

Digital Mortgages Self-Service Application 1.0.0

User Guide

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Overview

The Digital Mortgages Self-Service Application solution is an accelerator that allows you to obtain a **mortgage**¹ by applying for it online. All the steps of acquiring the mortgage are digital done in one session without having to leave the browser, from selecting the property area to providing details about your identity. However, the accelerator can be modified as per the business requirements with the use of Innovation Studio.

The accelerator helps you find a property to buy through the integration with a real estate platform, e.g., **Zoopla**² (other platforms can be accommodated as well). The solution is built around identifying the needs of the customer, followed by adding the data for the borrower and co-borrower. It supports multiple applicants, consequently, only the main applicant has to fill out the application with the data for all the applicants. Additionally, the process accommodates the flow for adding a co-borrower.

After the applicants finish their flows, the system runs an automatic underwriting process to approve the request. Once the decision in principle is approved, the applicants follow a formal approval which is subject to manual underwriting done by a back-office employee. If that request is validated, the main borrower undergoes a property valuation, uploads an insurance document, and conveyancing assessment. If everything is correct, the main borrower can sign the contract for the disbursement.

The user is an **un-authenticated customer** (a new customer to the financial institution) and the customer segment is retail.

NOTE

The solution offers a desktop mode with a user interface easy to navigate between screens. It contains a "[Mobile Mode](#)" on page 224 as well fitted for smaller screens.

¹A financial institution (FI) is a company that manages financial and monetary transactions such as deposits, loans, investments, and currency exchange, i.e business operations within the financial services sector including banks, trust companies, insurance companies, brokerage firms, and investment dealers.

²Near-field communication is a set of communication protocols for communication between two electronic devices over a distance of 4 cm or less.

The accelerator makes use of [connectors](#) developed by FintechOS. The connector chosen comes as a recommendation. For the United Kingdom market, FintechOS chose to use the [Ideal Postcodes](#) connector for discovering the address, but this is subject to internal modification in any implementation.

Business Pain Points

The Digital Mortgages Self-Service Application digital journey by FintechOS is aimed at resolving some of the pain points when applying for a mortgage:

- long duration before getting an agreement in principal;
- tailored experience for the market addressed
- applying for a loan without knowing the offering the bank has
- extensive calculations.

Advantages of Digital Mortgages Self-Service Application

Here are some of the major benefits the solution offers:

- Improved Customer Experience. The solution harbors a ["My Mortgage Hub"](#) on page 69 that displays the applicant's steps and timeline with live status updates and action triggers. from here, you can resume steps, check responses from the financial institution and more.
- Time-efficient. Get a decision in principal without the need of a proof of identity or documents for income.

- **Integrations.** The solution accesses and retrieves addresses stored in the Ideal Postcodes platform. Other platforms with APIs can be integrated.
- **Self-service and Co-browsing.** You can apply for the Digital Mortgages Self-Service Application with the assistance of an operator if you feel the need for assistance.
- **Resume the process.** You can resume the application after the DIP is done, an email is sent with a continuation link.
- **Progress.** The system informs you when the data for a borrower/co-borrower was collected successfully.

Install Digital Mortgages Self-Service Application

This version is compatible with High Productivity Fintech Infrastructure v22.1. The supported operating system is Microsoft Windows 10, and the supported browser is Google Chrome.

Prerequisites

Download the package from the [Marketplace](#).

Install and configure:

- Standard FTOS infrastructure (with B2CPortal, B2CProxy, JobServer, MessageBus, MessageComposer for the "[Contact Validation](#)" on page 63) v22.1
- Banking Product Factory v3.0.2
- OTP project (found in the folder Digital Mortgages Self-Service Application-v1.0.0.zip > prereq)
- B2C Setup project (found in the folder Digital Mortgages Self-Service Application-v1.0.0.zip > prereq) or a manually configured B2C security role assigned to the Guest user and a front-end domain named B2C.
- FAQ Module (for details, see [here](#))
- Optionally, consider the Ideal Postcodes, Zoopla and Core Banking integrations which are subject to internal implementation.

After the FintechOS environment is installed, proceed with the next steps.

Package

Once you downloaded the package Digital Mortgages Self-Service Application-1.0.0.zip, unzip the package. It contains the following set-up:

- prereq
- solution (the solution with the templates for the B2C Portal, containing the digital assets)
- data-model
- additional-files (the library with custom controls; the custom files and the report document templates)
- default-products (the banking products)
- reset (it contains SQL procedures to delete records from the database)
- an installation guide.

1 Install the Solution

Import the packages using [Digital Solutions Packages](#) found within the solution folder.

Add the latest syspackdeployer in the reset folder, edit the installer and run it in admin mode.

Add the latest syspackdeployer in the data-model folder, edit the installer and run it in admin mode.

Add the latest syspackdeployer in the solution folder, edit the installer and run it in admin mode.

2 Set up the Additional Files

Copy or upload the custom folder in the B2C Portal folder.

Copy or upload the content of the UploadEBS in your UploadEBS folder.

Core Banking Integration

For the Core Banking integration, set the value to 1 (true). If you don't want to integrate the core banking system, set the key CB-use-integration to 0 (false) and you can leave the other keys with the default values.

```
<add key="B2CProxy" value="LinkToProxy" />
<add key="CB-use-integration" value="1" />
<add key="CB-URL" value="core-banking-api-baseurl" />
<add key="CB-user" value="core-banking-api-username" />
<add key="CB-pass" value="core-banking-api-password" />
<add key="CB-bank-code" value="core-banking-api-defaultBank" />
```

Add the keys needed for the Cognitive Processors and SMTP in the web.config of the B2C Portal.

Add the keys needed for the Cognitive Processors in the serviceSettings of the Jobserver.

Add the proxy routes in proxy config file.

Restart the application pools/services for B2C Portal and B2CProxy.

Video

The solution contains a video on the page ["Fully Online End to End Process"](#) on [page 20](#). Within the web.config file, add the code:

```
<remove fileExtension=".mp4"/>
<mimeMap fileExtension=".mp4" mimeType="video/mp4" />
```

3 Install the Default Banking Products

Add the latest syspackdeployer in the default-products folder, edit the installer and run it in admin mode.

Solution Walkthrough

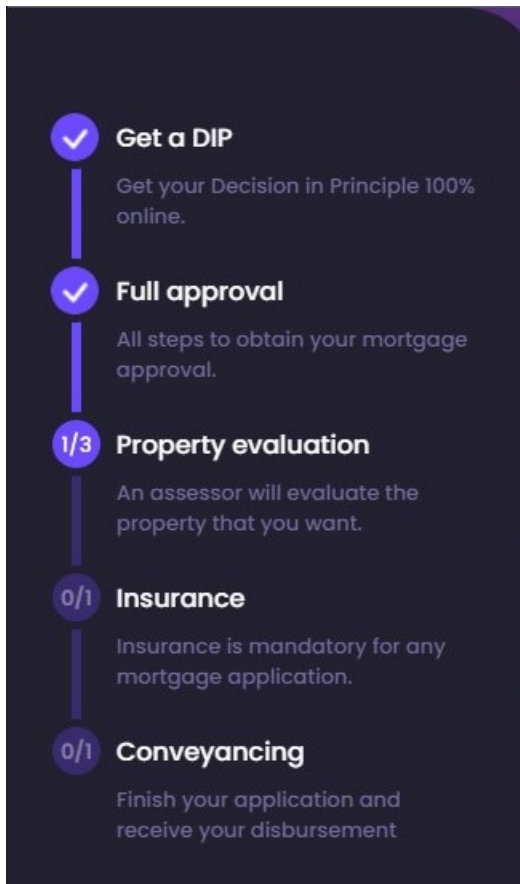
The Digital Mortgages Self-Service Application solution is an end-to-end mortgage application.

The online process accommodates several big steps that inform you in a few minutes what is the bank offer and whether or not you can apply for one of those offers. It includes an instant decision in principle for you to be able to check whether you are eligible for a potential mortgage. It is a pre-eligibility determination of a customer to enable you to receive the funds necessary for moving forward in your property buying process. Once the property is decided on and you continue the formal approval, an underwriter approves or rejects the request. For the positive answers, you can proceed to the property valuation and conveyancing.

The accelerator contains the following steps that are gathered in one central location that manages your application, the ["My Mortgage Hub" on page 69](#):

- ["Get Started" on page 20](#): where you select the reason for looking for a mortgage and how far along you are in the process of finding a property
- ["Searching for Real Estate" on page 28](#): where you can look for a property that matches your needs. It is an optional step. The solution offers in addition a Zoopla integration to help you find a property. Any other third-party platform can be integrated.
- ["Getting a DIP" on page 35](#): where you insert personal and financial information about the identity of the main borrower and, optionally, that of the co-borrower. That information is later used in advanced calculations to determine your eligibility. An email is sent containing the decision in principle document that was generated by ["Configuring the Digital Documents Processor" on page 170](#)
- ["Formal Approval" on page 78](#): where you provide proof of identity, address, income and expenses
- ["Property Details" on page 113](#) and ["Property Valuation" on page 115](#): where you add the information about the location of the house and set up a meeting with an assessor

- "Insurance" on page 121: where you provide the insurance document
- "Conveyancing" on page 123: where the solicitor adds the property deeds and title
- "Signing The Contract" on page 129.



Each page contains a **Go back** button that allows you to steer to the previous step.

IMPORTANT!

The journey is built for the United Kingdom market. Thus, the citizenship of the applicant must be British with a maximum number of applicants two. For different business requirements, consider modifying this validation.

Hence, the solution is a fast mortgage application to specify from your mortgage lender. The flow can be achieved online 100%, without the need to visit a financial institution. It can be launched from two starting points:

- the bank's website or it can be launched from the [Mortgage Calculator 1.0.0](#) by clicking **Get a DIP**

Mortgage calculator

Property budget **Mortgage cost**

What will my mortgage cost?
Use our repayment calculator to see examples of monthly mortgage repayments, cost, and interest rates for mortgages you could be eligible for.

Estimated Property Value
£ 6,792,000

Min: £10k Max: £10M

Down payment
£ 5,114,829 75%

Min: £500k Max: £7M

Your loan amount will be **£1,677,171**

Mortgage period
25 years

Repayment type
Equal instalments

Preferred interest type
Fixed

Your rough property budget

Save or share results

5Y Fixed - Green Mortgage
1.98%
£6,707.82 Monthly repayment

Details **Get a DIP**

Follow on rate 2.26%
Follow on payments £7,197.79
Total on repayments £2,125,925.57

2Y Fixed
3.89%
£8,986.52 Monthly repayment

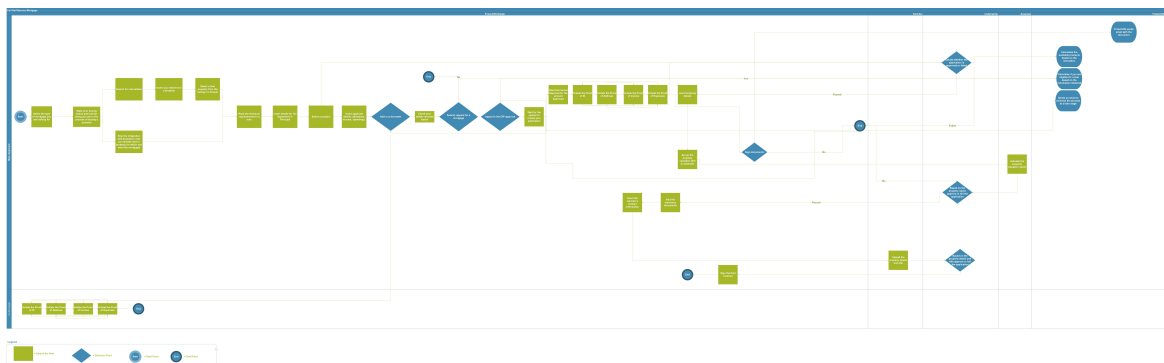
Details **Get a DIP**

3Y Fixed
3.34%
£7,694.00 Monthly repayment

OR

- independently to directly open the "Welcome" on the next page page.

Below is a UML diagram showing the main actions that taken to apply for a Digital Mortgages Self-Service Application.



To download the diagram, click [here](#).

Welcome

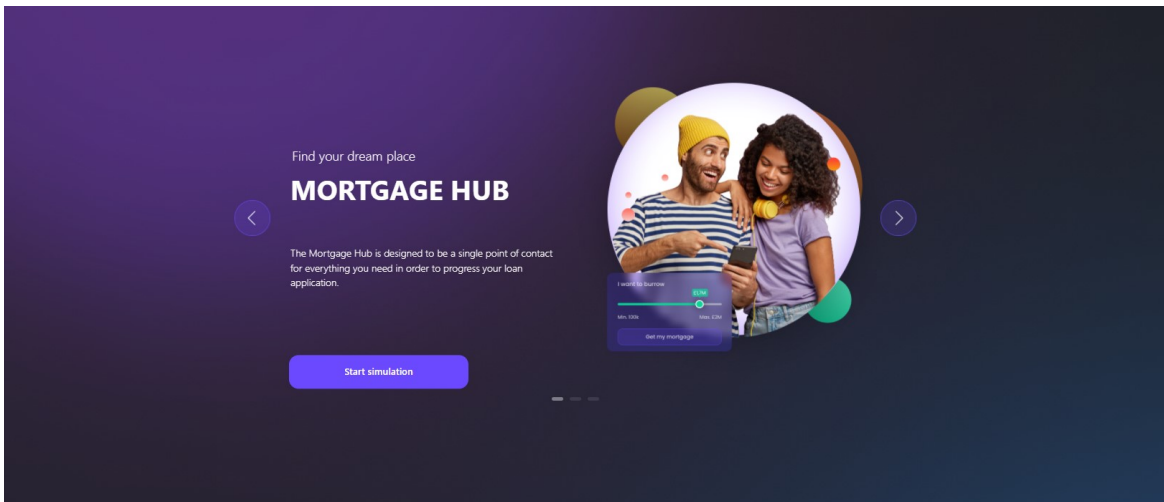
This screen represents the first interaction you as a customer have with the FintechOS solution. It comprises of three pages available on a slider. They are informative screens regarding the mortgage solution. As a financial institution, you can modify the content of these screen to display to customers information you see valuable.

NOTE

The carrousel was configured in the form driven flow FTOS_BARET_WelcomeScreen > step WelcomeScreen > Advanced > After Events. For details, see "[Welcome Carrousel](#)" on [page 224](#).

Mortgage Hub

This screen presents the "[My Mortgage Hub](#)" on [page 69](#) page.



Click the **Start a simulation** button to start the digital journey.

Product Availability

This screen presents the products. Click the **Start a simulation** button to start the digital journey.

Fully Online End to End Process

This screen depicts the online process. Click the **Start a simulation** button to commence the digital journey.

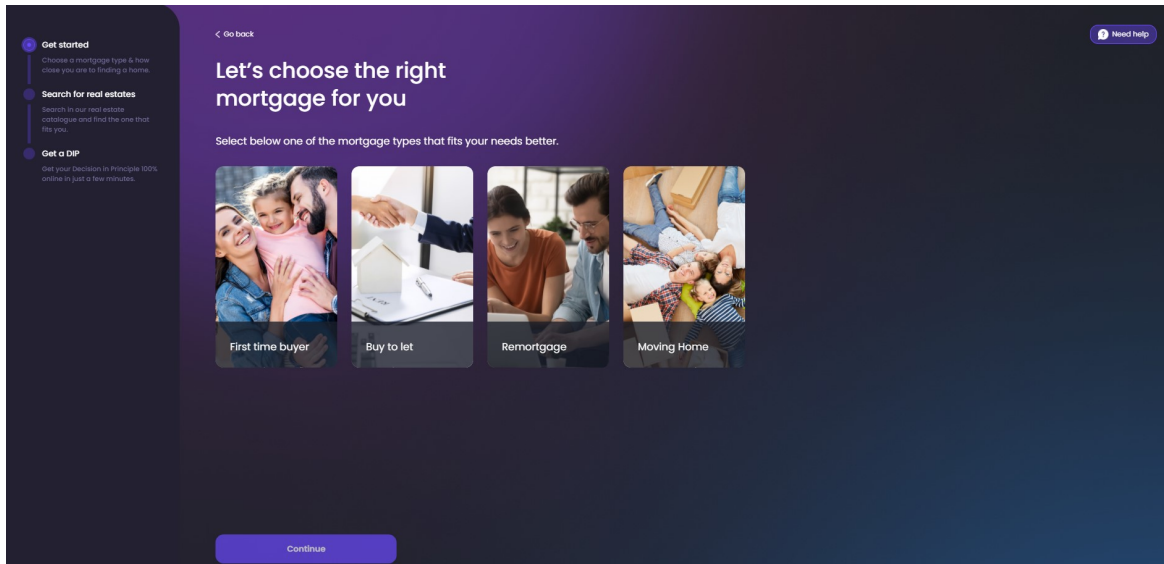
Get Started

This is the first step of the process, and it allows you to choose the type of mortgage you are looking for and find a home on Zoopla.

Let's Choose the Right Mortgage for You

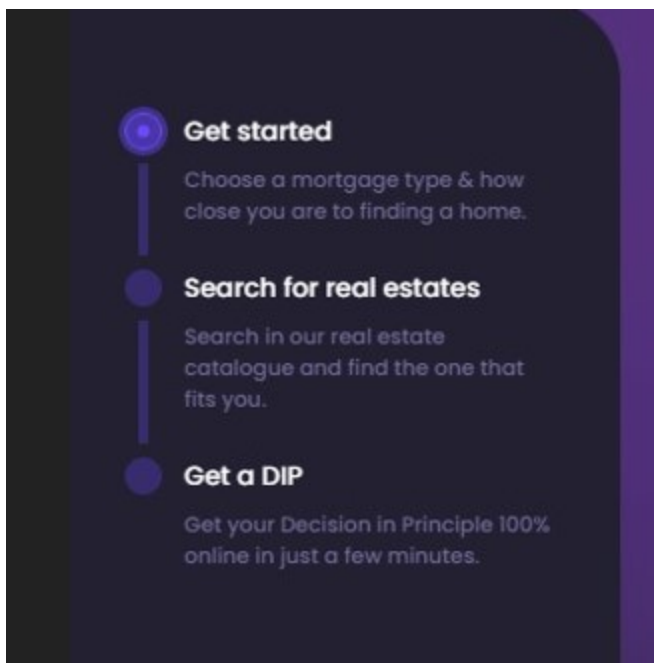
This screen helps you to choose the type of mortgage you are looking for. Based on what you select here, the financial institution can hyper-personalize the offering. These options are meant to filter the offering to your mortgage needs.

DIGITAL MORTGAGES SELF-SERVICE APPLICATION USER GUIDE



On the left-hand side of the screen, there is a progress bar marking the steps:

- Get started: *Choose a mortgage type & how close you are to finding a home.*
- Search for real estates: *Search in our real estate catalog and find the one that fits you.*
- Get a DIP: *Get your Decision in Principle 100% online in just a few minutes.*



The product categories available to choose from are:

NOTE

For technical details, see ["Select Category" on page 226](#).

- **First time buyer:** it addresses a potential house buyer who has not previously owned a property.

Hover over the card to display additional information for your first residential property.

NOTE

For this version, only the **First time buyer** flow was developed. The rest as subject to internal implementation.

- **Buy to let:** it addresses a customer who wishes to buy a property, and afterward to rent it out.

Hover over the card to display additional information.

- **Remortgage:** it addresses an application for a new mortgage with a different lender.

Hover over the card to display additional information to move your mortgage.

- **Moving Home:** it addresses someone who wishes to change one's mortgage to another place of residence.

Hover over the card to display additional information to transfer your current mortgage over to your new property.

Choose at least one from the list above, otherwise, you cannot continue the process. When you click one of the options, the dedicated card turns green.

Select **First time buyer** and click **Continue** to proceed.

Buying Status

In this screen, you, as the applicant, need to provide information like how urgent it is to buy a home and whether or not you've already started looking for one. This step is important because it influences the navigation to the next step. For the customers who have not found the property, the option to use Zoopla is available. For the customers who have found a property already, the flow navigates them to the step "[Getting a DIP](#)" on page 35. It helps the financial institution to direct customers exactly where they need.

The screenshot shows a web application interface for a digital mortgage application. The main heading is "Buying status" with a subtitle "Tell us your buying status so we can help you better." Below this, there are two sections of radio button options. The first section, "Where in the process are you?", has four options: "I'm just researching" (selected with a green checkmark), "I'm going to open houses", "I'm making offers", and "I have signed a purchase contract". The second section, "When do you plan on purchasing your property?", has five options: "As soon as possible", "1-3 months", "3-6 months", "6-12 months", and "Not sure yet". Below these is a "Where are you looking?" section with a text input field containing "London" and a dropdown menu showing "+90 miles". At the bottom of the form is a blue "Continue" button. On the left side, there is a vertical navigation menu with three items: "Get started" (selected), "Search for real estates", and "Get a DIP". At the top right, there is a "Need help?" link.

Fill in the following optional fields:

Field	Description
Where in the process are you?	<p>Select one option:</p> <ul style="list-style-type: none"> • I'm just researching. If you select this option, the next step is Let's find that dream house! • I'm going to open houses. If you select this option, the next step is Let's find that dream house! • I'm making offers. If you select this option, the next step is Let's find that dream house! • I have signed a purchase contract. If you select this option, the next step is "Getting a DIP" on page 35.
When do you plan on purchasing your property?	<p>This field is displayed if one of the three options above is selected. Select one:</p> <ul style="list-style-type: none"> • As soon as possible • 1-3 months • 3-6 months • 6-12 months • Not sure yet.

Field	Description
Where are you looking?	<p>This field is displayed if one of the three options above is selected. Insert the city or zip code¹. Then select the miles:</p> <ul style="list-style-type: none">• 5 miles• 10 miles• 20 miles• 30 miles• 40 miles• 50 miles• 60 miles• 70 miles• 80 miles• 90 miles• 100 miles.

After filling in the answers, click **Continue**. Depending on the answer from the first question, the flow determines a path to one of the two steps either "[Let's find that dream house!](#)" on page 28 or "[Getting a DIP](#)" on page 35.

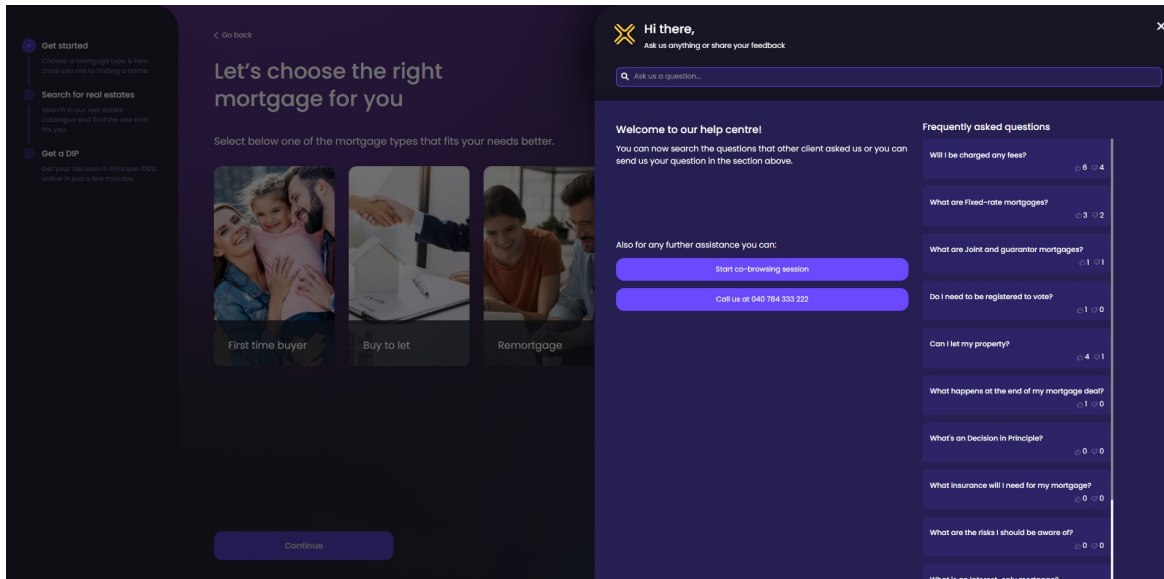
Help Center

This solution accommodated a **Need Help** button found on every page of the flow.

NOTE

It was configured in After Events of every form driven flow to be displayed.

¹Type of postal code.



NOTE

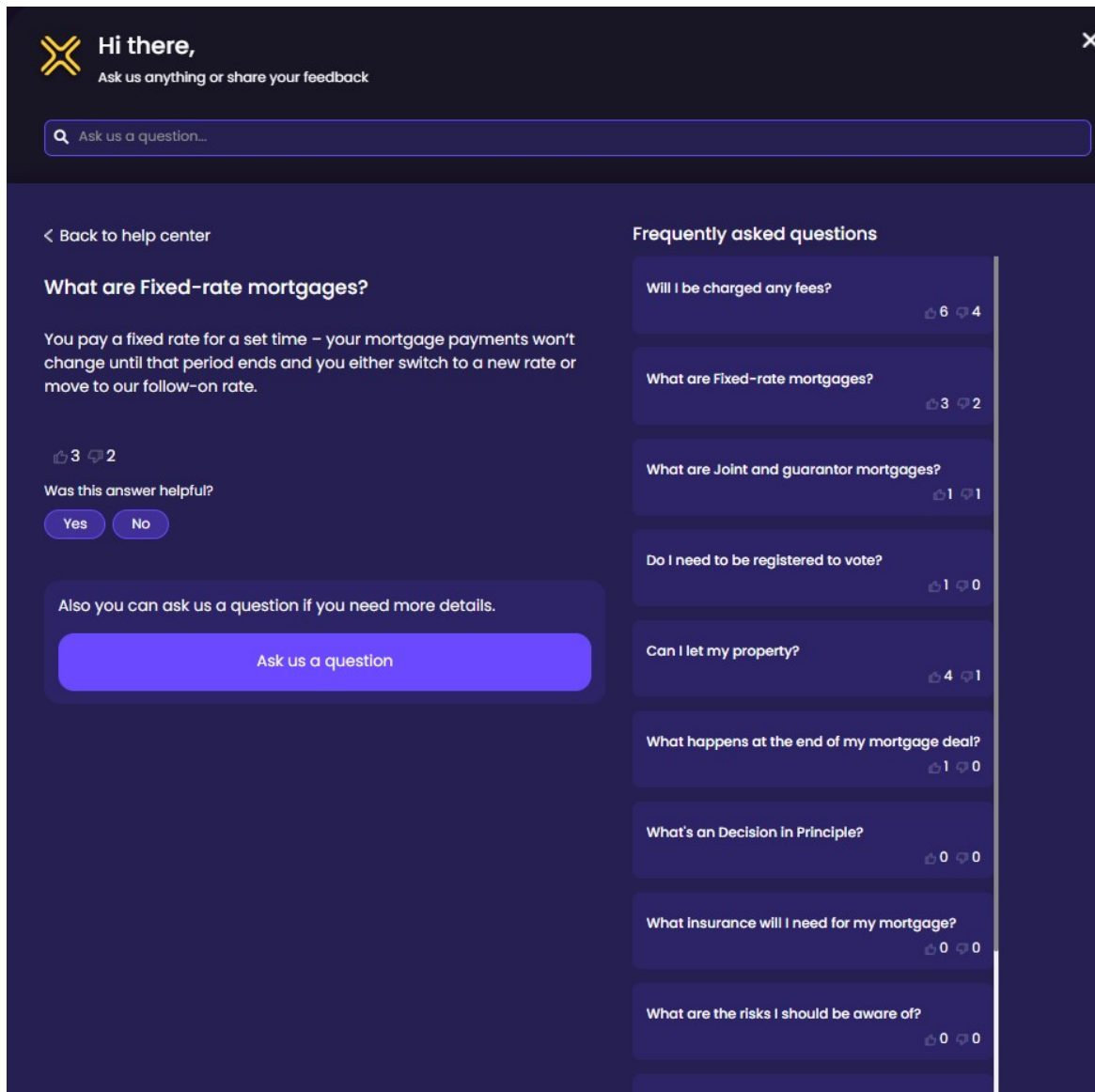
For details on how the Help Center is triggered, see ["Help Center" on page 224](#).

Click the button displayed at the top right-hand corner of the screen to expand the FAQs section dedicated to helping you find the support you need. It contains a search button. Type in some keywords to browse between the topics covered. The system displays a list with the questions that contain the keywords.

Underneath, there are two buttons:

- **Start a co-browsing session:** Click this button to launch a video call with a bank employee.
- **Call us on 09 0999 0999:** Click this button to open the caller application.

Further, on the extreme right-side all the questions in the database are displayed. To navigate between them, scroll down. Click on a question to expand it and view the answer as well. If the answer was helpful, vote it by clicking on the thumbs-up symbol. You can only vote once for one answer. You can delete a vote, by tapping again on the symbol. Click it again to compress the text.



When a question is expanded, it opens the possibility to insert your question by clicking the **Ask a question yourself**. It opens two text fields to insert your email address and the text field for the question. After you type in the question, click **Submit question**.

For extended details on how to use the Help Center, see [Help Center](#).

Searching for Real Estate

In this step, you can look for properties in case you have not decided to buy something already. It is an optional step meant to aid you in your quest to finding a dream location. The solution embedded the procedure of looking for a property by filtering through the listings.

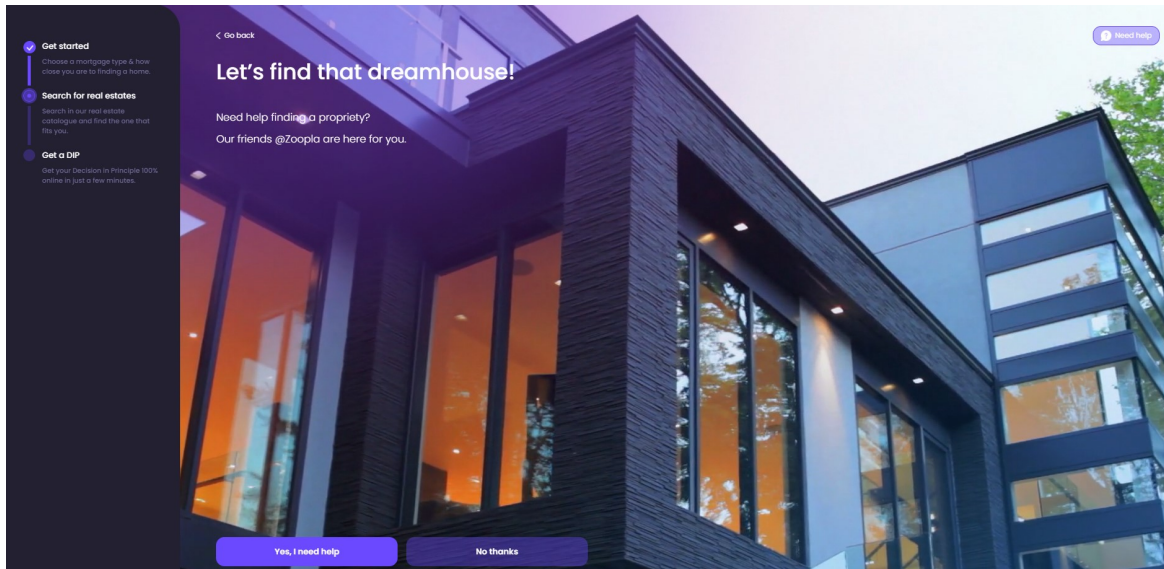
NOTE

The properties belong to a third-party platform that aggregates listing from prospective sellers and agencies. FintechOS proposes Zoopla, however, any other provider is suitable. The technical endpoints are mocked for the integration, i.e, they exist, but they are not activated to bring data from Zoopla.

Let's find that dream house!

If you have not yet found the house that you wish to buy, the solution offers an integration with a real estate platform. Since the solution is built for the United Kingdom market, the platform selected is Zoopla. However, any third-party platform with exposed APIs can be accommodated. Innovation Studio gets the properties from Zoopla and displays them to you within the accelerator. You can select a property and the system uses the price from the listing as the estimated property value.

If you already found the property, skip this step.



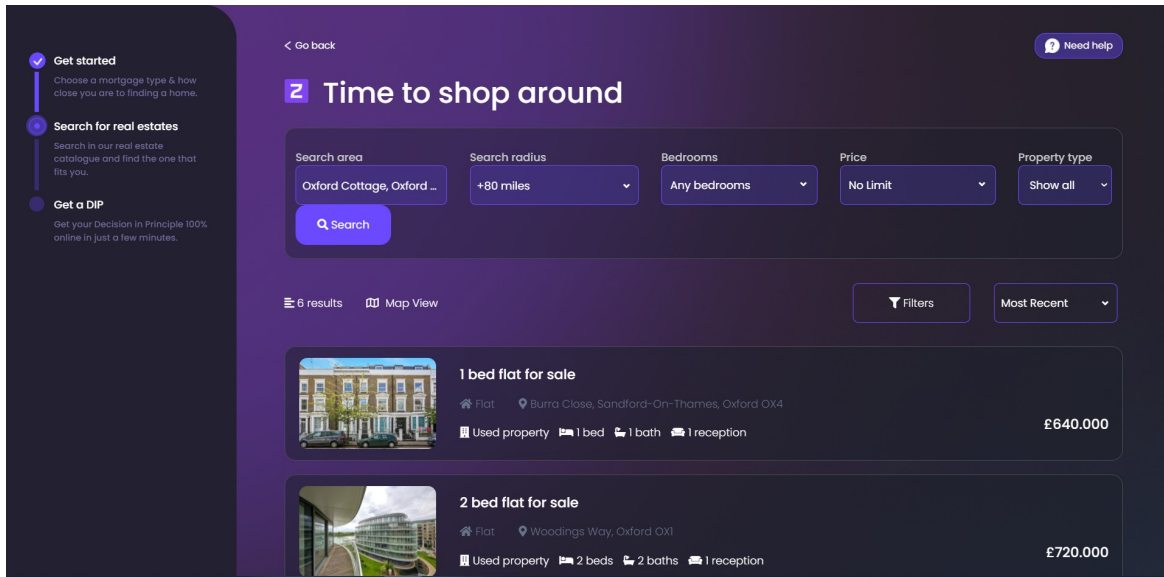
Choose an option:

- **Yes, I need help:** click this button to initiate the integration and proceed to ["Time to Shop Around"](#) below.
- **No thanks, I want to get a DIP:** clicking this button to proceed to ["Getting a DIP"](#) on page 35.

Time to Shop Around

For the customers who haven't found a property yet, the system helps you find a property based on the needs and requirements you have. The listings are brought from **Zoopla**¹, hence, the symbol on the page, however, any third-party platform for real estate can be used to bring forth properties.

¹It is a British real estate platform that aggregates properties of different kinds.



NOTE

The properties displayed were inserted manually in the back-office.

At the top of the page, there are filters based on which the properties are displayed:

- **Search area:** type the name of the street/city you are looking for.
The search area is automatically completed with the location provided for "Buying Status" on page 23.
- **Search radius:** select from the drop-down the number of miles from the search area you would be comfortable buying a property.
The search radius is automatically completed with the location provided for "Buying Status" on page 23.
- **Bedrooms:** select from the drop-down one of the options.
For the minimum number of bedrooms, choose an option from the list. The default value is **Any bedrooms**.
- **Price:** select from the drop-down the minimum price and the maximum price for a property.

- **Property type:** select from the drop-down the sort of property you are looking for.

For the filed **Property Type**, choose one of the options.

Click **Search** to reveal the properties.

Property Browsing

The data collected before is used here:

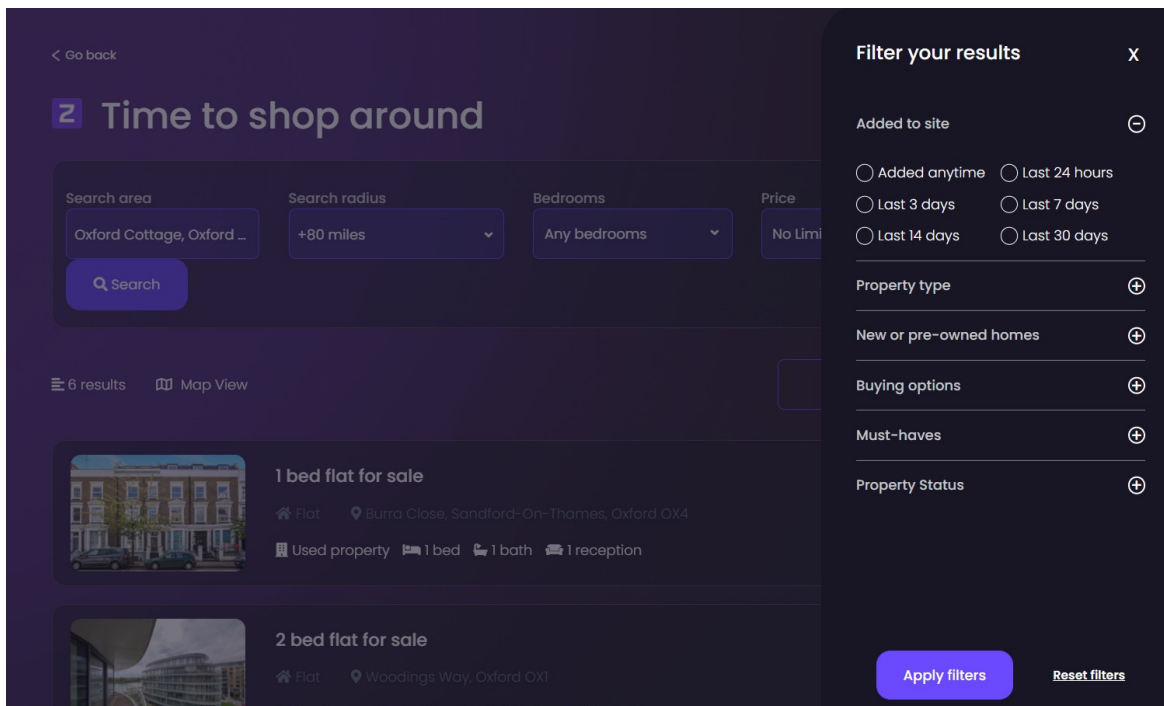
- Property budget: it is used as maximum amount for property search
- Location: data is used from "[Buying Status](#)" on page 23
- Range: data is used from "[Buying Status](#)" on page 23.

The page displays a search bar to navigate between properties.

There are two filtering possibilities:

NOTE

For technical details about these filters, see "[Filters for the Property within Zoopla](#)" on page 225.



Filter

Click this button to open a side menu with several options.

For the filter name **Added to site**, choose one of the options.

For the filter name **Property Type**, choose one of the options.

For the filter name **New or pre-owned homes**, choose one of the options.

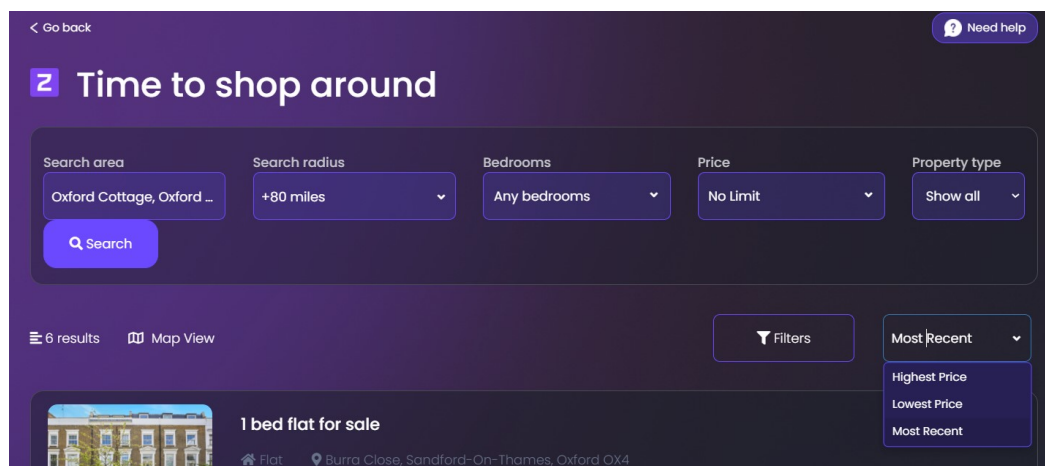
For the filter name **Buying options**, choose one of the options.

For the filter name **Must-haves**, choose one of the options.

For the filter name **Property Status**, choose one of the options.

Most recent

Click this button to arrange the responses by:



- Highest price
- Lowest price
- Most recent.

NOTE

For technical details, see ["Field Options"](#) on page 225.

There are two buttons available:

- **Apply filters:** it sets the filters above to look for the properties that match the filters
- **Reset filter:** it reboots the filters to display the properties without a particular relevance.

The main section of the screen displays the properties available after the search criteria. On the left-hand side of the screen, on top of the properties, there are two icons. The first displays the number of results, and the second displays a map view of where the properties are. Hover over the pins on the map to display the type of property, e.g., 2 bedroom flat.

NOTE

The map has pins with the location of the properties that have GPS locations (longitude and latitude).

By default, this section shows six properties with the option to **Show more** at the bottom of the screen. Every time the user clicks the **Show More** option, the screen displays six more options if available.

For every property, the system displays a picture on the left side, the name of the listing, the type of property, the location: fetched from Zoopla, the number of bedrooms, the number of bathrooms, the property price listed.

