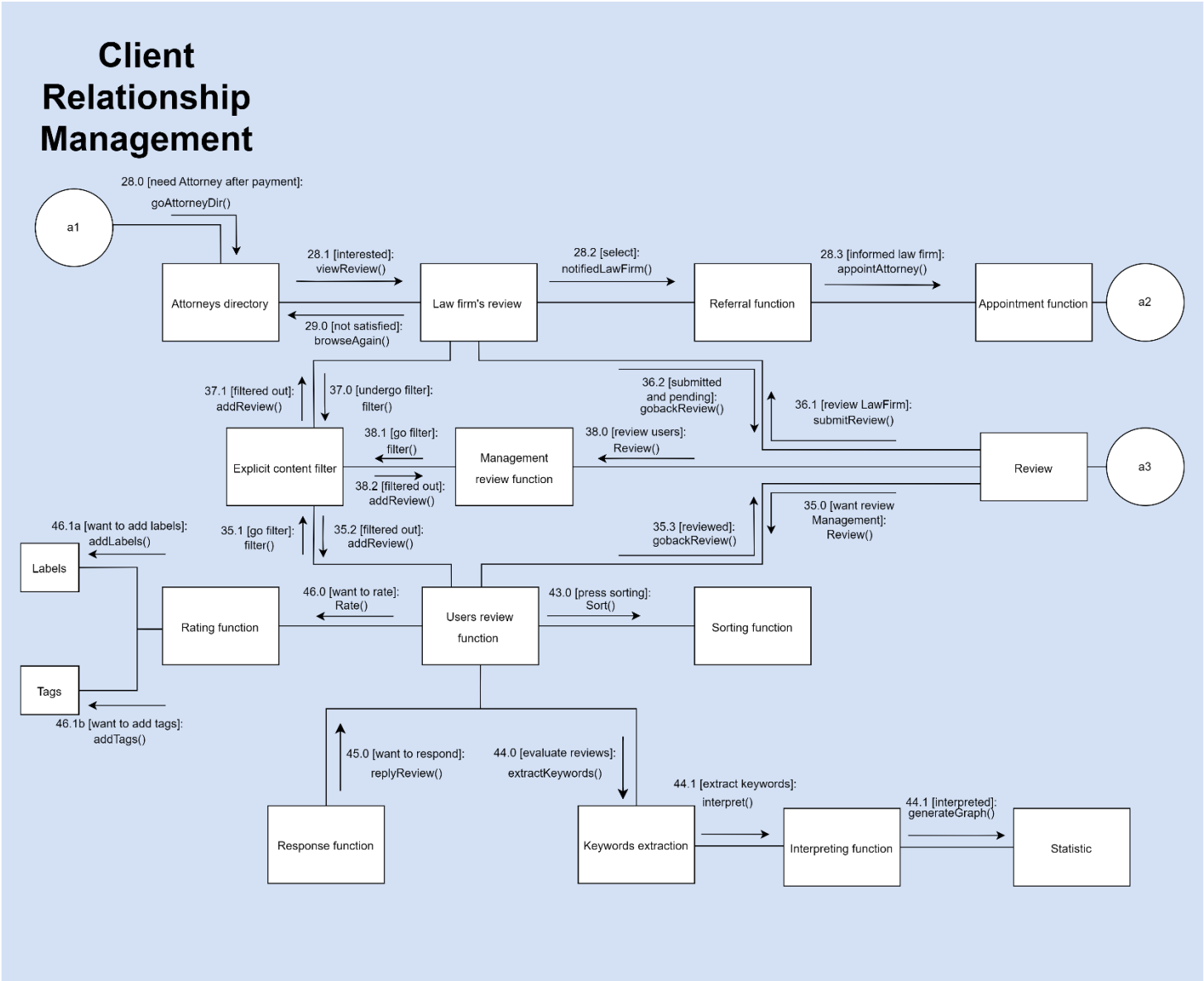
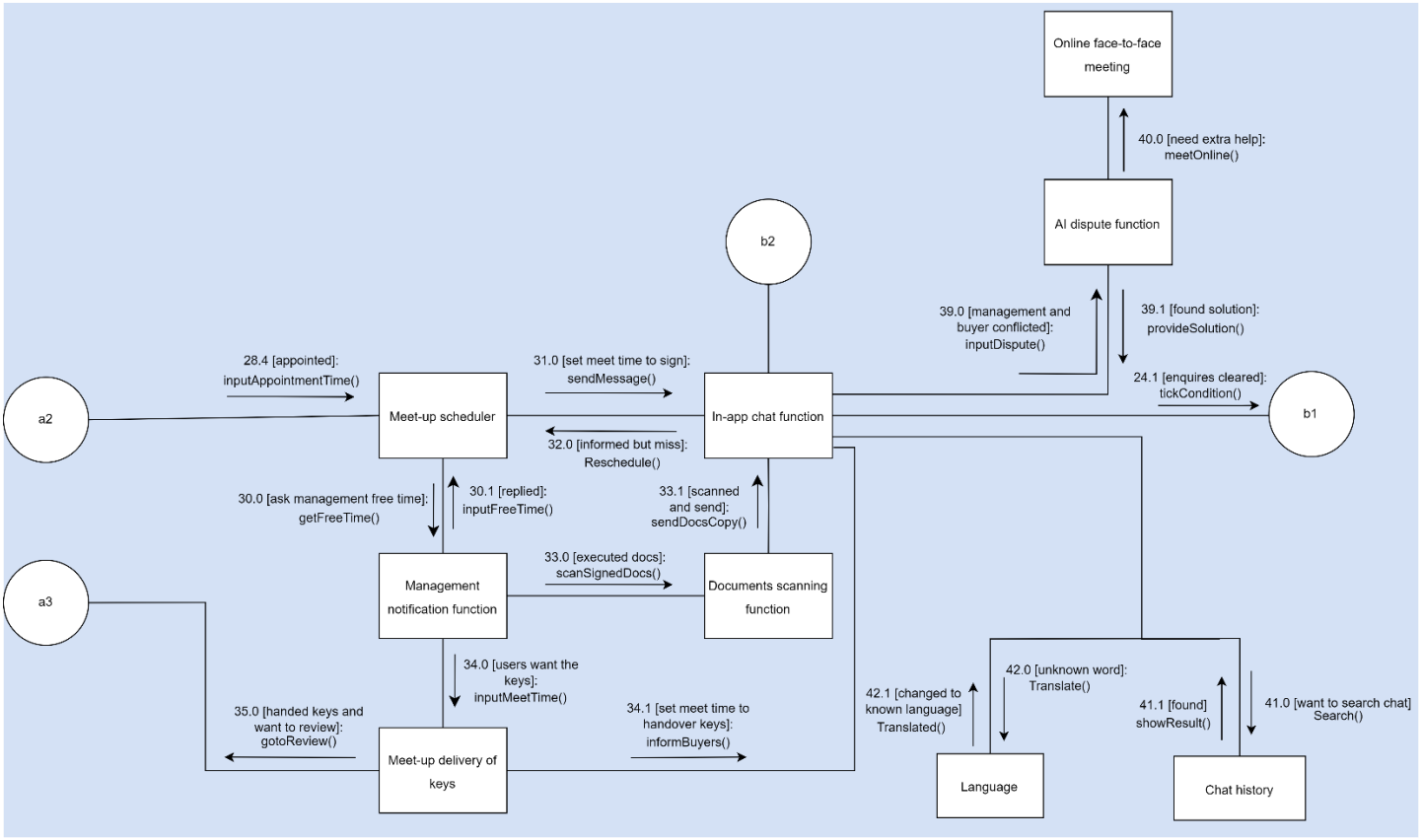
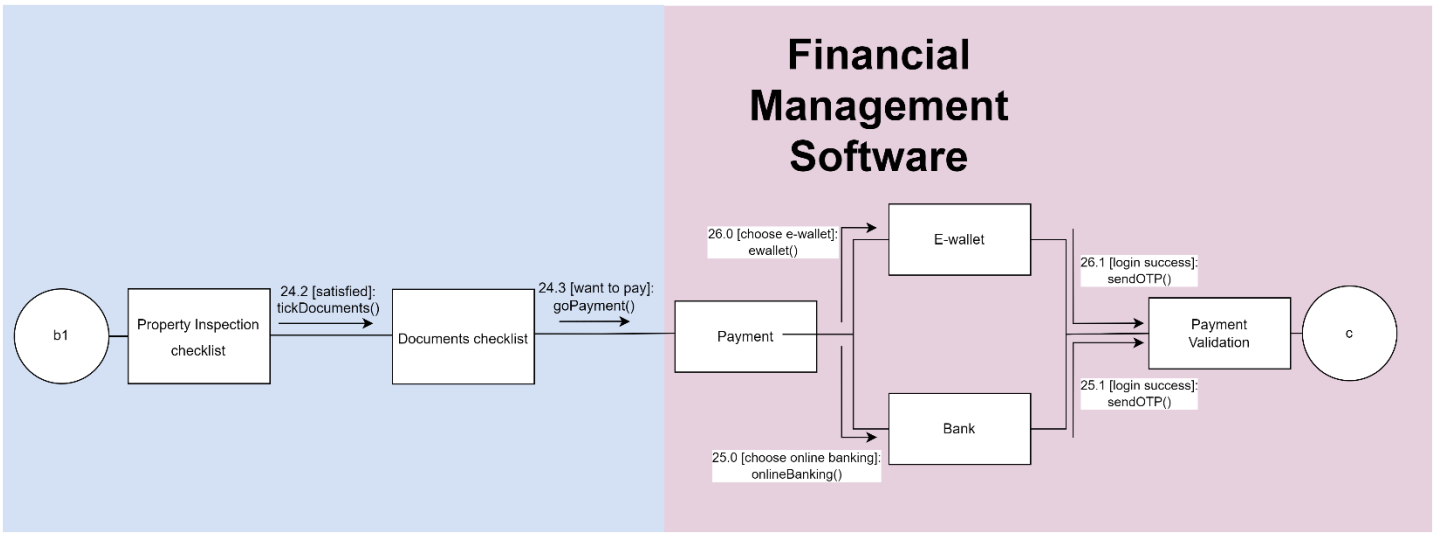
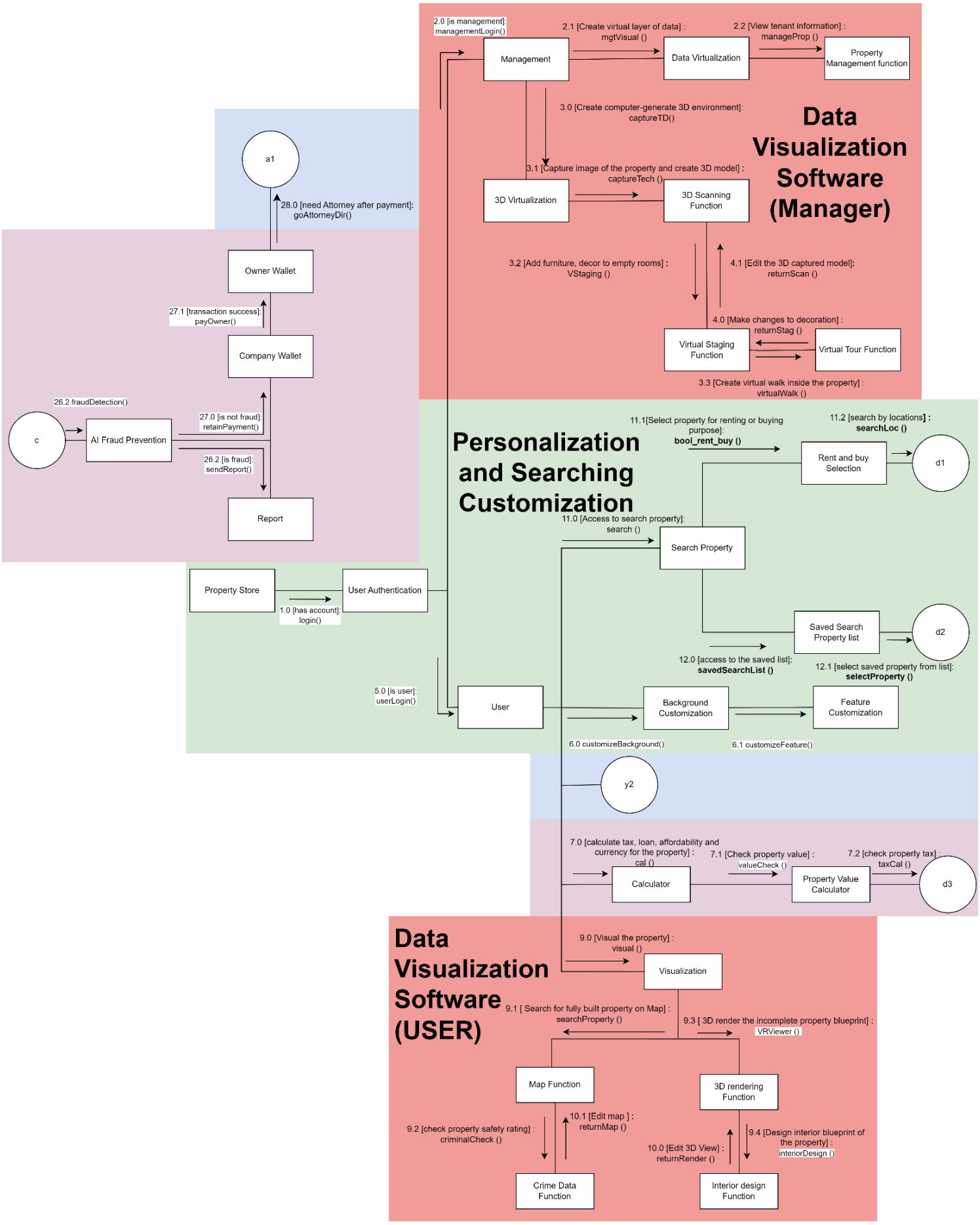
1.0 Background Information

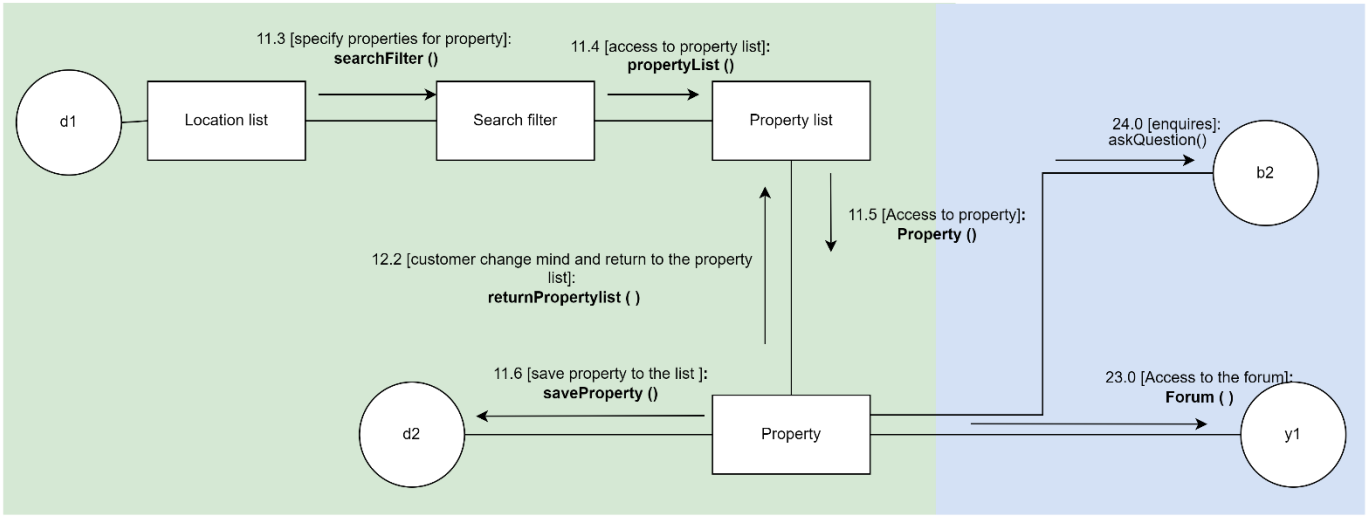
1.1 Block Diagram

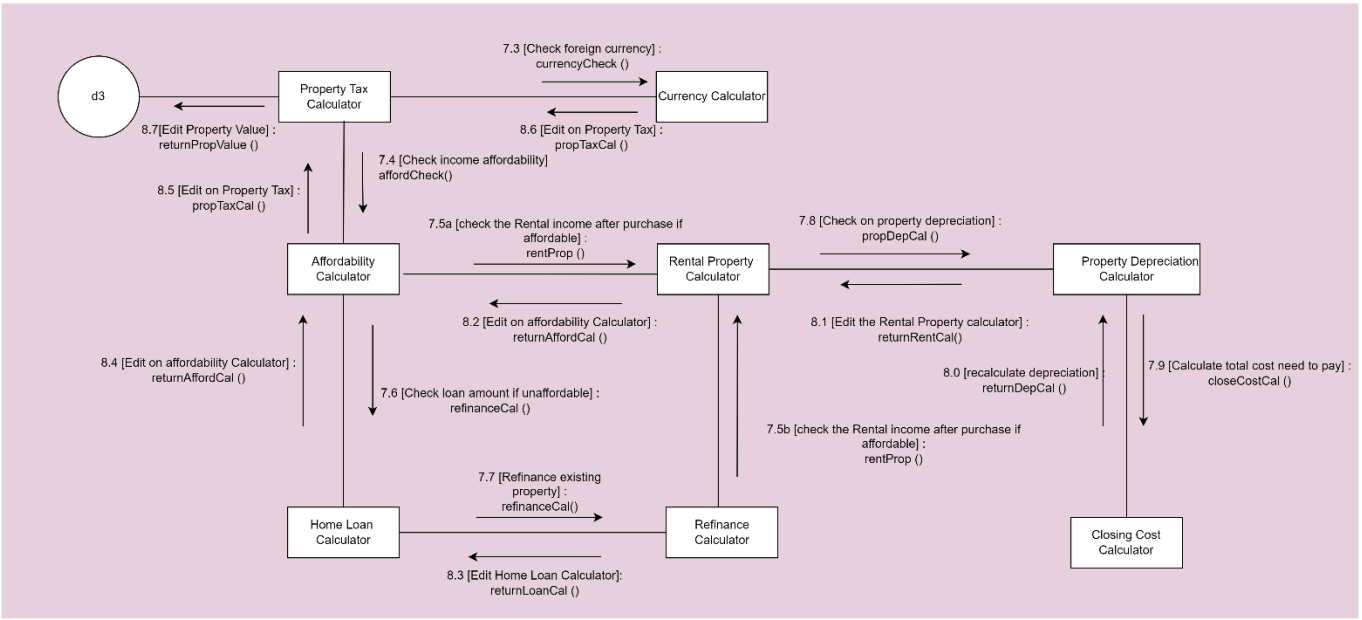


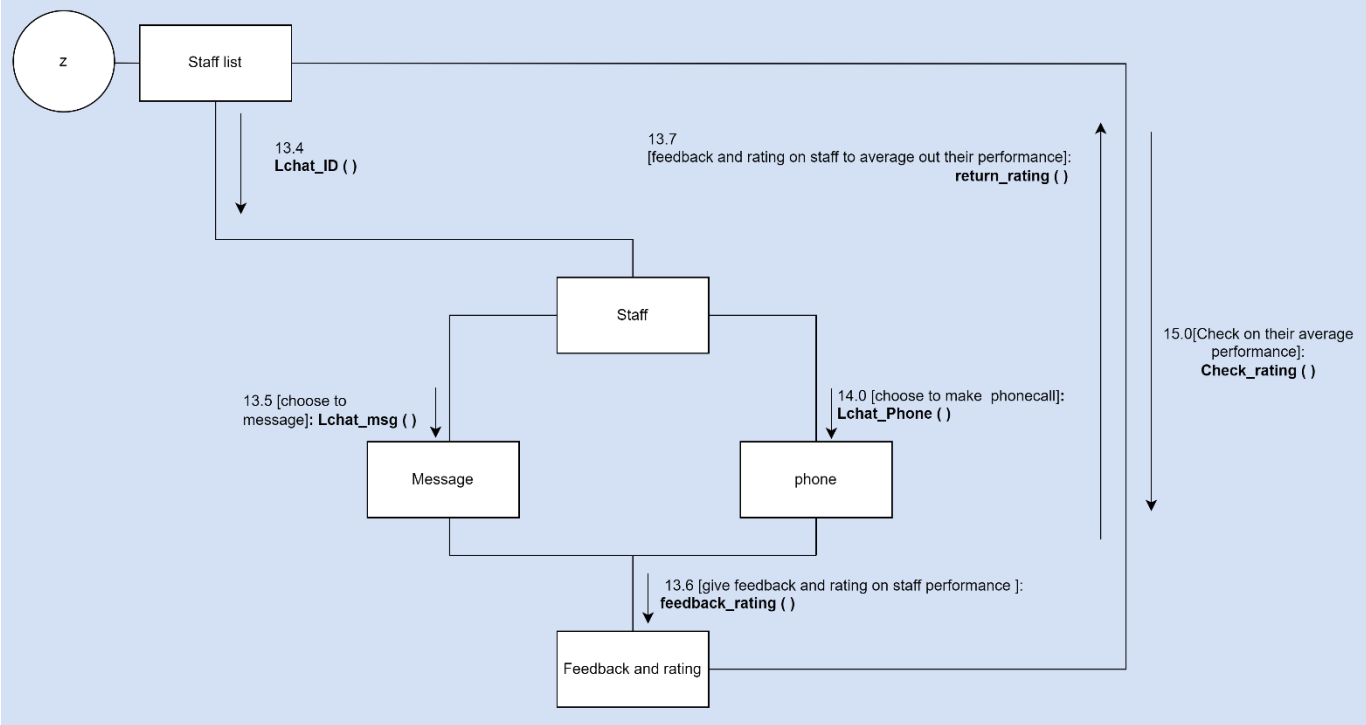

