

fintech **OS**

DIP for Mortgage 1.0.0

User Guide

TOC

Overview	5
Business Pain Points	6
Advantages of DIP for Mortgage	6
Solution Walkthrough	8
Welcome	11
Mortgage Hub	12
Product Availability	12
Fully Online End to End Process	13
Get Started	13
Help Center	14
Let's Choose the Right Mortgage for You	17
Buying Status	19
Searching for Real Estates	21
Let's find that dream house!	22
Time to Shop Around	23
Property Browsing	26
Property details	31
Getting a DIP	32
Let's Get Started with a Decision In Principle	33
Agreement In Principle	34
First Time Buyer	37
Applicants' Details	43
Main Borrower	43
Address Details	47
Income Details	50

Your Spendings	54
Add Co-Applicant	56
Address Details	60
Income Details	63
Your Spendings	67
You're almost finished - just check your details	69
Contact Details	71
Contact Validation	72
Submitting Your Request	74
Congratulations!	75
Rejection Screens	75
Installation	78
Prerequisites	78
Package	79
1 Install the Solution	79
2 Set up the Additional Files	80
Core Banking Integration	80
Video	80
3 Install the Default Banking Products	81
Configurations	82
Configuring the Banking Product Factory	84
Main Info	85
Details	86
Availability	100
Dimensions	101
Configuring the Business Formulas	101
MORTGAGE_KO_DIP	106
Mortgage_DIP_WeightIncome	107

MORTGAGE_SCORING_DIP	109
RMM_MAXDTI_DIP	114
Configuring the Digital Documents Processor	115
Server Automation Scripts and Libraries	117
Server Automation Scripts	118
Configuring the Flow Settings	126
RetailMortgage	127
Option Sets	129
Other Technical Configurations	130
Mobile Mode	130
Welcome Carrousel	130
Help Center	130
Filters for the Property within Zoopla	131
Side Panel with the Product	131
Field Options	131
Selection of Products	131
Address Details	132
Select Category	132
DIP	133
Email Configurations	133
SMS Configurations	133
Glossary	134

Overview

The DIP for Mortgage solution is a digital journey that allows a potential customer to obtain an **decision in principle**¹ for a **mortgage**² by applying for the loan online. All the steps of acquiring the decision in principle are digital done in one session without having to leave the browser, from selecting the area where the user wishes to buy the property to the identification of the customer. The form driven flow helps the customer find the dream house through the integration with a real estate platform, e.g., **Zoopla**³ (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.

However, the flow can be modified as per the business requirements with the use of our low-code Innovation Studio platform. It saves time to firstly find out whether you as a customer are eligible for the mortgage, and then begin the application. Additionally, the process accommodates the flow for adding a co-borrower.

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 130 as well fitted for smaller screens.

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 the step **"Address Details"** on page 47, but

¹A Decision in Principle/Agreement in Principle is an indication from a mortgage lender of how much they may be willing to lend a customer for a mortgage.

²A 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.

³Near-field communication is a set of communication protocols for communication between two electronic devices over a distance of 4 cm or less.

this is subject to internal modification in any implementation. By accessing data from third-party systems that have APIs, it no longer requires customers to type in their data. For more details, see ["Installation" on page 78](#).

Additionally, the integration with Zoopla, the real estate platform is a recommendation for the United Kingdom market. It can be replaced as per the business requirements with a different platform that has exposed APIs. For more details, see ["FTOS_BARET_GetZooplaProperties" on page 121](#).

Business Pain Points

The DIP for Mortgage 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 DIP for Mortgage

Here are some of the major benefits the solution offers through FintechOS:

- 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 DIP for Mortgage with the assistance of an operator if you feel the need for assistance.

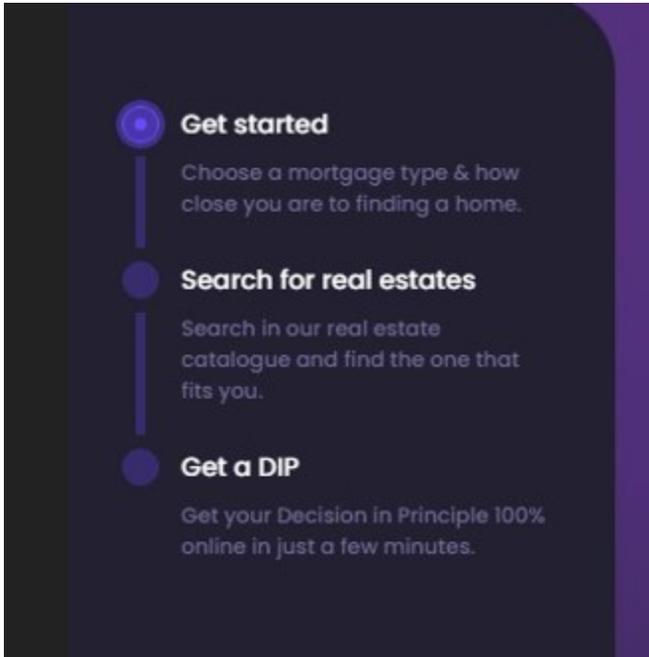
DIP FOR MORTGAGE USER GUIDE

- Navigation. There is a back button that allows you to return to the previous step in case something is not to your liking.
- 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.

Solution Walkthrough

The DIP for Mortgage solution is an instant decision in principle for the borrower to be able to check whether they are eligible for a potential mortgage. The online process accommodates three 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. The solution offers in addition a Zoopla integration to help you find a property. Any other third-party platform can be integrated. The business context of this solution is a pre-eligibility determination of a customer to enable them to receive the funds necessary for moving forward in their property buying process. The accelerator contains:

- ["Get Started" on page 13](#): where you select the reason for looking for a mortgage and how advanced you are in finding a property
- ["Searching for Real Estates" on page 21](#): where you can look for a property that matches your needs. It is an optional step.
- ["Getting a DIP" on page 32](#): 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 115](#).



Each page contains a **Go back** button that allows the user 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 decision in principle to specify from your mortgage lender how much they may be willing to lend you. 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**

Buying Status	19
Searching for Real Estates	21
Let's find that dream house!	22
Time to Shop Around	23
Getting a DIP	32
Let's Get Started with a Decision In Principle	33
Agreement In Principle	34
First Time Buyer	37
Applicants' Details	43
Address Details	47
Income Details	50
Your Spendings	54
Add Co-Applicant	56
You're almost finished - just check your details	69
Contact Details	71
Submitting Your Request	74
Congratulations!	75

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 carousel was configured in the form driven flow FTOS_BARET_WelcomeScreen > step WelcomeScreen > Advanced > After Events. For details, see "[Welcome Carrousel](#)" on page 130.

Mortgage Hub

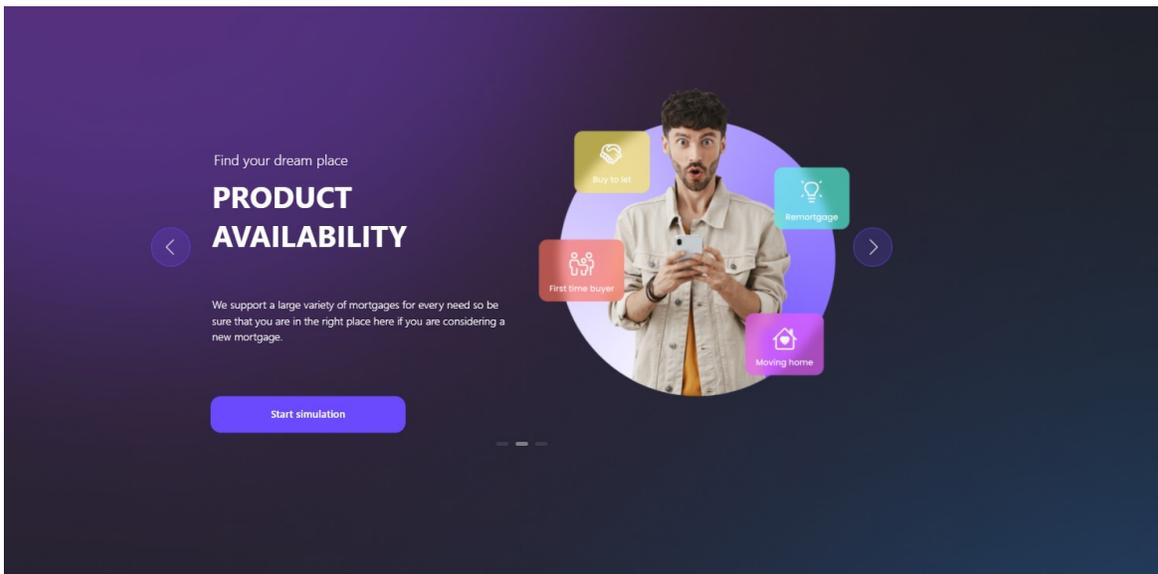
This screen presents the Mortgage Hub.



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

Product Availability

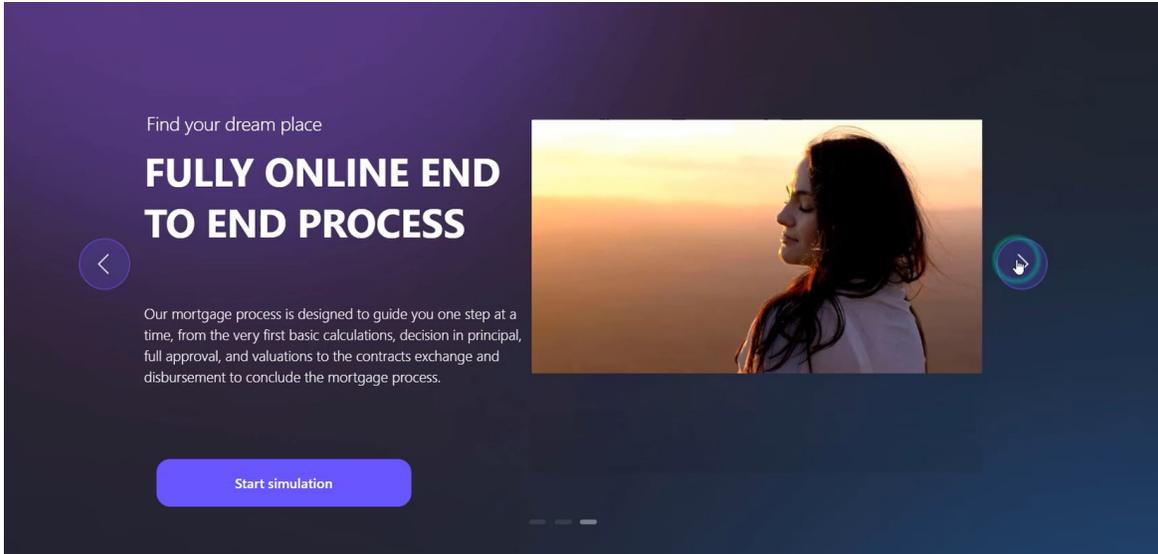
This screen presents the products.



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

Fully Online End to End Process

This screen depicts the online process. Additionally, this screen contains on the right side a video that presents the process. When this page is reached, the video automatically starts playing with sound.



NOTE

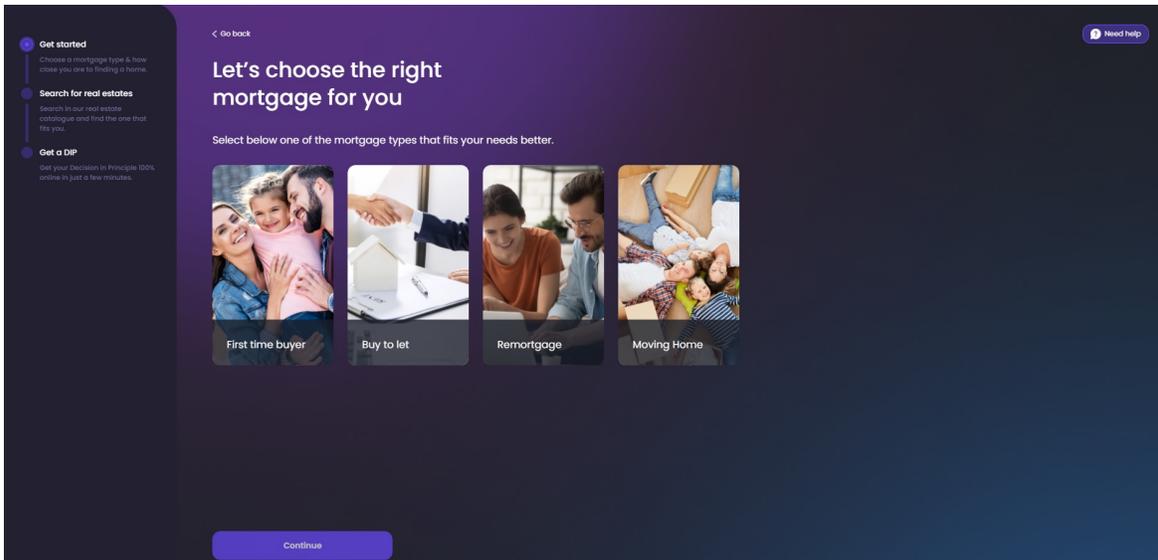
As a bank, you can place here any introductory marketing video.