NOTE

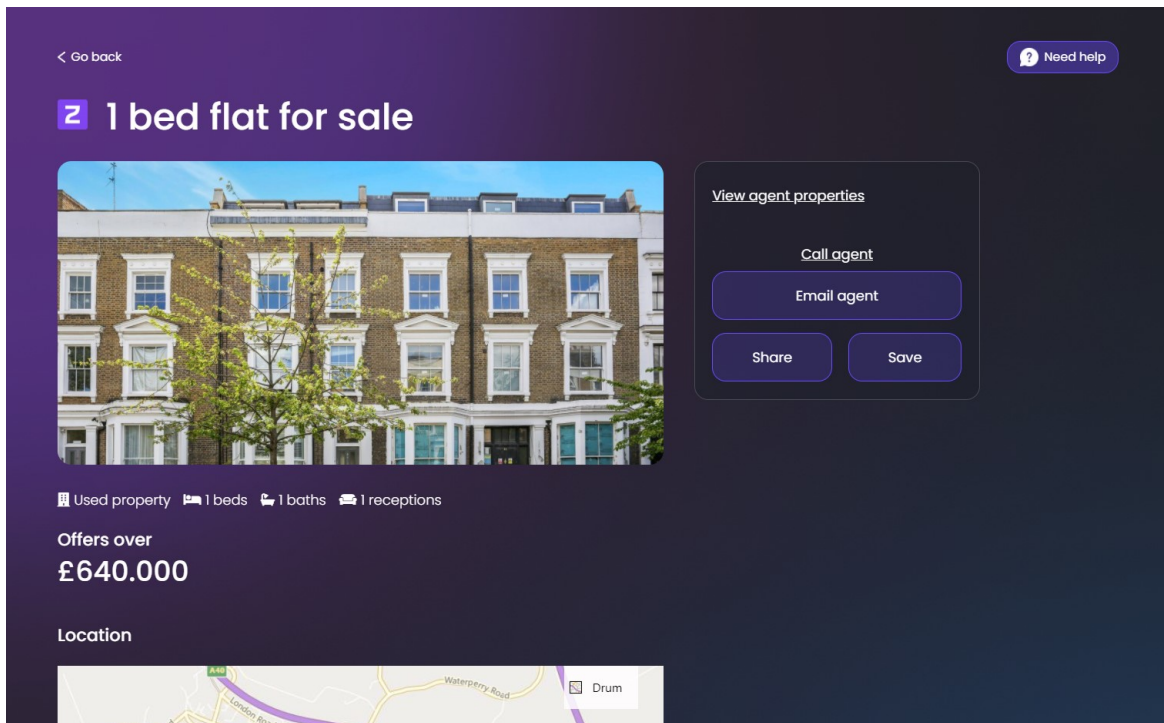
The data from the properties are brought by the script "[FTOS_BARET_GetZooplaProperties](#)" on page 184.

At the bottom of the page, you have the option to skip the search and progress. This button directs you to the DIP section of the flow and skips the searching for a home.

To continue with one of the properties, select the property in mind and click **Continue**.

Property details

When clicking on one of the properties, a secondary screen is displayed with all the details of that specific property (a photograph of the property, the number of bedrooms and bathrooms available, the price, a map with the location, features and description).



The right part of the section contains the following details related to contact details for the property:

- **View agent properties:** Click this button to view more properties from the same agent
- **Call agent**
- **Email agent**
- **Share:** copy the link for the property
- **Save.**

NOTE

Besides the share button, the other buttons do not trigger any action.

To select the listing and navigate to the next step, click **I want this one.**

Getting a DIP

After the initial simulation and the search for a property to buy (an optional step dedicated only to those who have not found a location yet), the third and final step is to apply for the decision in principle by inserting personal and financial data regarding the borrower and co-borrower if needed with an additional step to validate the contact information:

IMPORTANT!

The flow does not cover the full approval, only the generation of a decision in principle document.

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Applicants' Details	44
Address Details	46
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Your Spendings	51
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You're almost finished - just check your details	60
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Congratulations!	66

Let's Get Started with a Decision In Principle

This screen shows details about mortgage requirements such as age restrictions, property location or customer employment status. They can be configured within Innovation Studio.

< Go back

Need help

Let's get started with a decision in principle

Before you apply, make sure you pass the requirements from below:

- Be at least 18 years of age and a UK resident.
- Want the mortgage for a property in the UK.
- Intending to live in the property with only your own family.
- Have never had a home repossessed.
- Be working in the UK and paid in sterling.
- Not require a guarantor for your mortgage application.

Get a DIP

To continue the process, click **Get a DIP**.

Agreement In Principle

On this screen, answer a few questions regarding your mortgage needs. This is essential to determine the product offering defined by "[Configuring the Banking Product Factory](#)" on page 136.

< Go back

Need help

Agreement in Principle details

Number of applicants

1 2

Estimated Property Value

£ 327,000

Min. £10k Max. £150k

Down payment

£ 306,397 93%

Min. £32k Max. £225k

Your loan amount will be **£20,603**

Mortgage period

25 years

Repayment type

Equal installments

Preferred interest type

Fixed

Fill in the following mandatory fields:

- Choose the **Nr of applicants**: 1 or 2.
- **Estimated Property Value**: Move the slider to adjust the sum by dragging the slider or by manual input in the field above the slider. The minimum is 10000 and the maximum value is 15 million pounds. The default value is 300000 pounds. In case you manually input an amount lower/bigger than the minimum/maximum amount permitted, a toast message is displayed.
- **Down payment**:
 - the minimum deposit amount: from all the products available, the system fetches the highest **Loan-To-Value (LTV)**¹ available. Using the highest LTV, the system calculates the minimum deposit amount on the selected property value in the previous field.
 - the maximum deposit amount: based on the property value, it can cover even 99% of the property value. You cannot get a lower loan amount than the product minimum.

NOTE

The down payment cannot be over 85% of the property value.

- **Your Loan amount will be**: The system displays the loan amount based on the estimated property value and the deposit amount.
- **Mortgage Period**: By default, the value is 25 years. The value is calculated by getting the available products within "[Configuring the Banking Product Factory](#)" on page 136: the minimum and the maximum period from all of the products defined there.

¹LTV is calculated by dividing the deposit by the estimated property value and represented by a %. The system rounds up the % to a full number.

- Choose the **Repayment type**: Equal instalments or Equal principal payments or Only interest.
- Choose the **Preferred Interest type**: Fixed or Tracker.

Are you eligible for a **green mortgage**¹? Toggle this field to get a green loan. Hover over the tooltip to expand the definition of a green mortgage.

NOTE

For technical details, see ["DIP" on page 227](#).

Click **Continue**. After clicking this button, the system determines the available products for the current configuration. The loan amount, period, **LTV**², interest type must be compared to the available parameters for all products. If the value for these parameters inserted by the customer are not within the limits of the products, then no products can be offered.

First Time Buyer

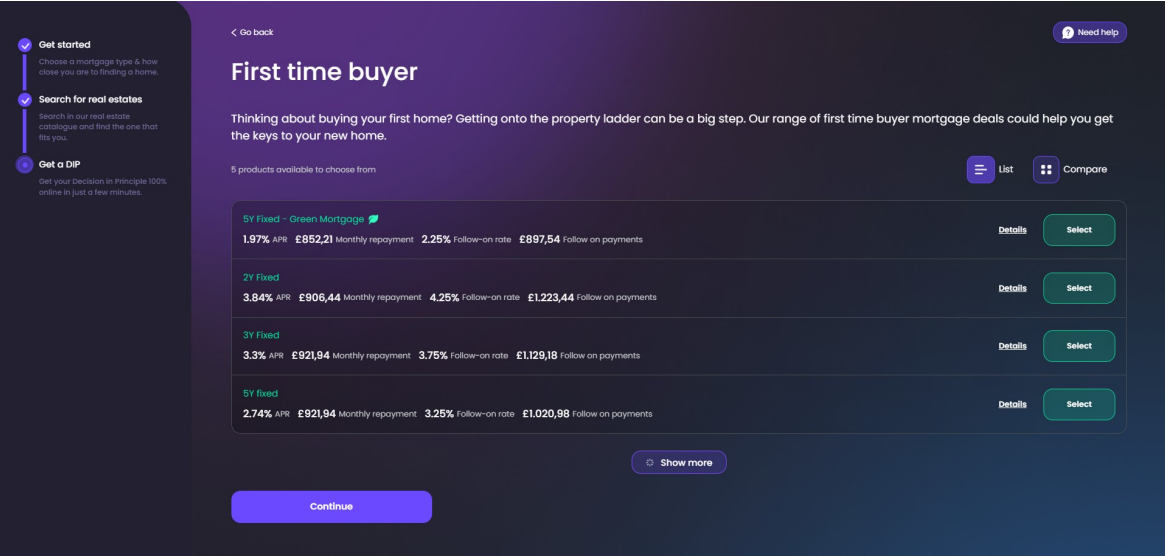
Based on what you selected in the previous screen, the system calculates the most likely products. It enlists possible offerings to compare. The heading is dynamic and depicts the mortgage selected in the ["Let's Choose the Right Mortgage for You" on page 20](#). However, the development only includes the type *First time buyer*.

NOTE

For the products defined here, see ["Configuring the Banking Product Factory" on page 136](#).

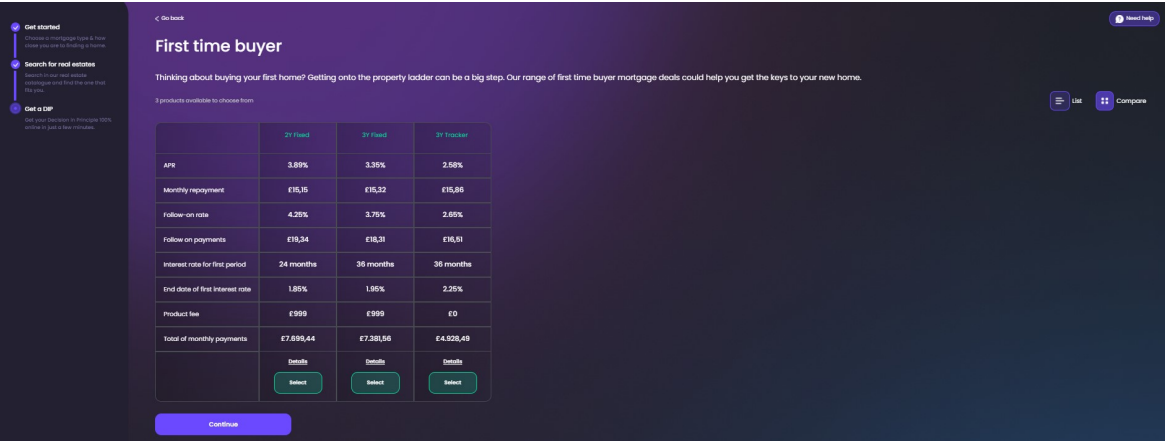
¹A green mortgage is a mortgage which offers a lower interest rate to people who are buying a more energy efficient home. In most cases, to qualify for a green mortgage, you need to be buying a home with a Building Energy Rating (BER) of at least B3 or higher.

²The loan-to-value (LTV) ratio is a measure comparing the amount of your mortgage with the appraised value of the property.

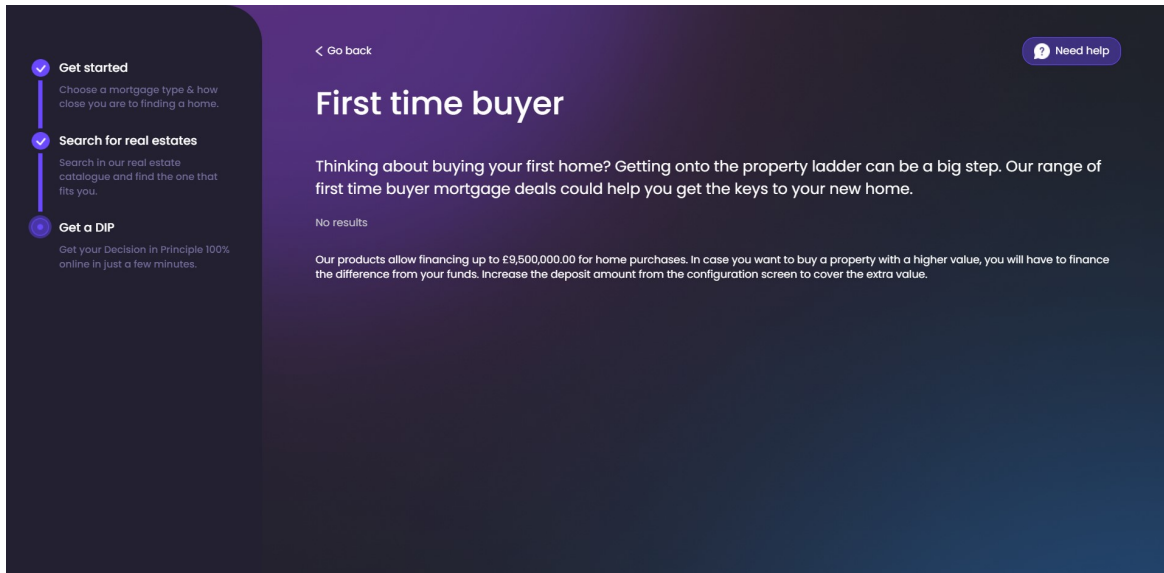


The list view is the default option. In the **List** viewing mode, the first four results for product offering based on the product ranking. Additionally, click **Show more** to display additional products, if the list exceeds the page. Additionally, the screen depicts the total number of products.

You can compare the products by clicking the **Compare** viewing mode.



Based on what you selected in the previous screen, the system can return with no products. In this case, configure a different loan.



NOTE

For technical details, see ["Selection of Products" on page 225](#).

Product information

The system displays additional details regarding a banking product for you to make an informed decision: product name, **APR¹**, monthly repayment (displays the value for the first month payment only), **follow-on rate²**, follow-on payments (monthly repayments after the first period expires).

The second view features a more detailed list of products and display them in a vertical way: product name, APR, monthly repayment, follow-on rate, follow-on payments, **interest rate³** for the first period, end date of the first period, product fee, total of monthly payments.

¹The annual percentage rate is an annualized representation of the interest rate.

²It is the lender's standard variable rate (SVR), and this is the default interest rate that you are charged if you don't remortgage.

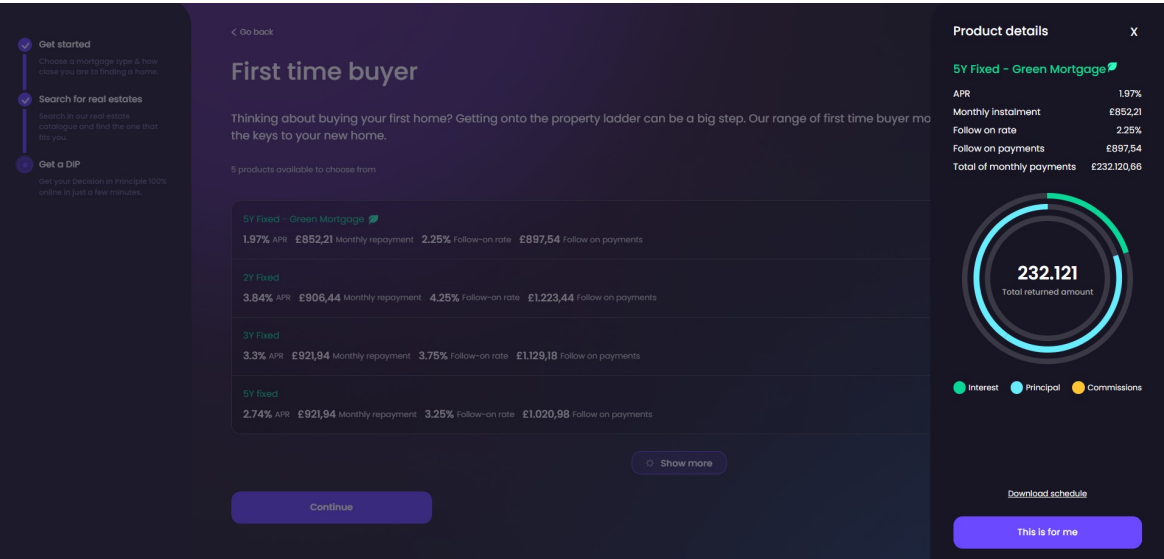
³The interest rate is the amount a lender charges a borrower and is a percentage of the principal, i.e., the amount loaned.

Select a product to view a graphical representation of product details: monthly repayment (the value for the first payment), **APR**¹, follow-on rate, follow-on payments (monthly repayments after the fixed interest rate period), **total repayable amount**².

NOTE

The products were configured using "Configuring the Banking Product Factory" on page 136. The system only displays the relevant products and a minimum of one product.

For each product from the list, click **Details** to expand the right-hand side panel with a graphical representation is displayed with the distinction of the property financing solution with the following elements:



NOTE

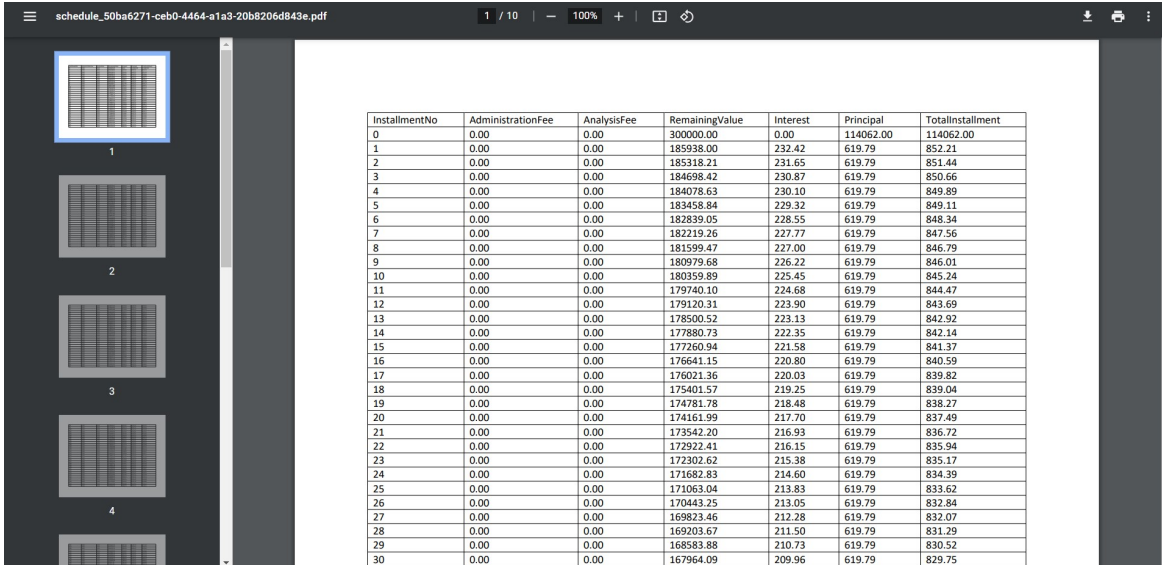
For the technical details, see "Side Panel with the Product" on page 225.

¹The annual percentage rate is an annualized representation of the interest rate.

²It represents the sum of all scheduled or projected payments of funds that the recipient agrees to pay to the provider.

- **Total commissions**¹ (using the yellow color)
- **Total interest**² (using the green color)
- **Total principal**³ (using the light blue color).

Additionally, there is a button to download the **schedule**⁴. Click it to trigger the download locally.



InstallmentNo	AdministrationFee	AnalysisFee	RemainingValue	Interest	Principal	TotalInstallment
0	0.00	0.00	300000.00	0.00	114062.00	114062.00
1	0.00	0.00	185938.00	232.42	619.79	852.21
2	0.00	0.00	185318.21	231.65	619.79	851.44
3	0.00	0.00	184698.42	230.87	619.79	850.66
4	0.00	0.00	184078.63	230.10	619.79	849.89
5	0.00	0.00	183458.84	229.32	619.79	849.11
6	0.00	0.00	182839.05	228.55	619.79	848.34
7	0.00	0.00	182219.26	227.77	619.79	847.56
8	0.00	0.00	181599.47	227.00	619.79	846.79
9	0.00	0.00	180979.68	226.22	619.79	846.01
10	0.00	0.00	180359.89	225.45	619.79	845.24
11	0.00	0.00	179740.10	224.68	619.79	844.47
12	0.00	0.00	179120.31	223.90	619.79	843.69
13	0.00	0.00	178500.52	223.13	619.79	842.92
14	0.00	0.00	177880.73	222.35	619.79	842.14
15	0.00	0.00	177260.94	221.58	619.79	841.37
16	0.00	0.00	176641.15	220.80	619.79	840.59
17	0.00	0.00	176021.36	220.03	619.79	839.82
18	0.00	0.00	175401.57	219.25	619.79	839.04
19	0.00	0.00	174781.78	218.48	619.79	838.27
20	0.00	0.00	174161.99	217.70	619.79	837.49
21	0.00	0.00	173542.20	216.93	619.79	836.72
22	0.00	0.00	172922.41	216.15	619.79	835.94
23	0.00	0.00	172302.62	215.38	619.79	835.17
24	0.00	0.00	171682.83	214.60	619.79	834.39
25	0.00	0.00	171063.04	213.83	619.79	833.62
26	0.00	0.00	170443.25	213.05	619.79	832.84
27	0.00	0.00	169823.46	212.28	619.79	832.07
28	0.00	0.00	169203.67	211.50	619.79	831.29
29	0.00	0.00	168583.88	210.73	619.79	830.52
30	0.00	0.00	167964.09	209.96	619.79	829.75

NOTE

This document is defined in "[RetailMortgagePricingSchedule](#)" on page 171.

For the side panel, click the **This is for me** button to select the product and continue to the next step, if it is to your linking or to close the panel click the **X** symbol at the top of the panel.

Select a product from the list by click **Select** on the row of a product and then click **Continue**.

¹The value of the total amount of commissions paid for the entire loan duration.

²It is the total amount paid for the entire loan duration as interest.

³It is the total amount paid for the entire loan duration.

⁴A loan amortization schedule is a complete table of periodic loan payments, showing the amount of principal and the amount of interest that comprise each payment until the loan is paid off at the end of its term.

Calculations

To calculate the offers for the filtered products that are displayed in this screen, the system determines the:

- The value for the first monthly instalment fetched from the payment **schedule**¹
- Interest rate for the fixed period fetched from "Configuring the Banking Product Factory" on page 136
- **APR**²
- End date of the fixed rate: calculated as the last payment for the first prancing rate on the product.
- Follow-on payments: monthly repayments after the fixed interest rate period, it is fetched from the scheduler the first instalment after the initial period
- Interest rate after the fixed period fetched from "Configuring the Banking Product Factory" on page 136
- Product fee fetched from "Configuring the Banking Product Factory" on page 136
- Total of monthly payments calculated by adding all the monthly payments for the loan in the schedule
- Early repayment charges fetched from "Configuring the Banking Product Factory" on page 136.

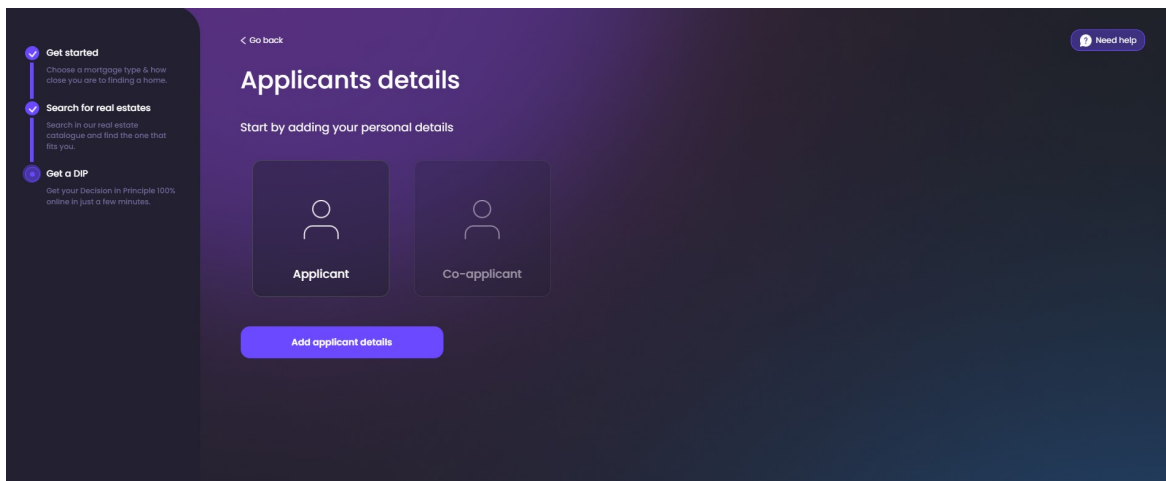
¹A loan amortization schedule is a complete table of periodic loan payments, showing the amount of principal and the amount of interest that comprise each payment until the loan is paid off at the end of its term.

²The annual percentage rate is an annualized representation of the interest rate.

Applicants' Details

This central hub unites the data of the two applicants, the main borrower and the co-borrower (optional). The data for the main borrower must be added first, then the data about the second applicant.

To begin, click **Add applicant details**.



NOTE

The maximum number of applicants is defined and can be modified using ["Defaults" on page 199](#).

Main Borrower

In this step, you have to give information about your identity. Fill in the following mandatory fields:

Applicant details

Add the details for each applicant.

Title: Mr.

First Name: John

Last Name: Bean

Marital status: Single

Date of birth: 26/10/1988

Gender: Male

Total number of dependents: 0

Nationality: British

Country of residence: United Kingdom

- **Title:** Choose between: **Mr/Mrs/Miss/Ms/Doctor**.
- **First Name:** Insert your first name.
- **Last Name:** Insert your surname.
- **Date of birth:** Click inside the field to display the calendar. If you select a date that results in you being younger than 18, a toast message is displayed.
- **Gender:** Choose between: **Male/Female**.
- **Marital Status:** Choose between: **Single/Married/Civil partnership/Separated/Divorced/Widow/Widower/Living as partners**.
- **Total nr of dependants:** Choose between zero and fifteen.
- **Nationality:** Select your nationality. This information is important for the financial calculations. There is a knock-out rule that says you must be British to advance in the Digital Mortgages Self-Service Application process.
- **Country of residence:** Select your country. You must choose United Kingdom. If you are not a UK resident, a toast message is displayed, and you cannot continue the flow.

Click **Continue**.

NOTE

The solution saves the session storage and saves the applicant's data. Using an endpoint, "FTOS_B2C_SaveSession" on page 180 sets the session for the applicant, as well as sending you to the previous step in the flow or back to the "Applicants' Details" on page 44.

Address Details

In this step, insert your addresses where you have lived in the last five years. It is used to check the credit history.

Get started

Choose a mortgage type & how close you are to finding a home.

Search for real estates

Search in our real estate catalogue and find the one that fits you.

Get a DIP

Get your Decision in Principle 100% online in just a few minutes.

< Go back

Address Details

Please provide us your addresses for the past 5 years only. We'll use this information to check your credit history but it won't affect your credit score.

Add address

Continue

Addresses

X

Postcode

Property type

Select...

Country

City

Street

Apartment number

Floor

Date you moved to this address

Do you still live there?

Date you moved from this address

Save

Get started

Choose a mortgage type & how close you are to finding a home.

Search for real estates

Search in our real estate catalogue and find the one that fits you.

Get a DIP

Get your Decision in Principle 100% online in just a few minutes.

< Go back

Address Details

Please provide us your addresses for the past 5 years only. We'll use this information to check your credit history but it won't affect your credit score.

Add address

Address	Date move in	Date move out	Actions
052196, null, Bucharest, Romania	1993-05-09	-	Edit Remove

Continue

Need help

HINT

You need at least one address to continue the process.

Click **Add address**. A side panel is displayed. Fill in the following mandatory fields:

- **Postcode:** Using the connector [Ideal Postcodes](#), the address is collected. By using a connector, the solution incorporates an endpoint that calls the API to bring data from an external source. Such an external source can be the [Ideal Postcodes](#) connector. This connector queries the Ideal Postcodes database to find information regarding addresses in United Kingdom. However, the solution can accommodate any other third-party software, this is one such software integration developed by FintechOS.
- **Property type:** Choose between: **Flat/House/Country**.
- **City:** Insert the name of your city.
- **Street:** Insert the name of your street.
- **Nr:** Insert the number of the street.
- **Ap number:** Insert the number. This field is available only if you chose flat as property type.
- **Date you moved in:** Select a date that is not in the future.
- **Do you still live here?:** If this is true, then the field below is not displayed.
- **Date you moved out:** Choose a date after the move in date.

NOTE

United Kingdom is the preselected value. You can modify it here ["Address Details"](#) on page 226.

Click **Save** to add this address to the list. For each address, you have two options:

< Go back Need help

Your spendings

Please provide your spending information. Select the categories that apply to you. Then enter the amount you spend in each.

[Add spending](#)

Spending type	Frequency	Amount	Actions
Service charge	Monthly	£2,345	Edit Remove

[Continue](#)

- edit (modify the address)
- remove (delete an address). This is executed using the script "[FTOS_BARET_ChangeApplicationStatusMortgage](#)" on page 181.

NOTE

For technical details about the buttons and warnings, see "[Address Details](#)" on [page 226](#).

Click **Continue** once you have added all the addresses from the last five years.

If you click **Continue** without an address inserted, the system informs you: *Please provide your addresses for the past 5 years.*

If you insert one or more addresses, but the oldest address doesn't cover the minimum five-year span, the system informs you: *Please make sure you cover all the places you lived in the past 5 years.*

If you inserted one or more addresses, but you didn't select a current address for any of them, the system informs you: *Please review the addresses inputted and make sure you mark the one you are currently living in.*

Income Details

Insert information about your income to determine your eligibility. The data is then taken to the "[MORTGAGE_SCORING_DIP](#)" on [page 163](#) where it is used to determine if your **credit score**¹.

¹Scoring is a statistical analysis performed by financial institutions to determine the creditworthiness of a borrower.

Select the type of employment you practice:

- **Employed**
- **Self-Employed.**

For the employed customers, fill in the following mandatory fields:

- **Employer name:** Choose between: **Creative/Specialist/Driver/Emergency Services/Hm Forces/Manager/Nurse/Office Staff/Clerical/Other/Professional/Sales Assistant/Service Staff/Sales Person/Senior Executive/Skilled Worker/Teacher/Unskilled Worker.**
- **Job Title:** Insert the name.
- **Time employed at this job:** Choose the number of years and months you spent at this job.
- **Yearly income before tax:** Insert the amount.
- **Do you have any other incomes?:** If true, a button will be made available (grayed out by default) named **Add income**. If you want to add additional income, a slider from the right side will appear with the following incomes in 2 categories.

For the self-employed customers, fill in the following mandatory fields:

- **Your business role:** Insert the role you have.
- **Name of business:** Insert the name of the company/NGO.
- **Time employed at this job:** Insert the number or years/months.
- **Net profit in most recent complete tax year:** Insert the profit after tax deduction for the last year.
- **Net profit in previous complete tax year:** Insert the profit after tax deduction for the previous year.
- **Do you have any other incomes?:** Toggle the button if you do receive money from other sources. Then, click **Add income** to open the side panel on the left with the following fields:
 - **Income type:** Choose between:
Overtime
/Allowances/Commission/Bonuses/Pension/Investments/Maintenance/Trust Funds.
 - **Value:** Insert the income.
 - **Frequency:** Choose between: **weekly/monthly/default yearly.**

NOTE

The default values from the option set can be modified as per the business requirements of any financial institution. For details, see ["Option Sets" on page 223](#).

You can edit each income source.

Click **Continue**.

Your Spendings

This screen collects the expenses you have to determine if you qualify for a loan. You can skip this step by clicking **Continue** without having completed any expense.

Click **Add spendings** to open a side panel with the fields:

- **Spending Type:** Select between: **Overdraft/Credit or store card/Council Tax/Ground rent/Service charge**.
- **Frequency:** Select between: **Annually/Monthly/Weekly**.

This field is displayed only for

- Council Tax
- Ground rent
- Service charge.
- **Amount:** Insert the value in pounds.

Click **Save**.

For each expense, you have two options edit (modify the expense) or remove (delete an expense).

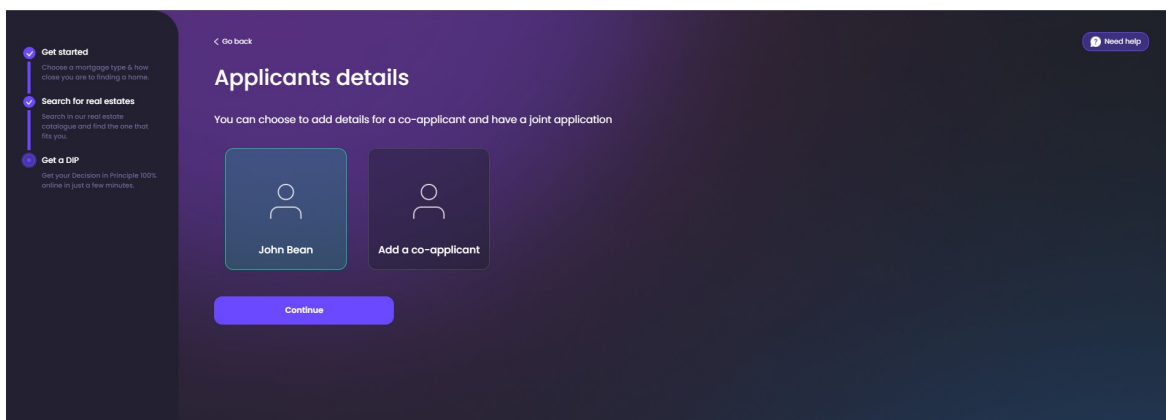
NOTE

The delete action is performed by calling "FTOS_BARET_RemoveMortgageSpending" on page 187.

Click **Continue** once you have added all the expenses.

Add Co-Applicant

After the details regarding the main borrower were added, you are prompted to add the details for the co-borrower. Select the secondary applicant and click **Continue**.



In this step, you have to give information about the identity of the co-borrower. Fill in the following mandatory fields:

Applicant details

Add the details for each applicant.

Title: Mr.

First Name: John

Last Name: Bean

Marital status: Single

Date of birth: 26/10/1988

Gender: Male

Total number of dependents: 0

Nationality: British

Country of residence: United Kingdom

- **Title:** Choose between: **Mr/Mrs/Miss/Ms/Doctor**.
- **First Name:** Insert your first name.
- **Last Name:** Insert your surname.
- **Date of birth:** Click inside the field to display the calendar. If you select a date that results in you being younger than 18, a toast message is displayed.
- **Gender:** Choose between: **Male/Female**.
- **Marital Status:** Choose between: **Single/Married/Civil partnership/Separated/Divorced/Widow/Widower/Living as partners**.
- **Total nr of dependants:** Choose between zero and fifteen.
- **Nationality:** Select your nationality. This information is important for the financial calculations. There is a knock-out rule that says you must be British to advance in the Digital Mortgages Self-Service Application process.
- **Country of residence:** Select your country. You must choose United Kingdom. If you are not a UK resident, a toast message is displayed, and you cannot continue the flow.

Click **Continue**.

Address Details

In this step, insert your addresses where you have lived in the last five years. It is used to check the credit history.

It contains the message: *Please provide us your addresses for the past 5 years only. We'll use this information to check your credit history but it won't affect your credit score.*

The top screenshot shows the 'Address Details' step with a sidebar on the left containing three steps: 'Get started', 'Search for real estates', and 'Get a DIP'. The main area has a heading 'Address Details' and a message: 'Please provide us your addresses for the past 5 years only. We'll use this information to check your credit history but it won't affect your credit score.' Below this is an 'Add address' button and a 'Continue' button. On the right, there is a form titled 'Addresses' with fields for Postcode, Property type (dropdown), Country, City, Street, Apartment number, Floor, Date you moved to this address (calendar icon), Do you still live there? (toggle switch), and Date you moved from this address (calendar icon). A 'Save' button is at the bottom right.

The bottom screenshot shows the same 'Address Details' step, but with an address added to a table. The table has columns for Address, Date move in, Date move out, and Actions. The added address is '062196, ruil, Bucharest, Romania' with a move-in date of '1993-06-09' and a move-out date of '-'. The Actions column has 'Edit' and 'Remove' links. The 'Add address' button is still present, and the 'Continue' button is at the bottom.

HINT

You need at least one address to continue the process.

Click **Add address** and fill in the following mandatory fields:

- **Postcode:** Using the connector [Ideal Postcodes](#), the address is collected. By using a connector, the solution incorporates an endpoint that calls the API to bring data from an external source. Such an external source can be the [Ideal Postcodes](#) connector. This connector queries the Ideal Postcodes database to find information regarding addresses in United Kingdom. However, the solution can accommodate any other third-party software, this is one such software integration developed by FintechOS.
- **Property type:** Choose between: **Flat/House/Country**.
- **City:** Insert the name of your city.
- **Street:** Insert the name of your street.
- **Nr:** Insert the number of the street.
- **Ap number:** Insert the number. This field is available only if you chose flat as property type.
- **Date you moved in:** Select a date that is not in the future.
- **Do you still live here?:** If this is true, then the field below is not displayed.
- **Date you moved out:** Choose a date after the move in date.

NOTE

United Kingdom is the preselected value. You can modify it here ["Address Details"](#) on page 226.

Click **Save** to add this address to the list.

For each address, you have two options:

< Go back Need help

Your spendings

Please provide your spending information. Select the categories that apply to you. Then enter the amount you spend in each.

[Add spending](#)

Spending type	Frequency	Amount	Actions
Service charge	Monthly	£2,345	Edit Remove

[Continue](#)

- edit (modify the address)
- remove (delete an address). This is executed using the script "[FTOS_BARET_ChangeApplicationStatusMortgage](#)" on page 181.

NOTE

For technical details about the buttons, see "[Address Details](#)" on page 226.

Click **Continue** once you have added all the addresses.

If you click **Continue** without an address inserted, the system informs you: *Please provide your addresses for the past 5 years.*

If you insert one or more addresses, but the oldest address doesn't cover the minimum five-year span, the system informs you: *Please make sure you cover all the places you lived in the past 5 years.*

If you inserted one or more addresses, but you didn't select a current address for any of them, the system informs you: *Please review the addresses inputted and make sure you mark the one you are currently living in.*

NOTE

For technical details about the warnings, see "[Address Details](#)" on page 226.

Income Details

Insert information about your income to determine your eligibility. The data is then taken to the "[Configuring the Business Formulas](#)" on page 156 where it is used to determine if you qualify for the loan.

Select the type of employment you practice:

- **Employed**
- **Self-Employed.**

For the employed customers, fill in the following mandatory fields:

- **Employer name:** Choose between: **Creative/Specialist/Driver/Emergency Services/Hm Forces/Manager/Nurse/Office Staff/Clerical/Other/Professional/Sales Assistant/Service Staff/Sales Person/Senior Executive/Skilled Worker/Teacher/Unskilled Worker.**
- **Job Title:** Insert the name.
- **Time employed at this job:** Choose the number of years and months you spent at this job.
- **Yearly income before tax:** Insert the amount.
- **Do you have any other incomes?:** If true, a button will be made available (grayed out by default) named **Add income**. If you want to add additional income, a slider from the right side will appear with the following incomes in 2 categories.

For the self-employed customers, fill in the following mandatory fields:

The screenshot shows a web form titled "Your Income" with a purple header. On the left, there is a sidebar with three steps: "Get started", "Search for real estates", and "Get a DP". The main form area has a "Go back" link and a "Need help" button. The form content includes a heading "Your Income", a sub-heading "We need to find out some details about your income.", and several input fields: "Employment status" (with a dropdown menu showing "Self Employed"), "Your business role" (with a dropdown menu showing "Select..."), "Name of business" (with a text input field), "Time employed at this job" (with two dropdown menus showing "Select..."), "Net profit in most recent complete tax year" (with a text input field), "Net profit in previous complete tax year" (with a text input field), and a toggle switch for "Do you have any other incomes?". A "Continue" button is at the bottom.

- **Your business role:** Insert the role you have.
- **Name of business:** Insert the name of the company/NGO.
- **Time employed at this job:** Insert the number or years/months.
- **Net profit in most recent complete tax year:** Insert the profit after tax deduction for the last year.
- **Net profit in previous complete tax year:** Insert the profit after tax deduction for the previous year.
- **Do you have any other incomes?:** Toggle the button if you do receive money from other sources. Then, click **Add income** to open the side panel on the left with the following fields:
 - **Income type:** Choose between:
 - Overtime**
 - /Allowances/Commission/Bonuses/Pension/Investments/Maintenance/Trust Funds.**
 - **Value:** Insert the income.
 - **Frequency:** Choose between: **weekly/monthly/default yearly.**

You can edit each income.

Click **Continue**.

Your Spendings

This screen collects the expenses you have to determine if you qualify for a loan.

Click **Add spendings** to open a side panel with the mandatory fields:

- **Spending Type:** Select between: **Overdraft/Credit or store card/Council Tax/Ground rent/Service charge**.
- **Frequency:** Select between: **Annually/Monthly/Weekly**.

This field is displayed only for

- Council Tax
- Ground rent
- Service charge.
- **Amount:** Insert the value in pounds.

Click **Save**.

