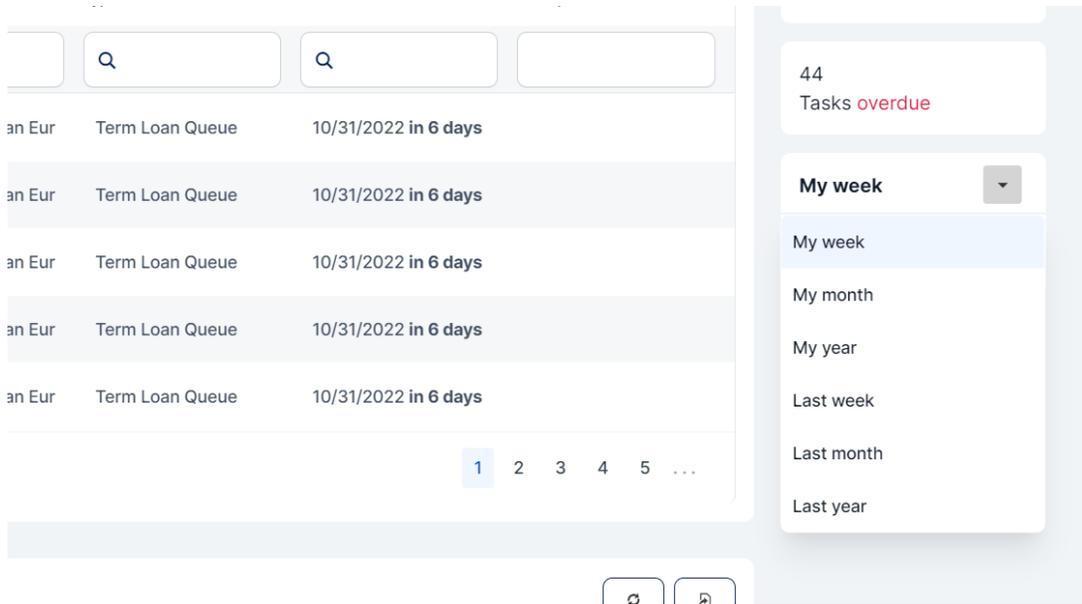
> **NOTE**
> The analytics of the **Returned, Approved** and **Rejected** tasks are only available in the Task Management package version 4.1.