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

Get Started

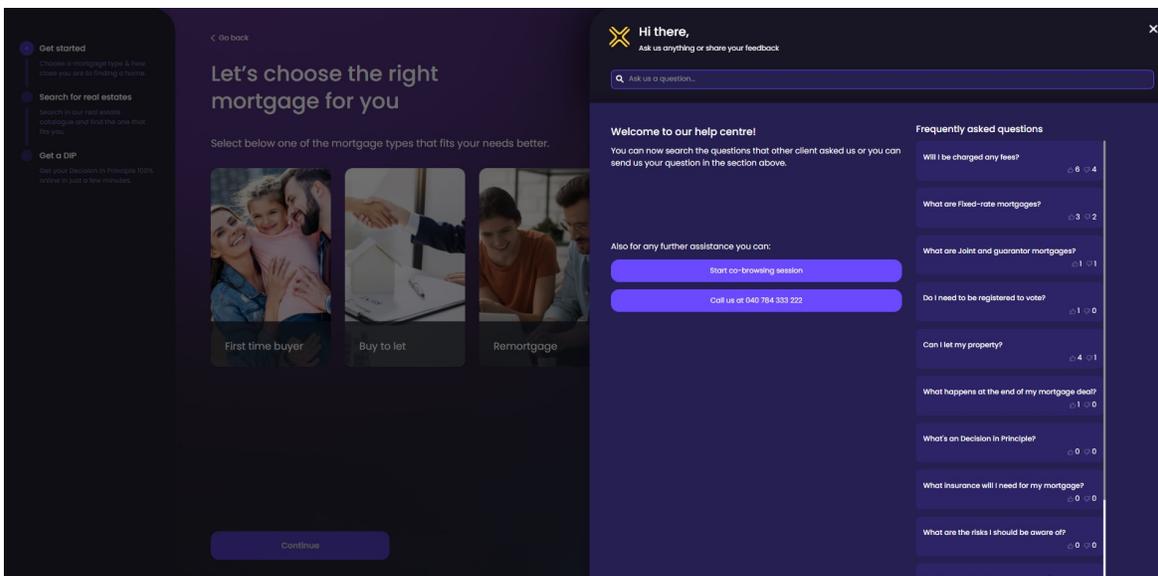
This is the first step of the solution. It contains the identification of the customer needs, the finding of a home using the Zoopla integration and the declaration of the customer towards a home.

DIP FOR MORTGAGE USER GUIDE



Help Center

This solution accommodated a **Need Help** button found on every page of the flow. It was configured in After Events of every form driven flow to be displayed.



NOTE

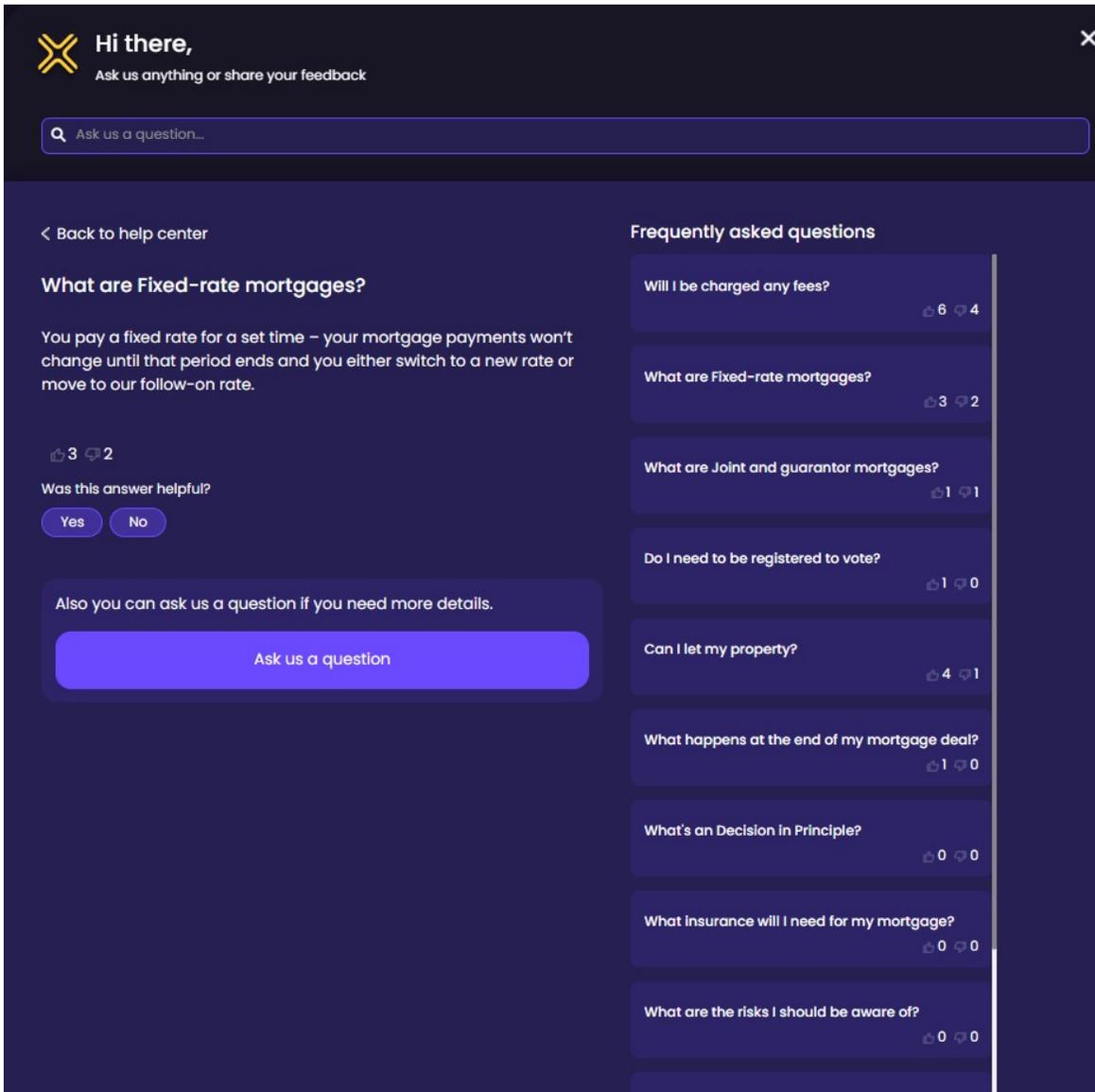
For details on how the Help Center is triggered, see "Help Center" on page 130.

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.

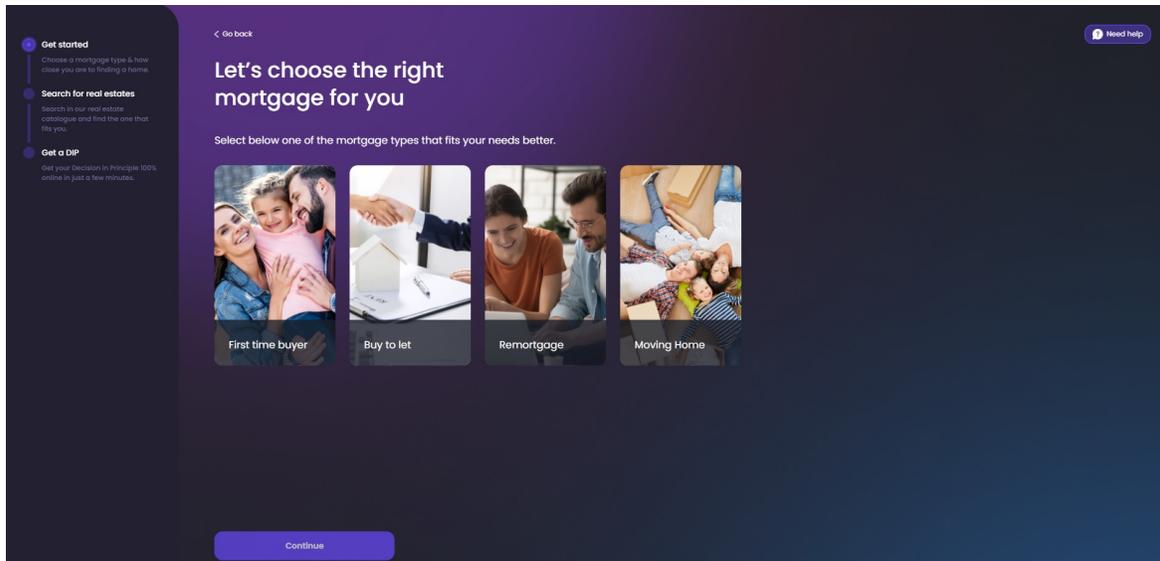


When a question is expanded, it opens the possibility to insert your question by clicking the **Ask a question yourself**. It opens two text fields to insert your email address and the text field for the question. After you type in the question, click **Submit question**.

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

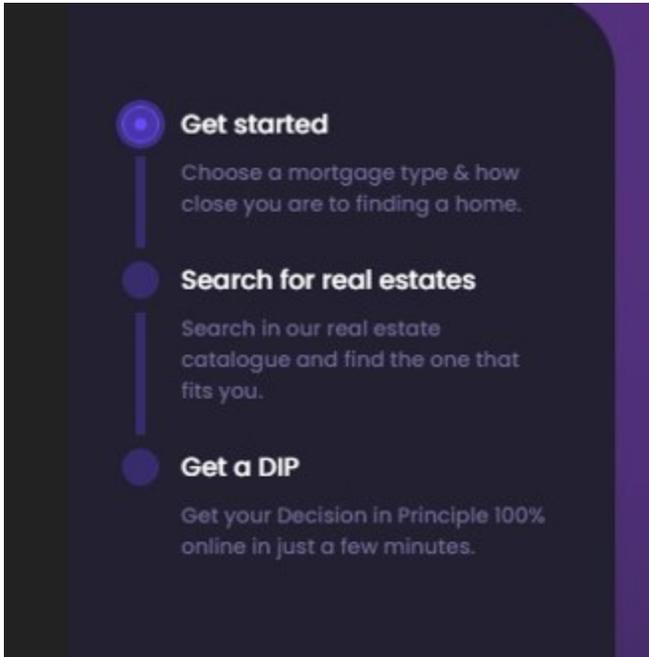
Let's Choose the Right Mortgage for You

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.



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

- Get started
- Search for real estates
- Get a DIP.



The product categories available to choose from are:

NOTE

For technical details, see "[Select Category](#)" on page 132.

- **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

The buying status page determine the urgency and the stages for the customer on the road to purchasing a new home. 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 32. It helps the financial institution to direct customers exactly where they need.

The screenshot shows a mobile application interface for the 'Buying status' step. On the left, a vertical sidebar contains three steps: 'Get started', 'Search for real estates', and 'Get a DIP'. The main content area is titled 'Buying status' and includes a 'Go back' link and a 'Need help' button. The text asks the user to 'Tell us your buying status so we can help you better.' and 'Where in the process are you?'. There are four radio button options: 'I'm just researching' (which is selected), 'I'm going to open houses', 'I'm making offers', and 'I have signed a purchase contract'. Below this, it asks 'When do you plan on purchasing your property?' with five radio button options: 'As soon as possible', '1-3 months', '3-6 months', '6-12 months', and 'Not sure yet'. At the bottom, there is a 'Where are you looking?' field with 'London' selected and a '+90 miles' range. A 'Continue' button is located at the very bottom of the form.

Fill in the following fields:

Field	Required	Data Type	Description
Where in the process are you?	Optional	Option set	<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!" on page 22 • I’m going to open houses. If you select this option, the next step is "Let's find that dream house!" on page 22 • I’m making offers. If you select this option, the next step is "Let's find that dream house!" on page 22 • I have signed a purchase contract. If you select this option, the next step is "Getting a DIP" on page 32.
When do you plan on purchasing your property?	Optional	Option set	<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	Required	Data Type	Description
Where are you looking?	Optional	Option set	<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 the next page or "Getting a DIP" on page 32.

Searching for Real Estates

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.

¹Type of postal code.

NOTE

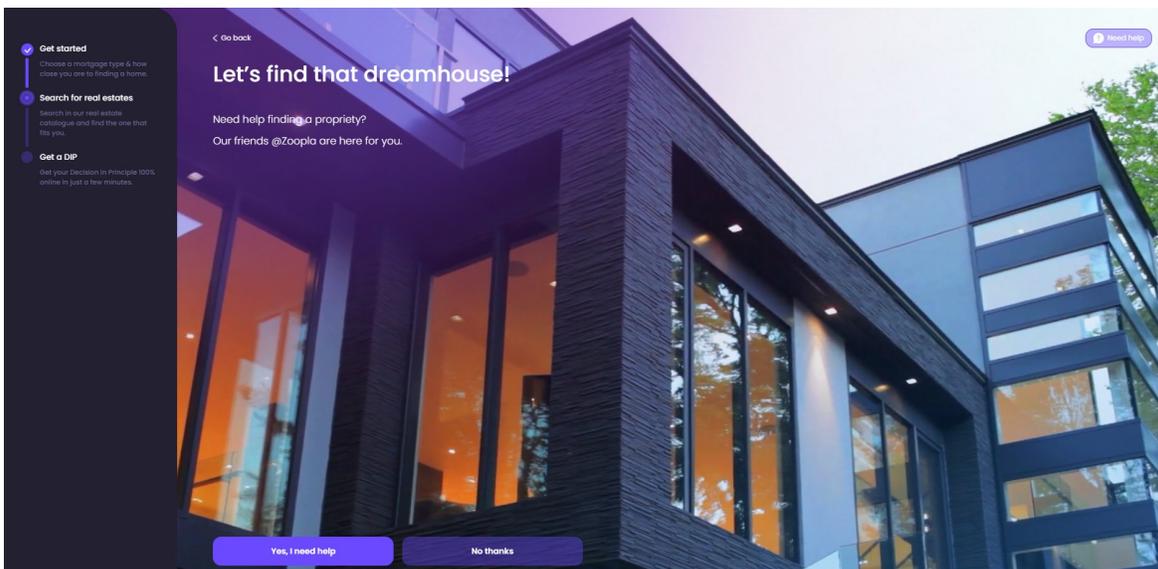
The properties belong to a third-party platform that aggregates listing from prospective sellers and agencies. FintechOS proposes Zoopla, however, any other provider is suitable. The technical endpoints are mocked for the integration, i.e, they exist, but they are not activated to bring data from Zoopla.

Let's find that dream house! 22
Time to Shop Around 23

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.