For each expense, you have two options:

- edit (modify the expense)
- remove (delete an expense).

Click **Continue** once you have added all the expenses.

You're almost finished - just check your details

This screen is an overview of the application. Check the details for verity before submitting to get the decision in principle.

IMPORTANT!

The data here is not checked with a financial authority, therefore it is not a full approval. This data is the declared data by the customer.

The screenshot shows a user interface for checking mortgage details. On the left is a sidebar with three steps: 'Get started', 'Search for real estates', and 'Get a DIP'. The main area has a title 'You're almost finished - just check your details' and a warning: 'Please check you've entered exact figures for your income and regular spendings, so they match the amounts shown on your supporting document. Don't round figures up or down.' Below this is a table titled 'Your mortgage enquiry details'.

Your mortgage enquiry details	
Reason for mortgage	First time buyer
No. of applicants	2
Product selected	
Property value	undefined0.000
Amount to borrow	undefined3.636
Mortgage term	25 years
Payment type	Equal installments
LTV	63%
Fee	undefined0

Below the table are two expandable sections: 'Personal details' and 'Address history', each with a dropdown arrow. An 'Edit mortgage details' button is located at the bottom right of the table.

Your mortgage enquiry details

It displays the details:

- Reason for mortgage First time buyer
- No. of applicants 2

- Product selected
- Property value 10.000
- Amount to borrow 3.636
- Mortgage term 25 years
- Payment type Equal installments
- **LTV**¹ 63%
- Fee.

Click **Edit mortgage details** to return to the "Agreement In Principle" on [page 36](#) stage.

Personal details

It displays the details:

Main applicant

- First name
- Last name
- Date of birth
- Nationality.

Co-applicant

- First name
- Last name

¹The loan-to-value (LTV) ratio is a measure comparing the amount of your mortgage with the appraised value of the property.

- Date of birth
- Nationality.

Click **Edit your details** to return to the "[Applicants' Details](#)" on page 44. This button is available for each applicant.

Address history

This drop-down displays the list with all the addresses added.

Click **Edit your addresses** to return to the "[Address Details](#)" on page 46.

Income

This drop-down displays the list with all the income sources added.

Click **Edit your incomes** to return to the "[Income Details](#)" on page 48.

Spending

This drop-down displays the list with all the expenses added.

Click **Edit your spending** to return to the "[Your Spendings](#)" on page 51.

Click **Continue** if the data is correct.

Contact Details

This optional stage collects the phone number and email of the applicant along with consents to Marketing and **GDPR**¹ terms for the scenarios with multiple applicants with the message *In order to get full approval, we also need to validate this information with the other applicants. Please input below the email address for <co-applicant name>.*

We will collect the following information:

¹The General Data Protection Regulation is a regulation in EU law on data protection and privacy in the European Union and the European Economic Area.

- **Email address:** it must contain “@” character, must contain “.” after the “@” character.

NOTE

The validation of the email structure was defined in FTOS_BNKAP_MortgageContactInfo > step Contact Info > After Section Save.

- **Phone number:** insert only numbers.

If the two fields respect the requirements, the system displays a checkmark. Click the button **Let's start!** to proceed to the next screen two codes must be inserted. When this button is clicked it triggers the sending of those codes.

Contact Validation

This screen contains the two fields where you must insert the codes sent via your email address and via your SMS. Each field has a dedicated countdown measured in seconds to insert the codes and validate them:

- 60 seconds for SMS
- 120 seconds for email.

If you insert the wrong code while the timer is still running, the timer is not going to stop, but a pop-up message is displayed to inform you that the code inserted was not correct. You have five retries to resend the code.

NOTE

For technical details, see "[FTOS_DFP_MORTGAGE_OTP](#)" on [page 200](#) where you can modify the length of time the code are valid for and more. The maximum number of retries is five in case you insert the wrong code.

Go back

Contact validation

Please provide the security OTP codes provided via SMS and email

We have sent you two validation codes, one to your phone number (ending in ****429) and the other to your email (***[redacted])

SMS Code

9727 Validated

Email Code

3394 79 s

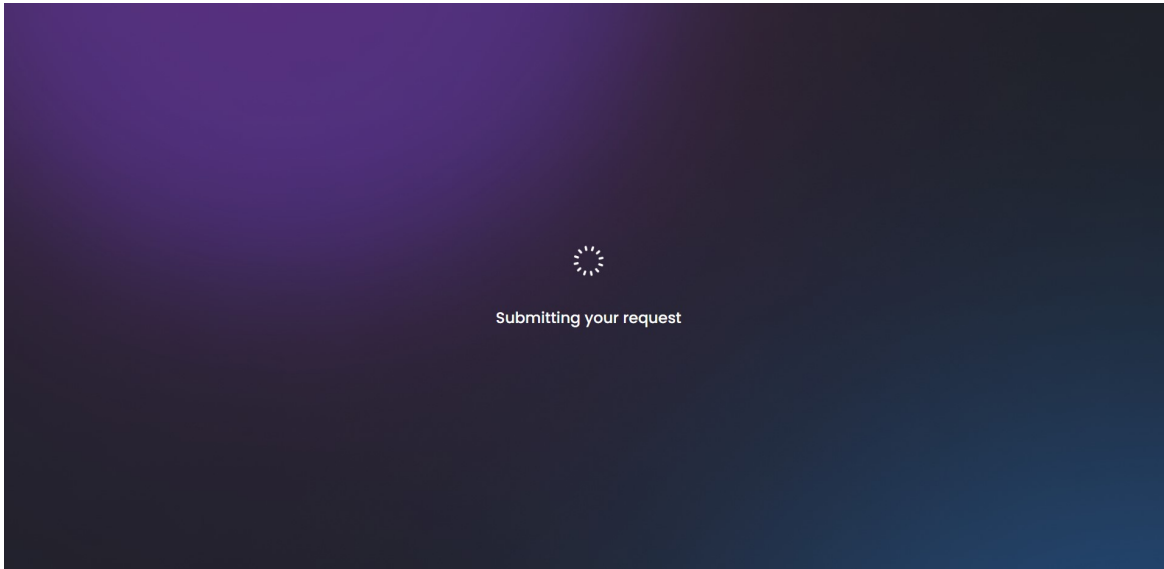
To validate the code after it has been inserted, click outside the field. For the process to run smoothly, you cannot continue with only one of the codes inserted correctly. Once the countdown expires, the **Resend** button is displayed for both channels of communication. It triggers the countdown to be reinitiated.

For the situation when the wrong phone number or email address were provided, click the Go back button to return to the previous screen and insert the correct data as explained in the message **In case you need to change your phone number or email address, please go back to the previous screen.**

Submitting Your Request

At this stage, the system decides whether or not you are eligible for the Digital Mortgages Self-Service Application. The benefit is that the bank gives an instant response to your request. Based on what you declared beforehand, the system returns an answer:

- you are eligible for the mortgage
- you are eligible for a lower amount
- you are not eligible.



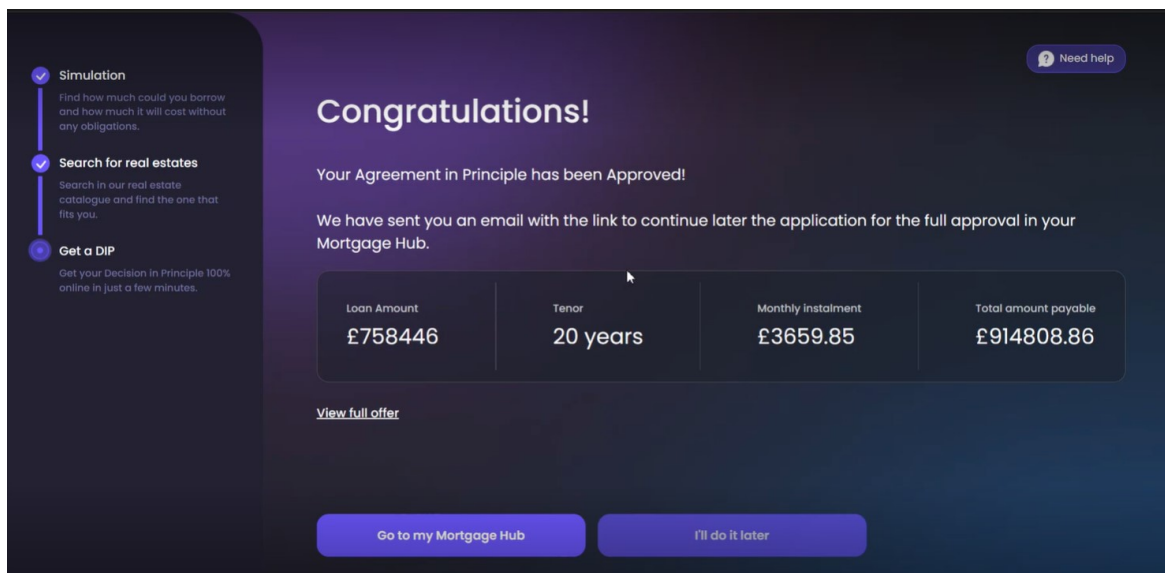
NOTE

The system determines the approval/rejection by calculating all the formulas defined in ["Configuring the Business Formulas" on page 156](#): whether or not you are eligible to determine your potential for the loan amount you asked for in the initial

stages of the process. The formulas determine whether you meet the minimal requirements, the income weight, the **scoring**¹ and finally, the maximum **DTI**².

Congratulations!

This step informs you whether you qualify for the mortgage you applied. It marks the success of your request and displays the offer available.



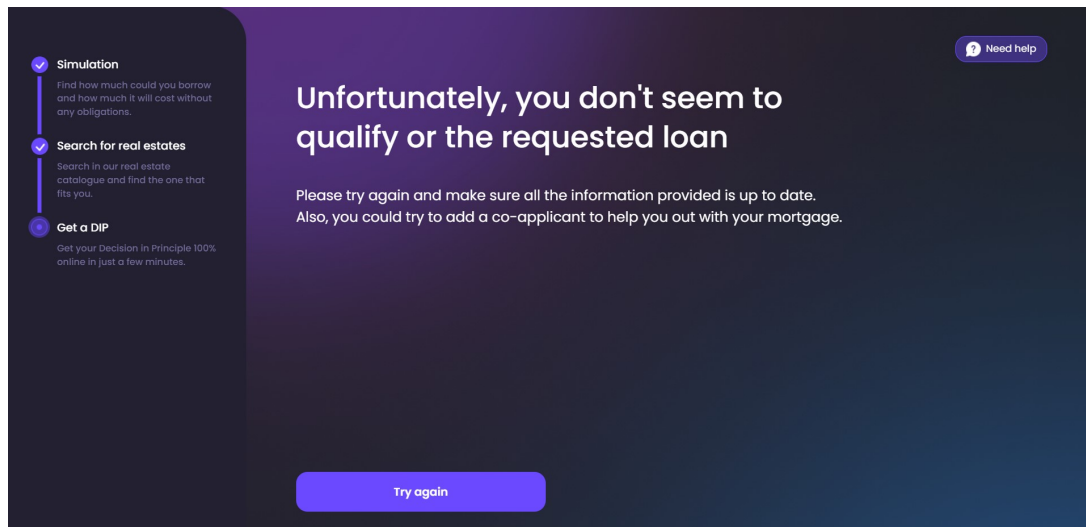
Rejection Screens

If you fail the financial calculations, there are two rejection screens for two scenarios:

- for the applications that have only one applicant, you are invited to add a co-applicant to boost the income and apply again for the decision in principle

¹Scoring is a statistical analysis performed by financial institutions to determine the creditworthiness of a borrower.

²The Debt-to-Income ratio (DTI) is a personal indicator of a good balance between debt and income. Monthly debt payment amount / Monthly gross amount (before taxes and other deductions).



- for the applications that already have two applicants, then the system invites you to a branch to discuss options for funding.

Additionally, an email is sent containing:

- a document with the DIP proposal
- the schedule for the offer

NOTE

See ["Configuring the Digital Documents Processor"](#) on page 170 for details regarding the two documents.

- a link to continue the journey at a later time.

NOTE

For technical details, see ["Email Configurations"](#) on page 227.

The offer is depicted with the loan amount, the tenor, **monthly instalment**¹, the **total amount payable**².

¹The value of one of a number of successive payments in settlement of a debt.

²It represents the sum of all scheduled or projected payments of funds that the recipient agrees to pay to the provider.

Click the button **View full offer** to open additional details about the loan:

- Product category
- Product name
- Nr of applicants
- **Monthly instalment**¹ (for the first instalment)
- **Interest rate**² for the fixed period
- **APR**³
- End date of the fixed rate
- Follow-on payments (monthly repayments after the fixed interest rate period)
- Interest rate after the fixed period
- Product fee (from "[Configuring the Banking Product Factory](#)" on page 136)
- Total of monthly payments
- Early repayment charges (from "[Configuring the Banking Product Factory](#)" on page 136).

There are two buttons available: **Go to My Mortgage Hub** or **I'll do it later** to postpone the process. An email is sent with a button **Continue Application** that triggers the "[Resume Application and Log In](#)" on page 73 page.

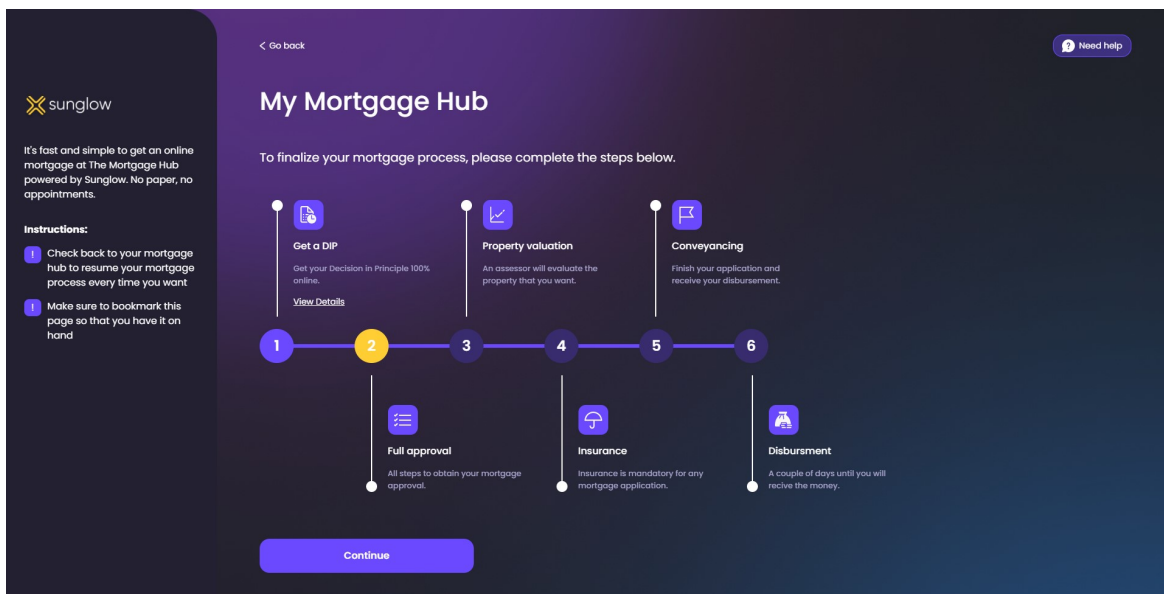
¹The value of one of a number of successive payments in settlement of a debt.

²The interest rate is the amount a lender charges a borrower and is a percentage of the principal, i.e., the amount loaned.

³The annual percentage rate is an annualized representation of the interest rate.

My Mortgage Hub

The solution is built around a hub where you can view your progress towards the intended purpose of obtaining the mortgage. It gathers all your data and at any time you can access it to view the status of your application. It can be accessed from the email sent via a dedicated button. From here you can access different steps and manage your application. This hub is a centralized space where the application is viewed at a glance. Not only can it be accessed around the clock, but it can be accessed days later after the initiation of the loan request.



On the **My Mortgage Hub** page, there is a progress bar with six steps executed after the decision in principle is approved during the underwriting process. They are color-coordinated to mark their completion status:

- Get a DIP: By clicking **View Details**, you can return to the page "[Congratulations!](#)" on [page 66](#)
- Full approval: This is the next stage where your identity is validated.

- **Property evaluation:** This step is not accessible until the user finishes the previous step. An assessor conducts an evaluation of the property to determine its potential.
- **Insurance:** This step is not accessible until the user finishes the previous step. The property must be insured first, otherwise, the amount is not disbursed.
- **Conveyancing:** This step is not accessible until the user finishes the previous step.
- **Disbursement:** This step is not accessible until you finish the previous step.

HINT

The steps with violet purple are the completed steps, the yellow steps are the current steps, the dark purple steps have not yet been accessed. You must complete each step one at a time, before you are able to move to the next step.

Click **Continue**. From this stage you can choose to postpone the application and resume at a later date.

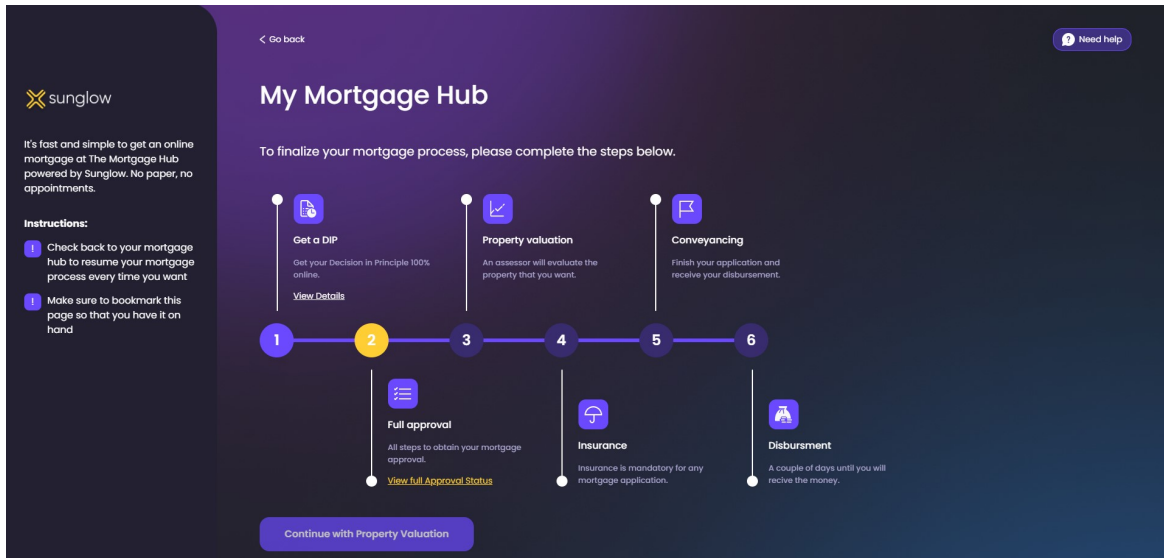
Additionally, the system sends an email that includes a link. By accessing the button **Go to my mortgage hub** from the email, you can return to this step anytime. For details, see ["Email Configurations" on page 227](#).

NOTE

The system updates the business workstatus and gets the data about the applicant by calling the scripts ["FTOS_BARET_GetMortgageHubAction" on page 183](#) and ["FTOS_BARET_GetMortgageApplicantsId" on page 183](#) within the flow FTOS_BARET_MortgageHub > step Step1 > Advanced > After Events.

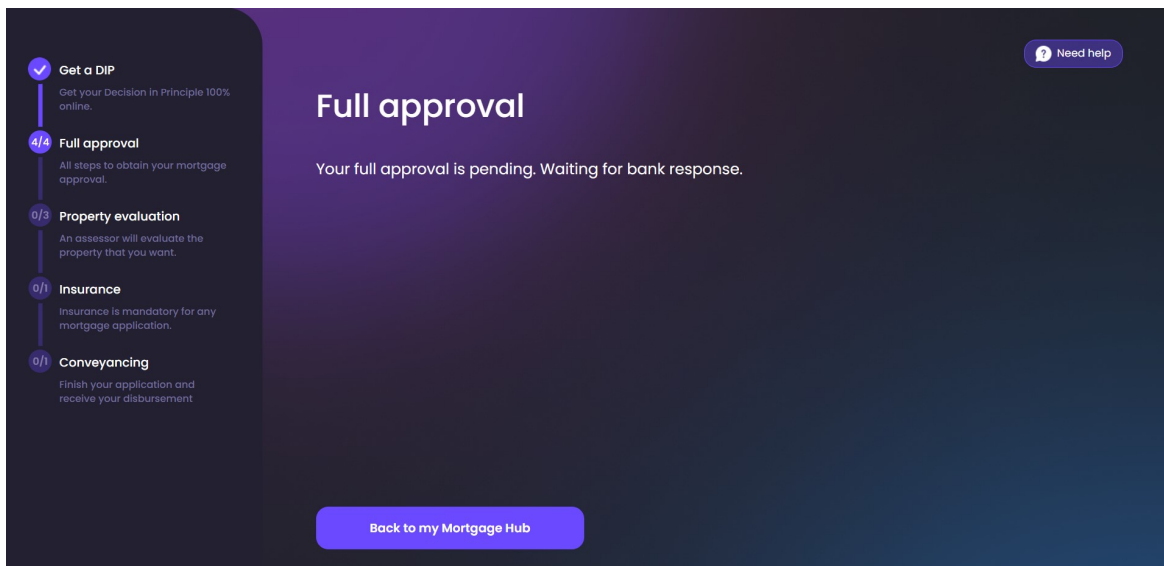
Pending Approval

After the decision in principle is approved, you access **My Mortgage Hub** from where you begin the ["Formal Approval" on page 78](#). Once you are done with declaring your personal data, your income and expenses, you return to this hub where you can keep track of the status of your application while it is under loan underwriting process where a back-office employee has to approve or fail your formal approval. While you are waiting for the response, you can access **My Mortgage Hub**.



While the application is pending, the **Continue with Property Valuation** is disabled. Once a back-office employee approved the request in the "[Back-Office Dashboard](#)" on [page 99](#), then this button becomes accessible to you.

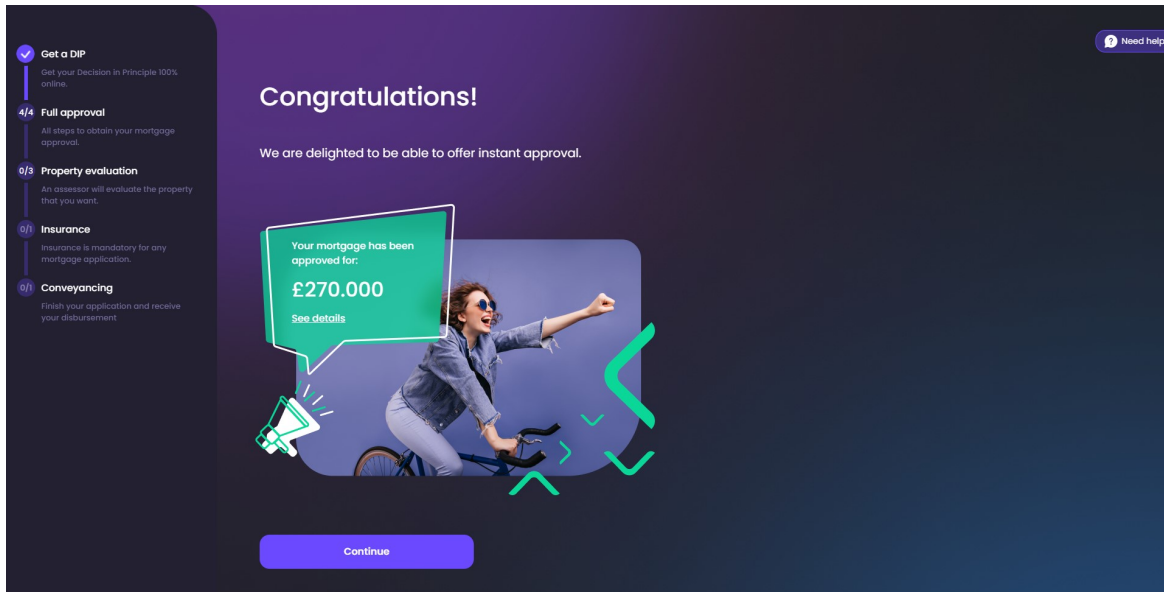
From **My Mortgage Hub**, click **View full Approval Status** to display the status page of your mortgage request.



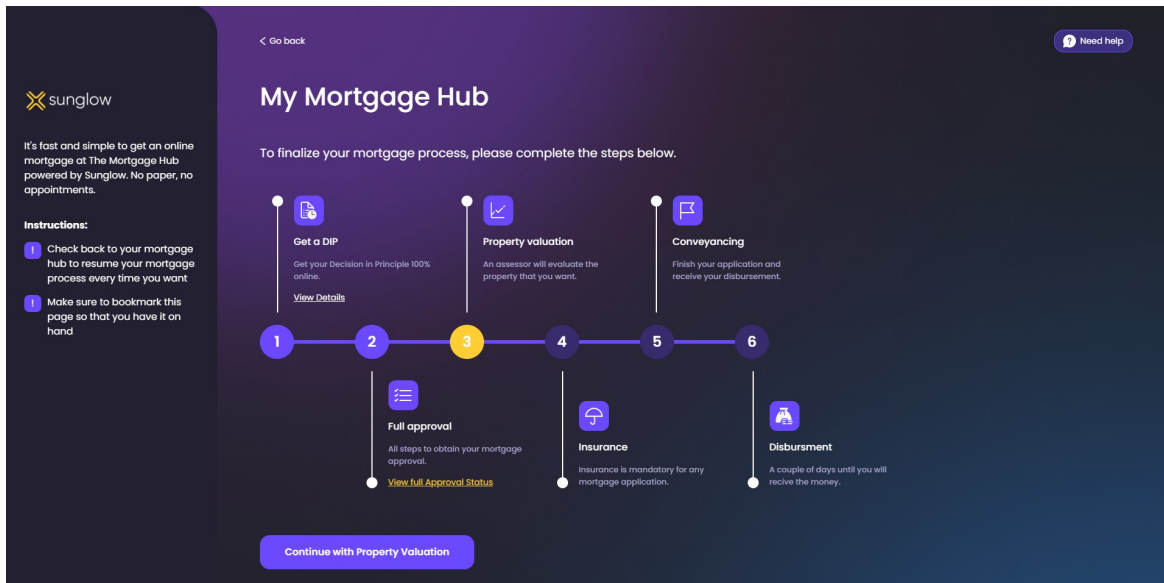
Click **Back to My Mortgage Hub** to return to the previous step.

Congratulations!

This confirmation screen is displayed to the customers for whom the mortgage request has passed the manual underwriting process and the back-office employee approved the amount. The back-office employee can approve even a smaller offer that fits within your debt-to-income ratio.



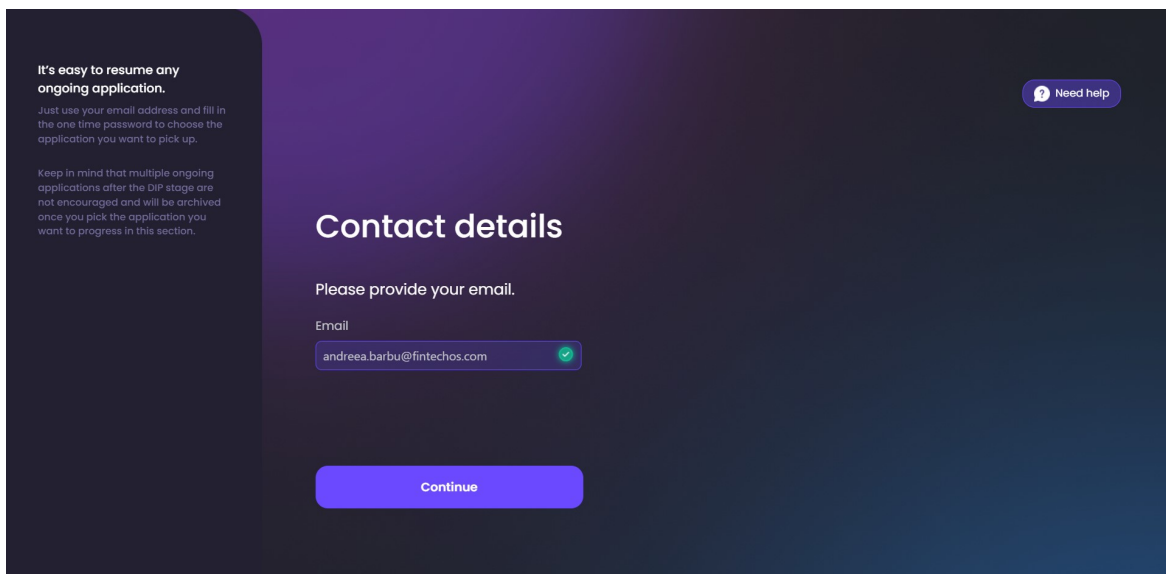
Click **Back to My Mortgage Hub** to return to the previous step.



Click **Continue with Property Valuation** to proceed.

Resume Application and Log In

While you are waiting for the manual underwriting approval from the back-office, an email is sent to your email address allowing you to resume the application at any time. Click the **Continue Application** button from the email. The **Contact details** page is displayed. The email address is read-only.



The screenshot shows a dark-themed user interface for the 'Contact details' page. On the left, a sidebar contains instructional text: 'It's easy to resume any ongoing application. Just use your email address and fill in the one time password to choose the application you want to pick up.' and 'Keep in mind that multiple ongoing applications after the DIP stage are not encouraged and will be archived once you pick the application you want to progress in this section.' The main area is titled 'Contact details' and prompts the user to 'Please provide your email.' Below this, there is a read-only email field displaying 'andreea.barbu@fintechos.com' with a green checkmark icon to its right. A blue 'Continue' button is positioned at the bottom of the form. A 'Need help' link with a question mark icon is located in the top right corner.

Click **Continue** to receive an email with an OTP.

It's easy to resume any ongoing application.

Just use your email address and fill in the one time password to choose the application you want to pick up.

Keep in mind that multiple ongoing applications after the DIP stage are not encouraged and will be archived once you pick the application you want to progress in this section.

< Go back

Contact validation

Please provide the security OTP codes provided via email

We have sent you one validation code, to your email (*****rbu@fintechos.com)

Email Code

114 s

NOTE

The OTP is defined in "FTOS_DFP_MORTGAGE_MAIL_OTP" on page 216.

Insert the four-digit OTP and click anywhere outside the field. You have 120 seconds to insert it before the timer expires. When the timer expires, the **Resend** button becomes available allowing you to resend the email with the OTP. If the OTP is correct, the **Applications** page is displayed. If it was not inserted correctly, you have five retries. A toast message is displayed informing you that a wrong code was inserted. Afterwards, you no longer can log in.

It's easy to resume any ongoing application.

Just use your email address and fill in the one time password to choose the application you want to pick up.

Keep in mind that multiple ongoing applications after the DIP stage are not encouraged and will be archived once you pick the application you want to progress in this section.

Need help

Applications

Please select an application to continue.

5Y Fixed - Green Mortgage	Created on 2022-07-13	Loan amount £270000	Currency GBP	Period 300	Select
5Y Fixed - Green Mortgage	Created on 2022-07-04	Loan amount £270000	Currency GBP	Period 300	Select
5Y Fixed - Green Mortgage	Created on 2022-06-14	Loan amount £799860	Currency GBP	Period 300	Select

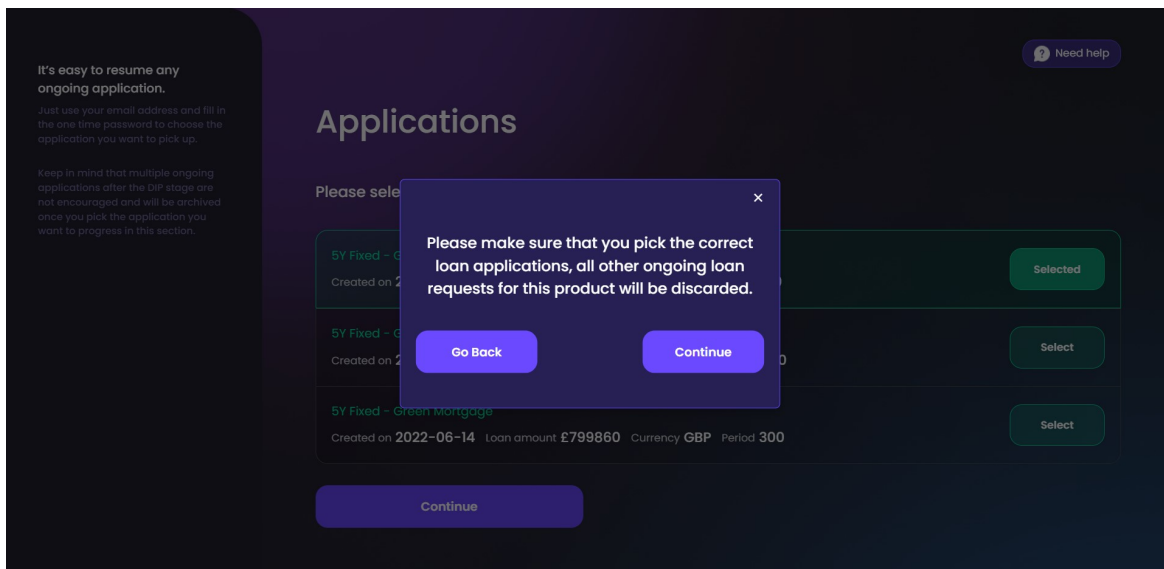
Continue

Select the application you wish to continue if you have multiple applications opened. Once an application is selected, all the other applications are set to expired, and you cannot continue to apply for those expired requests.

NOTE

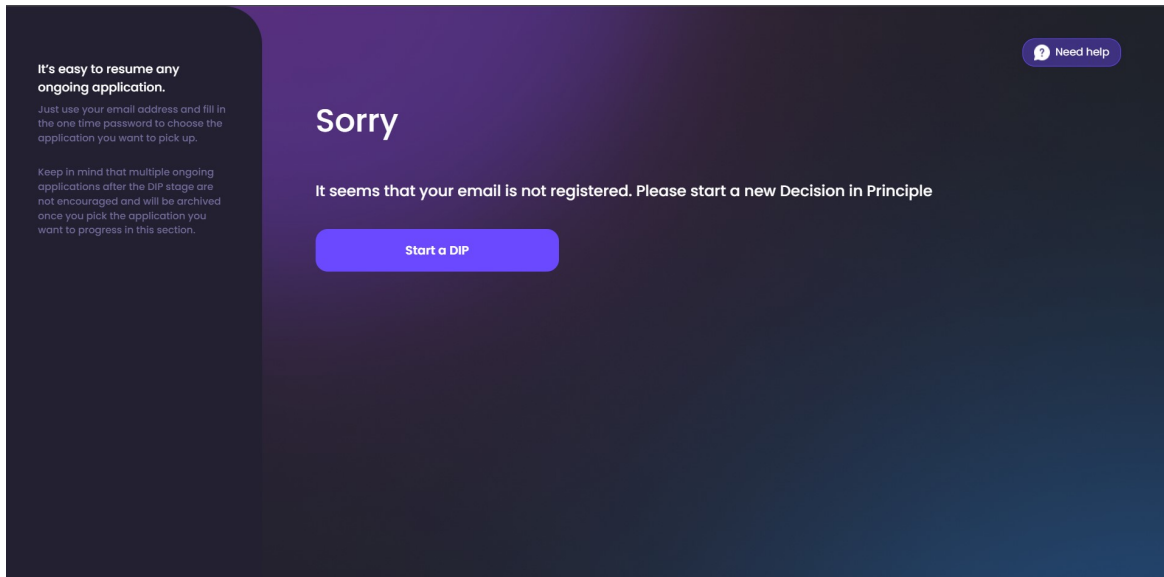
On this page the script "FTOS_BARET_SetResumingApplication" on page 190 is called.

A pop-up message is displayed with a disclaimer that only the selected application is going to remain. Click **Continue** to proceed or **Go back** to cancel.



Sorry

If the email is not registered or all the applications are expired, you need to start the process again by clicking **Start a DIP**.



Formal Approval Co-applicant

In this step you must declare the contact details of the co-borrower. For the applications that only have one main borrower, then this step is skipped in the flow. The system needs to check the contact information of all the applicants. The co-borrower must fill in the data about their identity, address, income and expenses, exactly as the main borrower.

Contact Details

Insert the email address and phone number. The email must contain a "@" character, must contain "." after the "@" character. If the values inserted match the requirements, a green checkmark is displayed.

The screenshot shows the 'Full approval co-applicant' screen. On the left is a vertical progress bar with five steps: 'Get a DIP' (completed), 'Full approval' (current step, 4/4), 'Property evaluation' (0/3), 'Insurance' (0/1), and 'Conveyancing' (0/1). The main content area has a title 'Full approval co-applicant' and a sub-header 'In order to get a full approval, we also need to validate this information with the other applicants.' Below this, there are two input fields: 'Email address' and 'Phone number'. The 'Phone number' field has a green checkmark icon. At the bottom is a blue 'Continue' button. A '< Go back' link is in the top left, and a 'Need help' button is in the top right.

NOTE

The validation was defined in FTOS_BNKAP_ApplicantContactDetails > step ApplicantContactDetails> Advanced.

Click **Continue** to proceed. An SMS and email are sent to the co-borrower containing a link to launch the co-borrower flow. The email was defined in "[Email Configurations](#)" on page 227. By clicking the **Let's start** button from the email, the co-borrower is directed to the "[Formal Approval](#)" on the next page stage where they must complete the same steps as the main borrower to declare their identity, address, income and expenses.

The screenshot shows the 'Formal Approval' screen. The left progress bar is identical to the previous screen. The main content area has a title 'Formal Approval' and a sub-header 'In order to submit your loan application for a formal review, please complete the sections below in any order of your choosing.' Below this are four cards, each with a circular icon and a title: 'Provide ID', 'Provide document', 'Provide document', and 'Provide document'. Each card has a right-pointing arrow. Below the cards are four labels: 'Proof of ID', 'Proof of Address', 'Proof of Income', and 'Proof of Expenditure', each followed by a right-pointing arrow. A 'Need help' button is in the top right.

Formal Approval

The journey is an end-to-end mortgage solution, therefore, it includes the stage following the decision in principle, where you and the co-borrower, if applicable, must validate the information inserted in the DIP. For each type of information, you must provide documents to verify what was declared earlier. For the financial institution to offer the mortgage, the identity, address history, income, and expenses must be certified. The **Formal Approval** page depicts the following mandatory stages you must complete. There is no hierarchy or co-dependence between stages. You can access the stages in no particular order. The system does not ask you to complete a stage 100% before starting another one.

Formal Approval

In order to submit your loan application for a formal review, please complete the sections below in any order of your choosing.

- Completed**
Proof of ID ✓
- Provide document**
Proof of Address >
- Provide document**
Proof of Income >
- Completed**
Proof of Expenditure ✓

[Save & Continue](#) [Back to Mortgage Hub](#)

Proof of ID

The identity of a borrower must be verified by the financial institution by scanning an ID document and taking a selfie. The name and other details must be proven using a document. After these steps, you return to the **Formal Approval** page. When the scanning is done, on the **Formal Approval** page the graphic displays 50%, after the selfie the stage is 100% complete.

Proof of Address

This requirement is specific to the United Kingdom market. It requires proof of occupation on the current residence. After each document is uploaded, you are redirected to the **Formal Approval** step where there is a graphic displayed: for one document uploaded equals 50%, 2 documents uploaded equals 100.

Proof of Income

The income sources and values from the decision in principle must be verified by using the Credit Kudos integration or by manually uploading the documents. The income is important because the bank needs to verify whether or not you can afford the mortgage. After each document is uploaded/the bank account from Credit Kudos is linked, you are redirected to the **Formal Approval** step where there is a graphic displayed: if you select open banking or if you select to manually upload documents, the process is 100% done.

Proof of Expenditures

From the income you have, there may be expenses paid for other loans, overdrafts, and more. To validate the expenses declared earlier, the system needs to view the documents with the existing spendings. By declaring the income and expenses, the system can determine the debt-to-income, then, it can determine whether you qualify for the mortgage. After each document is uploaded/the bank account from Credit Kudos is linked, you are redirected to the **Formal Approval** step where there is a graphic displayed: if you select open banking or manual upload, the process is 100% done. By default, the open banking page is displayed first, but you can click **Add documents manually** to skip the Credit Kudos integration.

After each of these four categories is completed, you are directed to the **Formal Approval** page to select a new step. The text from inside the chart reloads to inform you what action you need to take to complete the process.

Select one of the four categories and click **Save & Continue** to proceed. This button becomes available only when one of the categories has been selected. To return to the previous step, click **Back to Mortgage Hub**. This button redirects you to the page ["My Mortgage Hub" on page 69](#).

HINT

In the form FTOS_BNKAP_Mortgage_FullApproval > step Step1 > After Events several things are configured, including calling the script FTOS_BNKAP_GetMortgageFullApprovalStatus.

Proof of ID

The identity of the customer must be verified as part of the legal standard for this process. Therefore, you must complete two steps for the bank to validate your identity: provide an identity document and take a selfie. The photo from the selfie is compared with the photo from the ID, if they match the identity is confirmed. Otherwise, you fail this step.

NOTE

For more details on how this step was configured, see "[Mortgage_OCR_ID](#)" on [page 199](#) and "[Mortgage_OCR_DL](#)" on [page 198](#) and "[Mortgage_OCR_Passport](#)" on [page 199](#).