11. To export the tasks available on the dashboard, select the tasks you want to export and click the **Export** button. Only the selected queue items are exported in .xlsx format.
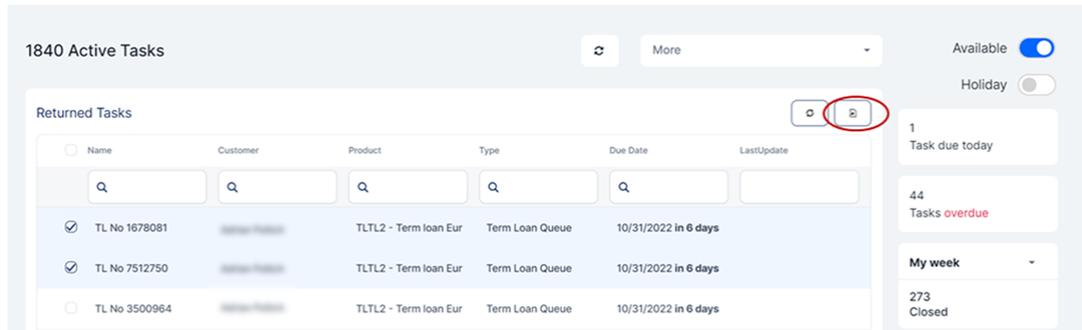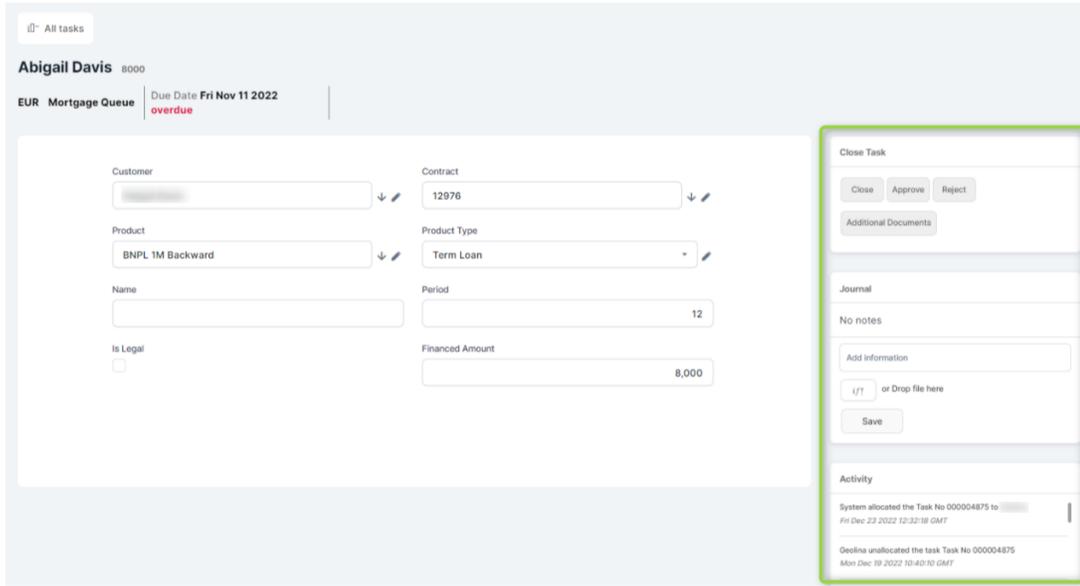
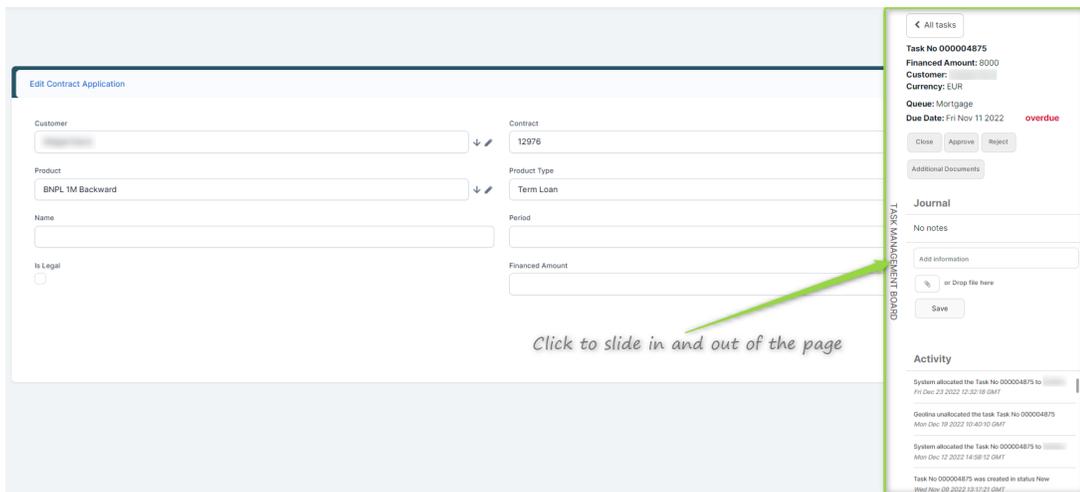12. Use the **Refresh** button to manually refresh the task list.

View Task Details

1. Double-click on a task to display the queue item in view mode, together with the form used for generating that queue item.

   If at the queue type level `Use MainEntity Context (Task Detail Page) = False`, then the queue item is displayed in the context of the `Queue Item` entity. The Task Management-specific information is displayed in the same page, as separate fixed sections on the right side of the form.

If at the queue type level `Use MainEntity Context (Task Detail Page) = True`, then the queue item is displayed in the context of the Main Entity set at the used data form level. Task Management is displayed embedded in a side panel, on the right side of your pages, sliding in and out of the page as needed.

Click to slide in and out of the page

NOTE

This view needs to be in connection to a digital journey so that details about applications can be displayed.