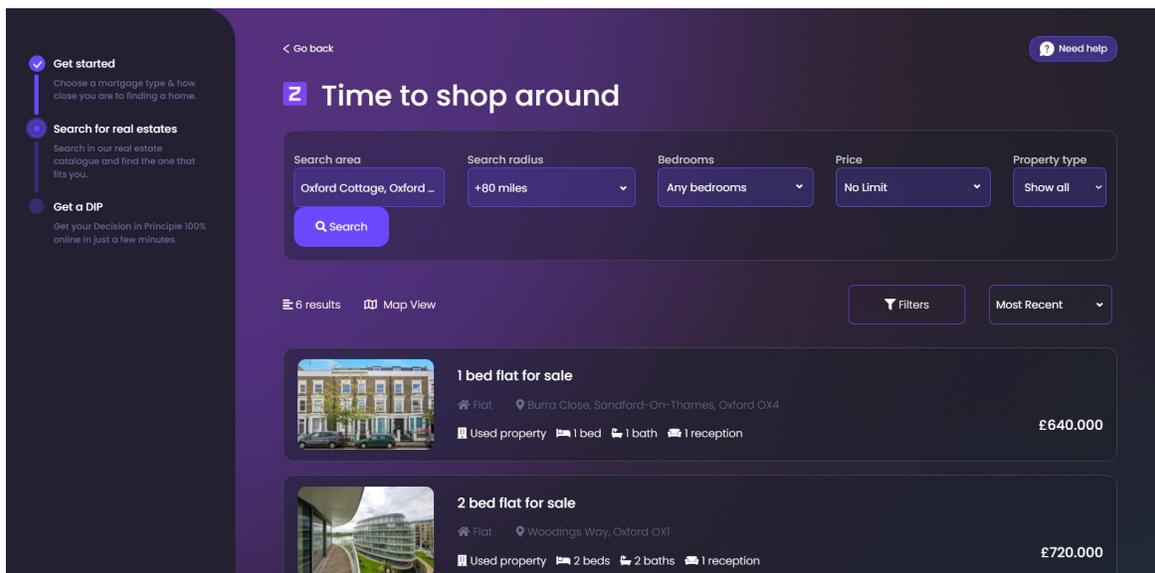


Choose an option:

- **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 32.

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.



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:

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

- **Search area:** type the name of the street or city you are looking for

The search area is automatically completed with the location provided for "Buying Status" on page 19.

- **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 19:

- Just this area
- 1/4 miles
- 1/2 miles
- 1 mile
- 3 miles
- 5 miles
- 10 miles
- 15 miles
- 20 miles
- 30 miles
- 40 miles.

- **Bedrooms:** select from the drop-down

For the minimum number of bedrooms, choose an option from the list. The default value is **Any bedrooms**.

- No min
- Studio
- 1

- 2
 - 3
 - 4
 - 5
 - 6
 - 7
 - 8
 - 9
 - 10+.
- **Price:** select from the drop-down the minimum price and the maximum price for a property

For the field **Price Range**, the minimum price is set:

- for increments of 10k for values between 10k up to 500k
- for increments of 50k for values from 500k up to 1 million
- for increments of 100k for values from 1 million to 2,5 million
- for increments of 200k for values from 2,5 million to 5 million
- for increments of 500k for values from 5 million to 10 million.

For the field **Price Range**, the maximum price is set:

- increments of 10k for values between 10k up to 500k
- increments of 50k for values from 500k up to 1 million
- increments of 100k for values from 1 million to 2,5 millions
- increments of 200k for values from 2,5 millions to 5 millions
- increments of 500k for values from 5 millions to 10 millions.

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

For the filed **Property Type**, the options are:

- All property types
- Houses
- Flats
- Land/ Farm
- New or pre-owned homes
- New homes
- Pre-owned
- Retirement.

Click **Search** to reveal the properties.

Property Browsing

The data collected before is used here:

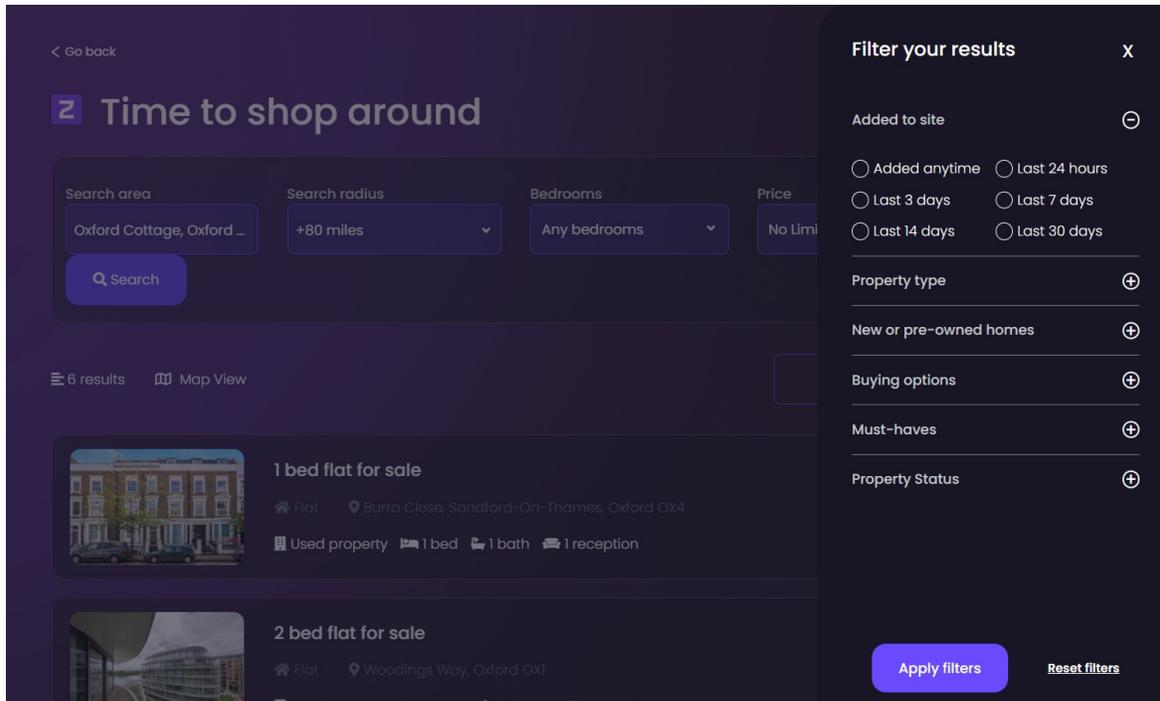
- Property budget: it is used as the maximum amount for property search
- Location: data is used from "[Buying Status](#)" on page 19
- Range: data is used from "[Buying Status](#)" on page 19.

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 131.



Filter

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

For the filter name **Added to site**, the options are:

- Added anytime
- last 24 hours
- last 3 days
- last 3 days
- last 14 days.

For the filed **Property Type**, select:

- Show all
- Flat

DIP FOR MORTGAGE USER GUIDE

- House
- Farm/Land.

For the filed **New or pre-owned homes**, select:

- New homes
- Pre-owned
- Retirement.

For the filed **Buying options**, select:

- Auction
- Shared ownership
- Help to buy.

For the field **Must-haves**, the options are:

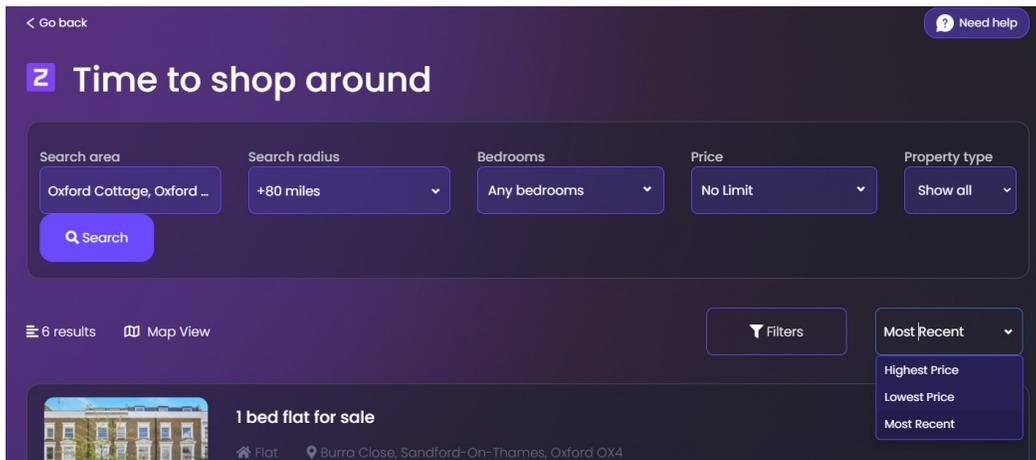
- Garden
- Parking/garage
- Balcony/terrace
- Porter/security
- Wood floors
- Fireplace
- Rural/secluded
- Property Status
- Chain free
- Price reduced
- Under offer/Sold.

For the filter **Property Status**, select between:

- Chain free
- Price reduced
- Under offer/ Sold.

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 131.](#)

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 the following:

NOTE

The data from the properties are brought by the script "[FTOS_BARET_GetZooplaProperties](#)" on page 121.

- a picture on the left side
- the name of the listing
- type of property
- location: fetched from Zoopla
- number of bedrooms
- number of bathrooms
- Property price listed.

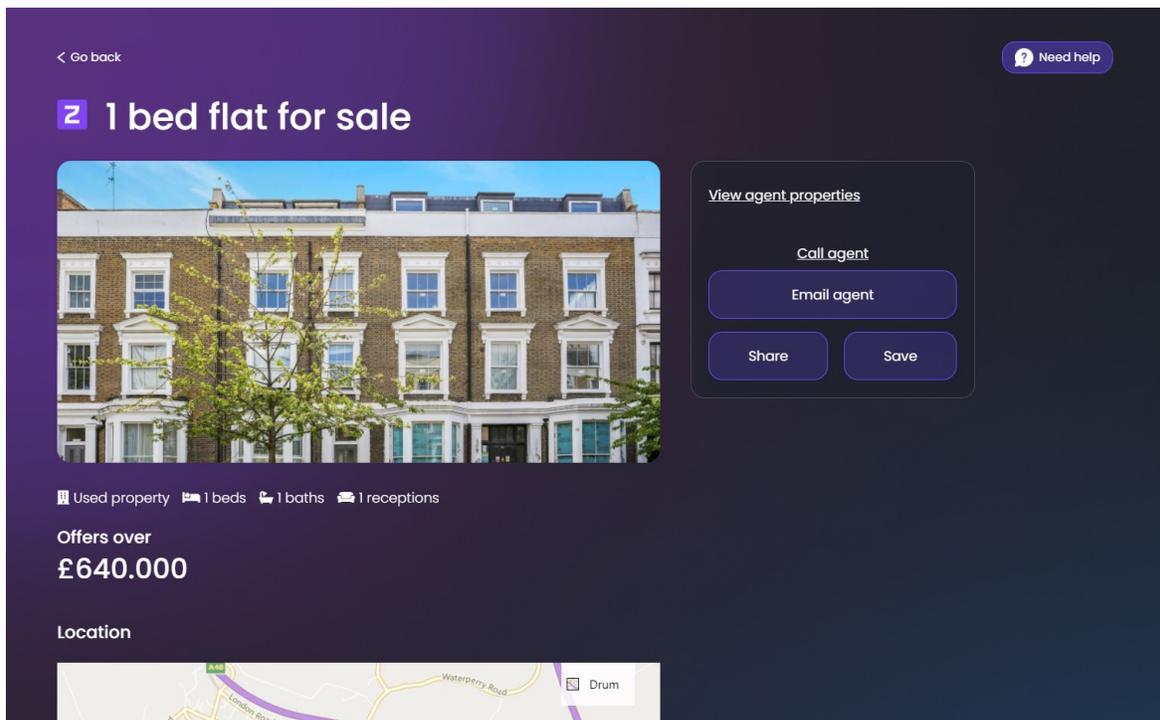
At the bottom of the page, you have the option to skip the search and progress. This button directs you to the DIP section of the flow and skips the searching for a home.

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 for the property
- the price
- a map with the location of the property
- Features and description of the property.



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. The functionality was not implemented for those buttons.

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!

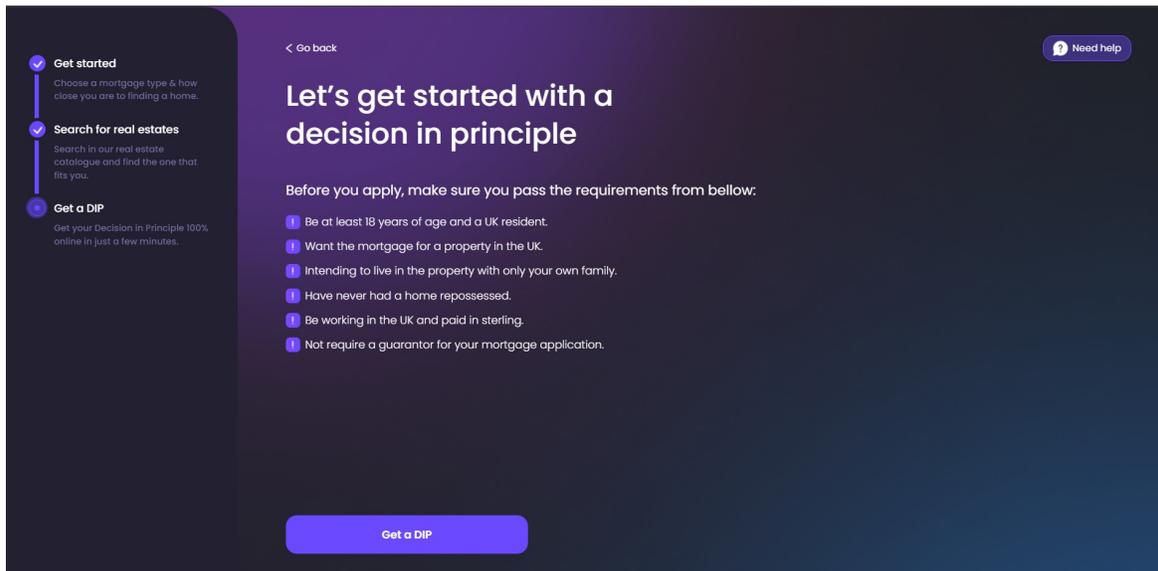
The flow does not cover the full approval, only the generation of an decision in principle document.

Let's Get Started with a Decision In Principle	33
Agreement In Principle	34
First Time Buyer	37
Applicants' Details	43
Address Details	47
Income Details	50
Your Spendings	54
Add Co-Applicant	56
You're almost finished - just check your details	69
Contact Details	71

Submitting Your Request	74
Congratulations!	75

Let's Get Started with a Decision In Principle

This is an informative screen that serves to inform you of the requirements that are mandatory to be fulfilled by the borrower for the application.