Scanning an Identity Document

This accelerator accepts multiple documents allowing you a wider variety of options:

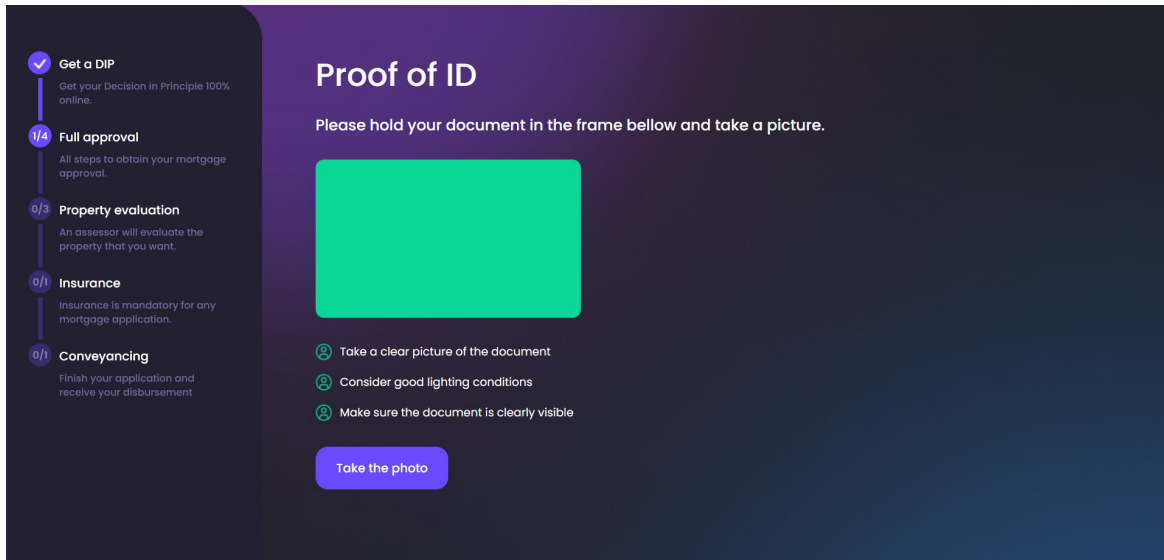
- scanning a driving license
- scanning a passport
- scanning a national personal ID.

Choose one of the options by clicking it and then clicking **Continue**. The **Continue** button becomes available only after you have made your choice.

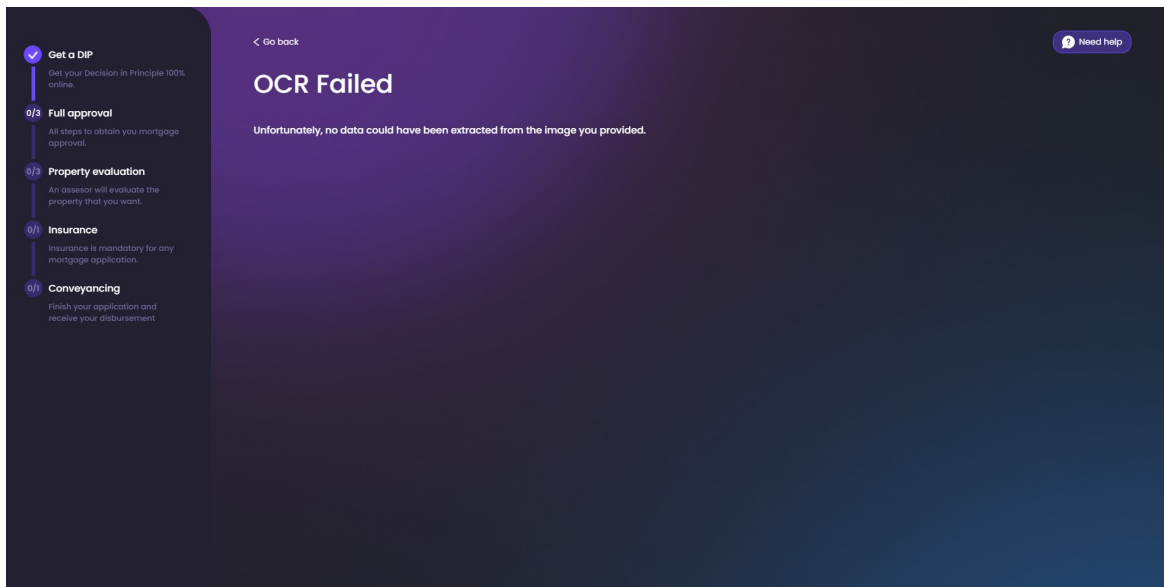
NOTE

On the form FTOS_BNKAP_MortgageScanOCR, there are several steps configured for each scenario of this stage of the process. In the step selectDocumentType > Advanced > After Events, the script "FTOS_BNKAP_GetMortgageFullApprovalStatus" on page 194 is called, as well as the processors "Mortgage_OCR_ID" on page 199 and "Mortgage_OCR_DL" on page 198 and "Mortgage_OCR_Passport" on page 199. In the same step in Advanced > After Section Save, the custom flow FTOS_DFP_Mortgage_OCR is triggered with the opening of the camera for the scanning of the document.

A new page is displayed where the image of the camera is shown. Frame your document and click **Take the photo**. Then, click **Process file** to proceed or **Retake photo** to frame again the ID and take a new photograph.



If the scanning process is successful, then the system loads the review information page. If the scanning is not successful, you have five retries to re-take the photo. The system displays a toast message to inform you that the photo could not be processed. Once the maximum number is reached, the system loads the fail page informing you that you cannot continue the flow.



Review the Information

This is a subsequent step to the successful scanning of the document. Under the heading **Personal Details**, the system displays the data taken from the document allowing you to edit it if it was collected wrongly:

NOTE

In the form FTOS_BNKAP_MortgageScanOCR > step reviewInfo > Advanced > After Events, the code validates the date format for the ID card issue and expiration date, and for the other fields to not be empty.

- Last name
- Given name
- Issued at
- Issued until
- Issued by
- Address.

The screenshot shows a mobile application interface for a mortgage application. On the left, a vertical progress bar indicates the current step is 'Full approval' (1/4). The main content area is titled 'Proof of ID' and includes a message: 'We have detected your data. Please check it.' Below this is a 'Personal details' section with a list of fields: Last name, Given name, Issued at, Issued until, Issued by, and Address. An 'Edit personal details' button is located at the bottom right of this section. At the bottom of the screen, a message states: 'Now we need to confirm your identity by comparing the photo from the passport with a live one with you.' followed by a 'Continue' button.

Click the **Edit personal details** button to modify the data collected. Click the **Continue** button to proceed.

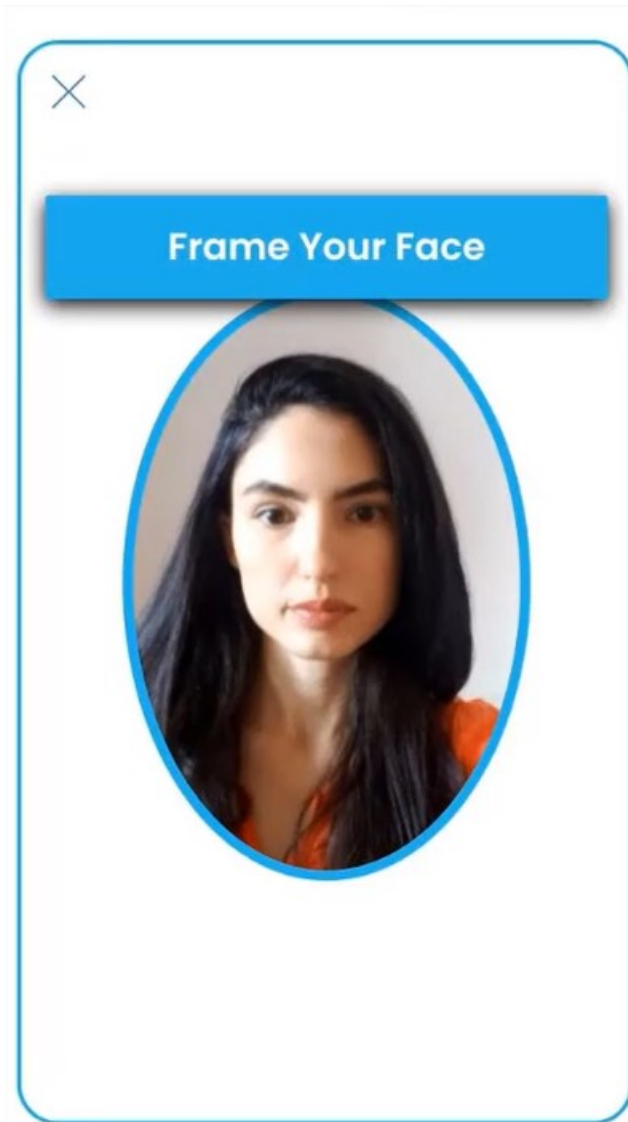
The page **Proof of ID** reloads with the information about the selfie.

Click **Continue** to trigger the selfie processor.

Take a Selfie

If the scanning of an identity document is achieved, the page loads the selfie step to display the image from the camera for you to take a photo of your face. This is needed to confirm your identity and prevent fraud.

To start the process click **I'm ready**. Follow the instructions from the automation processor. You have five retries to pass the liveness check. If the maximum number is reached and you could not pass the selfie check, the system loads the fail page informing you that you cannot continue the flow.



NOTE

For more details on how this step was configured, see ["Processor Setting for Liveness"](#) on page 199 and the flow ["FTOS_BNKAP_MortgageSelfie"](#) on page 134.

Proof of Address

This step asks you to upload two documents from a list of existing possible documents:

- Household utility bill
- Any bank correspondence quoting an account number
- Any revenue correspondence
- Social welfare document quoting the policy number
- Littlewood's correspondence quoting an account number.

You can upload more than two documents, which is the minimum number required to continue the flow. If the minimum number of documents is not reached, you cannot continue the flow. You must insert as well the **Any bank correspondence quoting an account number** file to complete the stage.

If you do not select at least one document, a pop-up message is displayed asking you to choose a document type.

NOTE

To modify the minimum number of documents needed and the document types, see

"Mortgage_DocumentType" on page 198. This processor is called on the form driven flow "FTOS_BNKAP_ProofOfAddress" on page 134 > Advanced > Before Events. On the form driven flow FTOS_BNKAP_ProofOfAddress > step ProofOfAddress > Advanced > After Events, the code validates the minimal number of documents inserted and saves the category of the document selected.

Tick the checkbox for the two documents you wish to upload. Then, click the **Continue** button. If no selection is made, the **Continue** button is not available.

Upload Documents

The page **Proof of address** reloads with the fields where to upload the documents from the local drive. The system takes the documents chosen from the first page and displays them on this page.

NOTE

All the documents requested in the Formal Approval are defined in "Mortgage_DocumentType" on page 201.

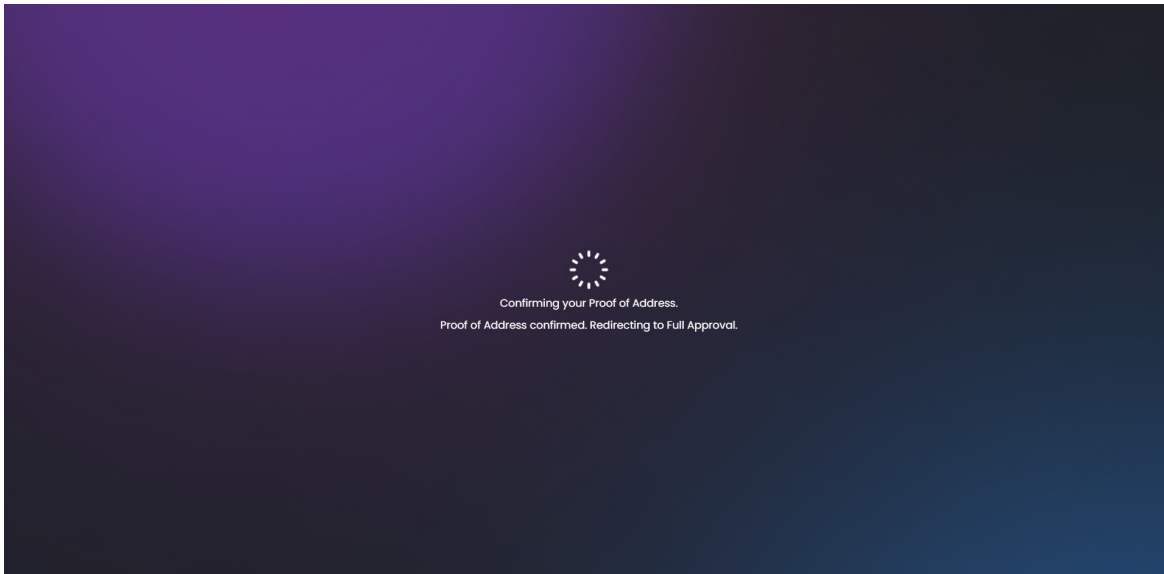
NOTE

In the form driven flow FTOS_BNKAP_ProofOfAddress > step ProofOfAddressUpload > After Events, the script "FTOS_BNKAP_GetApplicantSelectedDocuments" on page 193 is called.

Click **Select** to choose from the local drive the file. Once uploaded, the name of the file is displayed. Click **Add file** to add an additional document.

To proceed, click **Continue**. If there are no documents inserted, an error message is displayed to inform you of the requirement.

A loading page is displayed with the message *Proof of address submitted, redirecting you to the Full Approval screen*.



Proof of Income

This step verifies the income you earn. This validation is needed by the financial institution because any loan requires verification of the source of income. This is done using the **open banking**¹ integration with **Credit Kudos**². This is a suggestion FintechOS has. However, any third-party platform can be integrated.

IMPORTANT!

Every customer must have at least one account linked.

¹Open banking connects banks, third-parties and technical providers to securely exchange data.

²Credit Kudos' products enable businesses to leverage Open Banking to enhance affordability and risk assessments. The products help lenders streamline underwriting, improve accuracy in decision-making, and support customers after acquisition through our engagement tools.

The page explains the process within Credit Kudos. Click **Link Your Bank Account** to start the process using the integration or click **Add documents manually** if you do not wish to use open banking solution or if you do not have a bank available on the Credit Kudos platform.

Data Taken from Credit Kudos

The information taken from the third-party integration is:

From the Report Details, the information used is:

- Predicted monthly income amount: income value and currency
- Predicted monthly income with transfers: incomeWithBankTransfers value and currency
- Predicted monthly essential expenditure: essentialExpenditure value and currency
- Predicted monthly affordability threshold: affordabilityThreshold value and currency

From the Accounts Report, Innovation Studio gets the bank name.

From the Indicators Report Predicted, the information used is: gamblingExpenditure and ratioToIncome.

When selecting to link a bank account, you are directed to a flow within the Credit Kudos platform. If the account is linked successfully, then you are redirected back to the flow in this solution with the logo of the bank displayed as a confirmation.

The screenshot shows the 'Proof of Income' step in the mortgage application process. On the left, a progress bar indicates the following steps: 'Get a DIP' (completed), 'Full approval' (current step, 3/4), 'Property evaluation' (0/3), 'Insurance' (0/1), and 'Conveyancing' (0/1). The main content area has a 'Go back' link and a 'Need help' button. The title is 'Proof of Income'. Below the title, it says 'We need to verify your income now.' and provides instructions on the fastest way to do this by linking bank accounts or manually uploading documents. A red box with the CK logo asks 'Is Open Banking Credit Kudos safe?' and provides a reassuring answer. At the bottom, there are two buttons: 'Link your bank account' and 'Add documents manually'.

Multiple banks can be linked, but for each bank account, you need to repeat the process. Click **Add another account** to add a new account and follow the steps from Credit Kudos (choose the bank, log in the platform, view the accounts).

The screenshot shows the 'Proof of Income and Expenditure' step in the mortgage application process. On the left, the progress bar is updated: 'Get a DIP' (completed), 'Full approval' (current step, 2/4), 'Property evaluation' (0/3), 'Insurance' (0/1), and 'Conveyancing' (0/1). The main content area has a 'Go back' link and a 'Need help' button. The title is 'Proof of Income and Expenditure'. Below the title, it says 'Amazing, you have now provided proof of income and expenditure.' and displays three linked accounts with their respective balances: 'CREDIT CARD ACCOUNT' (-104.48 GBP), 'ULTIMATE REWARD CURRENT ACCOUNT' (11800.00 GBP), and '123 CURRENT ACCOUNT' (2600.00 GBP). At the bottom, there is a 'Save and continue' button.

Once the account(s) is/are added successfully, click **Save and continue** to proceed. The system takes the expenditures as well and you do not need to go through that step. However, subsequently, you can add the expenditures manually.

Add the Documents Manually

There are several options depicted in the interface. Choose at least one document from the list:

- Current account statement
- Pay Slip
- Salary cert
- Statement of earnings.

The screenshot shows a digital mortgage application interface. On the left, a vertical progress bar indicates the following steps: 'Get a DIP' (completed), 'Full approval' (3/4), 'Property evaluation' (0/3), 'Insurance' (0/1), and 'Conveyancing' (0/1). The main area is titled 'Proof of Income' and contains the instruction: 'We need to verify your income now. Please select the type of documents you want to provide for your income validation.' Below this, there are four unchecked checkboxes: 'Current account statement', 'Pay Slip', 'Salary cert', and 'Statement of earnings'. At the bottom center is a blue 'Continue' button. In the top right corner, there is a 'Need help' button with a question mark icon. A 'Go back' link is visible in the top left of the main content area.

After the selection is made, the **Continue** button is available. The step refreshes the page with the fields for the documents selected previously to be added. You can add multiple documents for a single category.

Click **Select** to add the document from the local drive. Click **Add file** to upload more documents. When all the documents were added, click **Continue** to display the **Formal Approval** page.

Proof of Expenditures

This step verifies the spendings you have. This validation is needed by the financial institution. This is done using the **open banking**¹ integration with **Credit Kudos**². FintechOS recommends using Credit Kudos, but any other third-party platform with APIs can be used.

Upload Manually the Documents

The screenshot shows a web interface for uploading documents. On the left is a vertical progress bar with five steps: 'Get a DIP' (completed), 'Full approval' (3/4), 'Property evaluation' (0/3), 'Insurance' (0/1), and 'Conveyancing' (0/1). The main area is titled 'Proof of Income' and contains the text 'We need some documents to verify your income.' Below this, under the heading 'Current account statement', there is a file upload area showing a file named 'proof.xlsx' with a circular arrow icon. An 'Add file' button is located below the file name. At the bottom of the main area is a large blue 'Continue' button. In the top right corner, there is a 'Need help' button with a question mark icon. A 'Go back' link is visible in the top left of the main content area.

1. You must select at least one document from the list and upload it: **Ongoing loan documents** or **Other recurring expenditures**.

¹Open banking connects banks, third-parties and technical providers to securely exchange data.

²Credit Kudos' products enable businesses to leverage Open Banking to enhance affordability and risk assessments. The products help lenders streamline underwriting, improve accuracy in decision-making, and support customers after acquisition through our engagement tools.

NOTE

In the flow FTOS_BNKAP_ProofOfExpenditures > Advanced > After Events, the processor settings "[Mortgage_DocumentType](#)" on [page 198](#) is called.

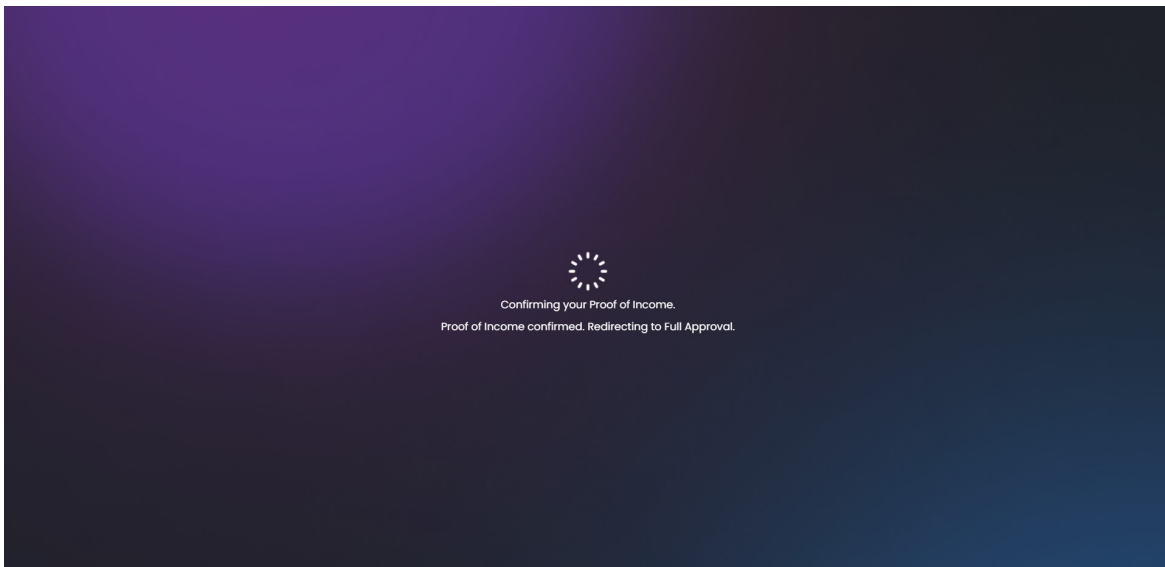
2. Tick the checkbox for the document(s) you wish to upload.

If you do not select any type of document, and click **Continue** a toast message is displayed informing you that you need to select at least one document.

3. Click the **Continue** button. If you do not have expenditures to add, click **I don't have anything to declare** to proceed directly to the **Formal Approval** page.

Additionally, the documents that prove the expenditures can be uploaded from the local drive without the use of open banking.

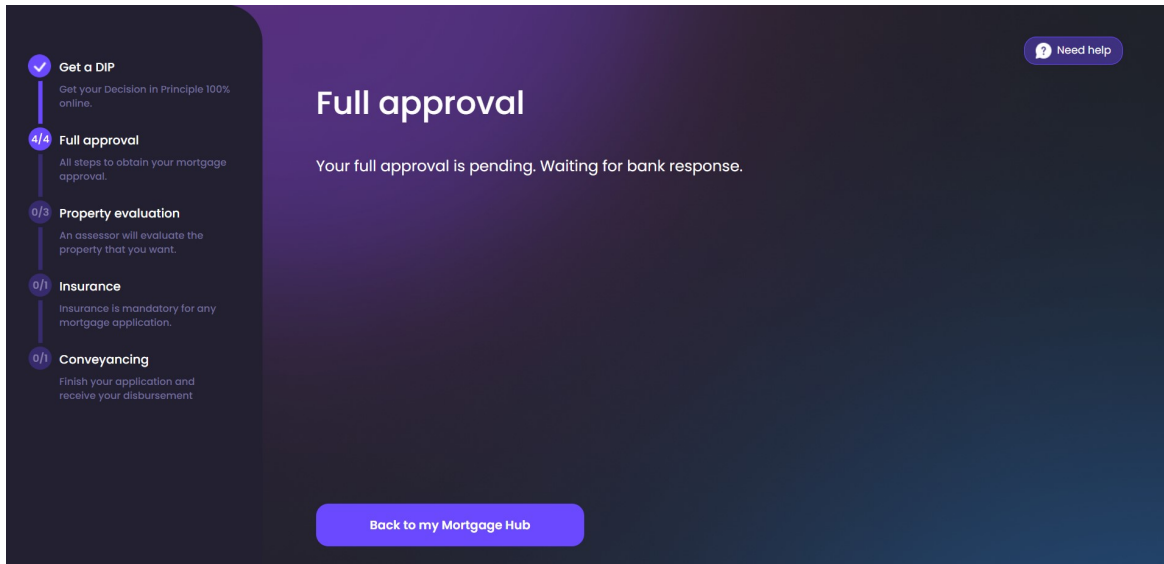
1. Click **Select** to add from the local drive the document.
2. Click **Add file** to upload more documents.
3. When all the documents were added, click **Continue** to arrive at the **Formal Approval** page.



Reaching the Formal Approval Page

When all the steps are completed, the flow redirects you to the **Formal Approval** page. Click **Save & Continue** from the **Formal Approval** page to continue to **My Mortgage Hub**.

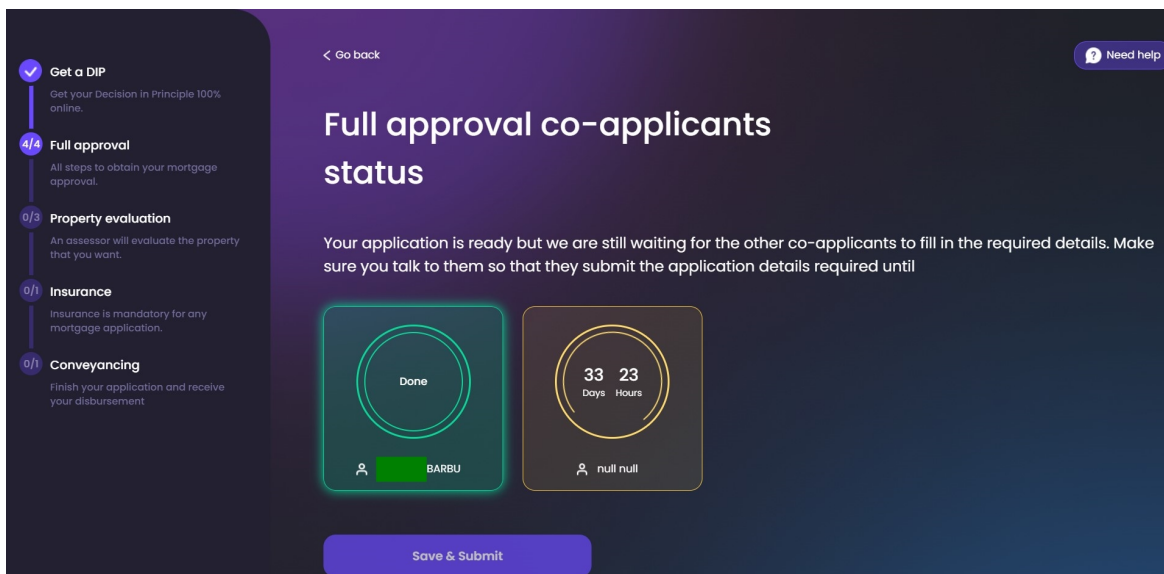
From **My Mortgage Hub**, click **View full Approval Status** to display the status page of your mortgage request.

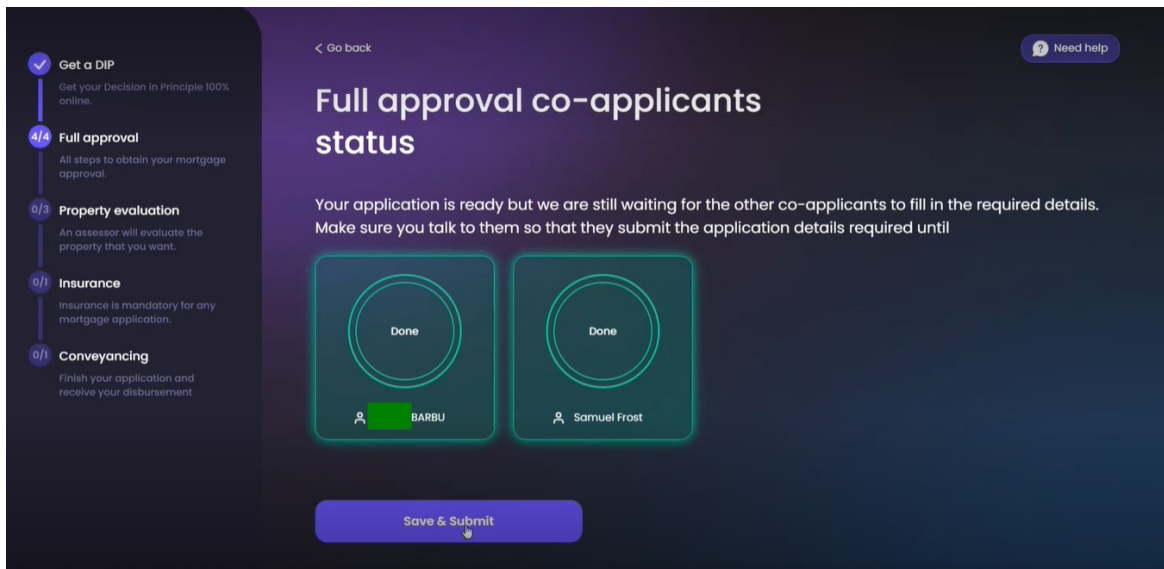


Click **Back to My Mortgage Hub** to return to the previous step.

Full Approval Co-Applicant Status

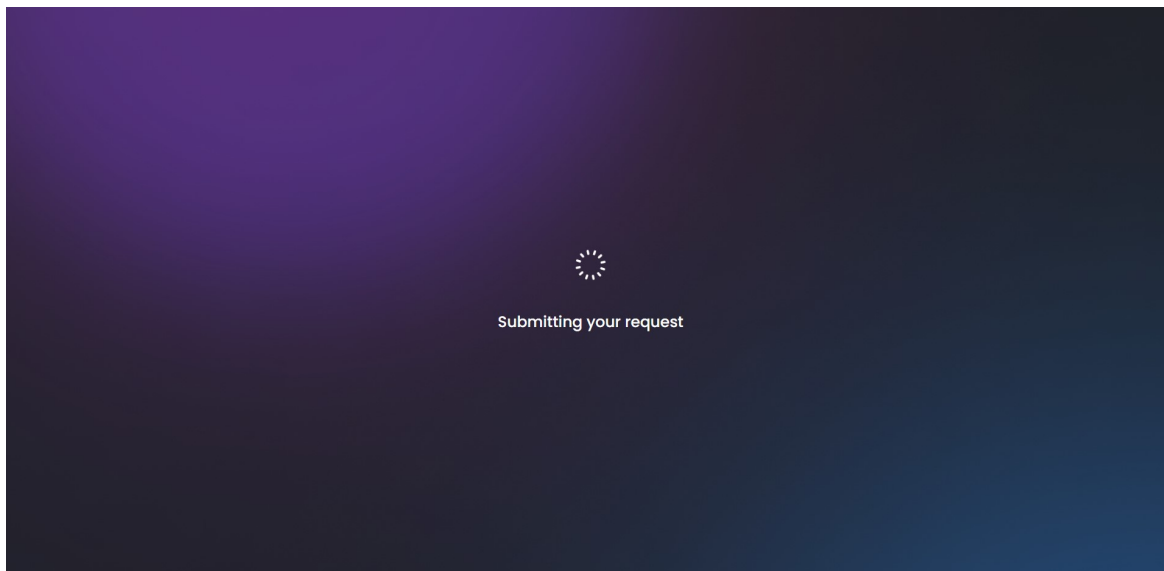
If the application has a co-applicant as well, this page is displayed to inform the main applicant the status of the other applicant. The yellow color represents the fact that the co-applicant did not finish the progress. Once the circle becomes green, you can continue the flow. Otherwise, you must wait for them to complete their journey.





Once the co-applicant finished adding their ID card and selfie, proof of address, income, and expenditure, you can click **Save & Submit**.

Submitting Your Request

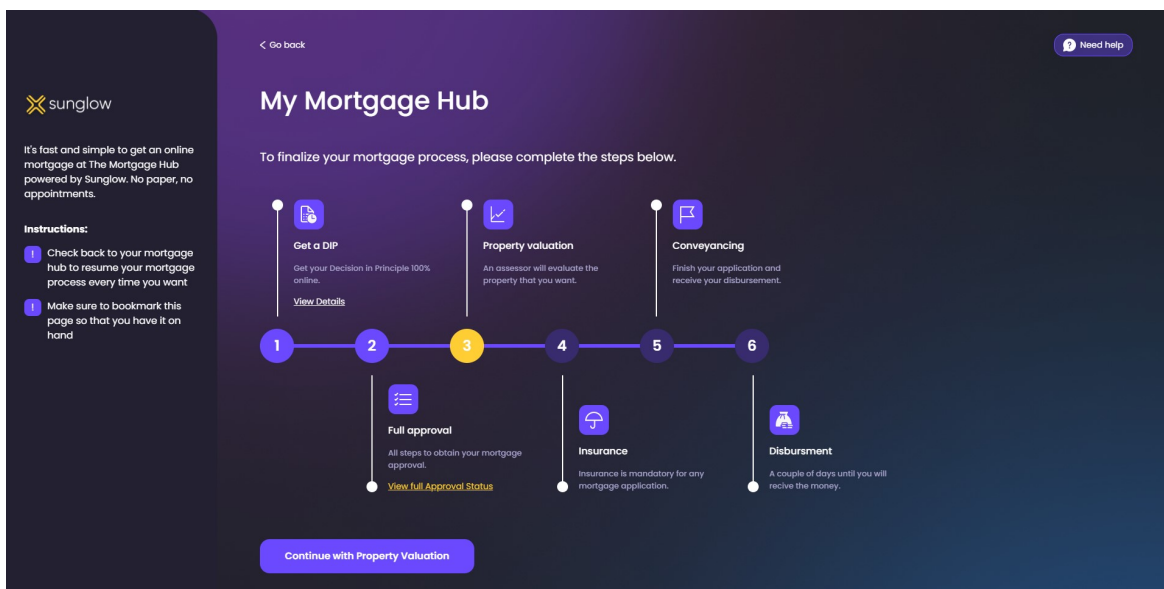


A loading page is displayed while the system runs the "Loan Underwriting" on [page 217](#) steps.

Formal Approval Passed

If the approval and the automatic loan underwriting are passed, you return to the "[My Mortgage Hub](#)" on page 69.

Once the manual underwriting process is passed, where the bank employee approves your mortgage request in the back-office dashboard, you can access the property details page by clicking **Continue with Property Valuation** on the page **My Mortgage Hub**.



More Documents Needed

The bank employee can ask you to upload more documents to fully evaluate your mortgage request. they can add the names of the documents or add questions to which you must answer. An email is sent to you with the requirement to upload more documents or complete some information.

This page displays the name(s) of the document(s) needed. To add a document, click **Upload**. If the file was uploaded successfully, a green checkmark is displayed. Once inserted into the system, you can delete the wrong file that was uploaded. If the bank needs you to answer questions, this page displays the question and the textbox where to write your answer.

NOTE

In the form driven flow "FTOS_BNKAP_UploadMortgageDocs" on page 134 > step UploadMortgageDocs > After Events, the scripts "FTOS_BNKAP_GetApplicantSelectedDocuments" on page 193 and "FTOS_BNKAP_LoadUWQuestions" on page 194 and "FTOS_BNKAP_SaveUWQuestion" on page 196 are called.

When you are done, click **Continue**. You cannot proceed without the documents/answers to questions filled in.

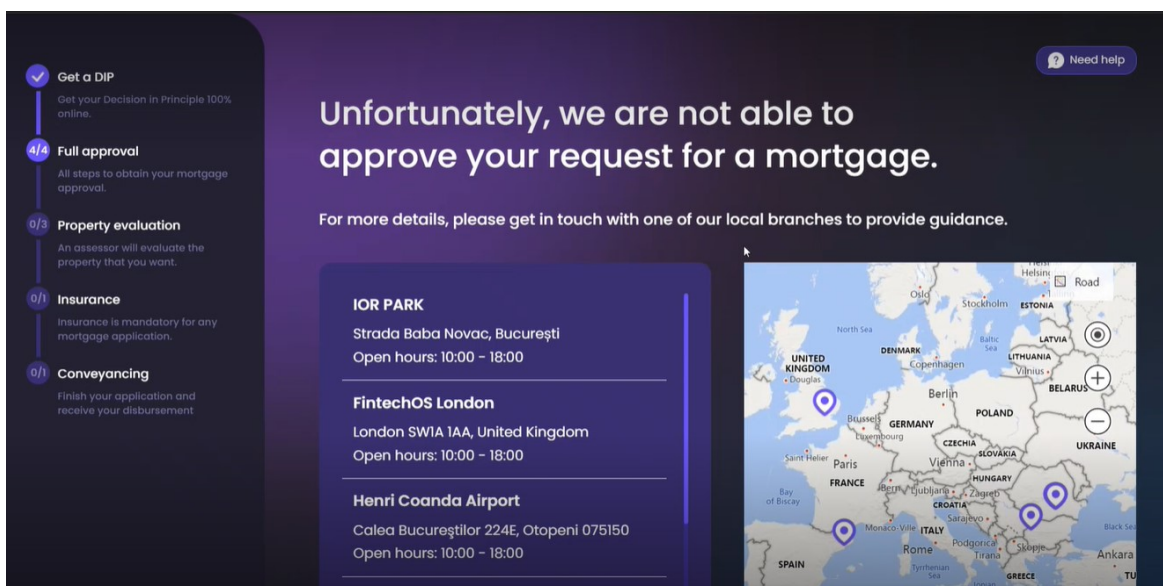
NOTE

In the form driven flow "FTOS_BNKAP_UploadMortgageDocs" on page 134 > step UploadMortgageDocs > After Section Save, the scripts "FTOS_BARET_ChangeApplicationStatusMortgage" on page 181 and "FTOS_BARET_NotifyMortgageUW" on page 187 are called.

The back-office employee receives an email with the application ID to review the documents/answers.

Rejection

The page **Unfortunately, we are not able to approve your request for a mortgage** is displayed to those applicants that do not qualify for the mortgage. The page displays a list of branches the bank has if you wish to contact the bank. There is a map incorporated with pins. Click on a pin and the address of the bank branch is highlighted.

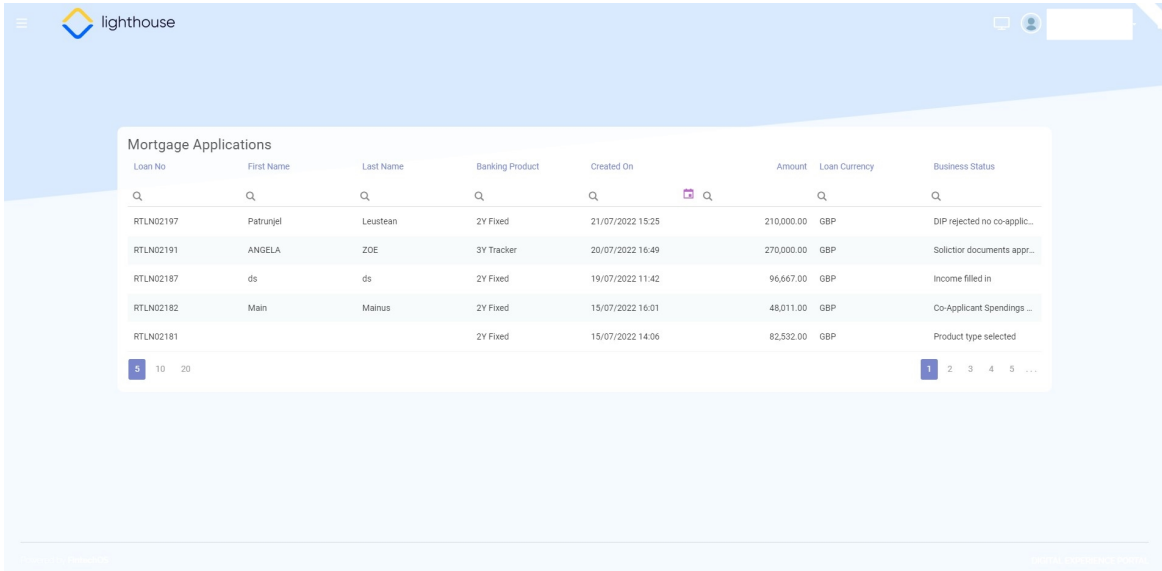


You can scroll the list with the branches and click **Show all locations** to view the entire list. The list shows the name of the branch, the address, and the office hours.

Click **Go Home** to access the "[Welcome](#)" on page 19 page.

Back-Office Dashboard

This dashboard is the central location where a back-office employee can view all the mortgage requests from potential customers. Here, they can view the applicant data, the product selected, the co-applicant data, the property details and the underwriting documents, and questions.



Loan No	First Name	Last Name	Banking Product	Created On	Amount	Loan Currency	Business Status
RTLNO2197	Patrunjel	Leustean	2Y Fixed	21/07/2022 15:25	210,000.00	GBP	DIP rejected no co-applic...
RTLNO2191	ANGELA	ZOE	3Y Tracker	20/07/2022 16:49	270,000.00	GBP	Solicitor documents appr...
RTLNO2187	ds	ds	2Y Fixed	19/07/2022 11:42	96,667.00	GBP	Income filled in
RTLNO2182	Main	Mainus	2Y Fixed	15/07/2022 16:01	48,011.00	GBP	Co-Applicant Spendings ...
RTLNO2181			2Y Fixed	15/07/2022 14:06	82,532.00	GBP	Product type selected

To access the dashboard, a user must have the proper security role attached and follow these steps:

1. Access the corresponding portal profile.
2. Log in by inserting the username and password. The homepage is displayed with the **Mortgage Applications** grid.
3. From the grid, select the customer you wish to review by double-clicking on their name.
4. The following section tabs are displayed: **Overview**, **Applicant Data**, **Co-Applicants**, **Risk Log**, **Property Details**, **Underwriting**.