You can review the application and give a resolution by clicking one of the following buttons: **Approve**, **Reject**, **Close** to close the task without a resolution, or **Additional Documents** to close the task asking for additional informative documents.

If you click one of the above buttons, the business workflow status changes to `Closed` and the resolution is displayed in the header section.
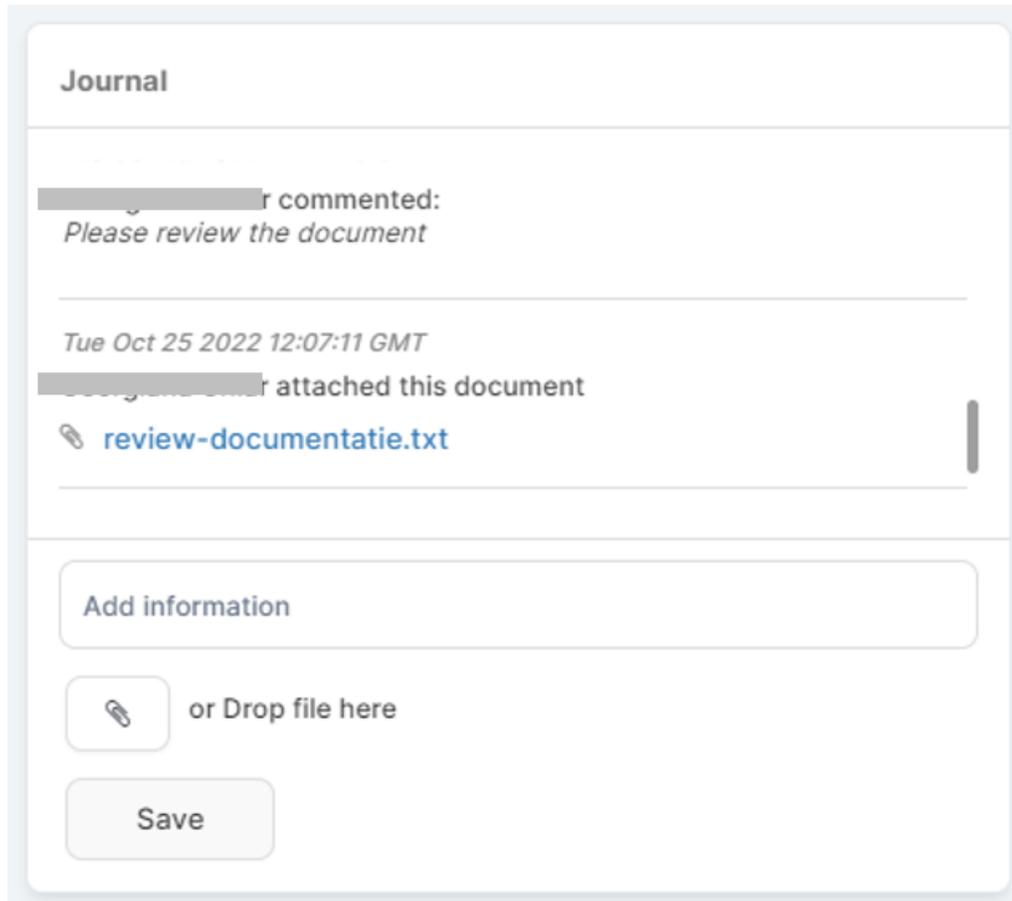
You cannot give a resolution for a task that is not assigned to you. An error message is displayed informing that the Resolution can be done only by the Assignee.

IMPORTANT!

When `Use MainEntity Context (Task Detail Page) = False`, we recommend that you use the displayed information **only for viewing** and you don't perform any changes.

Set the `Use MainEntity Context (Task Detail Page) = True` if you wish to perform changes to the information, using the displayed Task Management side panel.

2. In the **Journal** section, you can add a note in the **Add information** box or attach a file, then click **Save.** A label with the time-stamp of the note and the operator who left the note is added in the **Journal** section.

3. In the **Activity** section, view the activity history on the selected task. The ones marked in blue are for other queue items that have the same unique Id of the main entity, and the ones in black refer to the current queue item.