Under the heading **Let's get started with a decision in principle**, there are the requirements:

- *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.*

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 84.

Fill in the following:

Field	Mandatory	Description
Nr of applicants	Mandatory	There are two buttons labeled 1 and 2 for the number of borrowers.

Field	Mandatory	Description
Estimated Property Value	Mandatory	<p>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.</p> <p>In case you manually input an amount lower/bigger than the minimum/maximum amount permitted, a toast message is displayed.</p> <div style="background-color: #e6f2ff; padding: 10px; border: 1px solid #003366; border-radius: 5px;"> <p>NOTE The default value for this slider can be edited by the bank within "Configuring the Flow Settings" on page 126.</p> </div>
Down payment	Mandatory	<p>In this field, the system calculates:</p> <ul style="list-style-type: none"> 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.
Your Loan amount will be	N/A	The system displays the loan amount based on the estimated property value and the deposit amount.

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.

Field	Mandatory	Description
Mortgage Period	Mandatory	By default, the value is 25 years. The value is calculated by getting the available products within "Configuring the Banking Product Factory" on page 84 : the minimum and the maximum period from all of the products defined there.
Repayment type	Mandatory	Choose between: <ul style="list-style-type: none"> • Equal instalments • Equal principal payments • Only interest.
Preferred Interest type	Mandatory	Choose between: <ul style="list-style-type: none"> • Fixed • Tracker.
Are you eligible for a green mortgage ^{1?}	N/A	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 133](#).

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.

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.

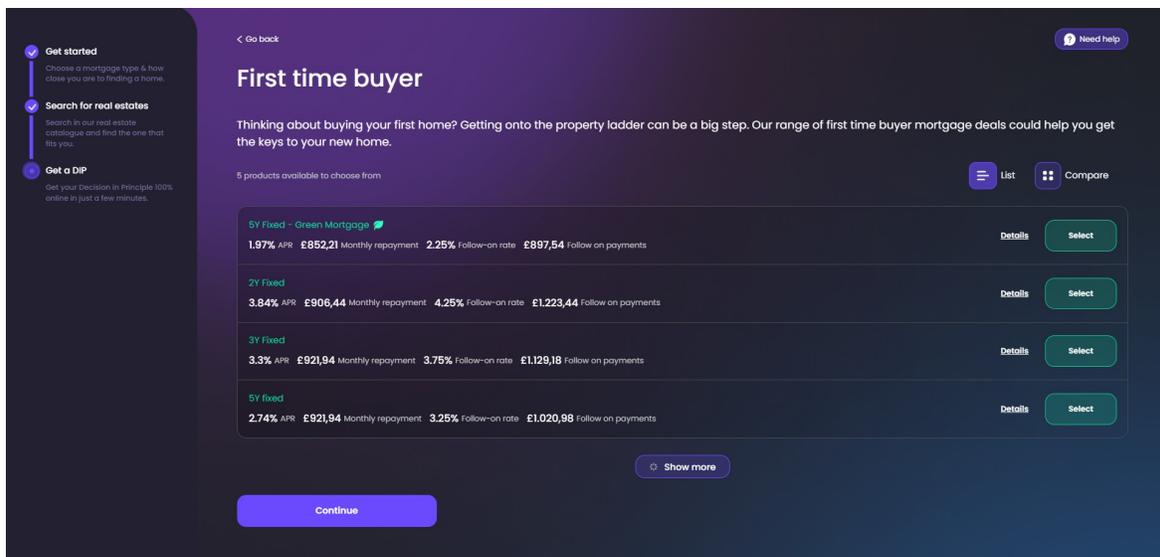
²The loan-to-value (LTV) ratio is a measure comparing the amount of your mortgage with the appraised value of the property.

First Time Buyer

This page marks the selection of a possible product that is the right fit for you. Based on what you selected in the previous screen, the system calculates the most likely products. Following on your predilection, choose a product from this screen. 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 17. However, the development only includes the type *First time buyer*.

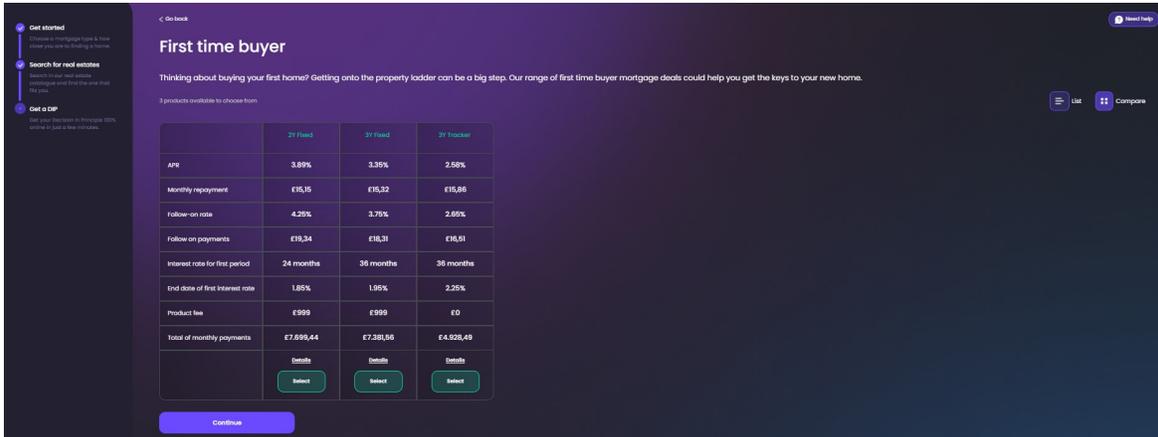
NOTE

For the products defined here, see "Configuring the Banking Product Factory" on page 84 and for the script that determines the disposal, see "First Time Buyer" above.



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.



There is the usecase where the system returns with no products at all, but instead the system displays the explanation why no products are displayed: *Our products allow financing up to the maximum product amount for home purchases. In case you want to buy a property with a higher value, you will have to finance the difference from your funds. Increase the deposit amount from the configuration screen to cover the extra value.*

NOTE

For technical details, see "[Selection of Products](#)" on page 131.

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

¹Annual percentage rate. APR is an annualized representation of your interest rate.

- **Follow-on rate**¹
- 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 rate**² for the first period
- End date of the first period
- Product fee
- Total of monthly payments.

Select a product to view a graphical representation of product details:

- Monthly repayment: the value for the first payment
- **APR**³
- Follow-on rate

¹It is the lender's standard variable rate (SVR), and this is the default interest rate that you are charged if you don't remortgage.

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

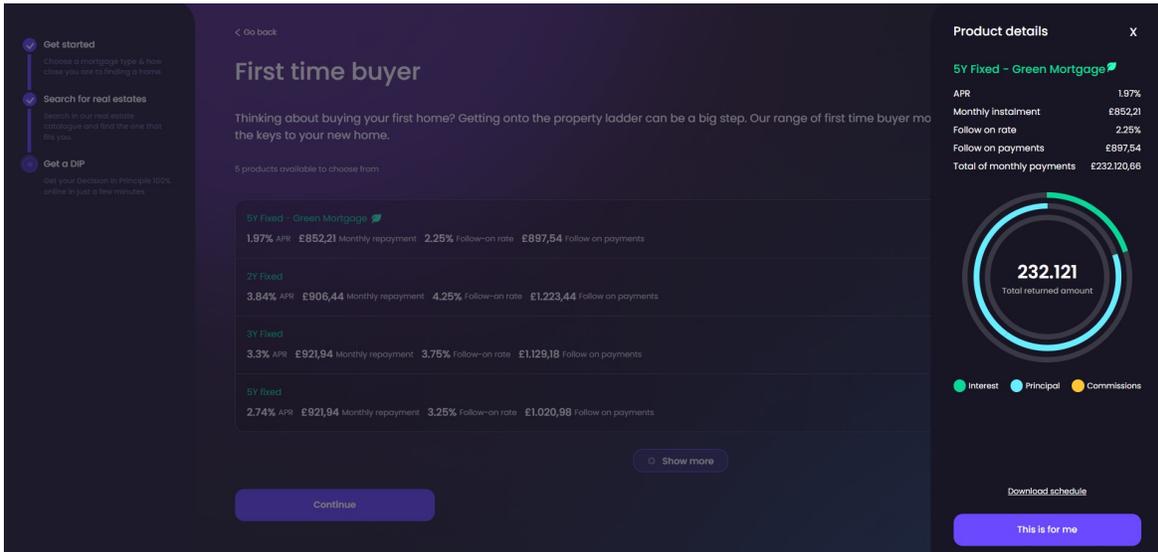
³Annual percentage rate. APR is an annualized representation of your interest rate.

- Follow-on payments: monthly repayments after the fixed interest rate period
- **Total repayable amount**¹.

NOTE

The products were configured using "Configuring the Banking Product Factory" on page 84. 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:



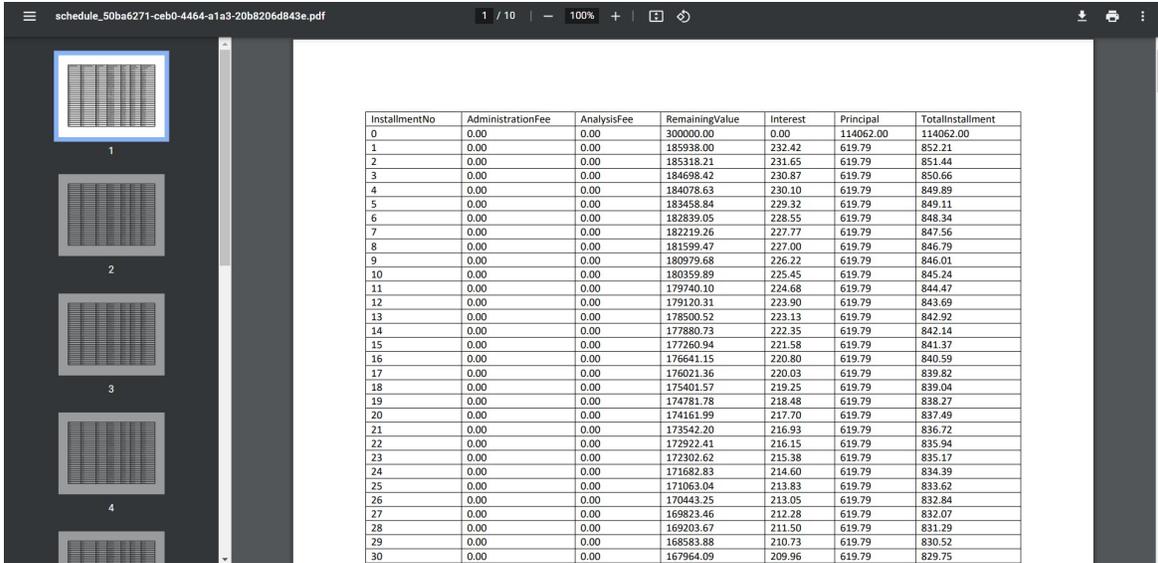
NOTE

For the technical details, see "Side Panel with the Product" on page 131.

¹It 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.



NOTE

This document is defined in "[RetailMortgagePricingSchedule](#)" on page 116.

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 84
- **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 84
- Product fee fetched from "Configuring the Banking Product Factory" on page 84
- 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 84.

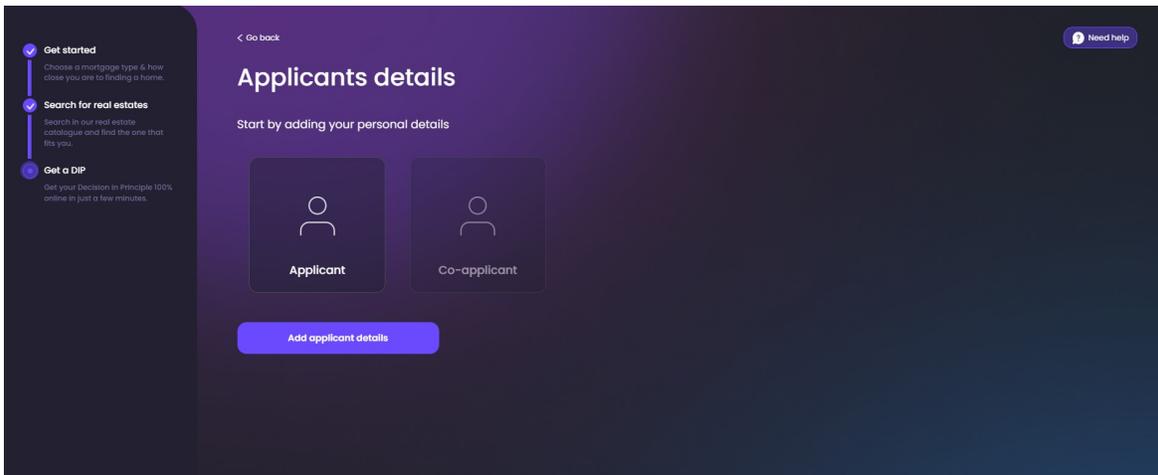
¹A loan amortization schedule is a complete table of periodic loan payments, showing the amount of principal and the amount of interest that comprise each payment until the loan is paid off at the end of its term.

²Annual percentage rate. APR is an annualized representation of your 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 127.

Main Borrower

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

The screenshot shows a web form titled 'Applicant details' with a 'Go back' link and a 'Need help' button. The form contains the following fields:

- Title: Mr.
- First Name: John
- Last Name: Bean
- Marital status: Single
- Date of birth: 29/10/1988
- Gender: Male
- Total number of dependents: 0
- Nationality: British
- Country of residence: United Kingdom

Field	Data Type	Mandatory	Description
Title	Option set	Mandatory	Choose between: <ul style="list-style-type: none"> • Mr • Mrs • Miss • Ms • Doctor.
First Name	Text	Mandatory	Insert your first name.
Last Name	Text	Mandatory	Insert your surname.
Date of birth	Date	Mandatory	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	Option set	Mandatory	Choose between: <ul style="list-style-type: none"> • Male • Female.