Overview

This section tab contains the information about the loan requested. The fields are read-only. There are displayed to inform you about the mortgage chosen by the customer. After these fields, there is the grid with the pricing fees, i.e., the commissions for the mortgage.

Fields	Description
Banking Product	The name of the product selected.
Available Amount	The amount the customer has available.
Financed Amount	The loan amount.
Financed Currency	The currency of the loan.
Down Payment	The value of the sum the customer has to pay at the outset.
Down Payment Percent	The percentage of the down payment is out of the value of the property.
Interest Type	The type of interest.
Interest Rate	The value of the interest.
Effective Interest Rate	The real value of the interest.
Total Payable Amount	The value of the whole mortgage: the principle plus the interest.
Installment	The value of the monthly installment.
Period	The length of the mortgage.
Schedule Payment Type	The type of schedule for the payment.

Applicant Data

This section tab holds the data collected from the ID card/passport/driver's license. The fields are read-only. There are displayed to inform you about the identity of the customer. There are also displayed the ID card photo and the selfie.

DIGITAL MORTGAGES SELF-SERVICE APPLICATION USER GUIDE

PERSONAL INFORMATION

First Name	ANGELA
Last Name	ZOE
PIN	2100804439758
Date Of Birth	04/08/2010
Nationality	British
Citizenship	Romana
Place Of Birth	Sec. 2 (Mun. Bucuresti)
Id Card Series	PT542324
Id Card Number	
Id Issue Date	10/01/2015
Id Expiration Date	04/08/2025
Id Issue Institution	S.P.C.E.R. Sector 4
Id Card Type	ID Card

Document

Selfie

Field	Description
First Name	The first name of the customer.
Last Name	The surname of the costumer.
PIN	The Personal Identification Number of the customer.
Date Of Birth	The date of birth of the customer.
Nationality	The nationality of the customer.
Citizenship	The citizenship of the customer.
Place Of Birth	The place of birth of the customer.
Id Card Series	The ID card series of the customer.
Id Card Number	The card number of the customer.
Id Issue Date	The issue date of the ID card.
Id Expiration Date	The expiration date of the ID card.
Id Issue Institution	The institution's name that issued the ID card.
Id Card Type	The type of document.

Following the ID card data, there are the grids with data:

- **Address information:** displays all the addresses that the customer has declared in the past 5 years. They are displayed in the order based on the moving-in dates. Click one of the addresses to open the **Edit Retail Applicant Address** page. It contains the editable fields:

Field	Description
Property Type	The type of home.
cityName	The name of the city.
CountryName	The country of residence.
Street Name	The name of the street.
Apartment Number	The number of the apartment. This is applicable to flats.
Postal Code	The postal code of the address.
Move In Date	The date they moved into this address.
Move Out Date	The date they moved out of this address.

- Proof of address
- Contact information: Mobile Phone and Email
- Eligibility questions: Employer, Job, Current Working Experience Months, Current Working Experience Years
- Financial Data: Net Income, Open Banking Income, Persons In Care, Marital status, Total Debt, Essential Expenditure, Total Other Loans Monthly Payments, Total Credit Cards Limits
- Incomes:

Click one entry to open the **Edit Retail Income Data** page with the editable fields:

Field	Description
Income source	The stage from where the income is taken: from DIP declared/Open banking/Manual doc upload.

Field	Description
Income Category	The type of income declared.
Employer Name	The name of the employer.
Is Main Employer	If this field is checked, then this employer is the main one.
Before / After Taxes	The type of income declared: before or after tax.
Income Amount	The value of the income.
Currency	The currency of the income.
Adjusted Income Amount	The value of the monthly net income. <div> <p>NOTE</p> <p>This value is determined using the script "FTOS_BNKAP_CalcAdjustedIncome" on page 191.</p> </div>

- Expenses

To view the details of one record, select it from the grid to open the **Edit Retail Loans Data** page:

Field	Description
Expense source	This is the stage where the expenses were collected: DIP declared/Open Banking/Manual Doc Upload/BC interrogation.

Field	Description
Expense type	The type of expense declared: credit card/loan/mortgage/overdraft/credit or store card/council tax/ground rent/service charge/dependants.
Monthly Payment	The value of the expense on a monthly basis.
Currency	The currency of the expense.
Start Date	The start date of the expense.
End Date	The end date of the expense.
Overdue	If this field is checked, the expense is behind schedule.

- Proof of income

To view an income record, select one to open the **Edit Retail Applicant Document** page with the following editable fields:

Field	Description
Category	The category of document: address/ income /expense/requested.
Type	The type of document: Current account statement/Pay Slip/Salary cert/Statement of earnings/Household utility bill/Any bank correspondence quoting an account number/Any revenue correspondence/Social welfare document quoting the policy number/Littlewood's correspondence quoting an account number/Ongoing loan documents/Other recurring expenditures.
File	The file uploaded by the customer.

- Proof of expenses

To view an income record, select one to open the **Edit Retail Applicant Document** page with the following editable fields:

Field	Description
Category	The category of document: address/income/ expense /requested.
Type	The type of document: Current account statement/Pay Slip/Salary cert/Statement of earnings/Household utility bill/Any bank correspondence quoting an account number/Any revenue correspondence/Social welfare document quoting the policy number/Littlewood's correspondence quoting an account number/Ongoing loan documents/Other recurring expenditures.
File	The file uploaded by the customer.

Each of these sections holds the documents uploaded and the information declared by the customer.

Co-Applicants

This section tab displays the grid with the data regarding the co-applicants. Click the name of one to open the **Applicant** page:

- Personal Information: First Name, Last Name, PIN, Date Of Birth, Nationality, Citizenship, Place Of Birth, Id Card Series, Id Card Number, Id Issue Date, Id Expiration Date, Id Issue Institution, Id Card Type
- Address information
- Proof of address
- Contact information: Mobile Phone and Email

- Eligibility questions: Employer, Job, Current Working Experience Months, Current Working Experience Years
- Financial Data: Net Income, Open Banking Income, Persons In Care, Marital status, Total Debt, Essential Expenditure, Total Other Loans Monthly Payments, Total Credit Cards Limits
- Incomes
- Expenses
- Proof of income
- Proof of expenses.

Each of these sections holds the documents uploaded and the information declared by the co-applicant for you to review.

Risk Log

This section tab holds the eligibility and scoring results. In the **Eligibility** grid, the result of the DIP is displayed for different formulas:

1 Overview	2 Applicant Data	3 Co-Applicants	4 Risk Log	5 Property Details	6 Underwriting
------------	------------------	-----------------	------------	--------------------	----------------

ELIGIBILITY			
Export Refresh			
Created On	Criteria	Result	Applicant
20/07/2022 16:56	KO_Final	False	Andsdflg sdf
20/07/2022 16:56	MORTGAGE_KO_DIP_Citizenship	False	Andsdflg sdf
20/07/2022 16:56	MORTGAGE_KO_DIP_Employment	False	Andsdflg sdf

SCORING			
Export Refresh			
Created On	Criteria	Result	Applicant
		No data	

- KO_Final
- MORTGAGE_KO_DIP_Citizenship
- MORTGAGE_KO_DIP_Employment.

Property Details

This section tab holds the data inserted by the customer in the "Property Details" on page 113 step:

1 Overview	2 Applicant Data	3 Co-Applicants	4 Risk Log	5 Property Details	6 Underwriting
PROPERTY DETAILS					
Property Type	Flat				
Property Value	£ 300,000				
Country	United Kingdom				
District					
City	23456				
Street	234567				
Street Number					
ZIP Code	2345				
Building Number					
Floor Number	3456				
Apartment Number	23				
Assessor	Adi Ronen				
Available for evaluation starting from	22/07/2022				

- Property Type
- Property Value
- Country
- District
- City
- Street
- Street Number
- ZIP Code

- Building Number
- Floor Number
- Apartment Number
- Assessor
- Available for evaluation starting from
- Preferred Contact Interval
- Documents
- File
- Resistance Structure
- Building Type
- Construction Year
- Area
- Rooms Number
- Usage Type
- Building Sum Insured.

You can edit the fields if you need to.

Underwriting

This section tab holds two grids: **Requested Documents** and **Underwriting Questions**, and two buttons: **Run financial calculations** and **Request documents**.

1 Overview2 Applicant Data3 Co-Applicants4 Risk Log5 Property Details6 Underwriting

Run financial calculations

REQUESTED DOCUMENTS

+ InsertX DeleteExportRefresh

<input type="checkbox"/>	Document	Details	Applicant First Name	Applicant Last Name
	Household utility bill	Document Missing	ANGELA	ZOE

UNDERWRITING QUESTIONS

+ InsertX DeleteExportRefresh

Question	First Name	Last Name
No data		

Request documents

Requested Documents

This grid holds the documents you want the customer to attach to their application in the step "More Documents Needed" on page 97. To request a document:

- 1. Click the **Insert** button. The **Request Document** page is displayed.
- 2. Fill in the following fields:

Requested Document

DocumentHousehold utility billDetailsDocument Missing

ApplicantAndsdg sdfFileProof.docxAdd fileor Drop file here

Field	Data type	Description
Document	Option set	<p>Select from the list:</p> <ul style="list-style-type: none"> • Household utility bill • Any bank correspondence quoting an account number • Any revenue correspondence • Social welfare document quoting the policy number • Littlewood's correspondence quoting an account number • Current account statement • Pay Slip • Salary cert • Statement of earnings • Ongoing loan documents • Other recurring expenditures • Property deeds • Property title • Insurance Policy.
Details	Text	Insert additional information.
Applicant	Lookup	Select the customer for whom the document is needed. By default you can only select the current customer.

Field	Data type	Description
File	File	Leave empty. This is where the document is going to appear after the customer has uploaded it.

3. Click **Save and Close**. Repeat as many times you need.

4. Click **Request Documents**.

From here, the customer must upload the document(s) and you can check them.

Changing the Business Status of a Customer

For the customer to be able to progress with their application in the steps:

- ["Formal Approval" on page 78](#): after the customer finished adding all the documents, you must access the dashboard, select the customer, check the data, and change the status from LOAN APPLICATION SUBMITTED FOR UW to:

Status	Step
UW approved	"Formal Approval Passed" on page 97
UW approved lower offer	"Formal Approval" on page 78
UW hard no	"Rejection" on page 99

- ["Property Details" on the next page](#): after the customer added the property details and set up the apportionment with the assessor, you can change the status from Valuation Pending to Valuation Submitted. From Valuation Submitted, you can choose :

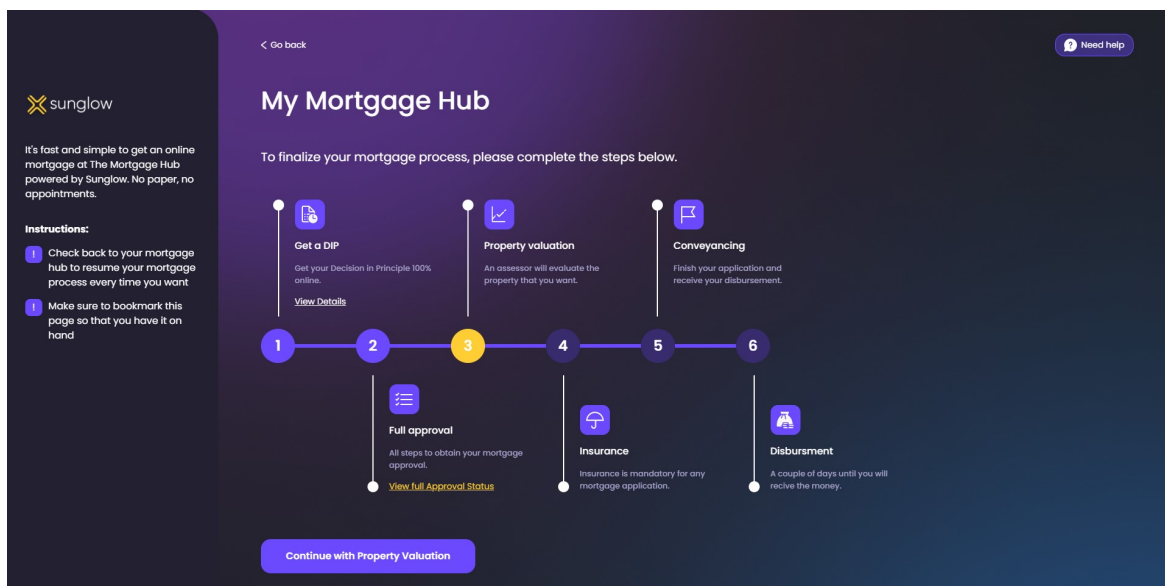
Status	Step
Valuation Passed	"Valuation Passed" on page 118

Status	Step
Valuation Failed	"Valuation Failed" on page 118

- ["Insurance" on page 121](#): after the customer added the insurance document, you can change the status from INSURANCE UPLOADED BY USER to DOCUMENTS SENT TO ALL PARTIES
- ["Conveyancing" on page 123](#): after the solicitor provided the documents, you must change the status from DOCUMENTS PROVIDED BY SOLICITOR to SOLICITOR DOCUMENTS REJECTED or SOLICITOR DOCUMENTS APPROVED.

Property Details

Once the manual underwriting process is passed, where the bank employee approves your mortgage request in the back-office dashboard, you can access the property details page by clicking **Continue with Property Valuation** on the page **My Mortgage Hub**.



The page **Property Details** is displayed. You must insert all the details regarding the estate you wish to purchase.

NOTE

Depending on the amount of the loan, the picture of the house changes. For details, see ["House Animation" on page 229](#).

Fields	Description
Property type	<p>Click the drop-down, to select one option:</p> <ul style="list-style-type: none"> • flat • house. <p>Depending on what is chosen here, the page displays dynamically additional fields for the type flat.</p>
Property value	The value is taken already from the application. You cannot edit it.
Deposit	The value is taken already from the application. You cannot edit it.
Postcode	Insert the postal code of the address.
Country	Insert the name of the country where it is located.
City	Insert the name of the city where it is located.
Street name	Insert the name of the street where it is located.
For Property type flat	
Floor number	Insert the number of the floor where the flat is located.
Apartment number	Insert the number of the apartment where the flat is located.

NOTE

If a field is left empty, a toast message is displayed when trying to continue with the process.

If the property for which the mortgage is intended is a property selected from Zoopla in the **"Time to Shop Around"** on page 29 step, then the propriety listing is displayed.

NOTE

In the form driven flow **"FTOS_BNKAP_Mortgage_PropertyDetails"** on page 134 > step Property details > Before Section Save, the script **"FTOS_BARET_ChangeApplicationStatusMortgage"** on page 181 is called.

Click **Continue** to proceed.

Property Valuation

The mortgage requires a property valuation done by an official assessor to review the property. To do so, a meeting must be established. The system asks you to select a date and an hour when you can meet the assessor.

The screenshot shows a web application interface for the 'Property valuation' step. On the left is a vertical progress bar with five steps: 'Get a DIP' (checked), 'Full approval' (checked), 'Property evaluation' (active), 'Insurance' (not started), and 'Conveyancing' (not started). The main content area has a dark purple header with a 'Go back' link and a 'Need help' button. Below the header, the title 'Property valuation' is followed by a message: 'Great! Now it's time to assign an assessor and begin the valuation process. We can provide an assessor for the evaluation or you can choose to pick one for yourself.' The next section is 'Choose preferred date for evaluation', which features a calendar for July 2022. The calendar shows dates from 1 to 31, with the 5th, 6th, and 7th highlighted in blue. Below the calendar, there is a section for 'Available slots' with a dropdown menu showing '02:00 PM' and a green checkmark. At the bottom of the main content area is a large blue button labeled 'Get an assessor'.

NOTE

In the form driven flow "[FTOS_BARET_AssessorAllocation](#)" on page 134 > step SelectInterval > After Events, the script "[FTOS_BARET_GetAssessorsBookings](#)" on page 182 is called. In Before Section Save, the script "[FTOS_BARET_ChangeApplicationStatusMortgage](#)" on page 181 is called.

Choose one of the three days available from the calendar and click the drop-down list to select an hour interval from the **Available slots**.

Assessor Assigned

The page refreshes with the assigned person to assess your estate with their name and photograph.

The screenshot shows a web application interface for 'Property valuation'. On the left is a vertical progress bar with five steps: 'Get a DIP' (checked), 'Full approval' (checked), 'Property evaluation' (active), 'Insurance', and 'Conveyancing'. The main content area has a header 'Property valuation' and a sub-header 'Assessor assigned!'. Below this is a card for 'Yosef Dekel' with ID 'GB 9854 QWE' and a profile picture. Underneath is the question 'Who will be there?' with three radio button options: 'Me', 'Seller', and 'Broker'. At the bottom is a blue button labeled 'Confirm appointment'. A 'Need help?' link is in the top right corner.

NOTE

In the form driven flow "[FTOS_BARET_AssessorAllocation](#)" on page 134 > step AssessorAssigned > After Events > the scripts "[FTOS_BARET_ChangeApplicationStatusMortgage](#)" on page 181 and "[FTOS_BARET_AllocateAssessor](#)" on page 181 are called.

ou who is going to be present at the property for the assessment. There are three options from which to choose:

- **Me**
- **Seller**

By selecting this option a new field is displayed asking you to fill in the phone number of the seller.

- **Broker**

By selecting this option a new field is displayed asking you to fill in the phone number of the broker.

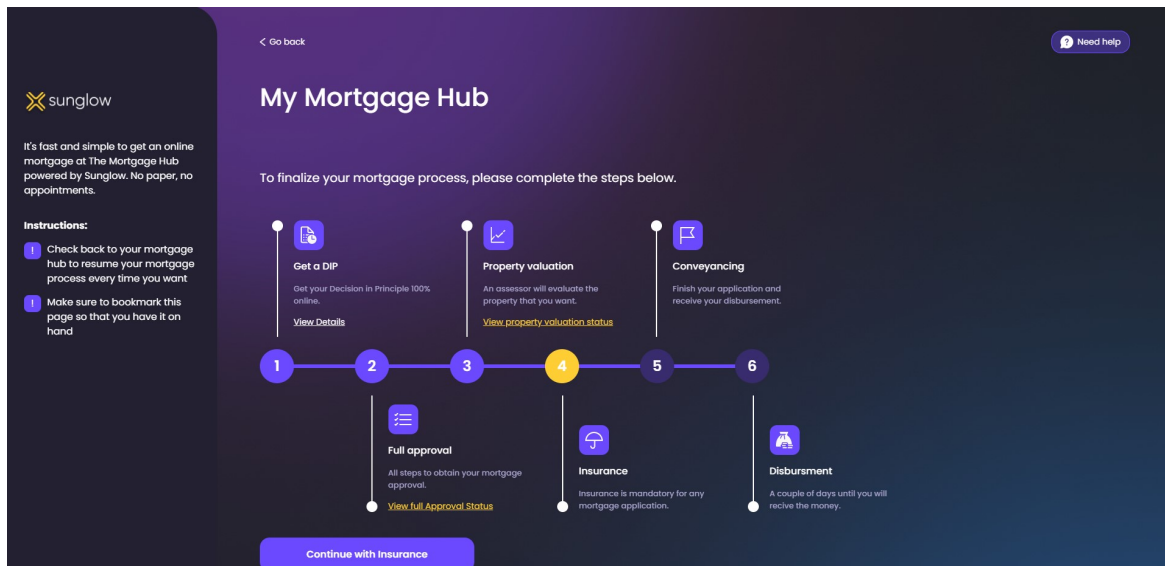
Click **Confirm appointment** to set the date up. The page refreshes with the contact details of the assessor: the email address and mobile phone number, and the details of the appointment.

NOTE

In the form driven flow "[FTOS_BARET_AssessorAllocation](#)" on page 134 > step AppointmentConfirmed > After Section Save> the script "[FTOS_BARET_NotifyMortgageAssessor](#)" on page 186 is called.

The screenshot shows the 'Property valuation' screen. On the left, a vertical progress bar indicates the current step is 'Property evaluation'. The main content area has a title 'Property valuation' and a subtitle 'Appointment confirmed!'. Below this, it states: 'Yosef Dekel will perform the assessment on the property on 5 July, 02:00 PM. After the valuation is done, Yosef Dekel will submit the report in the next 24 hours.' There are two input fields: 'Yosef Dekel's email address' with the value 'yosef.dekel@assessors.com' and 'Yosef Dekel's mobile phone' with the value '+447400546585'. Both fields have a green checkmark icon to their right. At the bottom center, there is a blue 'Continue' button. In the top right corner, there is a 'Need help' link.

Click **Continue** to proceed to **My Mortgage Hub**. There you are able to track the property valuation status by clicking **View property valuation status**.

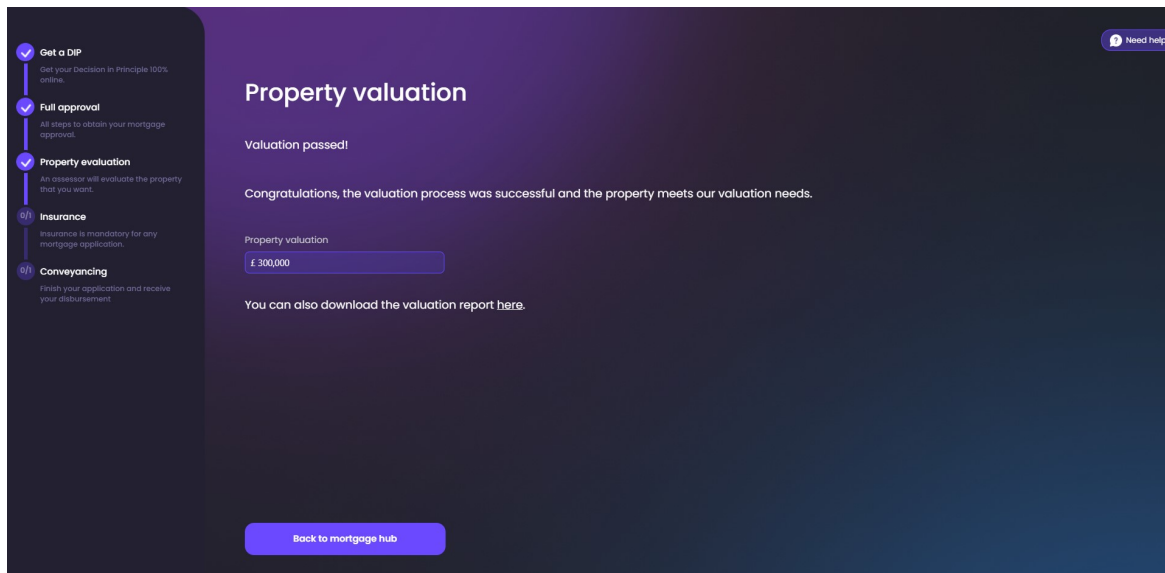


Valuation Failed

If the underwriter decides the valuation is not enough, they reject the application (for details, see "[Changing the Business Status of a Customer](#)" on page 112). You should re-initiate the process.

Valuation Passed

If the back-office underwriter changes the business status to passed (for details, see "[Changing the Business Status of a Customer](#)" on page 112), the following screen is displayed. You can access the report on the property by clicking the link provided.



Click **Back to mortgage hub**. From **My Mortgage Hub**, click **Continue with Insurance**.

Assessor's Flow

As an assessor, you must review the property and create a report. Based on the report, the back-office underwriter must evaluate the application. To add the report to the journey, follow these steps:

1. Access the email **Property ready to be assessed** that was sent to you.
2. Click the **Upload valuation report** button.

3. Fill in the fields on the **Evaluation Form** page:

- **Property Type:** Select one of the options: **Agricultural land/Apartment/Block of flats/Commercial property/Hotels/House / villa/Industrial property/Land inside the city/Office/Petrol station/Terrain outside of the city.**
- **Estimated Property Value:** Insert the value of the estate.
- **ZIP Code:** Insert the postal code.
- **Country:** Select the country.
- **City:** Select the city.
- **Street:** Insert the street name.
- **Floor Number:** Insert the floor number.
- **Apartment Number:** Insert the apartment number.
- **Resistance Structure:** Select between: **Concrete/Metal/Masonry/Wood.**
- **Building Type:** Select between: **House/Apartment.**
- **Construction Year:** Insert the year.
- **Area:** Insert the name.

- **Rooms Number:** Select the room's number.
- **Usage Type:** Select between: **Main residence/Vacation/Unoccupied.**

Click the **Add file** button to upload the valuation report. Click **Submit valuation**. A pop-up message is displayed to confirm it was sent to the underwriter.

Insurance

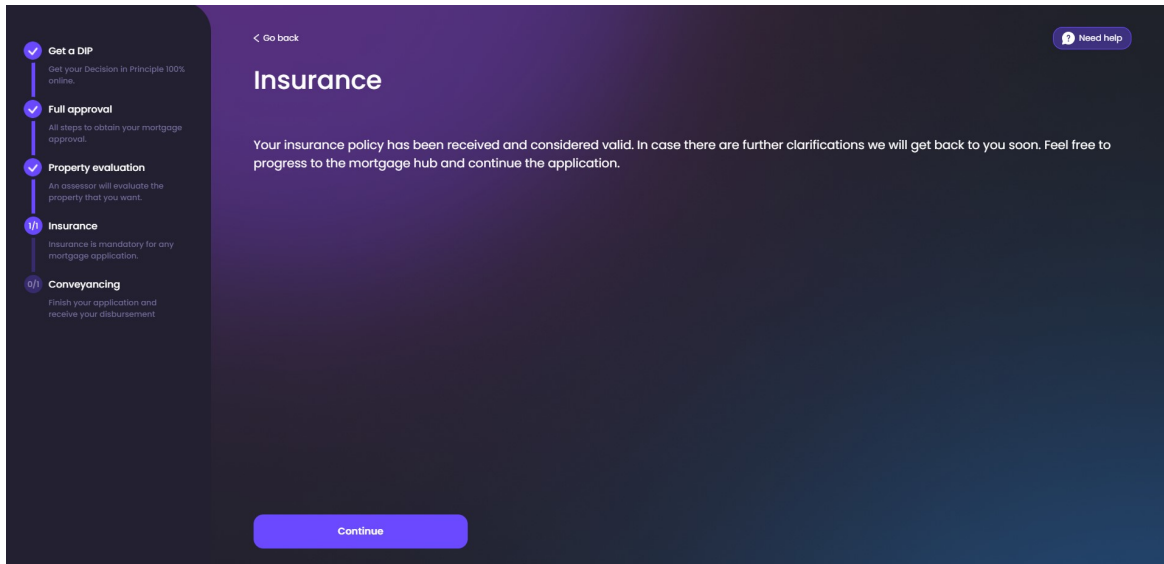
This stage of the application requires you to upload the insurance of the property for the loan to be disbursed. Click **Select** to add a file from your local drive.

The screenshot shows a web application interface for the 'Insurance' step. On the left, a vertical progress bar lists six steps: 'Get a DIP' (checked), 'Full approval' (checked), 'Property evaluation' (checked), 'Insurance' (current step, highlighted with a blue circle), and 'Conveyancing' (not started). The main content area has a dark blue background. At the top left of this area is a '< Go back' link. At the top right is a 'Need help' button with a speech bubble icon. The title 'Insurance' is centered. Below it, the text 'Please upload existing insurance documents:' is displayed. Underneath, there is a section labeled 'Insurance' containing a button with a file icon, the text 'Nu al ales niciun fișier' (No file has been chosen yet), and a 'Select' button. At the bottom center is a large blue 'Continue' button.

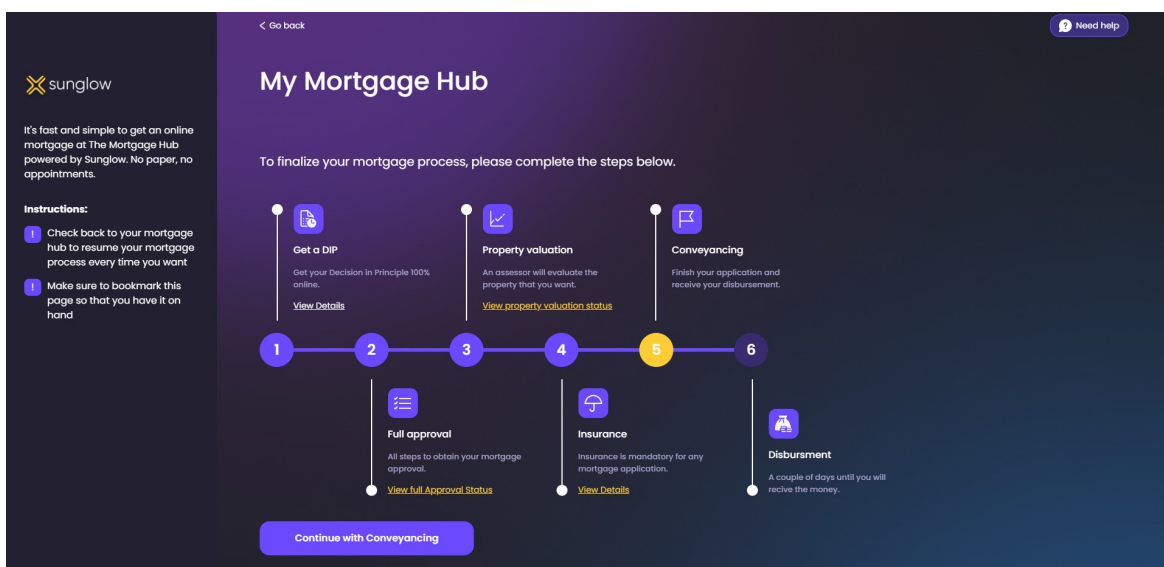
NOTE

In the form driven flow "[FTOS_BARET_ManualUploadInsurance](#)" on page 134 > step InsuraceManualUpload > After Events, the scripts "[FTOS_BNKAP_UploadMortgageApplicationDocuments](#)" on page 197 and "[FTOS_BNKAP_DeleteFileFromApplicationDocument](#)" on page 193 are called. In Before Section Save, the scripts "[FTOS_BNKAP_GetApplicantApplicationDocument](#)" on page 193 and "[FTOS_BARET_ChangeApplicationStatusMortgage](#)" on page 181 are called.

You can delete the file you added manually by clicking the **x** symbol. once the file is successfully added, click **Continue**. The page reloads with a confirmation message that the file was added.



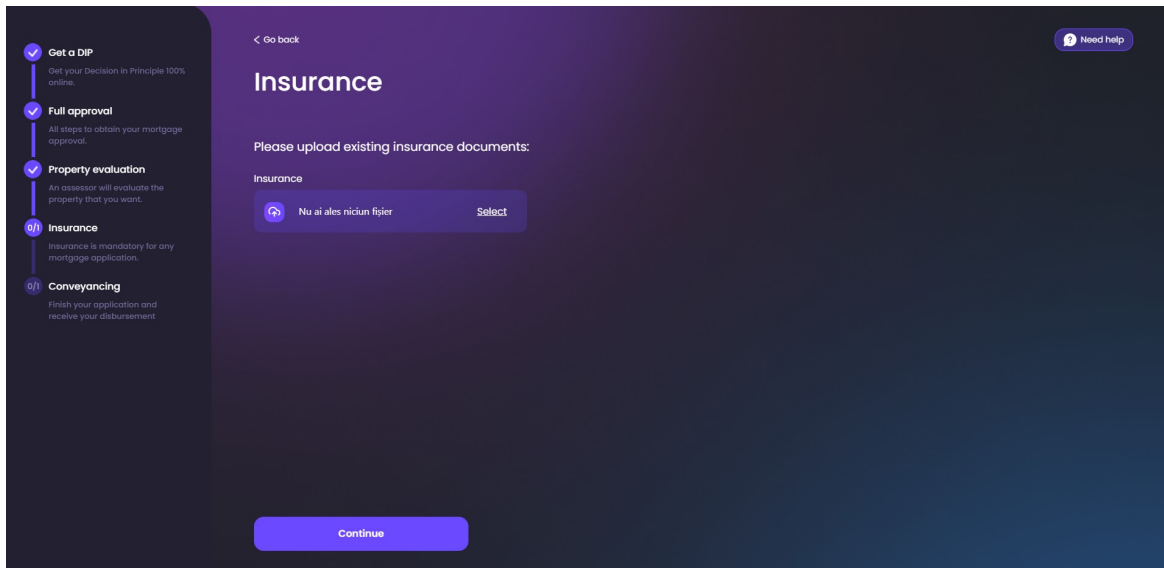
Click **Continue** to access **My Mortgage Hub**.



HINT

The steps with violet purple are the completed steps, the yellow steps are the current steps, the dark purple steps have not yet been accessed. You must complete each step one at a time, before you are able to move to the next step.

From there, click **View details** to view the document added.



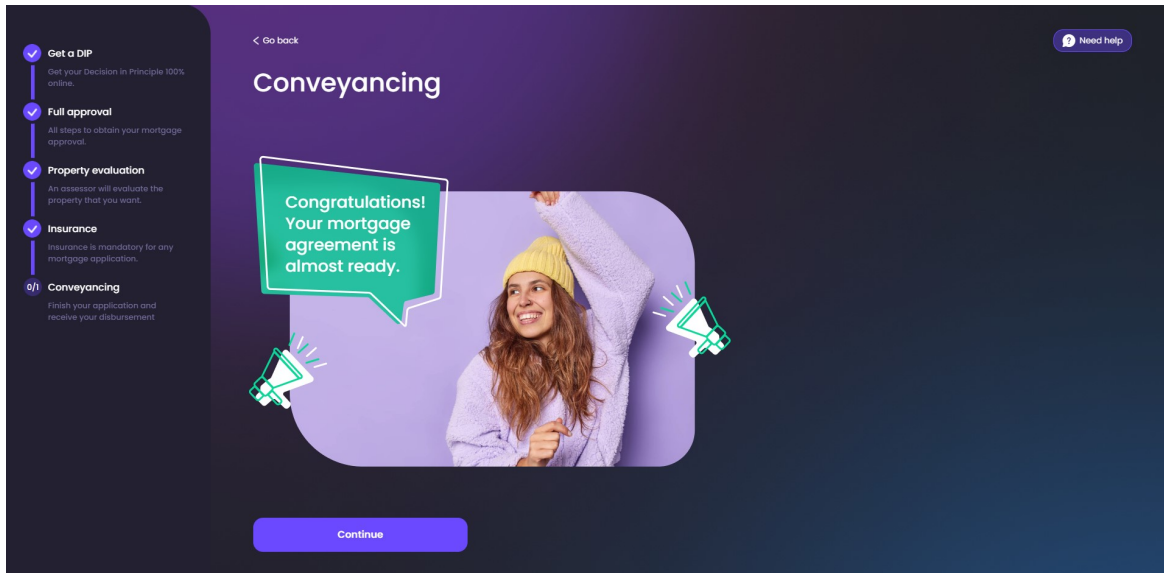
The screenshot shows a web interface for the 'Insurance' step of a mortgage application. On the left, a vertical progress bar lists five steps: 'Get a DIP' (completed), 'Full approval' (completed), 'Property evaluation' (completed), 'Insurance' (current step, marked with a blue circle and 'in progress'), and 'Conveyancing' (marked with a blue circle and 'pending'). The main content area has a dark blue header with a '< Go back' link and a 'Need help' button. Below the header, the title 'Insurance' is displayed. The instruction 'Please upload existing insurance documents:' is followed by a section titled 'Insurance' containing a button with a document icon, the text 'Nu ai ales niciun fișier', and a 'Select' button. At the bottom, a large blue 'Continue' button is visible.

Click **Continue**. From **My Mortgage Hub**, click **Continue to Conveyancing**.

Conveyancing

The bank needs a solicitor to send the conveyancing document, i.e., the transfer of legal title of real property from one person to another to validate the loan. After this step, the signing of the mortgage contract is done.

From **My Mortgage Hub**, click **Continue to Conveyancing**.



A confirmation message is displayed. Click **Continue**. The page reloads asking you to insert the solicitor's contact information. Insert the email address and the phone number of the solicitor that has the property deeds and the property title.

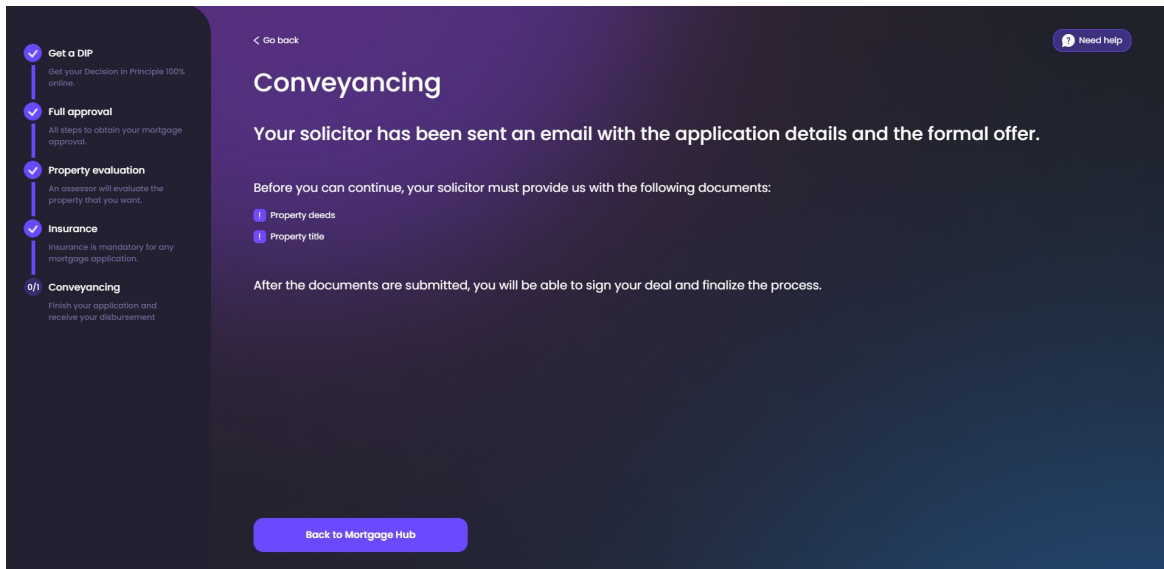
NOTE

In the form driven flow > step SolicitorContactDetails > After Section Save, the scripts "FTOS_BARET_MortgageGenerateContract" on page 186 and "FTOS_BARET_ChangeApplicationStatusMortgage" on page 181 are called.

After inserting those details, click **Continue**. An email is sent to the solicitor's address with a link where to insert the documents.

NOTE

To edit the email template, see "[Email Configurations](#)" on page 227.



Click **Back to Mortgage Hub**.

Solicitor's Flow

As a solicitor, follow these steps:

1. Access your email address.
2. Open the email sent to you.
3. Click **Upload documents**.
4. Fill in the following mandatory fields:

Conveyancing

Please provide your account details and requested documents.

Account holder name

Account number

Sort code

Property deeds
 Nu ai ales năcun fișier

Property title
 Nu ai ales năcun fișier

- **Account holder name:** Insert the account holder name.
 - **Account number:** Insert the account number.
 - **Sort code:** Insert three characters in each box.
 - **Property deeds:** Upload the property deeds file.
 - **Property title:** Upload the property title file.
5. Click **Continue**. An email is sent to the underwriter to be notified that you finished the process.

Conveyancing

Thank you! Your account information and documents have been successfully received.

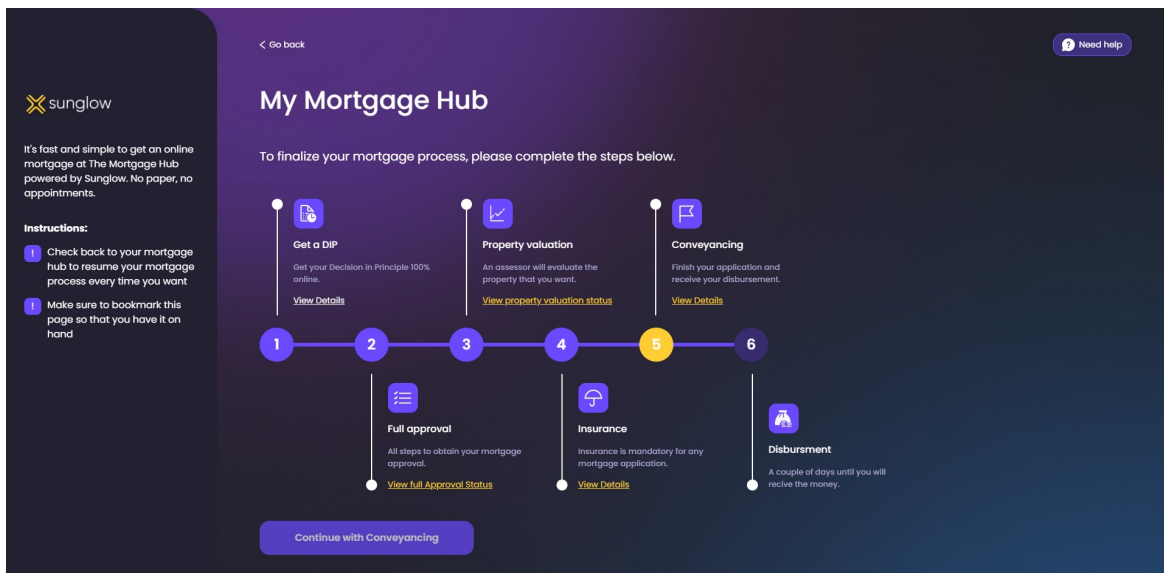
Progress:

- 1. **Get a DIP** - Get your Decision in Principle 100% online.
- 2. **Full approval** - All steps to obtain your mortgage approval.
- 3. **Property evaluation** - An assessor will evaluate the property that you want.
- 4. **Insurance** - Insurance is mandatory for any mortgage application.
- 5. **Conveyancing** - Finish your application and receive your disbursement.