DIP FOR MORTGAGE USER GUIDE

Field	Data Type	Mandatory	Description
Marital Status	Option set	Mandatory	Choose between: <ul style="list-style-type: none">• Single• Married/Civil partnership• Separated• Divorced• Widow/Widower• Living as partners.

Field	Data Type	Mandatory	Description
Total nr of dependants	Option set	Mandatory	<p>Choose between:</p> <ul style="list-style-type: none"> • 0 • 1 • 2 • 3 • 4 • 5 • 6 • 7 • 8 • 9 • 10 • 11 • 12 • 13 • 14 • 15. <p>This information is important for the scoring and financial analysis.</p>
Nationality	Lookup	Mandatory	<p>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 DIP for Mortgage process.</p>

Field	Data Type	Mandatory	Description
Country of residence	Lookup	Mandatory	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: <i>We can only process mortgage applications for UK residents. Please visit us in one of our branches or by video call to talk about your options.</i>

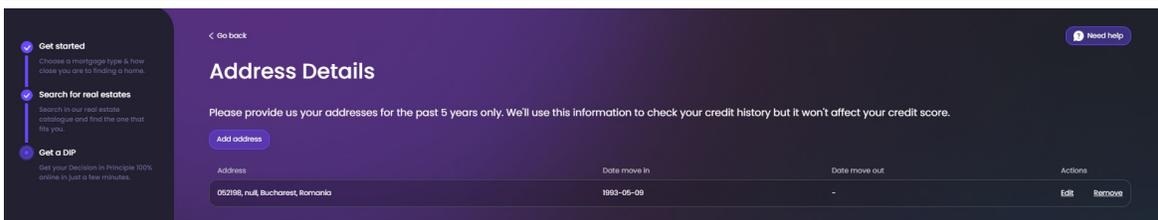
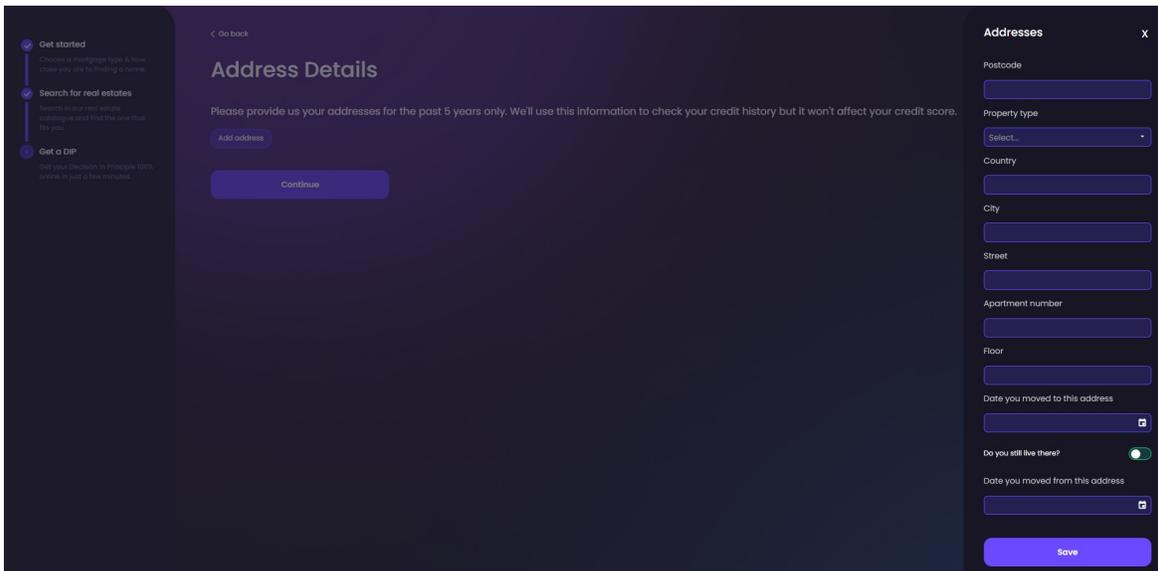
Click **Continue**.

NOTE

The solution saves the session storage and saves the applicant's data. Using an endpoint, "FTOS_B2C_SaveSession" on page 126 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 43.

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.



HINT

You need at least one address to continue the process.

Click **Add address** to begin:

Field	Data Type	Mandatory	Description
Postcode	Text	Mandatory	<p>Using the connector Ideal Postcodes, the address is collected.</p> <p>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.</p>
Property type	Option set	Mandatory	<p>Choose between:</p> <ul style="list-style-type: none"> • Flat • House • Country.
City	Lookup	Mandatory	Insert the name of your city.
Street	Text	Mandatory	Insert the name of your street.
Nr	Number	Mandatory	Insert the number of the street.
Ap number	Number	Mandatory	Insert the number. This field is available only if you chose flat as property type.
Date you moved in	Date	Mandatory	Select a date that is not in the future.
Do you still live here?	Bool	Mandatory	If this is true, then the field below is not displayed.
Date you moved out	Date	Mandatory	Choose a date after the move in date.

NOTE

United Kingdom is the preselected value. You can modify it here ["Address Details"](#) on [page 132](#).

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

For each address, you have two options:

The screenshot shows a mobile application interface titled "Your spendings". At the top left is a "Go back" button, and at the top right is a "Need help" button. Below the title, there is a prompt: "Please provide your spending information. Select the categories that apply to you. Then enter the amount you spend in each." Below this prompt is an "Add spending" button. A table is displayed with the following columns: "Spending type", "Frequency", "Amount", and "Actions". The table contains one row: "Service charge", "Monthly", "£2,345", and "Edit Remove". Below the table is a "Continue" button.

- edit (modify the address)
- remove (delete an address). This is executed using the script ["Server Automation Scripts and Libraries"](#) on [page 117](#).

NOTE

For technical details about the buttons, see ["Address Details"](#) on [page 132](#).

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.*

NOTE

For technical details about the warnings, see ["Address Details"](#) on [page 132](#).

Income Details

Insert information about your income to determine your eligibility. The data is then taken to the "MORTGAGE_SCORING_DIP" on page 109 where it is used to determine if your **credit score**¹.

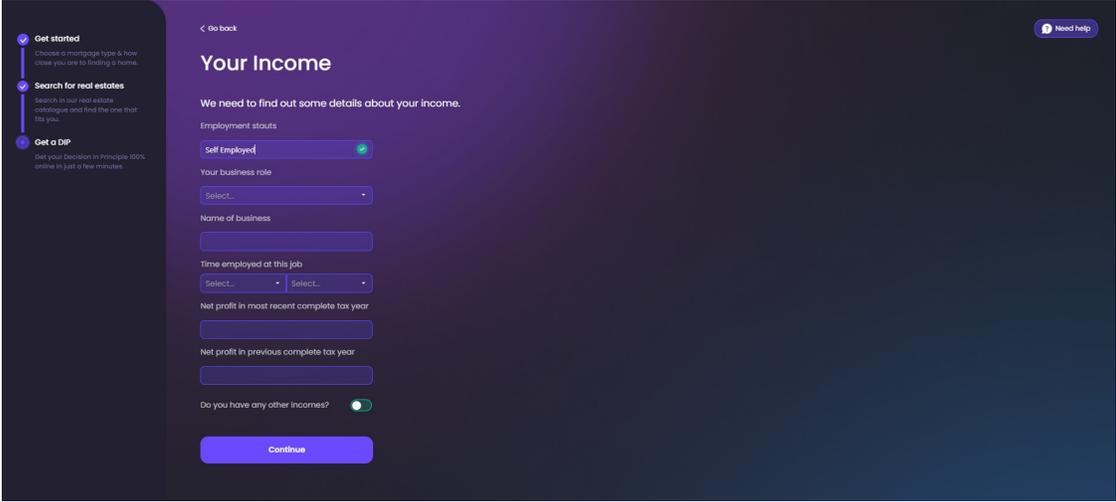
Field	Data Type	Mandatory	Description
Employment	Option set	Mandatory	<p>Choose between:</p> <ul style="list-style-type: none"> Employed Self-Employed. <p>Depending on what you select here, different fields are displayed to match the selection.</p>

For the option **employed**:

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

Field	Data Type	Mandatory	Description
Employer name		Mandatory	Choose between: <ul style="list-style-type: none"> • 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	Text	Mandatory	Insert the name.

Field	Data Type	Mandatory	Description
Time employed at this job		Mandatory	<p>Choose between:</p> <ul style="list-style-type: none"> • 1 month • 2 months • 3 months • 4 months • 5 months • 6 months • 7 months • 8 months • 9 months • 10 months • 11 months.
Yearly income before tax	Number	Mandatory	Insert the amount.
Do you have any other incomes?	Bool		<p>If true, a button will be made available (grayed out by default) named Add income.</p> <p>If you want to add additional income, a slider from the right side will appear with the following incomes in 2 categories.</p>

Field	Data Type	Mandatory	Description
For the option self-employed:			
			
Your business role	Text	Mandatory	Insert the role you have.
Name of business	Text	Mandatory	Insert the name of the company/NGO.
Time employed at this job	Option set	Mandatory	Insert the number or years/months.
Net profit in most recent complete tax year	Text	Mandatory	Insert the profit after tax deduction for the last year.
Net profit in previous complete tax year	Text	Mandatory	Insert the profit after tax deduction for the previous year.
Do you have any other incomes?		Mandatory	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.

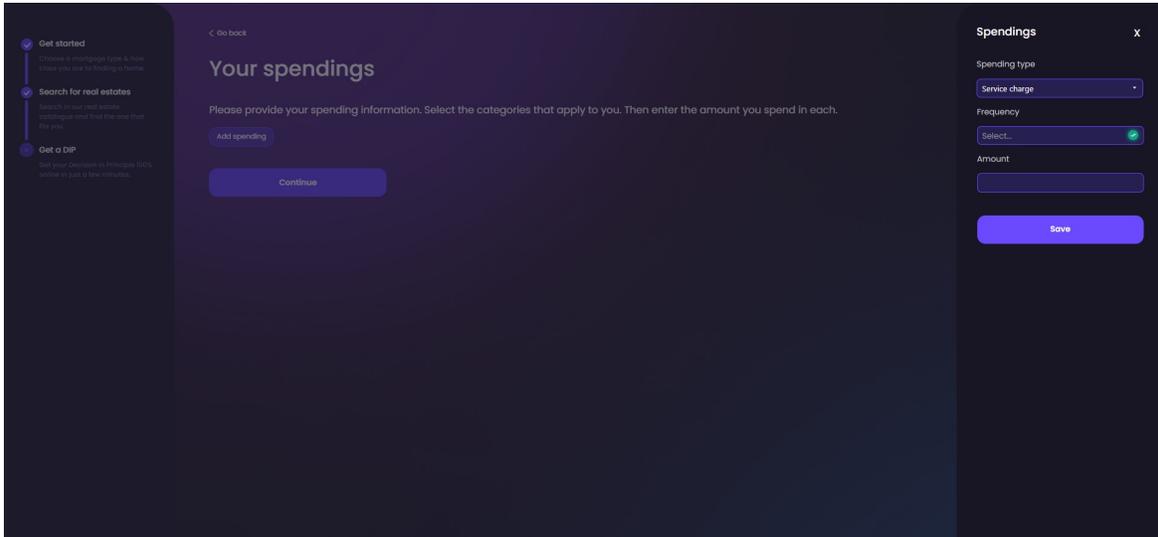
Field	Data Type	Mandatory	Description
Income type	Option set	N/A	Choose between: <ul style="list-style-type: none"> • Overtime • Allowances • Commission • Bonuses. Choose between: <ul style="list-style-type: none"> • Pension • Investments • Maintenance • Trust Funds.
Value	Number	N/A	Insert the income.
Frequency	Option set	N/A	Choose between: <ul style="list-style-type: none"> • 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 129.

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 fields:

Field	Data Type	Mandatory	Description
Spending Type	Option set	Mandatory	Choose between: <ul style="list-style-type: none"> • Overdraft • Credit or store card • Council Tax • Ground rent • Service charge.
Frequency	Option set	Mandatory	This field is displayed only for <ul style="list-style-type: none"> • Council Tax • Ground rent • Service charge. Choose between: <ul style="list-style-type: none"> • Annually • Monthly • Weekly.

Field	Data Type	Mandatory	Description
Amount	Text	Mandatory	Insert the value in pounds.

Click **Save**.

For each expense, you have two options:

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

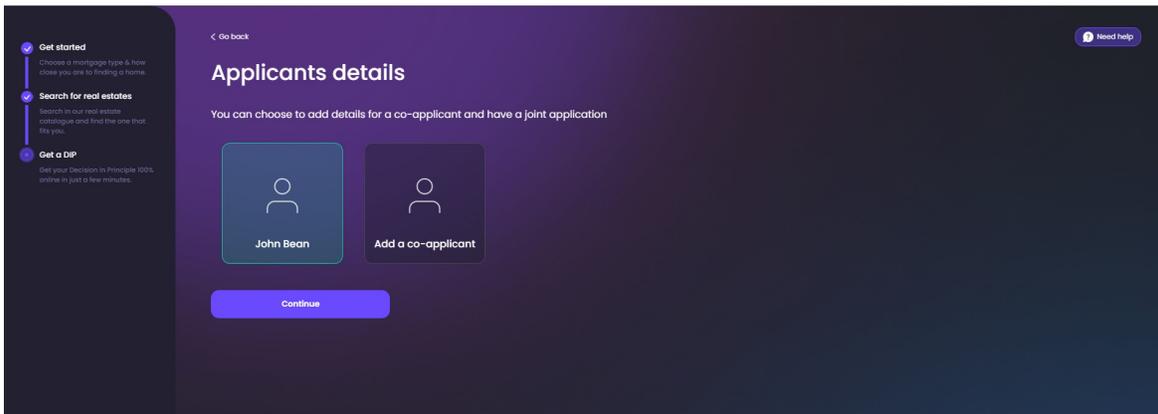
NOTE

This action is performed by calling "[FTOS_BARET_RemoveMortgageSpending](#)" on page 122.

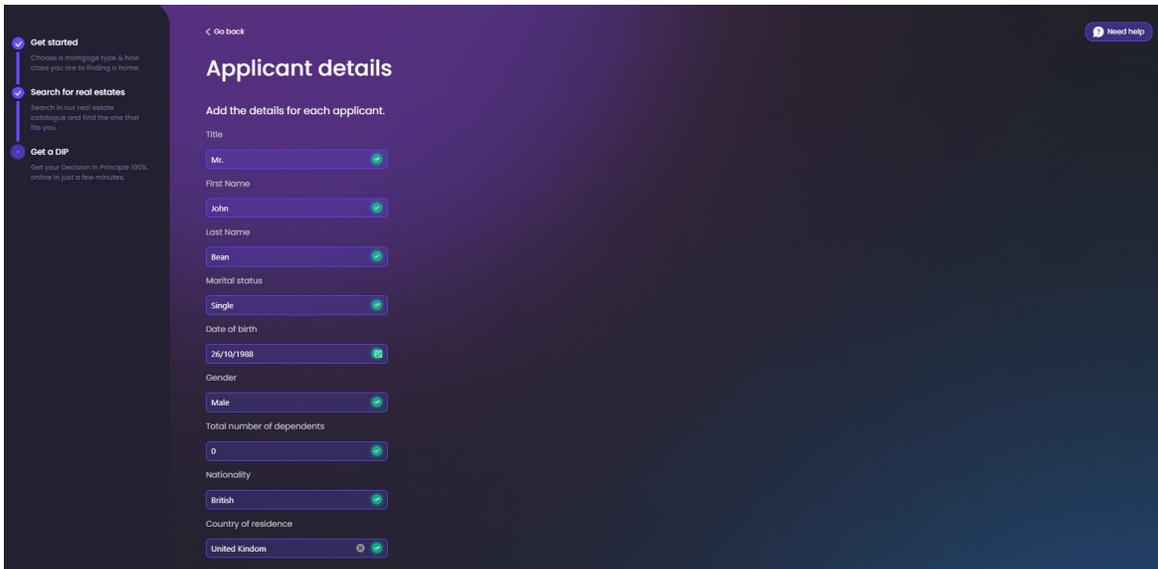
Click **Continue** once you have added all the expenses.

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 fields:



Field	Data Type	Mandatory	Description
Title	Option set	Mandatory	Choose between: <ul style="list-style-type: none"> • Mr • Mrs • Miss • Ms • Doctor.
First Name	Text	Mandatory	Insert your first name.
Last Name	Text	Mandatory	Insert your surname.
Date of birth	Date	Mandatory	the user should select the date using a calendar. The calendar offers the age range considering that the you cannot be younger than 18 years at the moment of application. The maximum age is no more than 150 years.

Field	Data Type	Mandatory	Description
Gender	Option set	Mandatory	Choose between: <ul style="list-style-type: none">• Male• Female.
Marital Status	Option set	Mandatory	Choose between: <ul style="list-style-type: none">• Single• Married/Civil partnership• Separated• Divorced• Widow/Widower• Living as partners.

Field	Data Type	Mandatory	Description
Total nr of dependants	Option set	Mandatory	<p>Choose between:</p> <ul style="list-style-type: none"> • 0 • 1 • 2 • 3 • 4 • 5 • 6 • 7 • 8 • 9 • 10 • 11 • 12 • 13 • 14 • 15. <p>This information is important for the scoring and financial analysis.</p>

Field	Data Type	Mandatory	Description
Nationality	Lookup	Mandatory	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 DIP for Mortgage process.
Country of residence	Lookup	Mandatory	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: <i>We can only process mortgage applications for UK residents. Please visit us in one of our branches or by video call to talk about your options.</i>

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.

HINT

You need at least one address to continue the process.

Click **Add address** to begin:

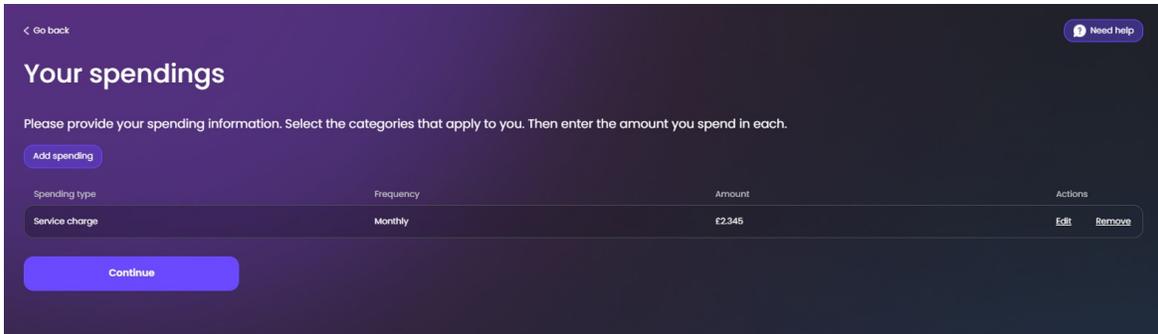
Field	Data Type	Mandatory	Description
Postcode	Text	Mandatory	Using the connector Ideal Postcodes , the address is collected. By using a connector, the solution incorporates an endpoint that calls the API to bring data from an external source. Such an external source can be the Ideal Postcodes Connector. This connector queries the Ideal Postcodes database to find information. However, the solution can accommodate any other third-party software, this is one such software integration developed by FintechOS.
Property type	Option set	Mandatory	Choose between: <ul style="list-style-type: none"> • Flat • House • Country.
City	Lookup	Mandatory	Insert the name of your city.
Street	Text	Mandatory	Insert the name of your street.
Nr	Number	Mandatory	Insert the number of the street.
Ap number	Number	Mandatory	Insert the number. This field is available only if you chose flat as property type.
Date you moved in	Date	Mandatory	Select a date that is not in the future.
Do you still live here?	Bool	Mandatory	If this is true, then the field below is not displayed.
Date you moved out	Date	Mandatory	Choose a date after the move in date.

NOTE

United Kingdom is the preselected value. You can modify it here ["Address Details"](#) on [page 132](#).

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

For each address, you have two options:



- edit (modify the address)
- remove (delete an address). This is executed using the script ["Server Automation Scripts and Libraries"](#) on [page 117](#).

NOTE

For technical details about the buttons, see ["Address Details"](#) on [page 132](#).

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 132](#).

Income Details

Insert information about your income to determine your eligibility. The data is then taken to "Configuring the Business Formulas" on page 101 where it is used to determine if you qualify for the loan.

Field	Data Type	Mandatory	Description
Employment	Option set	Mandatory	<p>Choose between:</p> <ul style="list-style-type: none"> • Employed • Self-Employed. <p>Depending on what you select here, different fields are displayed to match the selection.</p>

For the option **employed**:

Field	Data Type	Mandatory	Description
Employer name		Mandatory	Choose between: <ul style="list-style-type: none"> • 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	Text	Mandatory	Insert the name.

Field	Data Type	Mandatory	Description
Time employed at this job		Mandatory	Choose between: <ul style="list-style-type: none"> • 1 month • 2 months • 3 months • 4 months • 5 months • 6 months • 7 months • 8 months • 9 months • 10 months • 11 months.
Yearly income before tax	Number	Mandatory	Insert the amount.
Do you have any other incomes?	Bool		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.

Field	Data Type	Mandatory	Description
For the option self-employed:			

Your business role	Text	Mandatory	Insert the role you have.
Name of business	Text	Mandatory	Insert the name of the company/NGO.
Time employed at this job	Option set	Mandatory	Insert the number or years/months.
Net profit in most recent complete tax year	Text	Mandatory	Insert the profit after tax deduction for the last year.
Net profit in previous complete tax year	Text	Mandatory	Insert the profit after tax deduction for the previous year.
Do you have any other incomes?		Mandatory	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.

Field	Data Type	Mandatory	Description
Income type	Option set	N/A	Choose between: <ul style="list-style-type: none"> • Overtime • Allowances • Commission • Bonuses. Choose between: <ul style="list-style-type: none"> • Pension • Investments • Maintenance • Trust Funds.
Value	Number	N/A	Insert the income.
Frequency	Option set	N/A	Choose between: <ul style="list-style-type: none"> • weekly • monthly • default • yearly.

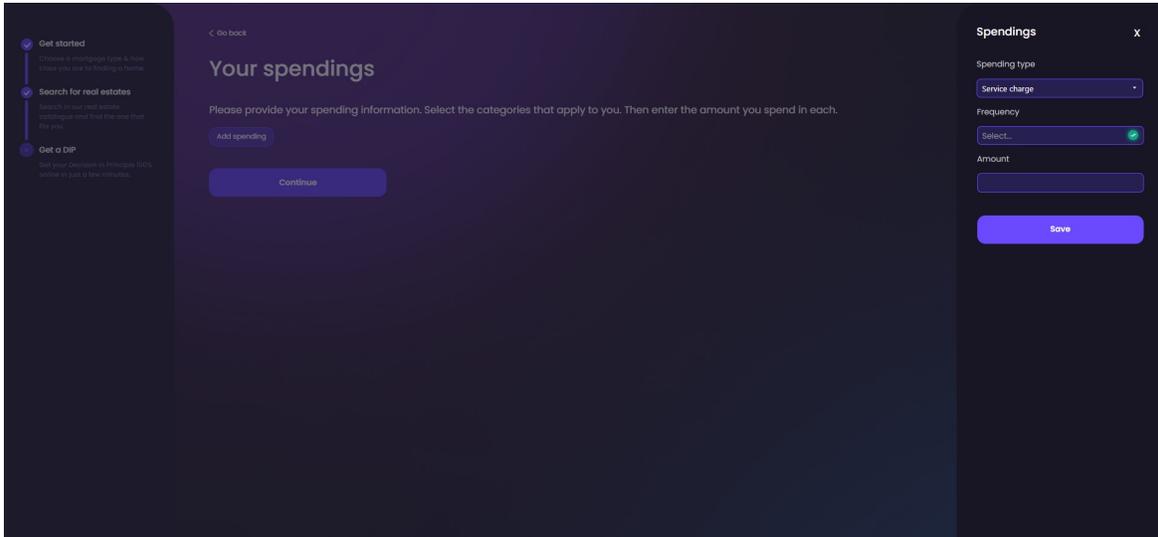
You can edit each income.

Click **Continue**.

Your Spendings

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

DIP FOR MORTGAGE USER GUIDE



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

Field	Data Type	Mandatory	Description
Spending Type	Option set	Mandatory	Choose between: <ul style="list-style-type: none"> • Overdraft • Credit or store card • Council Tax • Ground rent • Service charge.
Frequency	Option set	Mandatory	This field is displayed only for <ul style="list-style-type: none"> • Council Tax • Ground rent • Service charge. Choose between: <ul style="list-style-type: none"> • Annually • Monthly • Weekly.

Field	Data Type	Mandatory	Description
Amount	Text	Mandatory	Insert the value in pounds.

Click **Save**.

For each expense, you have two options:

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

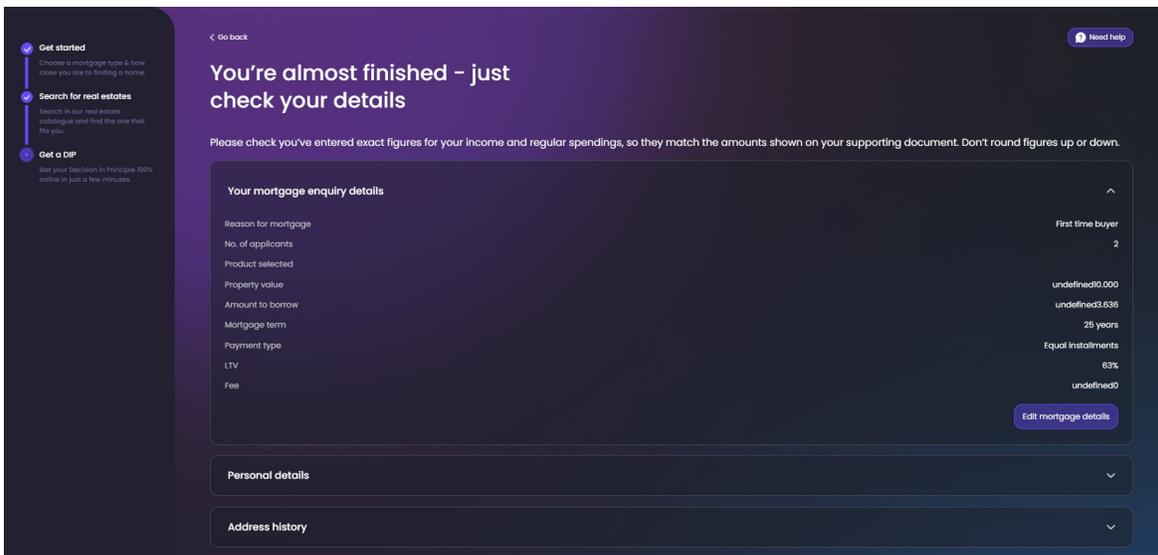
Click **Continue** once you have added all the expenses.

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.



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 34](#) stage.

Personal details

It displays the details:

Main applicant

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

Co-applicant

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

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

Click **Edit your details** to return to the "[Applicants' Details](#)" on page 43. 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 47.

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 50.

Spending

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

Click **Edit your spending** to return to the "[Your Spendings](#)" on page 54.

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*

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.

information with the other applicants. Please input below the email address for <co-applicant name>.

We will collect the following information:

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

NOTE

The validation was defined in the flow FTOS_BNKAP_MortgageContactInfo > step Contact Info > After Section Save.

- Phone number: insert only numbers.

The screenshot shows a mobile application interface for 'Contact details'. The title is 'Contact details' and the instruction is 'Please provide your email and phone number.' The form has two input fields: 'Email' with the value 'morgan.sarah@gmail.com' and 'Phone number' with the value '07123'. Both fields have a green checkmark icon to their right. Below the input fields are two toggle switches: 'Marketing Consent' and 'GDPR Consent', both of which are turned on. At the bottom of the form is a blue 'Continue' button. On the left side, there is a vertical sidebar with three steps: 'Simulation' (checked), 'Search for real estates', and 'Get a DIP'. The 'Simulation' step is currently active. In the top right corner, there is a 'Need help' button with a question mark icon. In the top left corner, there is a 'Go back' button with a left arrow icon.

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.