The underwriter must access to the documents submitted by the solicitor and change the business status depending on the result of the assessment. For details, see "[Back-Office Dashboard](#)" on page 99.

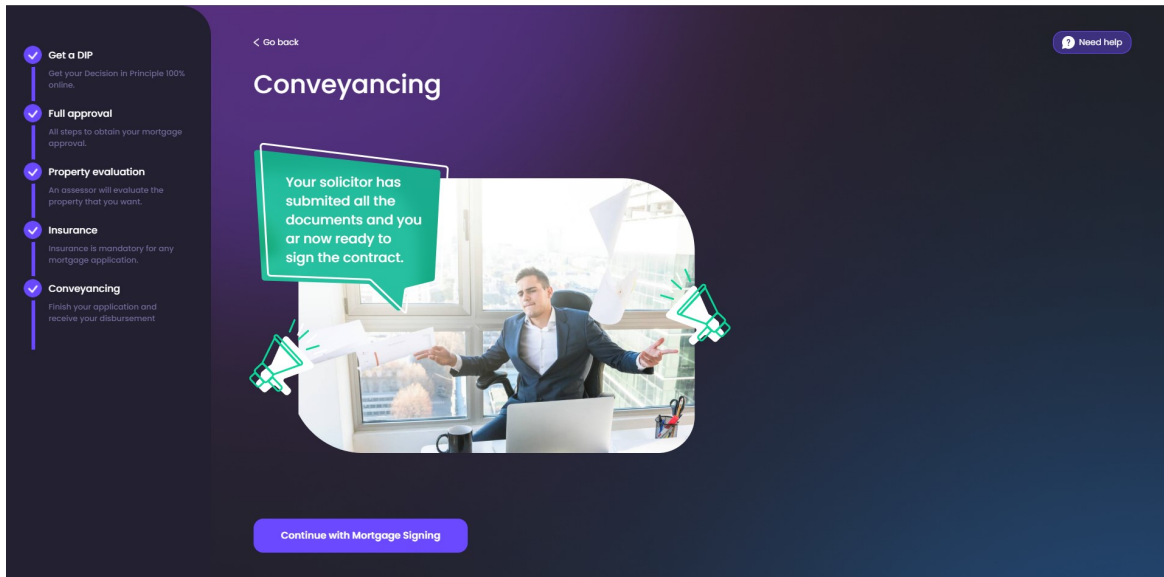
Applicant's Flow

You can view the status of the conveyancing flow by clicking the **View Details** link.



Conveyancing Passed

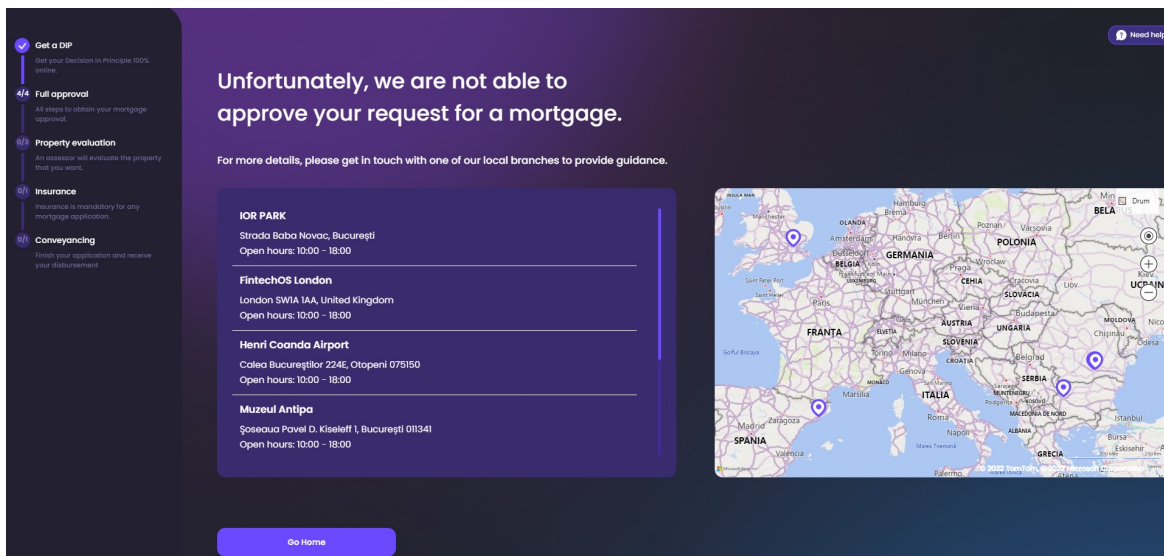
If the solicitor managed to upload the files and the underwriter to approve the documents uploaded (for details, see "[Changing the Business Status of a Customer](#)" on page 112), then this success screen is displayed.



Click **Continue with Mortgage Signing**.

Conveyancing Failed

If the solicitor managed to upload the files and the underwriter to fail the application (for details, see "[Changing the Business Status of a Customer](#)" on page 112), then this reject screen is displayed.



This screen has a list with the available branches where you can go to seek professional help with your mortgage application and the map where they are located. Click **Go Home** to access the "[Welcome](#)" on page 19 page.

Signing The Contract

The final step of the solution is to sign the mortgage contract. This is a mandatory step. A preview of the contract is displayed. You can download, print and read the full contract.

NOTE

For technical details, on how the contract was defined, see "[Retail Mortgage Loan Contract](#)" on page 172.

Mortgage signing

Loan contract preview:

☒ I agree with Namirial terms and conditions

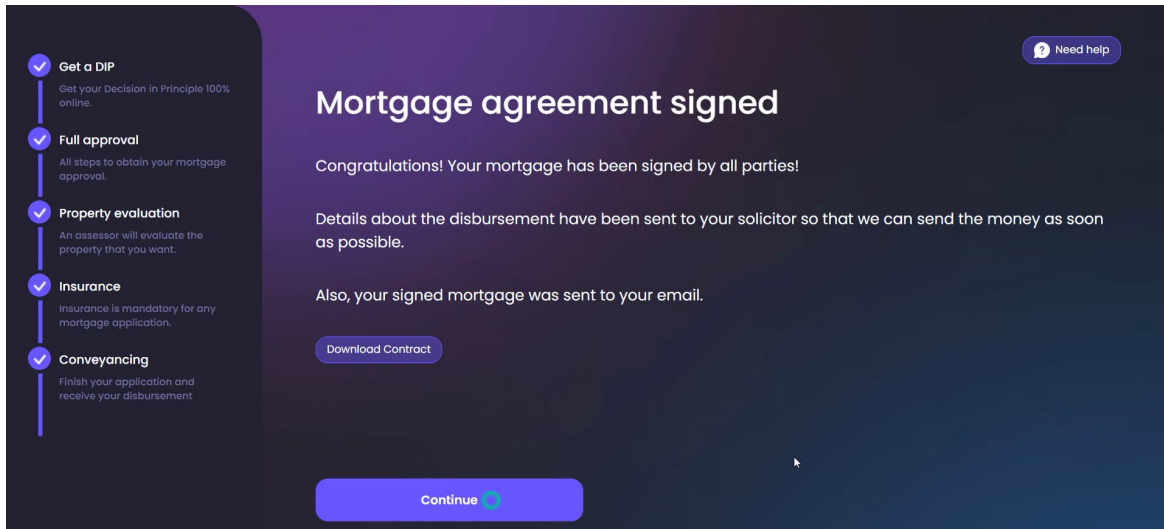
☒ I agree with GDPR consent

Sign Loan Contract

There are two mandatory toggles:

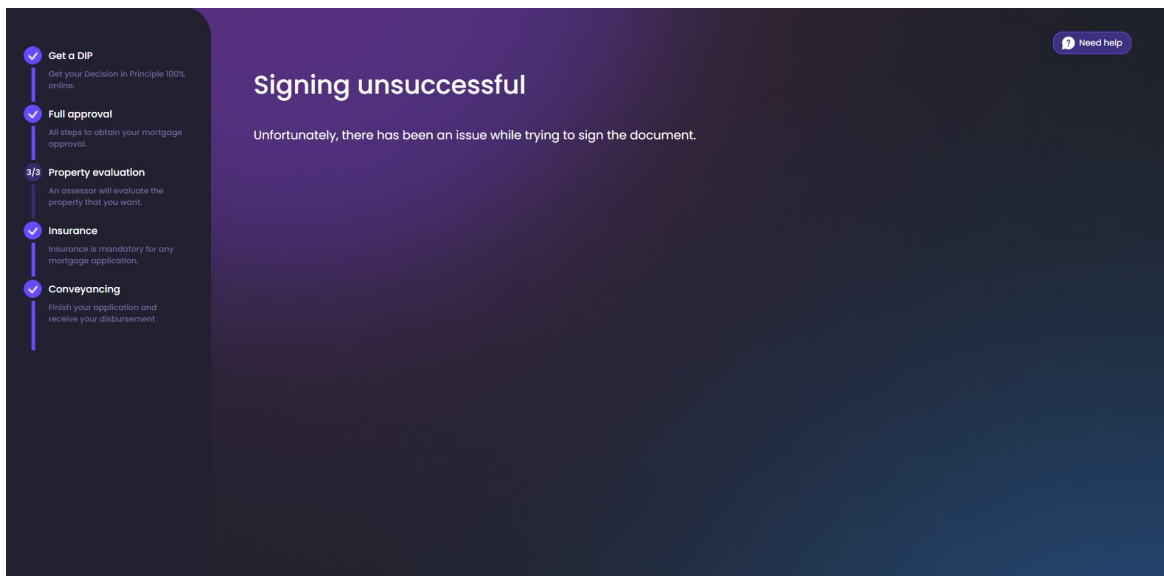
- agreeing with Namirial Terms & Conditions
- agreeing with the GDPR consent.

Click **Sign Loan Contract**. An OTP is sent to your phone number. Insert the four-digit code.



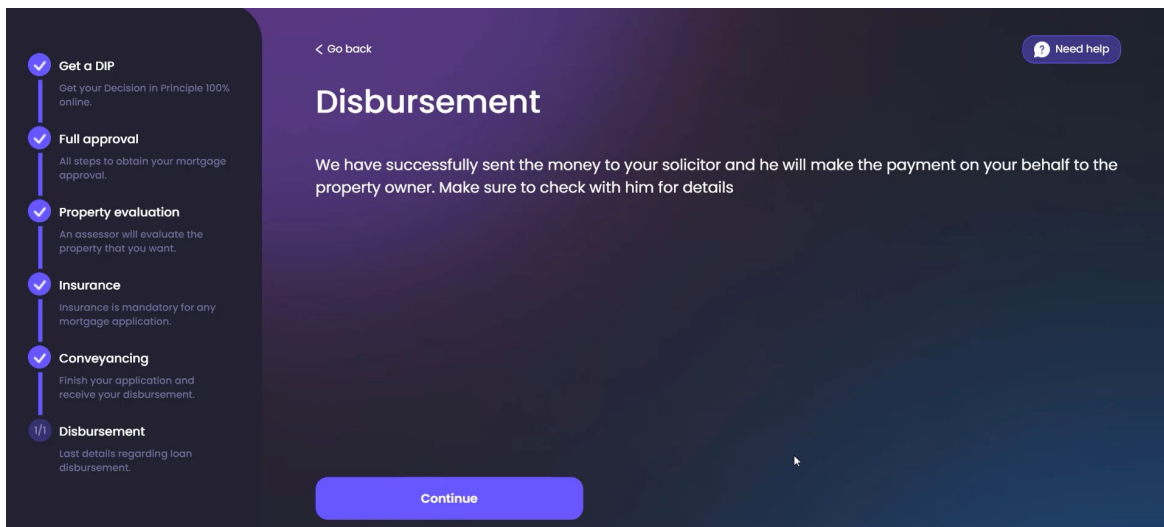
Signature Unsuccessful

If the signature was not collected properly, a failure screen is displayed. You can go back and try again.



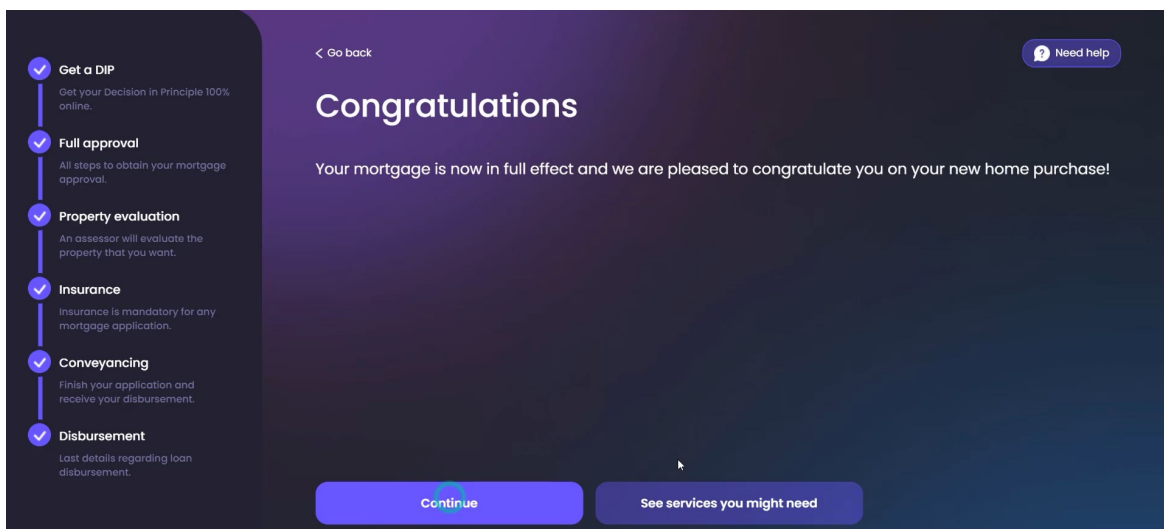
Disbursement

In case the signature is validated, the disbursement takes place. The funds are sent to the solicitor.



Click **Continue**.

Congratulations!



Click **Continue** to access the mortgage hub or click **See services you might need** to open a list of additional products.

Configurations

The following chapter of this guide is meant to explain the automation processors used to build the products, as well as technical details of how automation scripts aid the validation process or the process of comparing, returning and storing data. Automation is a powerful way to make business processes more time-efficient. Automation processors can help achieve exactly that. They can be configured to be consumed by any digital journey using the Innovation Studio.

The Digital Mortgages Self-Service Application digital journey is comprised of several automation processors that ensure a smooth process of applying for a mortgage. Several banking products were configured to offer the customer an actual product. This section of the user guide unveils information about which code snippet was used where, and what it enables in the journey. To create a personalized Digital Mortgages Self-Service Application digital journey to fit your banking requirements and offerings, more automation processors and other features are available in the Innovation Studio to build a customer-centric digital flow.

These are the form driven flows used within this journey **RetailMortgage**:

Flow	Step
FTOS_BARET_ApplicantsDetails	"Address Details" on page 46
FTOS_BARET_BuyingStatus	"Buying Status" on page 23
FTOS_BARET_ConfiguredDIP	"Agreement In Principle" on page 36
FTOS_BARET_EligibilityQuestions	"Let's Get Started with a Decision In Principle" on page 35
FTOS_BARET_FindDreamhouse	"Let's find that dream house!" on page 28
FTOS_BARET_Loan_DIP_Hard_Reject	"Rejection Screens" on page 66
FTOS_BARET_Loan_DIP_Soft_Reject	"Rejection Screens" on page 66
FTOS_BARET_MortgageDIPAnalysis	"Submitting Your Request" on page 65
FTOS_BARET_MortgageDIPApprovedOffer	"Congratulations!" on page 66
FTOS_BARET_MortgageDIPSummary	"You're almost finished - just check your details" on page 60
FTOS_BARET_ProductSelection	"First Time Buyer" on page 38
FTOS_BARET_SelectMortgageCategory	"Let's Choose the Right Mortgage for You" on page 20
FTOS_BARET_WelcomeScreen	"Welcome" on page 19
FTOS_BARET_ZooplaFinding	"Time to Shop Around" on page 29

Flow	Step
FTOS_BNKAP_MortgageAddressDetails	"Address Details" on page 46
FTOS_BNKAP_MortgageContactInfo	"Contact Details" on page 62
FTOS_BNKAP_MortgagePersonalDetails	"Applicants' Details" on page 44
FTOS_BNKAP_MortgageRetailIncomeDetails	"Income Details" on page 48
FTOS_BNKAP_MortgageSpendingDetails	"Your Spendings" on page 51
FTOS_BNKAP_Mortgage_CoApplicantStatus	"Full Approval Co-Applicant Status" on page 95
FTOS_BNKAP_Mortgage_FullApproval	"Formal Approval" on page 78
FTOS_BNKAP_MortgageScanOCR	"Scanning an Identity Document" on page 80
FTOS_BNKAP_MortgageSelfie	"Take a Selfie" on page 84
FTOS_BNKAP_ProofOfAddress	"Proof of Address" on page 86
FTOS_BNKAP_ProofOfExpenditures	"Proof of Expenditures" on page 92
FTOS_BNKAP_ProofOfIncome	"Proof of Income" on page 88
FTOS_BARET_MortgageHub	"My Mortgage Hub" on page 69
FTOS_BNKAP_ApplicantContactDetails	"Contact Details" on page 76
FTOS_BNKAP_Mortgage_ProofOfExpenditures	"Proof of Expenditures" on page 92
FTOS_BARET_MortgageFullAnalysis	"Submitting Your Request" on page 96
FTOS_BARET_MortgageFullSoftReject	"Rejection Screens" on page 66
FTOS_BARET_Loan_Mortgage_Hard_Reject	"Rejection Screens" on page 66
FTOS_BARET_Loan_Mortgage_Approval	"Congratulations!" on page 66
FTOS_BARET_MortgageFullApprovalWaiting	"Pending Approval" on page 70
FTOS_BNKAP_UploadMortgageDocs	"More Documents Needed" on page 97
FTOS_BNKAP_Mortgage_PropertyDetails	"Property Details" on page 113
FTOS_BARET_AssessorAllocation	"Property Valuation" on page 115
FTOS_BARET_CompleteMortgageEvaluation	"Valuation Passed" on page 118
FTOS_BARET_ConveyancingCongrats	"Conveyancing Passed" on page 127
FTOS_BARET_ManualUploadInsurance	"Insurance" on page 121
FTOS_BARET_MortgageLogIn	"Resume Application and Log In" on page 73
FTOS_BARET_MortgageSolicitorDetails	"Conveyancing" on page 123
FTOS_BARET_MortgageSolicitorUploadDocuments	"Solicitor's Flow" on page 125
FTOS_BARET_MortgageValuationPassed	"Valuation Passed" on page 118
FTOS_BNKAP_MortgageSign	"Signing The Contract" on page 129

Consult the following pages to read more on the internal set-up of the solution:

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Mortgage_DIP_WeightIncome	162
MORTGAGE_SCORING_DIP	163
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Configuring the Banking Product Factory

This processor creates and maintains products that are used in FintechOS form driven flows and later in digital journeys. The custom products are included in the solution with pre-loaded filters and ranking systems. They are a great place to start, but if for some reason you need further configurations, you have limitless possibilities to modify, extend or define new custom offerings for your customers. Based on your business requirements, create new products or clone the existing one to modify them.

To visualize and to administer them, access the dedicated menu for **Banking Product Factory** within the Innovation Studio. The Digital Mortgages Self-Service Application journey has five products that are different between themselves with regard to the minimum-maximum period intervals, the minimum-maximum amount intervals and the minimum-maximum **advance**¹, product destination types, and **interest**².

Product	Name	Class	Subclass	Category
RWM_01	5Y Fixed - Green Mortgage	Retail	Loan	Mortgage
RWM_02	2Y Fixed	Retail	Loan	Mortgage
RWM_03	3Y Fixed	Retail	Loan	Mortgage
RWM_04	5Y fixed	Retail	Loan	Mortgage
RWM_05	3Y Tracker	Retail	Loan	Mortgage

NOTE

To modify any of the five existing products, you must create a clone and modify the clone since the products are in Active state.

1. Log into Innovation Studio in developer mode.
2. Click the main menu icon at the top left-hand corner of the screen.

¹The advance percentage from the contract's financed value applicable at the contract level.

²It is the total amount paid for the entire loan duration as interest.

3. In the main menu, click **Product Factory**.
4. Click **Banking Products** to open the **Banking Products List** page.

BANKING PRODUCTS LIST							
<input type="checkbox"/>	Code	Name	Class	SubClass	Category	SubCategory	Status
<input type="checkbox"/>	Q	Q Y	Q	Q	Q Mortgage	Q	Q
	RWM_04	5Y fixed	Retail	Loan	Mortgage		Approved 1
	RWM_01	5Y Fixed - Green Mortg...	Retail	Loan	Mortgage		Approved 1
	RWM_05	3Y Tracker	Retail	Loan	Mortgage		Approved 1
	RWM_02	2Y Fixed	Retail	Loan	Mortgage		Approved 1
	RWM_03	3Y Fixed	Retail	Loan	Mortgage		Approved 1
5	10	20					

For exemplification, here is one of the products presented in detail. The fields are available for the other products as well with slight variations between them.

5Y Fixed - Green Mortgage

Main Info

The first tab requires the basic elements for the creation of a product such as product type, name, code, hierarchy and features.

Field	Required	Description	Default value
Product Type	Yes	The type of product.	Mortgage
External Code	No	The code of the product imported from an external system, if applicable. It can have 10 characters and it is not used in the contract.	N/A
Banking Product Code	Yes	The code of the product. It can have 10 characters and it is used in the contract. It uses a sequencer and the code of the product type.	RWM_01
Name	Yes	The name of the product.	5Y Fixed - Green Mortgage
Class	No	This field is used to place the product in a hierarchy.	Retail
Subclass	No	This field is used to place the product in a hierarchy.	Loan

Field	Required	Description	Default value
Category	No	This field is used to place the product in a hierarchy.	Mortgage
Start Date	Yes	The date when the product becomes available.	19/01/2022
End Date	Yes	The last date from when the product is available. From that date forward, the product is no longer available.	29/11/2029
Description	No	Write any description or additional text here.	Floating rates with low interest fees

Details

The Details tab requires further elements such as interest, payment type, top-ups and withdrawals.

Field	Required	Description	Default value
Bank Account Type	Yes	Select the type.	Loan Term Account
Is Revolving	No	Allows a business to borrow money as needed for funding working capital needs and continuing operations such as meeting payroll and payable.	null
Auto Disbursement	Yes	Specifies if the disbursement is automatically performed when the contract is approved.	true
Max No Disbursements	No	The maximum number of disbursements that can be configured for this product.	undefined
Is Guaranteed	Yes	This checkbox marks the product as secured or unsecured.	true

Field	Required	Description	Default value
Allow Collateral Partial Release	No	A partial release is a mortgage provision that allows some of the collateral to be released from a mortgage after the borrower pays a certain amount of the loan.	null
Collateral Cover Percent	No	The percent that the collateral person on the contract pays. It usually is over 100%.	undefined
Allow CoDebtor	No	Select if another debtor exists for this product.	true
Allow Refinancing	No	Select if the account can be refinanced for this product.	false
Number of CoDebtors	No	Set the maximum number of debtors possible for this product.	2

Payment Schedule Types grid

In the Payment Schedule Types section, the following fields are available:

Field	Required	Description	Default value
Periodicity Type	Yes	Select the regularity of payments.	Monthly
Holiday Shift For Repayment Installments	Yes	This checkbox marks if the holidays are considered for the calculation of the maturity schedule.	undefined

Field	Required	Description	Default value
Holiday Shift Method	No	<p>Select from the list the method to be used when calculating the due date if that date falls to a holiday. The due date can be shifted before or after the holiday. Possible values:</p> <ul style="list-style-type: none"> • None - the due date is not shifted. • Forward - the due date is shifted to the last working day before the initially calculated due date. • Backward - the due date is shifted to the next working day after the initially calculated due date. 	Forward
Defer Due Date	Yes	If you select the checkbox, the payment schedule calculates the next payment amount as if the due date has not changed even when the due date falls on a holiday. This checkbox is selected by default.	true
Grace Type	No	Select one from the list.	none
Product Grace	No	Select one from the list.	

Field	Required	Description	Default value
Grace Days for Repayment	No	Select one from the list. Insert the number of days for which the grace applies.	undefined
Penalty for grace period	No	If you select the checkbox, the penalty interest is applied on the loan contract without taking into consideration the grace period defined at contract level, being calculated for the difference between system date - due date, if the grace period passed and the customer didn't pay the due amounts. If you leave this checkbox unselected, the penalty interest is applied on the loan contract taking into consideration the grace period defined at contract level, being calculated for system date - due date + grace days for repayment.	undefined

Equal installments

Field	Required	Description	Default value
Name	No	Insert a suggestive name for the type.	Equal installments
Payment schedule code	No	Insert a code for the type to keep track of them.	MEIM360

Field	Required	Description	Default value
Product Type	No	Select a product type to associate with the payment schedule type. Depending on the Product Type, different calculation rules are triggered. For example, the product type Overdraft has only the payment at maturity.	Mortgage

Field	Required	Description	Default value
Schedule Interest Calculation Type	No	<p>Select from the list a type of calculation for the interest.</p> <p>When an annual interest rate is specified, in order to calculate the Installment for an interval of days, first the annual interest rate should be transformed in to a daily base. To make this transformation there are some accepted conventions. Innovation Studio implemented the following conventions: 30/360, 30/365, Actual/Actual, where Actual for years can be either 365 or 366. Other schedule interest calculation types</p>	30/360

Field	Required	Description	Default value
		<p>can also be defined, as needed.</p> <p>In practice may be also encountered the Actual/360 or Actual/365.</p>	
Is With Equal Installments	No	Select the checkbox if the installments are equal. If there are Commissions that appear on the Payment Schedule, these Commissions are added to the equal Installments, not included within.	true

Field	Required	Description	Default value
Installment Value Custom	No	<p>If you select the checkbox, with multiple disbursements, the Principal component of the Installments is the one calculated for the entire Financed Amount, even if it was not entirely disbursed.</p> <p>For example, if Financed Amount is 10.000 EURO and the value calculated for Principal component of the Installments is 800 EURO, and the customer disburses only 5.000 EURO, the Principal component remains 800, but the Interest is calculated for 5.000 EURO that were disbursed.</p>	true

Field	Required	Description	Default value
Use Fix Maturity Date (from Activation Date)	Yes	<p>If you select the checkbox, then the Maturity Date equals to Activation Date plus the Contractual Period in Months, i.e. the number of installments depends on the Activation Date.</p> <p>If the checkbox remains unselected, the number of installments are fixed, the Maturity Date is equal to the First Installment plus the Contractual Period in Months, e.g. Installment date is on the first day of the month, this results in the Maturity day to be the first day of the month.</p>	null

Field	Required	Description	Default value
Measurement Unit	Yes	Select from the list the type of measurement unit applicable for the payment schedule type.	Months

For the PAYMENT SCHEDULE TYPE DETAILS:

Column Repayment Schedule	Calculation Method
AnalysisFee	FeeOnce
RemainingValue	RemainingFormula
PMT	FixedValue
Interest	Effective Rate
Principal	ColumnFormula
TotalInstallment	ColumnFormula

Equal principal payments

Field	Required	Description	Default value
Name	No	Insert a suggestive name for the type.	Equal principal payments
Payment schedule code	No	Insert a code for the type to keep track of them.	MEIM360
Product Type	No	Select a product type to associate with the payment schedule type. Depending on the Product Type, different calculation rules are triggered. For example, the product type Overdraft has only the payment at maturity.	Mortgage

Field	Required	Description	Default value
Schedule Interest Calculation Type	No	<p>Select from the list a type of calculation for the interest.</p> <p>When an annual interest rate is specified, in order to calculate the Installment for an interval of days, first the annual interest rate should be transformed in to a daily base. To make this transformation there are some accepted conventions. Innovation Studio implemented the following conventions: 30/360, 30/365, Actual/Actual, where Actual for years can be either 365 or 366. Other schedule interest calculation types can also be defined, as needed.</p> <p>In practice may be also encountered</p>	30/360

Field	Required	Description	Default value
		the Actual/360 or Actual/365.	
Is With Equal Installments	No	Select the checkbox if the installments are equal. If there are Commissions that appear on thePaymentSchedule, these Commissions are added to the equal Installments, not included within.	false
Installment Value Custom	No	If you select the checkbox, with multiple disbursements, the Principal component of the Installments is the one calculated for the entire Financed Amount, even if it was not entirely disbursed.	true

Field	Required	Description	Default value
Use Fix Maturity Date (from Activation Date)	Yes	<p>If you select the checkbox, then the Maturity Date equals to Activation Date plus the Contractual Period in Months, i.e. the number of installments depends on the Activation Date.</p> <p>If the checkbox remains unselected, the number of installments are fixed, the Maturity Date is equal to the First Installment plus the Contractual Period in Months, e.g. Installment date is on the first day of the month, this results in the Maturity day to be the first day of the month.</p>	null
Measurement Unit	Yes	Select from the list the type of measurement unit applicable for the payment schedule type.	Months

For the PAYMENT SCHEDULE TYPE DETAILS:

Column Repayment Schedule	Calculation Method
AdministrationFee	FixedValue
AnalysisFee	FeeOnce
RemainingValue	RemainingFormula
Interest	Effective Rate
Principal	ColumnFormula
TotalInstallment	ColumnFormula

Only interest

Field	Required	Description	Default value
Name	No	Insert a suggestive name for the type.	Only interest
Payment schedule code	No	Insert a code for the type to keep track of them.	MOPM
Product Type	No	Select a product type to associate with the payment schedule type. Depending on the ProductType, different calculation rules are triggered. For example, the product type Overdraft has only the payment at maturity.	Mortgage

Field	Required	Description	Default value
Schedule Interest Calculation Type	No	<p>Select from the list a type of calculation for the interest.</p> <p>When an annual interest rate is specified, in order to calculate the Installment for an interval of days, first the annual interest rate should be transformed in to a daily base. To make this transformation there are some accepted conventions. Innovation Studio implemented the following conventions: 30/360, 30/365, Actual/Actual, where Actual for years can be either 365 or 366. Other schedule interest calculation types can also be defined, as needed.</p> <p>In practice may be also encountered the Actual/360 or Actual/365.</p>	30/360

Field	Required	Description	Default value
Is With Equal Installments	No	Select the checkbox if the installments are equal. If there are Commissions that appear on the Payment Schedule, these Commissions are added to the equal Installments, not included within.	false
Installment Value Custom	No	If you select the checkbox, with multiple disbursements, the Principal component of the Installments is the one calculated for the entire Financed Amount, even if it was not entirely disbursed.	true

Field	Required	Description	Default value
Use Fix Maturity Date (from Activation Date)	Yes	<p>If you select the checkbox, then the Maturity Date equals to Activation Date plus the Contractual Period in Months, i.e. the number of installments depends on the Activation Date.</p> <p>If the checkbox remains unselected, the number of installments are fixed, the Maturity Date is equal to the First Installment plus the Contractual Period in Months, e.g. Installment date is on the first day of the month, this results in the Maturity day to be the first day of the month.</p>	true
Measurement Unit	Yes	Select from the list the type of measurement unit applicable for the payment schedule type.	Months

For the PAYMENT SCHEDULE TYPE DETAILS:

Column Repayment Schedule	Calculation Method
AdministrationFee	FixedValue
AnalysisFee	FeeOnce

Column Repayment Schedule	Calculation Method
RemainingValue	RemainingFormula
Interest	Effective Rate
Principal	ColumnFormula
TotalInstallment	ColumnFormula

For the Product Destination Types grid:

- First time buyer
- Green Loan.

Availability

The Availability tab determines the monetary range and the time frame when the product is available for customers.

Field	Required	Description	Default value
Currency	Yes	Choose the currency for this banking product.	GDP
Period Type	No	Choose one: Days/Weeks/Months/Years/Once.	Months
Minimum Period	No	The minimum duration of the product mentioned in the contract.	1
Maximum Period	No	The maximum duration of the product mentioned in the contract.	480
Minimum Amount	No	The minimum amount of the product for which the bank opens a contract.	500
Maximum Amount	No	The maximum amount of the product for which the bank opens a contract.	9500,000
Minimum Advance (%)	No	The minimum down payment that must be paid for the leasing contract to be signed.	10%
Maximum Advance (%)	No	The maximum advance that can be paid for the leasing contract to be signed.	90%

Dimensions

The Dimensions tab displays the interests, commissions, insurances, discount and questions valid for a product. Interests & Commissions: for Interest RWM_01

Field	Default value
Banking Product	5Y Fixed - Green Mortgage
Code	IRWM_01
Item Name	Interest RWM_01
Start Date	19/01/2022
End Date	29/11/2029
Interest List	IRWM_01
Commission List	Mortgage fee 0
Minimum Interest Rate (%)	undefined
Is Negotiable	null

Configuring the Business Formulas

Business Formulas processes different inputs from your digital journey in order to generate desired outputs. The formulas developed for this journey are to filter the customers that do not meet the minimum standards, to determine the scoring of each applicant and the maximum debt-to-value to increase the mortgage offer. The formulas can be modified and extended to fit business requirements for any financial institution, even the trigger for them can be modified.

HINT

To edit a formula that is in Active status, clone it.

The formulas used are:

Order of execution	Name	Start date	Business Status	Version	Digital Asset
1	MORTGAGE_KO_DIP	08/04/2022 13:48	Active	1	RWM-SDK
2	Mortgage_DIP_WeightIncome	06/04/2022 15:46	Active	1	RWM-SDK
3	MORTGAGE_SCORING_DIP	08/04/2022 13:48	Active	1	RWM-SDK
4	RWM_MAXDTI_DIP	11/04/2022 14:18	Active	1	RWM-SDK

The system triggers the calculations in the form driven flow **FTOS_BARET_MortgageDIPAnalysis > step MortgageDIPAnalysis > Advanced > After Events > script FTOS_BNKAP_FinancialAnalysis:**

1. executes the formula "[MORTGAGE_KO_DIP](#)" on [page 161](#). Two eligibility criteria are defined in "[MORTGAGE_KO_DIP](#)" on [page 161](#):
 - If the time employed in the current job is less than 6 months for any applicant, the applicant is rejected
 - If the citizenship is not British, then the loan application is rejected.

Both criteria must be met for the application to be accepted.

2. Then, the system determines how incomes and spending are weight in and compounded after tax in United Kingdom (calculates all the incomes: yearly income before tax including secondary sources of income for each applicant, then calculates the income after tax, then merges the income with the co-applicant to result the total income before tax in a year). Weight in every income using the following proportions:

For employed persons:

- Income type
- Weight in
- salary 100%
- Overtime 100%

- Allowances 90%
- Commission 90%
- Bonuses 80%
- Pension 100%
- Investments 50%
- Maintenance 50%
- Trust Funds 50%.

For self-employed persons, to determine the income on a monthly basis:

- Net profit in most recent complete tax year/12
- Net profit in previous complete tax year/12.

3. calculates monthly net income for each applicant:

Then, the system calculates the average between the two indicators. This determines our monthly eligible profit (before applying tax). Then, the system adds the secondary sources of income using the same weight in as for employed persons. After, the system applies the weigh in for every income source, the system adds them all together for each applicant. Finally, the total income before taxes per month for each applicant is saved in the database. The system calculates the income after tax by apply tax brackets by applying the tax brackets to calculate the monthly income after tax and insurance.

UK Income Tax (excluding Scotland)		
Tax Band	Tax Rate	Taxable Income
Personal Allowance	0%	Up to £12,570
Basic Rate	20%	£12,571 to £50,270
Higher Rate	40%	£50,271 to £150,000
Additional Rate	45%	£150,001 or more
National Insurance (Class 1 — for Employees Only)		

UK Income Tax (excluding Scotland)		
Tax Band	Tax Rate	Taxable Income
How much you earn	How much you are going to pay	
Less than £9,568	0%	
£9,569 to £50,270	12%	
More than £50,270	2%	

The result is the monthly total income after tax and insurance.

- calculates the value of the spendings on a monthly bases and calculates the spendings on dependents. Then, the system aggregates expenses and calculate the existing DTI.

Based on the expenses:

- For credit card and overdraft that the applicants have declared, the system takes into account a monthly cost/instalment equal to 3% of the declared credit limit.
 - Council tax, Ground rent, Service charge: the system determines the monthly spending amount for them
 - Number of dependants: for every dependent that the user has declared, the system calculates an expense of 300 GBP per month.
- using the simulation Credit Bureau integration to get all the existing credit(s) the applicant has and adds all the monthly instalments to expenses for both applicants. The result is the monthly expenses.

IMPORTANT!

The integration is mocked. It is subject to internal implementation.

- calculates the scoring for each applicant using "MORTGAGE_SCORING_DIP" on [page 163](#) to get the current DTI, if it is bigger than 50% the application fails. If the current DTI is smaller than 50%, the system calculates the maximum DTI. The applicants fall into a risk level category used in "RWM_MAXDTI_DIP" on [page 169](#) to

determine the maximum offer. Finally, the monthly available amount for loan is determined, i.e., the maximum monthly instalment.

Calculate Debt-To-Income (DTI)

The incomes/expenses for both applicants are added to create one income/expenses for the Digital Mortgages Self-Service Application application. The result is the income/expenses for the application. Using these two values, the system calculates existing DTI at an application level:

$$\text{application expenses} / \text{application income} = \text{current DTI}$$

Calculations based on DTI

Using the current DTI, the system can determine whether the loan is rejected. If the DTI is bigger than 50%, it is rejected: `if current DTI > 50% - Loan request is rejected`

Scoring Calculations

Each applicant has to pass the scoring calculations.

Maximum DTI Calculations

Use the scoring matrix and establish maximum DTI permitted for the customer by combining **FICO score**¹ and applicant score. To establish the maximum DTI, the system uses the long term DTI for the calculated performance category (A,B,C,D). In case there are two applicants, the system uses the performance category graded the lowest between the 2 applicants.

¹The FICO score is an algorithm used internationally, mainly by banks, to determine the degree of risk for a person who applies for a loan, and is collected by the Credit Bureau.

Using the maximum permitted DTI by the matrix for the mortgage application, the system calculates the requested offer.

The value of the deposit is compared to the maximum loan amount. Using the product definition, the maximum loan-to-value permitted by the highest ranking product is recorded and compared to the maximum amount. In case the deposit is not enough cover the minimum loan-to-value, then the system reduces the maximum amount until the minimum loan-to-value is covered.

IMPORTANT!

The formulas and matrices are for example purposes only. They are subject to internal modifications for each implementation.

MORTGAGE_KO_DIP

This formula determines whether the applicant can continue the process by meeting the standards needed for citizenship and employment.

Field	Example
Name	MORTGAGE_KO_DIP
Formula Input	MORTGAGE_KO_DIP
Start date	07/04/2022 11:52

Formula steps:

Name	Master Type	Sub Type	Calculation Type	Formula
MORTGAGE_KO_DIP_Employment	Simple Type	Boolean	Normal	<pre>result = DataSet ("MORTGAGE_KO_DIP_Employment", ("MORTGAGE_KO_DIP_Employment", experienceMonths)) == 1;</pre>

Name	Master Type	Sub Type	Calculation Type	Formula
MORTGAGE_KO_DIP_Citizenship	Simple Type	Boolean	Normal	<pre>result = DataSet ("MORTGAGE_KO_DIP_ Citizenship", ("Citizenship", citizenship)) == 1;</pre>
KO_Final	Simple Type	Boolean	Normal	<pre>result = MORTGAGE_ KO_DIP_Citizenship MORTGAGE_KO_ DIP_Employment;</pre>

Data set **MORTGAGE_KO_DIP_Citizenship**

This matrix sets values for each citizenship available.

Citizenship	Values
Romanian	1
French	1
American	1

Data set **MORTGAGE_KO_DIP_Employment**

This matrix discriminates between the users, those who have been working under 6 months fail the application.

EmploymentTime	Values
[;6)	1
[6;]	0

Mortgage_DIP_WeightIncome

This formula determines the weight of the income.

Field	Example
Name	Mortgage_DIP_WeightIncome
Formula Input	Mortgage_DIP_WeightIncome
Start date	06/04/2022 15:46

Formula steps:

Name	Master Type	Sub Type	Calculation Type	Formula
DIP_IncomeType	Simple Type	Decimal	Normal	<pre>result = DataSet ("Mortgage_DIP_ WeightIncome", ("IncomeType", incomeType));</pre>
Result	Simple Type	Decimal	Normal	<pre>result = incomeAmount * DIP_IncomeType;</pre>

Data set **Mortgage_DIP_WeightIncome**

Depending on the source of income, the application scores higher with salary, pension and overtime being the highest scoring.

IncomeType	Values
Salary	1
Overtime	1
Pension	1
Allowances	0.9
Commission	0.9
Bonuses	0.8
Investments	0.5
Maintenance	0.5
Trust Funds	0.5

MORTGAGE_SCORING_DIP

This formula determines the scoring based on the age, marital status, employment status, the number of dependants, the time spent in employment, the **days past due**¹, the number of active loans. If the application has two applicants, the system calculates the scoring for all the applicants.