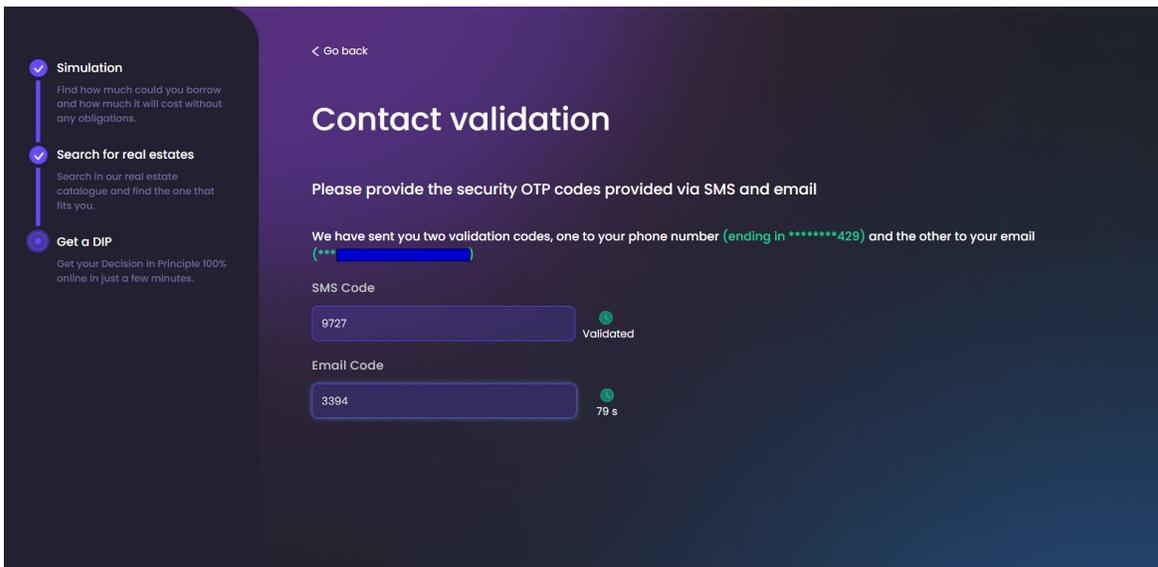
Contact Validation

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.

NOTE

For technical details, see "FTOS_DFP_MORTGAGE_OTP" on page 128 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.



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.

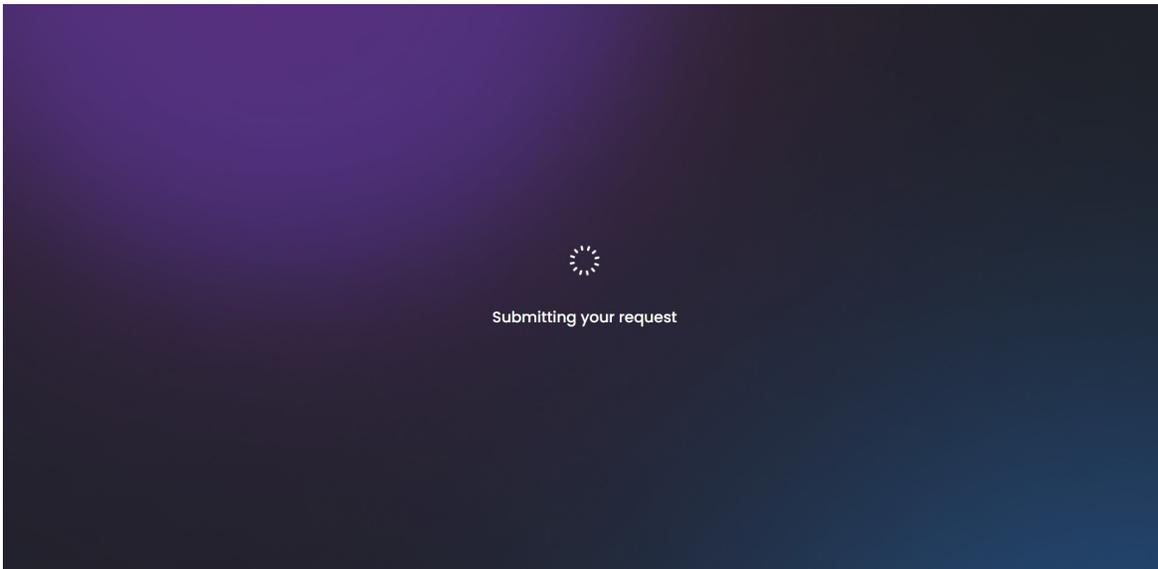
Once the countdown expires, the **Resend** button is displayed for both channels of communication. It triggers the countdown to be reinitiated.

For the situation when the wrong phone number or email address was 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 DIP for Mortgage. 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 not eligible.



NOTE

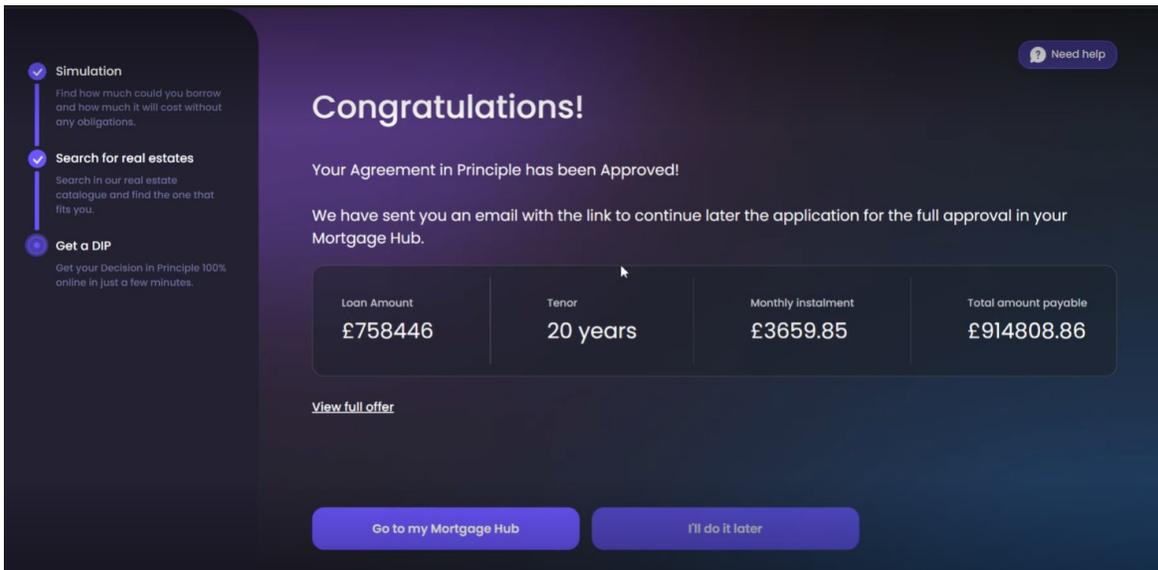
The system determines the approval/rejection by calculating all the formulas defined in "[Configuring the Business Formulas](#)" on page 101: whether or not you are eligible to determine your potential for the loan amount you asked for in the initial stages of the process. The formulas determine whether you meet the minimal requirements, the income weight, the **scoring**¹ and finally, the maximum **DTI**².

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).

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
- 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 115 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 133.

The offer is depicted with:

- loan amount
- tenor
- **monthly instalment**¹
- **total amount payable**².

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

- Product category
- Product name
- Nr of applicants
- **Monthly instalment**³ (for the first instalment)

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.

³The value of one of a number of successive payments in settlement of a debt.

- **Interest rate**¹ for the fixed period
- **APR**²
- 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 84)
- Total of monthly payments
- Early repayment charges (from "Configuring the Banking Product Factory" on page 84).

There are two buttons available: **Go to My Mortgage Hub** or **I'll do it later** to postpone the process.

¹The interest rate is the amount a lender charges a borrower and is a percentage of the principal, i.e., the amount loaned.

²Annual percentage rate. APR is an annualized representation of your interest rate.

Installation

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 72) v22.1 as explained here
- Banking Product Factory v3.0.2
- OTP project (found in the folder DIP for Mortgage-v1.0.0.zip > prereq)
- B2C Setup project (found in the folder DIP for Mortgage-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 DIP for Mortgage-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 `sypackdeployer` in the `reset` folder, edit the installer and run it in admin mode.

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

Add the latest `sypackdeployer` 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 13](#). 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.

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 DIP for Mortgage 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 DIP for Mortgage 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 47
FTOS_BARET_BuyingStatus	"Buying Status" on page 19
FTOS_BARET_ConfigureDIP	"Agreement In Principle" on page 34
FTOS_BARET_EligibilityQuestions	"Let's Get Started with a Decision In Principle" on page 33
FTOS_BARET_FindDreamhouse	"Let's find that dream house!" on page 22
FTOS_BARET_Loan_DIP_Hard_Reject	"Rejection Screens" on page 75
FTOS_BARET_Loan_DIP_Soft_Reject	"Rejection Screens" on page 75
FTOS_BARET_MortgageDIPAnalysis	"Submitting Your Request" on page 74
FTOS_BARET_MortgageDIPApprovedOffer	"Congratulations!" on page 75
FTOS_BARET_MortgageDIPSummary	"You're almost finished - just check your details" on page 69
FTOS_BARET_ProductSelection	"First Time Buyer" on page 37
FTOS_BARET_SelectMortgageCategory	"Let's Choose the Right Mortgage for You" on page 17
FTOS_BARET_WelcomeScreen	"Welcome" on page 11
FTOS_BARET_ZooplaFinding	"Time to Shop Around" on page 23

Flow	Step
FTOS_BNKAP_ MortgageAddressDetails	"Address Details" on page 47
FTOS_BNKAP_ MortgageContactInfo	"Contact Details" on page 71
FTOS_BNKAP_ MortgagePersonalDetails	"Applicants' Details" on page 43
FTOS_BNKAP_ MortgageRetailIncomeDetails	"Income Details" on page 50
FTOS_BNKAP_ MortgageSpendingDetails	"Your Spendings" on page 54

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

Configuring the Banking Product Factory	84
Configuring the Business Formulas	101
MORTGAGE_KO_DIP	106
Mortgage_DIP_WeightIncome	107
MORTGAGE_SCORING_DIP	109
RWM_MAXDTI_DIP	114
Configuring the Digital Documents Processor	115
Server Automation Scripts and Libraries	117
Server Automation Scripts	118
Configuring the Flow Settings	126
RetailMortgage	127
Option Sets	129
Other Technical Configurations	130
Mobile Mode	130
Welcome Carrousel	130
Help Center	130
Filters for the Property within Zoopla	131
Side Panel with the Product	131
Field Options	131
Selection of Products	131
Address Details	132
Select Category	132

DIP	133
Email Configurations	133
SMS Configurations	133

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 DIP for Mortgage 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**², and **interest**³.

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

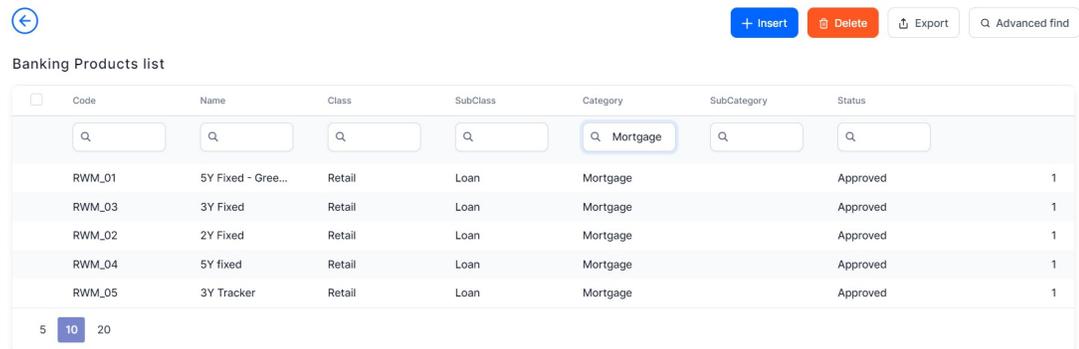
To modify any of the five existing products, you must create a clone and modify the clone since the products are in Active state.

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

²The product purpose. This section allows for insertion or removal of existing destinations for a banking product.

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

1. Log into Innovation Studio in developer mode.
2. Click the main menu icon at the top left-hand corner of the screen.
3. In the main menu, click **Product Factory**.
4. Click **Banking Products** to open the **Banking Products List** page.



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

Field	Required	Description	Default value
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
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

Field	Required	Description	Default value
Is Guaranteed	Yes	This checkbox marks the product as secured or unsecured.	true
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.	
Grace Days for Repayment	No	Select one from the list. Insert the number of days for which the grace applies.	undefined

Field	Required	Description	Default value
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
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 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.	true
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
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

Column Repayment Schedule	Calculation Method
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 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 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 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 the Actual/360 or Actual/365.</p>	30/360
Is With Equal Installments	No	<p>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.</p>	false

Field	Required	Description	Default value
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
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
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

Order of execution	Name	Start date	Business Status	Version	Digital Asset
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 106. Two eligibility criteria are defined in "[MORTGAGE_KO_DIP](#)" on page 106:
 - 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)		
How much you earn	How much you are going to pay	
Less than £9,568	0%	
£9,569 to £50,270	12%	

UK Income Tax (excluding Scotland)		
Tax Band	Tax Rate	Taxable Income
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 109 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 114 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 DIP for Mortgage 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.

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

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.

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 cove 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. The 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", experienceMont hs)) == 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

DIP FOR MORTGAGE USER GUIDE

Field	Example
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_ WeightInc ome", ("IncomeTy pe", incomeTyp e));</pre>
Result	Simple Type	Decimal	Normal	<pre>result = incomeAmo unt * DIP_ IncomeTyp e;</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
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>

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.

Name	Master Type	Sub Type	Calculation Type	Formula
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>
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>

Name	Master Type	Sub Type	Calculation Type	Formula
ApplicationScore_Decision	Simple Type	Text	Normal	<pre>result = DataSet ("SCORING_DIP_ ApplicationScore", ("ApplicationScore", ApplicationScore));</pre>
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
[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

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.