Field	Example
Name	MORTGAGE_SCORING_DIP

¹Days Past Due (DPD) indicates your financial history,i.e., whether you have been consistent in your repayments and if you have missed any, how many instalments you have missed and by how many days. It also reflects your credit card repayment history.

Field	Example
Formula Input	MORTGAGE_SCORING_DIP
Start date	08/04/2022 13:48

Formula steps:

Name	Master Type	Sub Type	Calculation Type	Formula
DIP_Age	Simple Type	Whole Number	Normal	<pre>result = DataSet ("SCORING_DIP_Age", ("Age", age));</pre>
DIP_MaritalStatus	Simple Type	Whole Number	Normal	<pre>result = DataSet ("SCORING_DIP_MaritalStatus", ("MaritalStatus", maritalStatus));</pre>
DIP_EmploymentStatus	Simple Type	Whole Number	Normal	<pre>result = DataSet ("SCORING_DIP_EmploymentStatus", ("EmploymentStatus", employmentStatus));</pre>
DIP_DependantsNo	Simple Type	Whole Number	Normal	<pre>result = DataSet ("SCORING_DIP_DependantsNo", ("DependantsNo", dependantsNo));</pre>
DIP_EmploymentTime	Simple Type	Whole Number	Normal	<pre>result = DataSet ("SCORING_DIP_TimeAtCurrentEmployer", ("TimeSpentCurrentEmployer", employmentTime));</pre>
DIP_DPD	Simple Type	Whole Number	Normal	<pre>result = DataSet ("SCORING_DIP_DPD", ("DPD", DPD));</pre>

Name	Master Type	Sub Type	Calculation Type	Formula
DIP_ActiveLoansNo	Simple Type	Whole Number	Normal	<pre>result = DataSet ("SCORING_DIP_ ActiveLoansNo", ("ActiveLoansNo", activeLoansNo));</pre>
ApplicationScore	Simple Type	Whole Number	Normal	<pre>result = DIP_Age + DIP_MaritalStatus + DIP_EmploymentStatus + DIP_DependantsNo + DIP_EmploymentTime + DIP_DPD + DIP_ ActiveLoansNo;</pre>
FICOScore_Decision	Simple Type	Text	Normal	<pre>if (FICOScore != 0) result = DataSet ("SCORING_DIP_ FICOScore", ("FICOScore", FICOScore)); else result = "Approved";</pre>
ApplicationScore_Decision	Simple Type	Text	Normal	<pre>result = DataSet ("SCORING_DIP_ ApplicationScore", ("ApplicationScore", ApplicationScore));</pre>

Name	Master Type	Sub Type	Calculation Type	Formula
Decision	Simple Type	Text	Normal	<pre> if (FICOScore_ Decision == "Rejected" ApplicationScore_ Decision == "Rejected") result = "Rejected"; else if (FICOScore_ Decision == "Derogation" ApplicationScore_ Decision == "Derogation") result = "Derogation"; else result = "Approved"; </pre>
ClientCategory	Simple Type	Text	Normal	<pre> result = DataSet ("SCORING_DIP_ ClientCategory", ("UserScore", ApplicationScore)); </pre>

Data set **SCORING_DIP_ActiveLoansNo**

This matrix determines a value depending on the number of active loans a customer has.

ActiveLoansNo	Values
[0;0]	25
[1;1]	20
[2;2]	15
[3;]	10
[-2;-2]	25

Data set **SCORING_DIP_Age**

This matrix determines a value depending on the age the customer has.

Age	Values
[;26)	15
[26;31)	20
[31;36)	25
[36;46)	30
[46;51)	40
[51;]	30

Data set **SCORING_DIP_ApplicationScore**

This matrix determines a value depending on the application score.

ApplicationScore	Value
[;90)	Rejected
[90;120)	Derogation
[120;)	Approved

Data set **SCORING_DIP_ClientCategory**

This matrix determines a value depending on the user score the customer received.

UserScore	Values
[70;110]	D
[111;130]	C
[131;159]	B
[160;180]	A

Data set **SCORING_DIP_DependantsNo**

This matrix determines a value depending on the number of dependents a customer has, the higher the number, the higher the value.

DependantsNo	Values
[;2)	15
[2;3]	10
(3;)	5

Data set **SCORING_DIP_DPD**

This matrix determines a value depending on the days-past-due.

DPD	Values
[0;29]	30

DPD	Values
[30;59]	25
[60;89]	15
[90;]	5
[-2;-2]	25
[-1;-1]	5

Data set **SCORING_DIP_EmploymentStatus**

This matrix determines a value depending on the type of employment declared by the customer.

EmploymentStatus	Values
Employed	35
SelfEmployed	20

Data set **SCORING_DIP_FICOScore**

This matrix determines a value depending on the **FICO score**¹ the customer has.

FICOScore	Value
[;520)	Rejected
[520;700)	Derogation
[700;]	Approved

Data set **SCORING_DIP_MaritalStatus**

This matrix determines a value depending on the marital status declared by the customer.

MaritalStatus	Values
Married/Civil partnership	25
Single	20
Widow/Widower	15
Separated	20
Divorced	20
Living as partners	15

Data set **SCORING_DIP_TimeAtCurrentEmployer**

¹The FICO score is an algorithm used internationally, mainly by banks, to determine the degree of risk for a person who applies for a loan, and is collected by the Credit Bureau.

This matrix determines a value depending on the time the customer has been employed at the present job.

TimeSpentCurrentEmployer	Values
(10;)	25
(5;10]	20
(2;5]	15
[1;2]	10
(;1)	5

RWM_MAXDTI_DIP

This formula determines the maximum debt-to-income the applicant can support with their current income-expenses situation.

Field	Example
Name	RWM_MAXDTI_DIP
Formula Input	RWM_MAXDTI_DIP
Start date	11/04/2022 14:18

Formula steps:

Name	Description	Master Type	SubType	Calculation Type	Formula
MAXDTI		Simple Type	Decimal	Normal	<pre>result = DataSet("RWM_ MaxDTI_DIP", ("ClientCategor y", clientCategor y));</pre>

Data set RWM_MaxDTI_DIP

This matrix determines a value depending on the client category.

ClientCategory	Values
A	0.3998
B	0.37
C	0.33
D	0.3

Mechanism for calculating the maximum loan amount

- Determine the total income of all applicants
- calculate the debt-to-income (DTI) by dividing expenses to the total income value
- compare the DTI to the maximum DTI available in the scoring matrix. If DTI is bigger than maximum DTI from scoring matrix, then the user is not eligible to a loan. If the DTI is smaller than the maximum DTI in the scoring matrix, then the system displays the next step
- calculate available DTI = Max DTI in the matrix - DTI
- based on available DTI, calculate the maximum loan amount the user is eligible for
- the result is the maximum loan amount.

Configuring the Digital Documents Processor

The Digital Mortgages Self-Service Application solution uses in the flow documents which are signed by the customer at the end of the journey and the schedule for the loan. The templates are imported with the package. Furthermore, these files are attached to the digital documents which use SQL procedures as source and finally, reports are attached to the entity pointing to the documents. They are used in the flow via ["Configuring the Banking Product Factory" on page 136](#) and via actions of generating digital documents and added to the UI, where they become accessible to the customer.

1. Access Innovation 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.

Name	Data Source Type	Stored procedure	Digital Asset
RetailMortgagePricingSchedule	SQL Stored Procedure	[ebs].[FTOS_BARET_RetailMortgagePricingSchedule] @Id	RWM-SDK
RetailMortgageLoanAgreement	Entity	N/A	RWM-SDK
RetailMortgageLoanContract	Entity	N/A	RWM-SDK

4. Attach a report to the entity pointing to the document by navigating to **Analytics** from the main menu.

5. Select **Reports**. The **Reports List** page appears.

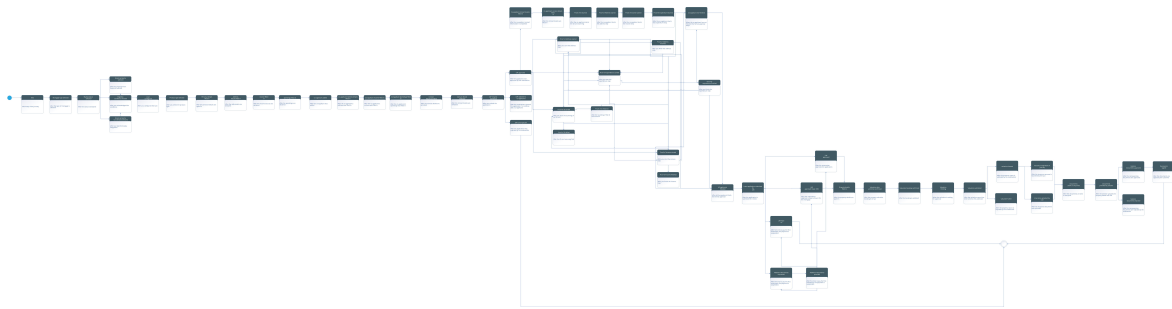
Name	Scope	Entity	Output Method	Destination Field	Destination File Name	Report Renderer Format	Digital Asset
RetailMortgage PricingSchedule	Entity	FTOS_BNKAP_Pricing	Attach to entity	scheduleFile	schedule	PDF	RWMSDK
Retail Mortgage Loan Agreement	Entity	FTOS_BNKAP_Application Document	Attach to entity	documentFile	contract	PDF	RWMSDK
Retail Mortgage Loan Contract	Entity	FTOS_BNKAP_Application Document	Attach to entity	documentFile	finalContract		

Configuring the Business Workflow

The Business Workflows Processor uses rules-driven business transitions between statuses to help a bank employee see the status of the application. With this data, a institution can review analytics for performance or customer experience such as a **sales funnel**¹. It renders the status of a record in the workflow and provides processing that must occur for it to move to the next step in its life-cycle.

Access **Innovation Studio > Automation Blocks > Business Workflows > Business Workflow Designer > BARET_Loan_RetailLoan**.

The transitions are:



To download the diagram, click [here](#).

¹It is the process prospects go through to become a customer. Each stage of the funnel takes the buyer one step closer to making a purchase.

Stage	Name	Step
DIP	_New	The initial status.

Stage	Name	Step
	New_Mortgage type selected	"Let's Choose the Right Mortgage for You" on page 20
	Mortgage type selected_Buying status selected	"Buying Status" on page 23
	Buying status selected_Eligibility conditions checked	"Let's Get Started with a Decision In Principle" on page 35
	Buying status selected_Zoopla property selected	"Time to Shop Around" on page 29
	Buying status selected_Zoopla property not selected selected	"Time to Shop Around" on page 29
	Zoopla property not selected selected_Eligibility conditions checked	"Time to Shop Around" on page 29
	Zoopla property selected_Eligibility conditions checked	"Time to Shop Around" on page 29
	Eligibility conditions checked_Loan configured	"Agreement In Principle" on page 36
	Loan configured_Product type selected	Let's Choose the Right Mortgage for You
	Product type selected_Personal details filled in	"Applicants' Details" on page 44
	Personal details filled in_Address details filled in	"Address Details" on page 46
	Address details filled in_Income filled in	"Income Details" on page 48
	Income filled in_Spendings filled in	"Proof of Expenditures" on page 92
	Spendings filled in_Co-applicant added	"Add Co-Applicant" on page 52
	Co-applicant Address details filled in_Co-applicant Income filled in	"Formal Approval Co-applicant" on page 76
	Co-applicant Income filled in_Co-Applicant Spendings filled in	"Formal Approval Co-applicant" on page 76
	Co-Applicant Spendings filled in_Contact details provided	"Formal Approval Co-applicant" on page 76
	Contact details provided_Contact details validated	"Contact Details" on page 62
	Co-applicant contact details filled in_Proof of ID started	"Formal Approval Co-applicant" on page 76
	Co-applicant contact details filled in_Proof of Address started	"Formal Approval Co-applicant" on page 76

Stage	Name	Step
	Co-applicant contact details filled in_ Proof of income started	"Formal Approval Co-applicant" on page 76
	Co-applicant contact details filled in_ Proof of expenditure started	"Formal Approval Co-applicant" on page 76
	Co-applicant not finished_All applicants finished	"Formal Approval Co-applicant" on page 76
	Contact details validated_DIP request submitted	"Contact Details" on page 62
	DIP request submitted_DIP approved	"Formal Approval Passed" on page 97
	DIP request submitted_DIP hard rejection	"Rejection" on page 99
	DIP request submitted_DIP rejected no co-applicants	"Formal Approval" on page 78
	DIP approved_Co-applicant contact details filled in	"Formal Approval Co-applicant" on page 76
	DIP approved_Proof of Address started	"Proof of Address" on page 86
	DIP approved_Proof of expenditure started	"Proof of Expenditures" on page 92
	DIP approved_Proof of ID started	"Proof of ID" on page 80
	DIP approved_Proof of income started	"Proof of Income" on page 88
	DIP rejected no co-applicants_Loan configured	N/A

Stage	Name	Step
Formal Approval	Proof of ID started_Proof of Address started	"Proof of Address" on page 86
	Proof of ID started_Proof of expenditure started	"Proof of Expenditures" on page 92
	Proof of ID started_Proof of ID failed	"Proof of ID" on page 80
	Proof of ID started_Proof of ID finished	"Proof of ID" on page 80
	Proof of ID started_Proof of income started	"Proof of Income" on page 88
	Proof of ID finished_All applicants finished	"Proof of ID" on page 80
	Proof of ID finished_Co-applicant not finished	"Proof of ID" on page 80
	Proof of ID finished_Proof of Address started	"Proof of ID" on page 80
	Proof of ID finished_Proof of expenditure started	"Proof of ID" on page 80
	Proof of ID finished_Proof of income started	"Proof of Income" on page 88
	Proof of Address started_Proof of Address finished	"Proof of Address" on page 86
	Proof of Address started_Proof of expenditure started	"Proof of Address" on page 86
	Proof of Address started_Proof of ID started	"Proof of Address" on page 86
	Proof of Address started_Proof of income started	"Proof of Address" on page 86
	Proof of Address finished_All applicants finished	"Proof of Address" on page 86
	Proof of Address finished_Co-applicant not finished	"Proof of Address" on page 86
	Proof of Address finished_Proof of expenditure started	"Proof of Address" on page 86
	Proof of Address finished_Proof of ID started	"Proof of Address" on page 86
	Proof of Address finished_Proof of income started	"Proof of Address" on page 86
	Proof of income started_Proof of income finished	"Proof of Income" on page 88
	Proof of income finished_Proof of Address started	"Proof of Income" on page 88

Stage	Name	Step
	Proof of income finished_Proof of expenditure started	"Proof of Income" on page 88
	Proof of income finished_Proof of ID started	"Proof of Income" on page 88
	Proof of income finished_Co-applicant not finished	"Proof of Income" on page 88
	Proof of income finished_All applicants finished	"Proof of Income" on page 88
	Proof of expenditure started_Proof of expenditure finished	"Proof of Expenditures" on page 92
	Proof of expenditure finished_All applicants finished	"Proof of Expenditures" on page 92
	Proof of expenditure finished_Co-applicant not finished	"Proof of Expenditures" on page 92
	Proof of expenditure finished_Proof of Address started	"Proof of Expenditures" on page 92
	Proof of expenditure finished_Proof of ID started	"Proof of Expenditures" on page 92
	Proof of expenditure finished_Proof of income started	"Proof of Expenditures" on page 92
	All applicants finished_Loan application submitted for UW	"Submitting Your Request" on page 96
	Loan application submitted for UW_UW approved	"Back-Office Dashboard" on page 99
	Loan application submitted for UW_UW approved lower offer	"Back-Office Dashboard" on page 99
	Loan application submitted for UW_UW hard no	"Back-Office Dashboard" on page 99
	Loan application submitted for UW_Additional documents requested	"More Documents Needed" on page 97
	Additional documents provided_Additional documents requested	"More Documents Needed" on page 97
	Additional documents requested_Additional documents provided	"More Documents Needed" on page 97
	Additional documents provided_UW approved	"More Documents Needed" on page 97
	Additional documents provided_UW approved lower offer	"More Documents Needed" on page 97
	Additional documents provided_UW hard no	"More Documents Needed" on page 97
	UW approved lower offer_Property details filled in	"Property Details" on page 113

Stage	Name	Step
Property valuation	UW approved_Property details filled in	"Property Details" on page 113
	Property details filled in_Valuation date and time confirmed	"Property Valuation" on page 115
	Valuation date and time confirmed_Valuation booking confirmed	"Property Valuation" on page 115
	Valuation booking confirmed_Valuation Pending	"Property Valuation" on page 115
	Valuation Pending_Valuation Submitted	"Property Valuation" on page 115
	Valuation Submitted_valuation Failed	"Property Valuation" on page 115
	Valuation Submitted_valuation Passed	"Property Valuation" on page 115
	valuation Passed_Insurance originated on journey	"Property Valuation" on page 115
	valuation Passed_Insurance uploaded by user	"Property Valuation" on page 115
Insurance	Insurance originated on journey_Documents sent to all parties	"Insurance" on page 121
	Insurance uploaded by user_Documents sent to all parties	"Insurance" on page 121
	Documents sent to all parties_Documents provided by solicitor	"Conveyancing" on page 123
Conveyancing	Documents provided by solicitor_Solicitor documents rejected	"Conveyancing Failed" on page 128
	Documents provided by solicitor_Solicitor documents approved	"Conveyancing Passed" on page 127
Signing	Solicitor documents approved_Documents signed	"Signing The Contract" on page 129

Server Automation Scripts and Libraries

Within Innovation Studio, there are bits of code that execute several actions, which embody a business need such as: filtering products, saving session storage, returning products and setting amounts or periods. On-demand automation scripts are available for being called from any object or context.

The client script library named **FTOS_RWM_HeaderNavigation** contains the code for the progress bar for the mobile view informing the user about the step they are at. It is called on form driven flows in **Advanced** section tab > **After Events**.

Server Automation Scripts

Name	Description	Script Type	Digital Asset
FTOS_B2C_SaveSession	<p>This script saves the session storage.</p> <p>Input: n/a</p> <p>Output: string</p>	On demand	BAN-SDK
FTOS_BARET_AddMortgageAddress	<p>Based on the <code>addressId</code>, this script updates the address in the database.</p> <p>Input: var <code>applicantId</code>; var <code>addressId</code>; var <code>postCode</code>; var <code>propertyType</code>; var <code>country</code>; var <code>city</code>; var <code>street</code>; var <code>apartment</code>; var <code>floor</code>; var <code>moveInDate</code>; var <code>moveOutDate</code>; var <code>addressStatus</code></p> <p>Output: var <code>params</code></p>	On demand	RW M-SDK
FTOS_BARET_AddMortgageSpending	<p>This script gets the details of the loan and updates the values in the database.</p> <p>Input: var <code>applicantId</code>; var <code>loansDataId</code>; var <code>creditType</code>; var <code>frequency</code>; var <code>currencyCode</code>; var <code>spendingAmount</code></p> <p>Output: var <code>params</code></p>	On demand	RW M-SDK

Name	Description	Script Type	Digital Asset
FTOS_BARET_AllocateAssessor	<p>This script selects an assessor for the property.</p> <p>Input: let <code>loanId</code></p> <p>Output: var <code>result</code></p>		
FTOS_BARET_ChangeApplicationStatusMortgage	<p>This script changes the business status.</p> <p>Input: var <code>accountApplicationId</code>; var <code>statusName</code></p> <p>Output: n/a</p>		
FTOS_BARET_CheckAvailableMortgageCoApplicants	<p>This script gets the maximum number of applicants set in the "Defaults" on page 199 and determines whether the number of existing applicants is smaller than the maximum.</p> <p>Input: let <code>loanId</code></p> <p>Output: void</p>	On demand	RW M-SDK
FTOS_BARET_GenerateMortgageLoanDocuments	<p>This script generates the loan documents.</p> <p>Input: var <code>loanId</code>; var <code>bankingProductId</code>; var <code>applicationId</code></p> <p>Output: boolean</p>	On demand	RW M-SDK

Name	Description	Script Type	Digital Asset
FTOS_BARET_GetApprovalType	<p>This script gets the approval type of the loans (approvedLowerOffer and fullApproval) based on the loans that have the statuses UW approved and UW approved lower offer.</p> <p>Input: let <code>loanId</code>;</p> <p>Output: var <code>result</code></p>		
FTOS_BARET_GetAssessorsBookings	<p>Input: let <code>applicationId</code>; let <code>documentsName</code></p> <p>Output: array <code>result</code></p>		
FTOS_BARET_GetCityIdByName	<p>This script gets the name of the city.</p> <p>Input: var <code>cityName</code></p> <p>Output: boolean</p>	On demand	RW M-SDK
FTOS_BARET_GetCountryIdByName	<p>This script gets the name of the country.</p> <p>Input: var <code>countryName</code></p> <p>Output: boolean</p>	On demand	RW M-SDK
FTOS_BARET_GetLoanApplicationsByEmail	<p>This script gets all the applicants based on an email address.</p> <p>Input: var <code>email</code></p> <p>Output: <code>loanApplicationList</code></p>		
FTOS_BARET_GetMortgageLoanIdbyRetail	<p>This script gets the <code>loanId</code> and the <code>sessionId</code>.</p> <p>Input: var <code>retailApplicantId</code></p> <p>Output: var <code>result</code></p>	On demand	RW M-SDK

Name	Description	Script Type	Digital Asset
FTOS_BARET_GetMortgageApplicantsFullData	<p>This script gets the data regarding the main borrower and the income, addresses and spendings.</p> <p>Input: var <code>loanId</code></p> <p>Output: void</p>	On demand	RW M-SDK
FTOS_BARET_GetMortgageApplicantsId	<p>This script gets the data regarding the applicants.</p> <p>Input: var <code>loanId</code></p> <p>Output: var <code>result</code></p>	On demand	
FTOS_BARET_GetMortgageExistingDocument	<p>This script retrieves the mortgage documents.</p> <p>Input: var <code>loanId</code>; var <code>applicationId</code>; var <code>documentName</code></p> <p>Output: var <code>data</code></p>		
FTOS_BARET_GetMortgageHubAction	<p>This script sets the status of the loan to Formal Approval.</p> <p>Input: let <code>loanId</code></p> <p>Output: let <code>statusCode</code></p>	On demand	
FTOS_BARET_GetMortgageProductsBoundaries	<p>This script gets the minimum and maximum periods and amounts for the banking products and other banking products details (interests and product destination). It is used for the form driven flow "FTOS_BARET_ConfigureDIP" on page 133.</p> <p>Input: var <code>loanId</code></p> <p>Output: boolean</p>	On demand	RW M-SDK

Name	Description	Script Type	Digital Asset
FTOS_BARET_ GetRankedProductsMortgage	<p>This script determines the mortgage products in a specific order.</p> <p>Input: var <code>applicationId</code>; var <code>top</code></p> <p>Output: any []</p>	On demand	RW M-SDK
FTOS_BARET_ GetRetailMortgageAddresses	<p>This script gets the details of the borrower's address.</p> <p>Input: var <code>applicantId</code></p> <p>Output: var <code>data</code></p>	On demand	RW M-SDK
FTOS_BARET_ GetRetailMortgageSpending	<p>This script gets the details of the loan.</p> <p>Input: var <code>applicantId</code></p> <p>Output: var <code>data</code></p>	On demand	RW M-SDK
FTOS_BARET_ GetZooplaProperties	<p>This script gets the details of the properties within Zoopla.</p> <p>Input: var <code>minBed</code>; var <code>maxBed</code>; var <code>minPrice</code>; var <code>maxPrice</code>; var <code>propertyType</code>; var <code>searchLatitude</code>; var <code>searchLongitude</code>; var <code>milesRangeId</code>; var <code>top</code></p> <p>Output: var <code>result</code></p>	On demand	RW M-SDK
FTOS_BARET_Loan_Link_Extended	<p>This script updates in the entity FTOS_BARET_Loan the following: <code>applicantDataId</code>, <code>applicationId</code>, <code>financialDataId</code>, <code>loanNo</code>, <code>name</code>.</p> <p>Input: var <code>loanId</code></p> <p>Output: <code>applicantDataId</code>, <code>applicationId</code>, <code>financialDataId</code>, <code>loanNo</code>, <code>name</code></p>		

Name	Description	Script Type	Digital Asset
FTOS_BARET_MortgageApplicantsStatus	<p>This script gets the status of each applicant if they have completed their "Applicants' Details" on page 44.</p> <p>Input: var <code>masterRetailApplicantId</code>; var <code>maxNumberOfApplicants</code></p> <p>Output: boolean</p>	On demand	RW M-SDK
FTOS_BARET_MortgageBlacklistChecks	<p>This script checks if the borrower is blacklisted.</p> <p>Input: let <code>applicant</code></p> <p>Output: N/A</p>	On demand	
FTOS_BARET_MortgageBOFinancialCalc	<p>This script calculates the final decision based on scoring and the maximum offer and decides whether it is a hard reject or not.</p> <p>Input: let <code>loanId</code></p> <p>Output: boolean</p>		
FTOS_BARET_MortgageCheckBC	<p>This script checks the applicant in the Credit Bureau.</p> <p>Input: let <code>items</code></p> <p>Output: N/A</p>	On demand	
FTOS_BARET_MortgageChecksCCJ	<p>This script verifies the country court judgments for the employer of the borrower.</p> <p>Input: var <code>loan</code></p> <p>Output: var <code>haveUpdates</code></p>	On demand	

Name	Description	Script Type	Digital Asset
FTOS_BARET_MortgageFullApprovalCalculations	<p>This script calculates the final decision for the application. It is used in FTOS_BARET_Loan> User Journeys > step FullAnalysis.</p> <p>Input: let <code>loanId</code>; let <code>KOfail</code>; let <code>finalDecision</code></p> <p>Output: <code>finalDecision</code></p>	On demand	
FTOS_BARET_MortgageGenerateContract	<p>This script generates the contract for the mortgage.</p> <p>Input: var <code>applicantId</code>; var <code>applicationId</code>; var <code>reportName</code>; var <code>docName</code></p> <p>Output: boolean</p>		
FTOS_BARET_MortgageOffer	<p>This script gets the banking products to be offered to the customer.</p> <p>Input: var <code>loanId</code></p> <p>Output: boolean</p>	On demand	RW M-SDK
FTOS_BARET_MortgageSendMailLoanDocuments	<p>This script sends the email with the email template <code>MortgageLoanDocuments</code>. For details, see "Email Configurations" on page 227.</p> <p>Input: var <code>applicationId</code>; var <code>loanId</code></p> <p>Output: boolean</p>	On demand	RW M-SDK
FTOS_BARET_NotifyMortgageAssessor	<p>This script sends an email with the email template <code>MortgageAssessProperty</code>.</p> <p>Input: let <code>loanId</code></p> <p>Output: sends email</p>		

Name	Description	Script Type	Digital Asset
FTOS_BARET_ NotifyMortgageUW	<p>This script sends an email to the underwriter.</p> <p>Input: let <code>loanId</code>; let <code>templateName</code>; let <code>toStatusName</code></p> <p>Output: sends an email</p>		
FTOS_BARET_ NotifyUWSolicitor	<p>This script alerts the bank employee to perform the underwriting tasks.</p> <p>Input: let <code>loanId</code>; let <code>templateName</code>; let <code>toStatusName</code></p> <p>Output: sends the email</p>		
FTOS_BARET_ RemoveMortgageAddress	<p>This script deletes an address.</p> <p>Input: var <code>addressId</code></p> <p>Output: void</p>	On demand	RW M- SDK
FTOS_BARET_ RemoveMortgageSpending	<p>This script deletes an expense that was added manually by an applicant.</p> <p>Input: var <code>loanId</code></p> <p>Output: void</p>	On demand	RW M- SDK

Name	Description	Script Type	Digital Asset
FTOS_BARET_RetailMortgageLinkApplicantData	<p>This script updates the data in the Loan and Retail Applicant Data entities (<code>applicantDataId</code>, <code>applicationId</code>, <code>financialDataId</code>, <code>loanNo</code>, <code>name</code>) and (saves the session to the corresponding <code>applicantId</code>).</p> <p>Input: var <code>loanId</code></p> <p>Output: <code>IFtosScriptableEbsExecutionContext</code> object</p>	On demand	RW M-SDK
FTOS_BARET_SaveAvailableMortgageProducts	<p>This script is used to get all the banking products and determines which of those are applicable to the application (interest, instalment type, product destination selected) and calls the "RetailMortgagePricingSchedule" on page 171 document to get the value of the interest.</p> <p>Input: var <code>loanId</code>; var <code>applicationId</code>; var <code>filters</code></p> <p>Output: the value of the interest</p>	On demand	RW M-SDK

Name	Description	Script Type	Digital Asset
FTOS_BARET_SaveMortgagePricing	<p>This script gets the details about all of the offers (products you are eligible for, the maximum offer we can give you) and updates the offer data , and then searches for the document for that banking product.</p> <p>Input: var <code>pricingId</code>; var <code>loanId</code>; var <code>applicationId</code></p> <p>Output: boolean</p>	On demand	RW M-SDK
FTOS_BARET_SendMortgageCoApplicantMailDocument	<p>This script sends the co-applicant an email with the documents.</p> <p>Input: var <code>loanId</code>; var <code>applicationId</code>; var <code>applicantId</code>; var <code>docName</code></p> <p>Output: var <code>coApplicantData</code></p>		
FTOS_BARET_SendMortgageContractMail	<p>This script sends an email with the template MortgageLoanContractSign.</p> <p>Input: var <code>loanId</code>; var <code>applicationId</code>; var <code>docName</code></p> <p>Output: sends email</p>		

Name	Description	Script Type	Digital Asset
FTOS_BARET_ SendMortgageSolicitorEmails	<p>This script sends two emails MortgageSolicitorUploadDocuments and MortgageApplicantsWaitingSolicitor.</p> <p>Input: let applicantName; let applicantEmail; let applicantId; let solicitorEmail; let loanId; let applicationId; let docName</p> <p>Output: sends two emails</p>		
FTOS_BARET_ SetResumingApplication	<p>This script sets the rest of the applications as expired, and creates the session for the chosen loan.</p> <p>Input: var chosenLoanId; var email</p> <p>Output: var navigationUrl</p>		
FTOS_BARET_ UpdateMortgage	<p>This script updates the data in the entity FTOS_BARET_Loan.</p> <p>Input: N/A</p> <p>Output: N/A</p>	On demand	
FTOS_BARET_ UpdateProductSelection	<p>This script updates the data in the Loan entity.</p> <p>Input: n/a</p> <p>Output: IFtosScriptableEbsExecutionContext object</p>	On demand	RW M-SDK

Name	Description	Script Type	Digital Asset
FTOS_BNKAP_ AddRelatedRetailApplicant	<p>This script inserts the co-applicant data in the RetailApplicantRelation entity.</p> <p>Input: var <code>masterApplicantId</code>; var <code>loanId</code></p> <p>Output: var <code>relatedApplicantId</code></p>	On demand	RW M-SDK
FTOS_BNKAP_ AddSolicitorDetails	<p>This script saves in the entity <code>FTOS_BNKAP_Solicitor</code> the details: accountNumber, accountHolderName, sortCode, loanId.</p> <p>Input: let <code>loanId</code>; let <code>accHolder</code>; let <code>accNumber</code>; let <code>sortCode</code></p> <p>Output: let params</p>		
FTOS_BNKAP_ CalcAdjustedIncome	<p>This script determines the monthly net income, i.e., after tax divided by 12 and runs the formula "<code>MORTGAGE_KO_DIP</code>" on page 161.</p> <p>Input: let <code>incomeAmount</code>; let <code>frequencyId</code>; let <code>categoryId</code>; let <code>applicantId</code></p> <p>Output: <code>adjustedIncome</code></p>		

Name	Description	Script Type	Digital Asset
FTOS_BNKAP_ CoApplicantFullApproval	<p>This script gets the co-applicant data and the loan data and sends them an email and generates a link to the environment.</p> <p>Input: let <code>firstName</code>; let <code>loanId</code>; let <code>coApplicantsData</code></p> <p>Output: updates the email address and phone number in the entity <code>FTOS_BNKAP_RetailApplicantData</code>.</p>	On demand	
FTOS_BNKAP_ DeleteAllIncomesByApplicant	<p>This script deletes all the income sources for an applicant from the <code>RetailIncomeData</code> entity.</p> <p>Input: var <code>masterApplicantId</code>; var <code>loanId</code></p> <p>Output: delete incomes</p>	On demand	RW M- SDK
FTOS_BNKAP_ DeleteFileFromApplicantDocument	<p>This script updates in the entity <code>FTOS_BNKAP_RetailApplicantDocument</code> the files.</p> <p>Input: let <code>recordId</code>; let <code>files</code></p> <p>Output: <code>file</code></p>		
FTOS_BNKAP_ DeleteFileFromApplicantionDocument	<p>This script deletes the file from an application.</p> <p>Input: let <code>applicationId</code>; let <code>files</code></p> <p>Output: deletes the files</p>		

Name	Description	Script Type	Digital Asset
FTOS_BNKAP_DeleteFileFromApplicationDocument	<p>This script deletes the file based on the recordId.</p> <p>Input: let <code>recordId</code></p> <p>Output: deletes the record</p>		
FTOS_BNKAP_DeleteRetailApplicantRelation	<p>This script deletes all the data of the co-borrower from the RetailApplicantRelation & RetailApplicantAddress & RetailIncomeData & RetailLoansData entities.</p> <p>Input: var <code>relatedApplicantId</code></p> <p>Output: deletes the data of the co-applicant</p>	On demand	RW M-SDK
FTOS_BNKAP_FinancialAnalysis	<p>This script triggers all the business formulas and determines their result.</p> <p>Input: var let <code>loanId</code></p> <p>Output: boolean</p>	On demand	RW M-SDK
FTOS_BNKAP_GetApplicantApplicationDocument	<p>This script gets the documents for the upload process.</p> <p>Input: let <code>applicationId</code>; let <code>documentsName</code></p> <p>Output: array <code>applicationDocuments</code></p>		
FTOS_BNKAP_GetApplicantSelectedDocuments	<p>This script gets the documents that were selected by the customer to be uploaded.</p> <p>Input: let <code>applicantId</code>; let <code>category</code>; var <code>categoryId</code></p> <p>Output: var <code>insertedDocs</code></p>	On demand	

Name	Description	Script Type	Digital Asset
FTOS_BNKAP_GetCoApplicantsFromMainApplicant	<p>This script gets the email address and phone number of the co-applicant.</p> <p>Input: let <code>applicant</code></p> <p>Output: array <code>coAppsId</code></p>	On demand	
FTOS_BNKAP_GetMortgageFullApprovalStatus	<p>This script sets the result for the: id, address, income, expense, total, coApplicants, isCoApplicant.</p> <p>Input: let <code>applicantDataId</code></p> <p>Output: let <code>result</code></p>	On demand	
FTOS_BNKAP_GetMortgageLocations	<p>This script gets the location, text, address and open hours depending on the city.</p> <p>Input: var <code>loc</code></p> <p>Output: var <code>data</code></p>	On demand	RW M-SDK
FTOS_BNKAP_GetPurposes	<p>This script gets the destinations of the banking products.</p> <p>Input: var <code>digitalJourney</code></p> <p>Output: boolean</p>	On demand	BAN-SDK
FTOS_BNKAP_LoadUWQuestions	<p>This script gets the underwriting questions.</p> <p>Input: let <code>retailApplicantId</code></p> <p>Output: var <code>data</code></p>		
FTOS_BNKAP_MortgageSaveIncome	<p>This script updates the currency for the income.</p> <p>Input: var <code>incomeId</code>; var <code>incomeData</code></p> <p>Output: update the in <code>incomeData</code></p>	On demand	RW M-SDK

Name	Description	Script Type	Digital Asset
FTOS_BNKAP_Mortgage_CoApplicantStatusData	This script gets the details about the co-applicant and sets a start and end date for the application. Input: let <code>applicantId</code> Output: object <code>obj</code>	On demand	
FTOS_BNKAP_MortgageAddSalaryIncome	This script inserts the income in the RetailIncomeData entity. Input: var <code>incomeData</code> Output: boolean	On demand	RW M-SDK
FTOS_BNKAP_MortgageDeleteIncome	This script deletes the income of an applicant. Input: var <code>incomeId</code> Output: void	On demand	RW M-SDK
FTOS_BNKAP_MortgageGetAllIncomes	This script gets the income and the currency for it. Input: var <code>retailApplicantId</code> Output: var <code>data</code>	On demand	RW M-SDK
FTOS_BNKAP_RequestMortgageDocs	This script requests more documents from the customer by generating a link, changing the status to Additional documents requested. Input: let <code>loanId</code> Output: <code>number</code>		
FTOS_BNKAP_SaveApplicantApplicationDocuments	This script saves the application documents. Input: let <code>applicantDataId</code> ; let <code>applicationId</code> ; let <code>documentsType</code> Output: let <code>documentsType</code>		

Name	Description	Script Type	Digital Asset
FTOS_BNKAP_SaveApplicantSelectedDocuments	<p>This script saves the type and category of the documents selected by the borrower.</p> <p>Input: let <code>applicantId</code>; let <code>selectedDocs</code>; let <code>category</code></p> <p>Output: inserts in the entity <code>FTOS_BNKAP_RetailApplicantDocument</code> the values for: <code>retailApplicantId</code>, <code>typeId</code>, <code>categoryId</code>.</p>	On demand	
FTOS_BNKAP_SaveCreditKudosData	<p>This script updates in the entity <code>FTOS_BNKAP_RetailFinancialData</code> the values for the: <code>income</code>, <code>incomeWithBankTransfers</code>, <code>essentialExpenditure</code>, <code>affordabilityThreshold</code>, <code>gamblingExpenditureRatioToIncome</code>, <code>currencyId</code>.</p> <p>Input: let <code>applicantDataId</code>; let <code>ckData</code></p> <p>Output: <code>income</code>, <code>incomeWithBankTransfers</code>, <code>essentialExpenditure</code>, <code>affordabilityThreshold</code>, <code>gamblingExpenditureRatioToIncome</code>, <code>currencyId</code></p>	On demand	
FTOS_BNKAP_SaveUWQuestion	<p>This script updates the answer in the entity <code>FTOS_BNKAP_UnderwritingQuestion</code>.</p> <p>Input: let <code>questionId</code>; let <code>answer</code></p> <p>Output: <code>answer</code></p>		

Name	Description	Script Type	Digital Asset
FTOS_BNKAP_UploadMortgageApplicationDocuments	<p>This script uploads the documents for the mortgage, used including for the insurance documents.</p> <p>Input: let <code>base64</code>; let <code>name</code>; let <code>typeId</code>; let <code>applicationId</code>; let <code>documentType</code></p> <p>Output: let <code>insertedDocs</code></p>		
FTOS_BNKAP_UploadMortgageProofDocuments	<p>This script updates the documents for the applicant in the database with the uploaded documents.</p> <p>Input: var <code>base64</code>; var <code>name</code>; var <code>applicantId</code>; var <code>typeId</code></p> <p>Output: var <code>insertedDocs</code></p>	On demand	
FTOS_RWM_CheckForEndpoint	<p>This script verifies the endpoint.</p> <p>Input: var <code>endpointName</code></p> <p>Output: var <code>result</code></p>	On demand	RWM-SDK

NOTE

In addition to the RWM_SDK digital asset, there is the asset BAN-SDK that contains endpoints generically used in all types of digital journeys, not only in Digital Mortgages Self-Service Application.

For details, see [Server SDK Reference Guide](#).

Configuring the Digital Flow Processing

This menu part of Innovation Studio is used to build processors used in the journey for specific actions that are triggered such as Face Recognition and Computer Vision and contact validation. It is easy to modify any parameter of the processor by accessing the dedicated processor settings and changing the value from the key-value pair.

Access **Innovation Studio > Digital Experience > Digital Experience > Digital Flow Processing > RetailMortgage**.

← Save and close Save and reload

Edit Flow Settings

Flow Settings

Digital Journey

Name RetailMortgage

Processor Settings

+ Insert X Delete Export Refresh

Name	Flow Settings	Digital Processor Type	Modified On
Defaults	RetailMortgage		08/06/2022 16:34
FTOS_DFP_Mortgage_ESign	RetailMortgage	Electronic Signature	01/07/2022 12:53
<input checked="" type="checkbox"/> FTOS_DFP_MORTGAGE_MAIL_OTP	RetailMortgage	OTP	08/07/2022 14:37
FTOS_DFP_MORTGAGE_OTP	RetailMortgage	OTP	08/07/2022 11:19
Mortgage_DocumentType	RetailMortgage		23/06/2022 16:47
Mortgage_OCR_DL	RetailMortgage	OCR	27/04/2022 13:03
Mortgage_OCR_ID	RetailMortgage	OCR	27/04/2022 13:05

Name	Flow Settings	Digital Processor Type	Description
Defaults	RetailMortgage		It holds the default values for several components of the solution.
FTOS_DFP_MORTGAGE_OTP	RetailMortgage	OTP	It holds the configurations for the One-Time-Password.
Mortgage_DocumentType	RetailMortgage		It holds the types of documents.
Mortgage_OCR_DL	RetailMortgage	OCR	It holds the configurations for the driver's license scanning.

Name	Flow Settings	Digital Processor Type	Description
Mortgage_OCR_ID	RetailMortgage	OCR	It holds the configurations for the identity document scanning.
Mortgage_OCR_Passport	RetailMortgage	OCR	It holds the configurations for the passportscanning.
Processor Setting for Liveness	RetailMortgage	Face Recognition	It holds the configurations for the selfie.
FTOS_DFP_Mortgage_ESign	RetailMortgage	Electronic Signature	It holds the settings for the eSign processor for the final contract.
FTOS_DFP_MORTGAGE_MAIL_OTP	RetailMortgage	OTP	It holds the settings for the One-Time-Password.

RetailMortgage

Defaults

It contains the settings for the maximum number of applicants allowed, the currency for the mortgage, the property values used for the ["Configuring the Banking Product Factory"](#) on page 136, the citizenship & age interval needed for eligibility, the period type for income/spendings.

```
{
  "maxNoOfApplicants": 2,
  "defaultCurrencyCode": "GBP",
  "defaultCurrencySymbol": "£",
  "defaultPeriod": 300,
  "minEstimatedPropertyValue": 10000,
  "maxEstimatedPropertyValue": 15000000,
  "stepEstimatedPropertyValue": 1000,
  "defaultEstimatedPropertyValue":
300000,
  "stepDownPayment": 1000,
  "allowedResidenceCountries": ["United Kindom"],
  "minAge": 18,
  "maxAge": 150,
  "periodType":
"months"
```

```
}
```

FTOS_DFP_MORTGAGE_OTP

These are the settings for the "Contact Validation" on page 63 using a one-time-password generated within Innovation Studio. You can modify the settings for both email and SMS validation such as number of digits the code has, the maximum number of retries, the interval the code is valid for.

```
{
  "SourceEntityName" : "RetailApplicantData",
  "Channels": [
    {
      "Name": "Sms",
      "RelatedEntityName": "RetailApplicantData",
      "RelatedAttribute": "mobilePhone",
      "LookupAttribute": "RetailApplicantDataid",
      "OTPDigitsNumber": 4,
      "MaxRetry": 5,
      "MaxResendRetry": 5,
      "MaxResendRetryIntervalSeconds": 60
    },
    {
      "Name": "Email",
      "RelatedEntityName": "RetailApplicantData",
      "RelatedAttribute": "email",
      "LookupAttribute": "RetailApplicantDataid",
      "OTPDigitsNumber": 4,
      "MaxRetry": 5,
      "MaxResendRetry": 5,
      "MaxResendRetryIntervalSeconds": 120
    }
  ],
  "ValidTimeIntervalMinutes": 3,
  "maskNextStepURLChanged": {
    "entity": "FTOS_BNKAP_RetailApplicantData",
    "form": "FTOS_BNKAP_MortgageContactInfo",
    "section": "Contact Info"
  },
  "maskNextStepURLSuccess": {
    "entity": "FTOS_BNKAP_RetailApplicantData",
    "form": "FTOS_BNKAP_MortgageContactInfo",
    "section": "Redirect"
  }
}
```

```

    },
    "maskNextStepURLFail": {
      "entity": "FTOS_BNKAP_RetailApplicantData",
      "form": "FTOS_BNKAP_MortgageContactInfo",
      "section": "Fail"
    },
    "businessWorkflow": {
      "entity": "FTOS_BASME_Loan",
      "bwAttribute": "corporateLoanId",
      "successStatus": "",
      "failedStatus": ""
    }
  }
}

```

Mortgage_DocumentType

These are the settings for the types of documents available for the customer to upload.

Settings

```

{
  "documents": [
    {
      "category": "Address",
      "type": [
        "Household utility bill",
        "Any bank correspondence quoting an account
number",
        "Any revenue correspondence",
        "Social welfare document quoting the policy
number",
        "Littlewood's correspondence quoting an account
number"
      ],
      "minDoc": 2
    },
    {
      "category": "Income",
      "type": [
        "Current account statement",
        "Pay Slip",
        "Salary cert",
        "Statement of earnings"
      ]
    }
  ]
}

```

```

        ],
        "minDoc": 1
    },
    {
        "category": "Expense",
        "type": [
            "Ongoing loan documents",
            "Other recurring expenditures"
        ],
        "minDoc": 1
    },
    {
        "category": "Solicitor",
        "type": [
            "Property deeds",
            "Property title"
        ],
        "minDoc": 0
    },
    {
        "category": "Insurance",
        "type": [
            "Insurance policy"
        ],
        "minDoc": 0
    }
]
}

```

Mortgage_OCR_DL

These are the settings for the scanning of the driver's license. You can modify the source entity, editing the image, the mapping of the data, the next steps in case of success or failure, etc.

Settings

```

{
    "SourceEntityName": "FTOS_BNKAP_RetailApplicantData",
    "Entities": [
        {

```

```

        "DestinationEntityName": "FTOS_BNKAP_
RetailApplicantData",
        "SourceEntityName": "FTOS_BNKAP_
RetailApplicantData",
        "SourceLookupDestinationName": "FTOS_BNKAP_
RetailApplicantDataid"
    },
    ],
    "FileAttributeName": "pictureOcr",
    "WaitUserConfirmation" : true,
    "ShowUploadPhotoButton" : true,
    "ShowTakePictureButton" : true,
    "RegisterFaceFromOCR" : true,
    "SessionExpiredMins" : 15,
    "RotateImage" : false,
    "CropImage" : false,
    "MaxRetry": 5,
    "OptionSets": [{
"OptionSetName": "Gender Type",
"Sex",
"OptionSetItems": {
"Male",
"Female"
}, {
"OptionSetName": "Citizenship",
"Nationality",
"OptionSetItems": {
"Romanian",
"GBR": "UK"
}
}],
"LookupEntities": [{
"MappingName": "DistrictCode",
"EntityName": "District",

```

```

"AttributeKey": "Code"
                                }, {
"MappingName": "Country",
"EntityName": "FTOS_CMB_Country",
"AttributeKey": "code"
                                }],
"Validations": [],
"AvailableDocumentTypes": [{
"type": "IdRom",
"DocumentType": "IdentityCard",
"Country": "RO",
"Provider": "Azure"
                                }, {
"type": "IdBG",
"DocumentType": "IdentityCard",
"Country": "BG",
"Provider": "Abbyy"
                                }, {
"type": "Passport",
"DocumentType": "MRZ",
"Provider": "Azure"
                                }, {
"type": "DrivingLicence",
"DocumentType": "DrivingLicence",
"Provider": "Azure"
                                }
],
"maskNextStepURLSuccess": {

```

```

        "entity": "FTOS_BNKAP_RetailApplicantData",
        "form": "FTOS_BNKAP_MortgageScanOCR",
        "section": "redirect"
    },
    "maskNextStepURLFail": {
        "entity": "FTOS_BNKAP_RetailApplicantData",
        "form": "FTOS_BNKAP_MortgageScanOCR",
        "section": "fail"
    },
    "DocumentType": "DrivingLicence"
}

```

Mapping

```

{
    "DocumentsMapping": [{
        "type": "DrivingLicence",
        "Map": {
            "PictureAttribute": "pictureOcr",
            "LastName": "lastName",
            "GivenName": "firstName",
            "DocumentNumber": "IdCardSeries",
            "StreetType": "streetType",
            "PersonalNumber": "PIN",
            "BirthDate": "dateOfBirth",
            "PlaceOfBirthBody": "placeOfBirth",
            "Address": "fullAddress",
            "Sex": "gender",
            "Nationality": "citizenshipId",
            "Country": "country",
            "DistrictCode": "districtId",
            "City": "city",
            "Street": "street",
            "StreetNo": "streetNo",
            "Storey": "floor",
            "Stairway": "stairway",
            "ApartmentNo": "apartment",
            "ApHouse": "buildingNo",
            "IssuedBy": "IdIssueInstitution",
            "IssuedAt": "IdIssueDate",
            "IssuedUntil": "IdExpirationDate",
            "IssuingCountry": "cityName"
        }
    }]
}

```

Mortgage_OCR_ID

These are the settings for the scanning of the identity document. You can modify the source entity, editing the image, the mapping of the data, the next steps in case of success or failure, etc.

Settings

```
{
  "SourceEntityName": "FTOS_BNKAP_RetailApplicantData",
  "Entities": [
    {
      "DestinationEntityName": "FTOS_BNKAP_
RetailApplicantData",
      "SourceEntityName": "FTOS_BNKAP_
RetailApplicantData",
      "SourceLookupDestinationName": "FTOS_BNKAP_
RetailApplicantDataid"
    }
  ],
  "FileAttributeName": "pictureOcr",
  "WaitUserConfirmation" : true,
  "ShowUploadPhotoButton" : true,
  "ShowTakePictureButton" : true,
  "RegisterFaceFromOCR" : true,
  "SessionExpiredMins" : 15,
  "RotateImage" : false,
  "CropImage" : false,
  "MaxRetry": 5,
  "OptionSets": [{
    "OptionSetName": "Gender Type",
    "MappingName":
    "Sex",
    "OptionSetItems": {
      "M":
      "Male",
      "F":
      "Female"
    }
  }, {
    "OptionSetName": "Citizenship",
    "MappingName":
    "Nationality",
```

```

"OptionSetItems": {
  "Romanian",
  "GBR": "UK"
},
"LookUpEntities": [],
"Validations": [{
  "IdROM",
  "Validations": "",
  "CheckScriptName": "ValidateIdROM"
}],
"AvailableDocumentTypes": [{
  "type": "IdRom",
  "DocumentType": "IdentityCard",
  "Country": "RO",
  "Provider": "Azure"
}, {
  "type": "IdBG",
  "DocumentType": "IdentityCard",
  "Country": "BG",
  "Provider": "Abbyy"
}, {
  "type": "Passport",
  "DocumentType": "MRZ",
  "Provider": "Azure"
}, {
  "type": "DrivingLicence",

```

```

"DocumentType": "DrivingLicence",

"Provider": "Azure"

}],

"maskNextStepURLSuccess": {
    "entity": "FTOS_BNKAP_RetailApplicantData",
    "form": "FTOS_BNKAP_MortgageScanOCR",
    "section": "redirect"
},
"maskNextStepURLFail": {
    "entity": "FTOS_BNKAP_RetailApplicantData",
    "form": "FTOS_BNKAP_MortgageScanOCR",
    "section": "fail"
},
"DocumentType": "IdRom"
}

```

Mapping

```

{
  "DocumentsMapping": [{
    "type": "IdRom",
    "Map": {
      "PictureAttribute": "pictureOcr",
      "LastName": "lastName",
      "GivenName": "firstName",
      "DocumentNumber": "IdCardSeries",
      "StreetType": "streetType",
      "PersonalNumber": "PIN",
      "BirthDate": "dateOfBirth",
      "PlaceOfBirthBody": "placeOfBirth",
      "Address": "fullAddress",
      "Sex": "gender",
      "Nationality": "citizenshipId",
      "Country": "country",
      "DistrictCode": "districtId",
      "City": "city",
      "Street": "street",
      "StreetNo": "streetNo",
      "Storey": "floor",
      "Stairway": "stairway",
      "ApartmentNo": "apartment",
    }
  ]
}

```

```

        "ApHouse": "buildingNo",
        "IssuedBy": "IdIssueInstitution",
        "IssuedAt": "IdIssueDate",
        "IssuedUntil": "IdExpirationDate",
        "IssuingCountry": "cityName"
    }
  }
}

```

Mortgage_OCR_Passport

These are the settings for the scanning of the passport. You can modify the source entity, editing the image, the number of retries, the mapping of the data, the next steps in case of success or failure, etc.

Settings

```

{
  "SourceEntityName": "FTOS_BNKAP_RetailApplicantData",
  "Entities": [
    {
      "DestinationEntityName": "FTOS_BNKAP_RetailApplicantData",
      "SourceEntityName": "FTOS_BNKAP_RetailApplicantData",
      "SourceLookupDestinationName": "FTOS_BNKAP_RetailApplicantDataid"
    }
  ],
  "FileAttributeName": "pictureOcr",
  "WaitUserConfirmation" : true,
  "ShowUploadPhotoButton" : true,
  "ShowTakePictureButton" : true,
  "RegisterFaceFromOCR" : true,
  "SessionExpiredMins" : 15,
  "RotateImage" : false,
  "CropImage" : false,
  "MaxRetry": 5,
  "OptionSets": [{
    "OptionSetName": "Gender Type",
    "MappingName": "Sex",
    "OptionSetItems": {

```

```

    "Male",
    "Female"
  }, {
    "OptionSetName": "Citizenship",
    "Nationality",
    "OptionSetItems": {
      "Romanian",
      "M":
      "F":
      "ROU":
      "GBR": "UK"
    }
  }],

  "LookupEntities": [{
    "MappingName": "DistrictCode",
    "EntityName": "District",
    "AttributeKey": "Code"
  }, {
    "MappingName": "Country",
    "EntityName": "FTOS_CMB_Country",
    "AttributeKey": "code"
  }],

  "Validations": [],
  "AvailableDocumentTypes": [{
    "type": "IdRom",
    "DocumentType": "IdentityCard",
    "Country": "RO",
    "Provider": "Azure"
  }, {
    "type": "IdBG",

```

```

"DocumentType": "IdentityCard",
"Country": "BG",
"Provider": "Abbyy"
}, {
"type": "Passport",
"DocumentType": "MRZ",
"Provider": "Azure"
}, {
"type": "DrivingLicence",
"DocumentType": "DrivingLicence",
"Provider": "Azure"
}],
"maskNextStepURLSuccess": {
  "entity": "FTOS_BNKAP_RetailApplicantData",
  "form": "FTOS_BNKAP_MortgageScanOCR",
  "section": "redirect"
},
"maskNextStepURLFail": {
  "entity": "FTOS_BNKAP_RetailApplicantData",
  "form": "FTOS_BNKAP_MortgageScanOCR",
  "section": "fail"
},
"DocumentType": "Passport"
}

```

Mapping

```

{
  "DocumentsMapping": [{
    "type": "Passport",
    "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": "citizenshipId",
        "City": "CityId",
        "Street": "StreetName",
        "StreetNo": "StreetNo",
        "Storey": "FloorNo",
        "Stairway": "Stairway",
        "ApartmentNo": "ApartmentNo",
        "ApHouse": "BuildingNo",
        "IssuedBy": "IdIssueInstitution",
        "IssuedAt": "IdIssueDate",
        "IssuedUntil": "IdExpirationDate",
        "IssuingCountry": "issuingCountry"
    }
}
}

```

Processor Setting for Liveness

These are the settings for the liveness processor where you can change the maximum number of retries, the minimum acceptance for the confidence score, the next steps for success and failure of the selfie.

Settings

```

{
    "isLiveness": true,
    "DestinationEntityName": "FTOS_BNKAP_RetailApplicantData",
    "SourceEntityName": "FTOS_BNKAP_RetailApplicantData",
    "SourceLookupDestinationName": "FTOS_BNKAP_
RetailApplicantDataid",
    "FileAttributeName": "pictureOcr",
    "MaxRetry": 5,
    "MinimumAcceptedConfidence": 0.2,
    "maskNextStepURLSuccess": {"entity": "FTOS_BNKAP_
RetailApplicantData", "form": "FTOS_BNKAP_
MortgageSelfie", "section": "Success" },

```

```

    "maskNextStepURLFail": { "entity": "FTOS_BNKAP_
RetailApplicantData", "form": "FTOS_BNKAP_
MortgageSelfie", "section": "Fail" },
    "businessStatusSuccess": "",
    "businessStatusFail": ""
}

```

Mapping

```

{
  "Confidence": "confidence"
}

```

FTOS_DFP_Mortgage_ESign

These are the settings for the generation of the OTP for signing the final contract for the mortgage request. Here you can modify the maximum number of retries, the file, the text of the SMS, the next steps in case of success and failure.

Settings

```

{
  "EntityName": "FTOS_BNKAP_RetailApplicantData",
  "FileAttributeNameList": [
    {
      "fileAttributeName": "contract",
      "fileToBeSignedName": "finalContract.pdf"
    }
  ],
  "MaxRetry": 3,
  "daysUntilExpire": 1,
  "signedDocumentName": "retailContract",
  "WebhookUrl": "{FTOSHook}/49dae9c6-fab9-4c80-a843-
4c80-a843-ee5709b36c9?envelopeId=##&action=envelopeFinished",
  "WebhookStatusUrl": "{FTOSHook}/49dae9c6-fab9-4c80-a843-
ee5709b36c9?envelopeId=##&action=envelopeFinished",
  "SignatureSteps": [
    {
      "order": "1",
      "signatureTag": "#333#",
      "signatureTypeTemplate":
        "",
      "signatureType": "OTPSign",
    }
  ]
}

```

```

        "signatureCoordinates": [
            {
                "fileAttributeName": "contract",
                "pageNumber": 5,
                "x": 300,
                "y": 80
            }
        ],
        "SignatureData": [
            {
                "SourceEntityName":
                    "FTOS_BNKAP_RetailApplicantData",
                "SourceLookupDestinationName": "FTOS_BNKAP_RetailApplicantDataid",
                "DefaultFields": {
                    "languageCode":
                        "EN",
                    "documentType":
                        ""
                },
                "MappedFields": {
                    "languageCode":
                        "",
                    "documentType":
                        "",
                    "email":
                        "email",
                    "phoneMobile":
                        "mobilePhone",
                    "firstName":
                        "firstName",
                    "lastName":
                        "lastName",
                    "documentIssuedBy": "",
                    "socialSecurityNumber": "PIN",
                    "documentExpiryDate": "",
                    "documentIssuedOn": "",
                    "documentNumber": ""
                },
                "OptionSets": "",
                "LookupEntities":
            }
        ]
    }
}

```

```

    },
    {
      "SourceEntityName":
"FTOS_BNKAP_RetailApplicantData",
      "SourceLookupDestinationName": "FTOS_BNKAP_RetailApplicantDataid",
      "DefaultFields": {
        "countryResidence": ""
      },
      "MappedFields": {
        "countryResidence": ""
      },
      "OptionSets": "",
      "LookupEntities":
""
    }
  ],
  "smsText": "Agreement for
signing the document through digital certification, transaction
code: {tId}",
  "smsConfiguration": {
    "Text": "Agreement for
signing the document through digital certification {tId},
transaction code: {Token}",
    "LanguageCode": "en"
  },
  "clickMsg": "Click here to
sign",
  "disableEmail": true
},
  "maskNextStepURLSuccess": {
    "entity": "FTOS_BNKAP_RetailApplicantData", "form": "FTOS_BNKAP_
MortgageSign", "section": "Success" },
    "maskNextStepURLFail": { "entity": "FTOS_BNKAP_
RetailApplicantData", "form": "FTOS_BNKAP_MortgageSign", "section":
"Fail" },
    "businessStatusSuccess": "Document Signed",
    "businessStatusFail": "Document Signing Failed",
    "redirecttoNamirialLink": true
}

```

Mapping

```
{
  "FileAttributeName": "contract"
}
```

FTOS_DFP_MORTGAGE_MAIL_OTP

These are the settings for the OTP sent via email. You can modify the channels of communication, the number of digits the OTP has, the maximum number of retries, the maximum number of resend, the interval the OTP is valid for.

Settings

```
{
  "SourceEntityName" : "FTOS_BARET_Loan",
  "Channels": [
    {
      "Name": "Email",
      "RelatedEntityName": "FTOS_BNKAP_
RetailApplicantData",
      "RelatedAttribute": "email",
      "LookupAttribute": "applicantDataId",
      "OTPDigitsNumber": 4,
      "MaxRetry": 5,
      "MaxResendRetry": 5,
      "MaxResendRetryIntervalSeconds": 120
    }
  ],
  "ValidTimeIntervalMinutes": 3,
  "maskNextStepURLChanged": {
    "entity": "FTOS_BARET_Loan",
    "form": "FTOS_BARET_MortgageLogIn",
    "section": "LoginScreen"
  },
  "maskNextStepURLSuccess": {
    "entity": "FTOS_BARET_Loan",
    "form": "FTOS_BARET_MortgageLogIn",
    "section": "Applications"
  },
  "maskNextStepURLFail": {
    "entity": "FTOS_BARET_Loan",
```

```

        "form": "FTOS_BARET_MortgageLogIn",
        "section": "Fail"
    },
    "businessWorkflow": {
        "entity": "FTOS_BARET_Loan",
        "bwAttribute": "FTOS_BARET_LoanId",
        "successStatus": "",
        "failedStatus": ""
    }
}

```

Loan Underwriting

The financial institution verifies your income, expenses, and property details in order to issue final approval on your mortgage application. The decision to pass the loan is done for this journey in two stages:

1. automatically: applicants must fulfill the requirements such as not being blacklisted, not having county court judgments, and credit history for all the applicants.
2. manually.

The journey is the following: the application reaches the automatic stage, and from there it can be either rejected or moved to the manual assessment.

Automatic Assessment

The automatic assessment filters all the applications for the blacklisted people. The assessment is done by searching for the person on the database of the bank and on the **Lexis Nexis**¹ platform to get the confidence score. This connector is an integration we recommend, but other third-party systems can be integrated. The search is conducted using the full name of the applicant and/or Personal Identification Number.

¹LexisNexis Legal & is a global provider of legal, regulatory and business information and analytics that help customers increase productivity, improve decision-making and outcomes, and advance the rule of law around the world.

The search within the bank's database is done using the following data:

- first name: mandatory for search
- last name: mandatory for search
- date of birth: optional for search
- nationality: optional for search
- country of residence: optional for search
- customer PIN: optional for search.

If by searching the database a result is found for the first name, last name, date of birth, and nationality, then the applicant fails the request and a rejection screen is displayed. If by searching the database a result is found for the customer PIN, then the applicant fails the request and a rejection screen is displayed, otherwise, the applicant is approved and the solution runs the Lexis Nexis assessment.

The search within the Lexis Nexis connector is done:

Field	Required	Type	Description
Entity unique ID	No	Text	A unique system-generated number that identifies the entity.
Entity score	No	Numeric	<p>This field displays a confidence score between 0 and 100 that Lexis Nexis Bridger Insight XG generates to indicate how closely the list record matched the input entity information.</p> <p>A score of 90 indicates the match is closer than a potential match with a score of 80. When a valid score is not available, -1 is returned.</p>
Entity name	No	Text	The main entity name from the list record that generated the potential match.
Best name score	No	Text	The score of the name that most closely matched the input information.
Best name	No	Text	The name that most closely matched the input information.
Best country	No	Text	The country that most closely matched the input information.

Field	Required	Type	Description
Reason listed	No	Text	The reason the country is on the list.

If by searching the database a result is found, and the <Entity Score> is >90%, then the applicant fails the request and a rejection screen is displayed, otherwise, the customer is approved and the solution runs the county court judgments assessment.

County Court Judgments

By using a connector, the solution incorporates an endpoint that calls the API to bring data from an external source. Such an external source can be the [Experian](#) connector. This connector queries the Experian database to find the information. However, the solution can accommodate any other third-party software, this is one such software integration developed by FintechOS. Depending on localization, other connectors produced by FintechOS may be used.

The data used is the status being settled/not settled:

- country court judgment date: the date when the country court Judgment was posted
- country court judgment value: the amount to pay.

The result can be:

- If the country court Judgment is not settled, then the applicant fails the request and a rejection screen is displayed
- If the country court Judgment is satisfied/If there is more than one country court judgments in the past 12 months/If there are two or more, then the system adds the total value of them and if the total value is over 1000, then the applicant fails the request and a rejection screen is displayed.

If the assessment is passed, then the Credit Bureau assessment is next.

Credit Bureau Interrogation

Also, at this stage, we will need to pull a credit report for all the applicants, no matter if they have information fetched from open banking - we will need this information in the scoring matrix.

The BC check will be mocked since we don't have a connector in this area but we will need to mock the following attributes:

For search, we will use the following attributes:

- First Name (mandatory)
- Last Name (mandatory)
- PIN (optional)
- Date of birth (mandatory)
- Current address, and postal code (mandatory).

To get the result, the values for the metadata below are mocked:

- Credit type
- Credit is active
- Currency
- Start date
- End date
- Loan amount
- Monthly instalment
- Principal due
- Max DPD in the past 3 months (can be from 0 to 999, or it can be no history)
- Max DPD in the past 6 months (can be from 0 to 999, or it can be no history)
- Max DPD in the past 12 months (can be from 0 to 999, or it can be no history)
- Max DPD in the past 24 months (can be from 0 to 999, or it can be no history).

Second Automatic Underwriting Process

The information provided in the full approval step of both applicants is validated here:

- Proof of ID: this validation is already done since the ID and selfie are confirmed
- Proof of address: Because the applicant uploads the documents, this validation is done manually by an underwriter.
- Proof of income: If all applicants chose to offer the income via open banking, the validation is done here.

NOTE The open banking integration registers the net income.

- Proof of expenses: If all applicants chose to offer the expenses via open banking, the validation is done here.

DTI

The DTI is calculated here:

- Predicted monthly income amount: used as income for all applicants
- Predicted monthly essential expenditure: used as expenses for all applicants.

Then, the system calculates the income weight for income and expenses based on the data from the open banking integration.

The system adds the incomes for both applicants to calculate the total income available for the current loan application and also adds the expenses. This results in a single value for the income at an application level and one value for the expenses.

Then, the system calculates the existing DTI at an application level.

$$\text{application expenses} / \text{application income} = \text{current DTI}$$

Then, the system runs the knock-out criteria:

- if the current DTI is bigger than 50% , the loan request is rejected
- If the applicant has income or expenses via open banking, the system looks within Credit Kudos's response to check the gambling expenses. If gambling expenditure ratio to income is more than 5%, then the loan application is rejected.

Scoring Matrix for Both Applicants

HINT

If one of the applicants does not pass the minimum matrix scoring thresholds, the application is rejected.

The system calculates the scoring matrix and the maximum DTI permitted for the applicant by combining FICO score and applicant score. To establish max DTI, the system uses the long-term DTI for the calculated performance category (A,B,C,D).

In case there are 2 applicants, the system uses the performance category graded the lowest between the 2 applicants.

Using the maximum permitted DTI by the matrix for the loan application, the system calculates the requested offer using the PMT formula to establish if the application is eligible for the requested loan. For the maximum offer, the system uses the maximum loan period available for the selected product.

In case there is only one applicant and they are not eligible for the requested loan (requested amount/requested loan period), the system calculates the maximum offer (maximum amount/maximum period) for the selected product in the DIP section using the PV formula.

The Result

Passed Automatic Underwriting

The loan application passes to the manual underwriting. If the application doesn't have a requester offer available, but has a maximum offer available in the refusal screen and they choose to accept that offer, the application continues to the manual underwriting stage.

Failed Automatic Underwriting

The application doesn't pass the automatic underwriting process because of KYC validations or the country court judgements validations, the applicant cannot continue the flow and .

If there is a single applicant and the application failed because of DTI or scoring criteria, the system displays the **Unfortunately, you don't seem to qualify for the requested loan** page that allows the applicant to add a co-applicant and try again. This screen will also show the maximum offer available.

If there are already multiple applicants and they are not eligible for the requester amount, the **Unfortunately, we are not able to approve your request for a mortgage** page is displayed.

Option Sets

An option set attribute allows you to define a list with several options available for selection in the user interface. You can specify multiple values that are available for users to select. The steps to creating an option set is to first create the option set with the values and then create the attribute in the entity and associate the option set to the attribute. To access the existing option sets, follow the steps:

1. On the main menu, click **Admin** and select **Options Sets**. The **Option Sets List** page is displayed.
2. The option sets defined for this solution are:

Display Name	Name	Digital Asset
FTOS MOCK_BuyingOptions	FTOS MOCK_BuyingOptions	RWM-MDM
FTOS MOCK_PriceStatus	FTOS MOCK_PriceStatus	RWM-MDM
FTOS Mock_PropertyCondition	FTOS Mock_PropertyCondition	RWM-MDM
FTOS MOCK_PropertyType	FTOS MOCK_PropertyType	RWM-MDM
FTOS MOCK_Sort	FTOS MOCK_Sort	RWM-MDM

For more details, see [Adding Option Set Attributes](#).

Other Technical Configurations

This chapter contains additional information for the configurations done to certain important functionalities of the solution within the form driven flows. You can modify them to fit the business requirements of any market.

Mobile Mode

The mobile screens use the same interface as the desktop, however to fit to a smaller screen, they are adjusted by the style sheet named **FTOS_BARET_RWMDefaults**.

Welcome Carrousel

The carrousel was configured in the form driven flow FTOS_BARET_WelcomeScreen > step WelcomeScreen > Advanced > After Events:

```
$('#goNext').click(() => $('#.btn-next').trigger('click'));

$('.carousel').slick({
  dots: true,
  infinite: true,
  speed: 500
});
```

Help Center

The trigger of the Help Center is placed in the Advanced section of every form driven flow in After Events where the client script **FTOS_FAQ_HelpLoader** is imported.

Filters for the Property within Zoopla

The filters are created within the form driven flow named "[FTOS_BARET_ZooplaFinding](#)" on page 133 in the step named **ZooplaIntegration**, in the Advanced section, in After Events from `filter1` to `filter6` symbolizing the filters from *Added to site* to *Property status*.

Side Panel with the Product

The side panel is defined with its contents in the form driven flow named "[FTOS_BARET_ZooplaFinding](#)" on page 133 in the step **ZooplaProduct** in the Advanced section, in After Events. For each UI element of the product the class is added and the text.

Field Options

On the form driven flow named "[FTOS_BARET_ZooplaFinding](#)" on page 133, there are two field options:

- `zooplaIntegrationId`: each time you click on a card with a property, the ID is saved in the database.
- `sortResultsId`: it sorts the properties based on the price: Lowest Price/ Highest Price/Most Recent.

Selection of Products

The entity form named "[FTOS_BARET_ProductSelection](#)" on page 133 contains the step ProductSelection, where in Advanced > After Events, the server script "[FTOS_BARET_GetRankedProductsMortgage](#)" on page 184 that gets the products based on pricing. The code displays the number of products available to the user. It also contains the download scheduler.

Address Details

Within the form driven flow "FTOS_BNKAP_MortgageAddressDetails" on page 134 in the step **AddressDetails**, in Advanced > After Events, there are several configurations:

- United Kingdom is the preselected country
- the script "FTOS_BARET_RemoveMortgageAddress" on page 187 is called to delete the record id.

For the same flow and step, in Advanced > Before Section Save, there are several configurations:

- Without an address inserted `addresses.length === 0`, the system informs you: *Please provide your addresses for the past 5 years.*
- If you insert one or more addresses, but the oldest address doesn't cover the minimum five year span, by calculating the time frame the system informs you: *Please make sure you cover all the places you lived in the past 5 years.*
- If there is no `existingCurrentAddress`, the system informs you: *Please review the addresses inputted and make sure you mark the one you are currently living in.*

Select Category

In the form "FTOS_BARET_SelectMortgageCategory " on page 133, in the step **SelectCategory**, in Advanced > After Events, the script "FTOS_BNKAP_GetPurposes" on page 194 is called to get the category, image and description, and keeps the **Continue** button disabled until a selection is made.

DIP

In the form driven flow F"[FTOS_BARET_ConfigureDIP](#)" on page 133, in the step ConfigureDIP, in Advanced > After Events, the down payment is calculated, the number of applicants is saved once you click on one of the two buttons and sets the class on the button selected. it also calculates the period of the loan.

In Advanced > Before Section Save, the script "[FTOS_BARET_SaveAvailableMortgageProducts](#)" on page 188 is called with the mortgage products.

Email Configurations

Access **Innovation Studio > Admin > Email Templates:**

- MortgageLoanDocuments

The screenshot shows the 'Edit Email Template' interface. At the top, there is a back arrow icon and two buttons: 'Save and close' and 'Save and reload'. Below the title 'Edit Email Template', there are three input fields: 'Template Name' with the value 'MortgageLoanDocuments', 'Subject' with the value 'Continue Your Mortgage Application', and 'Body'. To the right of the 'Body' field are two buttons: 'Release' and 'Check Out', and a 'History' link. The main content area displays a preview of the email template. The preview has a dark purple header and footer. The central content area has a white background with the heading 'Congratulations!' in a large, bold font. Below the heading, there is a paragraph of text: 'The paperwork for your mortgage application has been generated and can be found in the attachment of this email!'. Below this paragraph, there is another paragraph: 'Take your time to look over the documents. When you're ready, you can go ahead and click the button below to continue your mortgage application.'.

- MortgageCoApplicantFullApproval
- EvaluationMortgageNotifyUW
- MortgageLoanContractSign
- MortgageApplicantsWaitingSolicitor

- MortgageNotifyUWDocs
- MortgageSolicitorUploadDocuments
- MortgageNotifyUWValuation
- MortgageAssessProperty
- MortgageNotifyUWSolicitorDocs
- MortgageRequestedDocs
- MortgageSolicitorNotifyUW.

SMS Configurations

Draft for the SMS message: Hi <co-applicant name>, we are reaching out on behalf of <main applicant full name>. <main applicant first name> has nominated you as a co-applicant for his mortgage application. Click on the link below to start the application form.

Proof of Expenses

The form driven flow FTOS_BNKAP_ProofOfExpenditures contains several steps that play different roles:

- CheckExistingCK: this step contains a flow control rule existingCK with the rule expresion `FinancialData Essential Expenditure (VA) Is not blank` navigate to the step DocumentSelect.
- CreditKudos: this step corresponds to the ["Proof of Expenditures" on page 92](#)
- DocumentSelect: this is the step where you select the type of document to upload manually

- DocumentUpload: this is the step where you upload manually the documents proving the expenses you have
- Loading: this is a loading screen after the documents or the Credit Kudos stage has been completed.

House Animation

In the step "Property Details" on page 113, there is a house animation that changes based on the value of the property:

- for values from 0 to 100k, the following picture is displayed

The screenshot displays the 'Property details' step of a mortgage application. On the left, a vertical sidebar shows the progress of the application steps: 'Get a DIP' (completed), 'Full approval' (0/3), 'Property valuation' (0/3), 'Insurance' (0/1), and 'Conveyancing' (0/1). The main form area contains the following fields:

- Property type:** House (selected)
- Property value:** £ 820,000
- Deposit:** £ 70,000
- Property address:**
 - Postcode: PO18 7GZ
 - Country: United Kingdom
 - City: London
 - Street: Fetter Ln

A 'Continue' button is located at the bottom of the form. On the right side of the form, there is an illustration of a house with a tree and a sun.

- for values from 100k to 200k, the following picture is displayed

< Go back Need help

Property details

Now, lets talk about the property you want to buy

Property type
House ✓

Property value
£ 820,000 ✓

Deposit
£ 70,000 ✓

Property address

Postcode
PO16 7GZ ✓

Country
United Kingdom ✓

City
London ✓

Street
Fetter Ln ✓

Continue

Get a DIP
Get your Decision In Principle 100% online.

Full approval
All steps to obtain you mortgage approval.

Property valuation
An assessor will evaluate the property that you want.

Insurance
Insurance is mandatory for any mortgage application.

Conveyancing
Finish your application and receive your disbursement.

- for values from 200k to 300k, the following picture is displayed

< Go back Need help

Property details

Now, lets talk about the property you want to buy

Property type
House ✓

Property value
£ 820,000 ✓

Deposit
£ 70,000 ✓

Property address
Postcode: PO18 7GZ ✓
Country: United Kingdom ✓
City: London ✓
Street: Fetter Ln ✓

Continue

Get a DIP
Get your Decision in Principle 100% online.

0/3 Full approval
All steps to obtain you mortgage approval.

0/3 Property valuation
An assessor will evaluate the property that you want.

0/1 Insurance
Insurance is mandatory for any mortgage application.

0/1 Conveyancing
Finish your application and receive your disbursement.

- for values from 300k to any value, the following picture is displayed.

< Go back Need help

Property details

Now, lets talk about the property you want to buy

Property type
House ✓

Property value
£ 820,000 ✓

Deposit
£ 70,000 ✓

Property address

Postcode
PO16 7GZ ✓

Country
United Kingdom ✓

City
London ✓

Street
Fetter Ln ✓

[Continue](#)

Progress:

- ✓ **Get a DIP**
Get your Decision in Principle 100% online.
- 0/3 **Full approval**
All steps to obtain your mortgage approval.
- 0/3 **Property valuation**
An assessor will evaluate the property that you want.
- 0/1 **Insurance**
Insurance is mandatory for any mortgage application.
- 0/1 **Conveyancing**
Finish your application and receive your disbursement.

Glossary

A

Advance

The advance percentage from the contract's financed value applicable at the contract level.

ANAF/NAFA

Agencia Națională de Administrare Fiscală (ANAF) or National Agency of Fiscal Administration (NAFA) is the specialized body of the central public administration in Romania. It ensures the resources for the public expenses of the state by collecting and administering effectively and efficiently the taxes, contributions, and other amounts to the general consolidated budget.

APR

The annual percentage rate is an annualized representation of the interest rate.

B

Biometric Consent

Certain laws require banks to provide you a notice to agree that the bank can collect, use and disclose your biometric data, e.g. biometric identifiers are fingerprints, facial patterns, voice or typing cadence.

C

Council tax

Council tax is a tax on domestic dwellings by local authorities (councils) throughout Britain and is based on the estimated value of your dwelling and the number of people living in it.

Credit Bureau

The Credit Bureau provides financial institutions real and aggregated information regarding individuals who have outstanding loans with banks or financial companies, have purchased an asset via leasing or have been insured against default risk with an insurer.

Credit Kudos

Credit Kudos' products enable businesses to leverage Open Banking to enhance affordability and risk assessments. The products help lenders streamline underwriting, improve accuracy in decision-making, and support customers after acquisition through our engagement tools.

Credit score

Scoring is a statistical analysis performed by financial institutions to determine the creditworthiness of a borrower.

D

Days past due

Days Past Due (DPD) indicates your financial history, i.e., whether you have been consistent in your repayments and if you have missed any, how many instalments you have missed and by how many days. It also reflects your credit card repayment history.

Debt-to-income (DTI)

The Debt-to-Income ratio (DTI) is a personal indicator of a good balance between debt and income.

Monthly debt payment amount / Monthly gross amount (before taxes and other deductions).

Decision in principle

It offers an easy way for customers to view product requirements before advancing to the next step in the digital journey.

F

FICO

The FICO score is an algorithm used internationally, mainly by banks, to determine the degree of risk for a person who applies for a loan, and is collected by the Credit Bureau.

Financial institution (FI)

A financial institution (FI) is a company that manages financial and monetary transactions such as deposits, loans, investments, and currency exchange, i.e business operations within the financial services sector including banks, trust companies, insurance companies, brokerage firms, and investment dealers.

Follow-on rate

It is the lender's standard variable rate (SVR), and this is the default interest rate that you are charged if you don't remortgage.

G

GDPR

The General Data Protection Regulation is a regulation in EU law on data protection and privacy in the European Union and the European Economic Area.

Green Mortgage

A green mortgage is a mortgage which offers a lower interest rate to people who are buying a more energy efficient home. In most cases, to qualify for a green mortgage, you need to be buying a home with a Building Energy Rating (BER) of at least B3 or higher.

I

IBAN

International Bank Account Number

Interest rate

The interest rate is the amount a lender charges a borrower and is a percentage of the principal, i.e., the amount loaned.

L

Lexis Nexis

LexisNexis Legal & is a global provider of legal, regulatory and business information and analytics that help customers increase productivity, improve decision-making and outcomes, and advance the rule of law around the world.

Loan-To-Value (LTV)

LTV is calculated by dividing the deposit by the estimated property value and represented by a %. The system rounds up the % to a full number.

Loan-to-value (LTV) ratio

The loan-to-value (LTV) ratio is a measure comparing the amount of your mortgage with the appraised value of the property.

M

Monthly instalment

The value of one of a number of successive payments in settlement of a debt.

Mortgage

It is a legal agreement by which a bank lends money at interest in exchange for taking title of the debtor's property, with the condition that the conveyance of title becomes void upon the payment of the debt.

N

NFC

Near-field communication is a set of communication protocols for communication between two electronic devices over a distance of 4 cm or less.

O

One-Time-Password (OTP)

It is a password generated by the system to validate a piece of information or sign a document.

Open Banking

Open banking connects banks, third-parties and technical providers to securely exchange data.

Overdrafts

An overdraft is a loan provided by a bank that allows a customer to pay for bills and other expenses when the account reaches zero.

P

Profit and Loss Statement (P&L)

The P&L statement refers to a financial statement that summarizes the revenues, costs, and expenses incurred during a specified period, usually a quarter or fiscal year.

S

Sales funnel

It is the process prospects go through to become a customer. Each stage of the funnel takes the buyer one step closer to making a purchase.

Schedule

A loan amortization schedule is a complete table of periodic loan payments, showing the amount of principal and the amount of interest that comprise each payment until the loan is paid off at the end of its term.

Scoring

Credit scoring is a statistical analysis performed by lenders and financial institutions to determine the creditworthiness of a person or a small, owner-operated business.

T

Tenor

The length of time needed by the borrower to repay the loan along with the interest.

Total commissions

The value of the total amount of commissions paid for the entire loan duration.

Total interest

It is the total amount paid for the entire loan duration as interest.

Total principal

It is the total amount paid for the entire loan duration.

Total repayable amount

It represents the sum of all scheduled or projected payments of funds that the recipient agrees to pay to the provider.

U

Underwriting

Underwriting is the process by which your lender verifies your income, assets, debt and property details in order to issue final approval on your loan application.

Z

Zip code

Type of postal code.

Zoopla

It is a British real estate platform that aggregates properties of different kinds.