Data set **SCORING_DIP_TimeAtCurrentEmployer**

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", ("ClientCategory", clientCategory));</pre>

Data set **RWM_MaxDTI_DIP**

This matrix determines a value depending on the client category.

ClientCategory	Values
A	0.3998
B	0.37

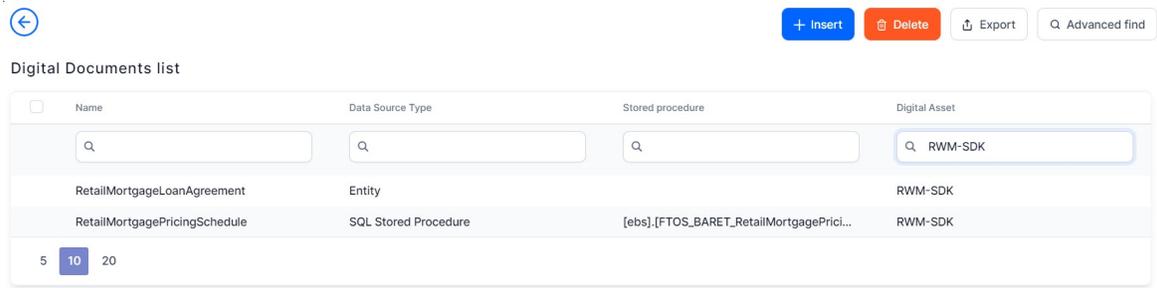
ClientCategory	Values
C	0.33
D	0.3

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 DIP for Mortgage 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 84](#) and via actions of generating digital documents and added to the UI, where they become accessible to the customer.



To access the documents, follow these steps:

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

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	Sc o pe	Entity	Out put Me tho d	Destin ation Field	Desti natio n File Name	Re po rt Re nd er Fo rm at	Di git al As set
RetailMortgagePri cingSchedule	E nt ity	FTOS_ BNKAP_ Pricing	Att ach to enti ty	schedu leFile	sched ule	PD F	R W M- SD K
Retail Mortgage Loan Agreement	E nt ity	FTOS_ BNKAP_ Application Document	Att ach to enti ty	docum entFile	contr act	PD F	R W M- SD K

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	Script Type	Entity	Event	Stage	Order	Prevent Recursivity	Disabled	Digital Asset
FTOS_BARET_AddMortga...	On demand					<input type="checkbox"/>	<input type="checkbox"/>	RWM-SDK
FTOS_BARET_AddMortga...	On demand					<input type="checkbox"/>	<input type="checkbox"/>	RWM-SDK
FTOS_BARET_CheckAvaila...	On demand					<input type="checkbox"/>	<input type="checkbox"/>	RWM-SDK
FTOS_BARET_GenerateM...	On demand					<input type="checkbox"/>	<input type="checkbox"/>	RWM-SDK
FTOS_BARET_GetCityIdy...	On demand					<input type="checkbox"/>	<input type="checkbox"/>	RWM-SDK
FTOS_BARET_GetCountry...	On demand					<input type="checkbox"/>	<input type="checkbox"/>	RWM-SDK
FTOS_BARET_GetMortgag...	On demand					<input type="checkbox"/>	<input type="checkbox"/>	RWM-SDK
FTOS_BARET_GetMortgag...	On demand					<input type="checkbox"/>	<input type="checkbox"/>	RWM-SDK
FTOS_BARET_GetMortgag...	On demand					<input type="checkbox"/>	<input type="checkbox"/>	RWM-SDK
FTOS_BARET_GetMortgag...	On demand					<input type="checkbox"/>	<input type="checkbox"/>	RWM-SDK
FTOS_BARET_GetMortgag...	On demand					<input type="checkbox"/>	<input type="checkbox"/>	RWM-SDK
FTOS_BARET_GetRanked...	On demand					<input type="checkbox"/>	<input type="checkbox"/>	RWM-SDK
FTOS_BARET_GetRetailM...	On demand					<input type="checkbox"/>	<input type="checkbox"/>	RWM-SDK
FTOS_BARET_GetRetailM...	On demand					<input type="checkbox"/>	<input type="checkbox"/>	RWM-SDK
FTOS_BARET_GetZooplaP...	On demand					<input type="checkbox"/>	<input type="checkbox"/>	RWM-SDK
FTOS_BARET_MortgageA...	On demand					<input type="checkbox"/>	<input type="checkbox"/>	RWM-SDK

Name	Description	Script Type	Digital Asset
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	RWM-SDK

Name	Description	Script Type	Digital Asset
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
FTOS_BARET_CheckAvailableMortgageCoApplicants	<p>This script gets the maximum number of applicants set in the "Defaults" on page 127 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
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

Name	Description	Script Type	Digital Asset
FTOS_BARET_ GetMorgageLoanIdbyRetail	This script gets the <code>loanId</code> and the <code>sessionId</code> . Input: var <code>retailApplicantId</code> Output: var <code>result</code>	On demand	RW M-SDK
FTOS_BARET_ GetMortgageApplicantsFullData	This script gets the data regarding the main borrower and the income, addresses and spendings. Input: var <code>loanId</code> Output: void	On demand	RW M-SDK
FTOS_BARET_ GetMortgageProductsBoundaries	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 82. Input: var <code>loanId</code> Output: boolean	On demand	RW M-SDK
FTOS_BARET_ GetRankedProductsMortgage	This script determiners the mortgage products in a specific order. Input: var <code>applicationId</code> ; var <code>top</code> Output: any []	On demand	RW M-SDK
FTOS_BARET_ GetRetailMortgageAddresses	This script gets the details of the borrower's address. Input: var <code>applicantId</code> Output: var <code>data</code>	On demand	RW M-SDK

Name	Description	Script Type	Digital Asset
FTOS_BARET_ GetRetailMortgageSpending	This script gets the details of the loan. Input: var <code>applicantId</code> Output: var <code>data</code>	On demand	RW M-SDK
FTOS_BARET_ GetZooplaProperties	This script gets the details of the properties within Zoopla. 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> Output: var <code>result</code>	On demand	RW M-SDK
FTOS_BARET_ MortgageApplicantsStatus	This script gets the status of each applicant if they have completed their "Applicants' Details" on page 43 . Input: var <code>masterRetailApplicantId</code> ; var <code>maxNumberOfApplicants</code> Output: boolean	On demand	RW M-SDK
FTOS_BARET_MortgageOffer	This script gets the banking products to be offered to the customer. Input: var <code>loanId</code> Output: boolean	On demand	RW M-SDK

Name	Description	Script Type	Digital Asset
FTOS_BARET_MortgageSendMailLoanDocuments	This script sends the email with the email template <code>MortgageLoanDocuments</code> . For details, see "Email Configurations" on page 133 . Input: var <code>applicationId</code> ; var <code>loanId</code> Output: boolean	On demand	RW M-SDK
FTOS_BARET_RemoveMortgageAddress	This script deletes an address. Input: var <code>addressId</code> Output: void	On demand	RW M-SDK
FTOS_BARET_RemoveMortgageSpending	This script deletes an expense that was added manually by an applicant. Input: var <code>loanId</code> Output: void	On demand	RW M-SDK
FTOS_BARET_RetailMortgageLinkApplicantData	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>). Input: var <code>loanId</code> Output: <code>IFtosScriptableEbsExecutionContext</code> object	On demand	RW M-SDK

Name	Description	Script Type	Digital Asset
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 116 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
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_UpdateProductSelection	<p>This script updates the data in the Loan entity.</p> <p>Input: n/a</p> <p>Output: <code>IFtosScriptableEbsExecutionContext</code> object</p>	On demand	RW M-SDK

Name	Description	Script Type	Digital Asset
FTOS_BNKAP_ AddRelatedRetailApplicant	This script inserts the co-applicant data in the RetailApplicantRelation entity. Input: var <code>masterApplicantId</code> ; var <code>loanId</code> Output: var <code>relatedApplicantId</code>	On demand	RW M- SDK
FTOS_BNKAP_ DeleteAllIncomesByApplicant	This script deletes all the income sources for an applicant from the RetailIncomeData entity. Input: var <code>masterApplicantId</code> ; var <code>loanId</code> Output: delete incomes	On demand	RW M- SDK
FTOS_BNKAP_ DeleteRetailApplicantRelation	This script deletes all the data of the co-borrower from the RetailApplicantRelation & RetailApplicantAddress & RetailIncomeData & RetailLoansData entities. Input: var <code>relatedApplicantId</code> Output: deletes the data of the co-applicant	On demand	RW M- SDK
FTOS_BNKAP_ FinancialAnalysis	This script triggers all the business formulas and determines their result. Input: var let <code>loanId</code> Output: boolean	On demand	RW M- SDK

Name	Description	Script Type	Digital Asset
FTOS_BNKAP_GetMortgageLocations	This script gets the location, text, address and open hours depending on the city. Input: var <code>loc</code> Output: var <code>data</code>	On demand	RW M-SDK
FTOS_BNKAP_MortgageSaveIncome	This script updates the currency for the income. Input: var <code>incomeId</code> ; var <code>incomeData</code> Output: update the in <code>incomeData</code>	On demand	RW M-SDK
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_RWM_CheckForEndpoint	This script verifies the endpoint. Input: var <code>endpointName</code> Output: var <code>result</code>	On demand	RW M-SDK

Name	Description	Script Type	Digital Asset
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_B2C_SaveSession	<p>This script saves the session storage.</p> <p>Input: n/a</p> <p>Output: string</p>	On demand	BAN-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 DIP for Mortgage.

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

Configuring the Flow Settings

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 Journeys > Processor Settings > RetailMortgage.

The screenshot shows the 'Edit Digital Flow Settings' page for 'RetailMortgage'. It includes sections for 'Flow Settings' and 'Processor Settings'. The 'Processor Settings' section contains a table with columns for Name, Flow Settings, Digital Processor Type, and Modified On. The table lists various settings such as Defaults, FTOS_DFP_MORTGAGE_OTP, Mortgage_DocumentType, Mortgage_OCR_DL, Mortgage_OCR_JD, Mortgage_OCR_Passport, and Processor Setting for Liveness.

Name	Flow Settings	Digital Processor Type	Modified On
Defaults	RetailMortgage		12/04/2022 16:58
FTOS_DFP_MORTGAGE_OTP	RetailMortgage	OTP	12/04/2022 16:58
Mortgage_DocumentType	RetailMortgage		03/05/2022 18:29
Mortgage_OCR_DL	RetailMortgage	OCR	27/04/2022 13:03
Mortgage_OCR_JD	RetailMortgage	OCR	27/04/2022 13:05
Mortgage_OCR_Passport	RetailMortgage	OCR	27/04/2022 13:06
Processor Setting for Liveness	RetailMortgage	Face Recognition	02/05/2022 20:17

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 84, 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 72 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": ""
    }
  }
}

```

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 82 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 82 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 82, 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 82 contains the step ProductSelection, where in Advanced > After Events, the server script "FTOS_BARET_GetRankedProductsMortgage" on page 120 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 83 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 122 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 fame 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 82, in the step **SelectCategory**, in Advanced > After Events, the script "FTOS_BNKAP_GetPurposes" on page 126 is called to get the category, image and description, and keeps the **Continue** button disabled until a selection is made.

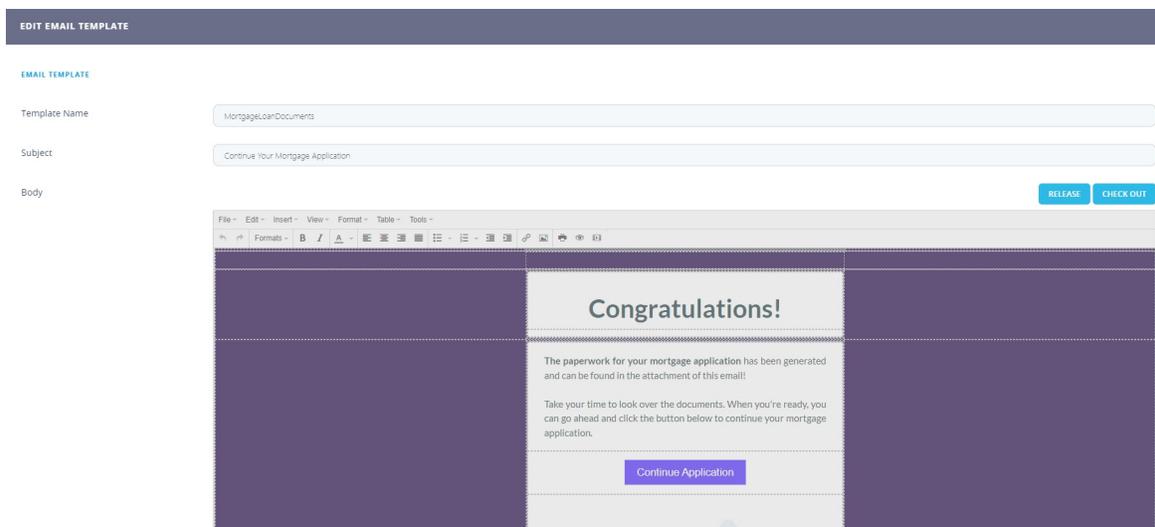
DIP

In the form driven flow F"FTOS_BARET_ConfigureDIP" on page 82, 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 123 is called with the mortgage products.

Email Configurations

Access Innovation Studio > Admin > Email Templates > MortgageLoanDocuments.



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.

Glossary

A

Advance

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

ANAF/NAFA

Agenția Națională de Administrare Fiscală (ANAF) or National Agency of Fiscal Administration (NAFA).

It is the specialized body of the central public administration in Romania. It has its own legal persona, by detaching the directions with attributions in the administration of the state revenues within the Ministry of Public Finance. It ensures the resources for the public expenses of the state by collecting and administering effectively and efficiently the taxes, taxes, contributions and other amounts due to the general consolidated budget.

APR

Annual percentage rate. APR is an annualized representation of your 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 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

A Decision in Principle/Agreement in Principle is an indication from a mortgage lender of how much they may be willing to lend a customer for a mortgage.

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

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

OCR

The employability of technology to recognize scanned documents.

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

product destination types

The product purpose. This section allows for insertion or removal of existing destinations for a banking product.

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.

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 that will be taken 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.