Online face-to-face meeting
40.0 [need extra help]: meetOnline()
AI dispute function
b2
39.0 [management and buyer conflicted]: inputDispute()
39.1 [found solution]: provideSolution()
28.4 [appointed]: inputAppointmentTime()
31.0 [set meet time to sign]: sendMessage()
24.1 [enquires cleared]: tickCondition()
a2
Meet-up scheduler
In-app chat function
b1
32.0 [informed but miss]: Reschedule()
30.0 [ask management free time]: getFreeTime()
30.1 [replied]: inputFreeTime()
33.1 [scanned and send]: sendDocsCopy()
a3
Management notification function
33.0 [executed docs]: scanSignedDocs()
Documents scanning function
34.0 [users want the keys]: inputMeetTime()
35.0 [handed keys and want to review]: gotoReview()
34.1 [set meet time to handover keys]: informBuyers()
Meet-up delivery of keys
42.1 [changed to known language] Translated()
42.0 [unknown word]: Translate()
41.1 [found] showResult()
41.0 [want to search chat] Search()
Language
Chat history

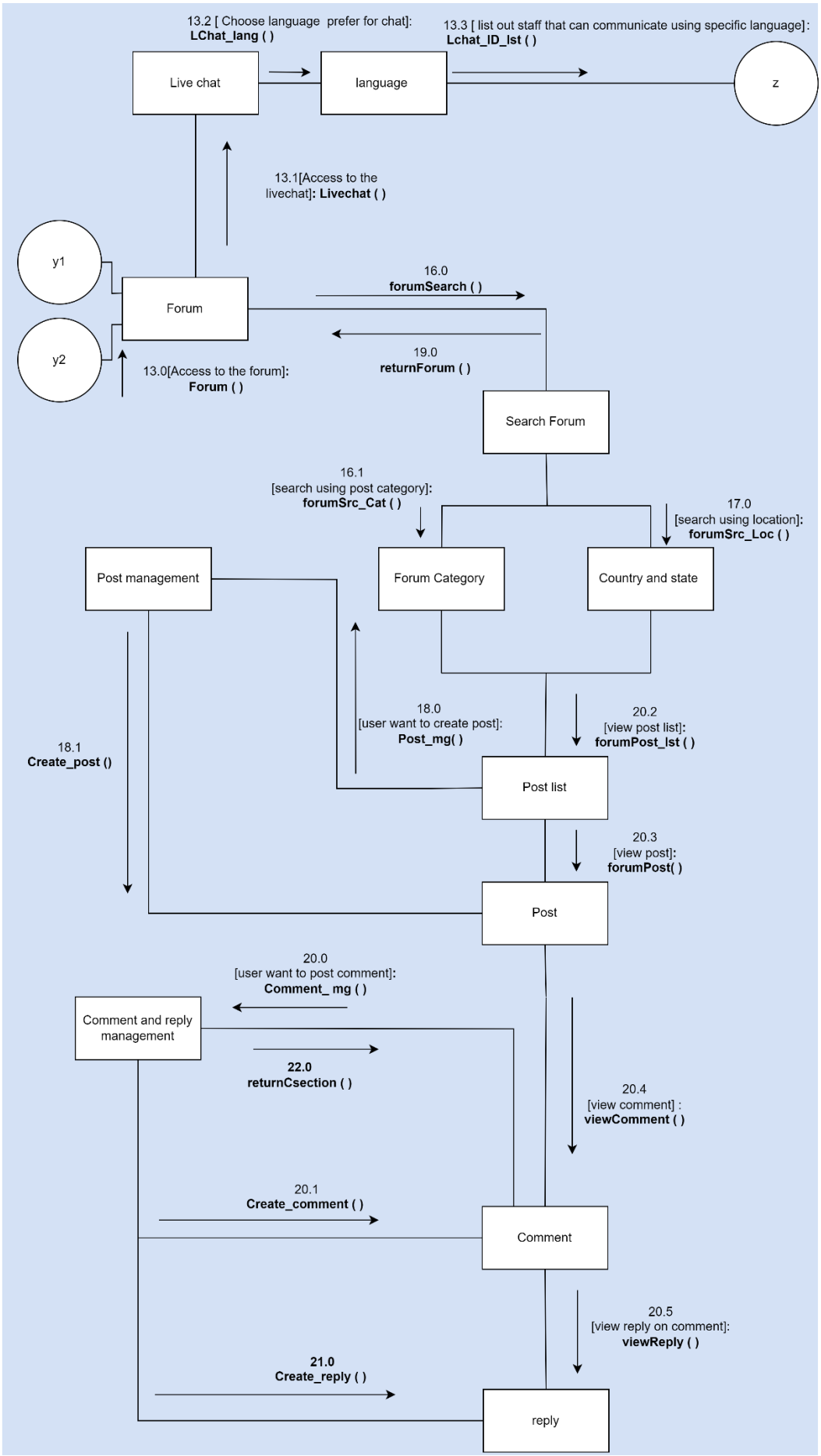

Financial Management Software
b1
Property Inspection checklist
24.2 [satisfied]: tickDocuments()
Documents checklist
24.3 [want to pay]: goPayment()
Payment
26.0 [choose e-wallet]: ewallet()
E-wallet
Bank
25.0 [choose online banking]: onlineBanking()
26.1 [login success]: sendOTP()
25.1 [login success]: sendOTP()
Payment Validation
c


Data Visualization Software (Manager)
2.0 [is management]: managementLogin()
Management
2.1 [Create virtual layer of data] : mgtVisual ()
Data Virtualization
2.2 [View tenant information] : manageProp ()
Property Management function
3.0 [Create computer-generate 3D environment]: captureTD()
3.1 [Capture image of the property and create 3D model] : captureTech ()
3D Virtualization
3D Scanning Function
3.2 [Add furniture, decor to empty rooms] : VStaging ()
4.1 [Edit the 3D captured model]: returnScan ()
4.0 [Make changes to decoration] : returnStag ()
Virtual Staging Function
Virtual Tour Function
3.3 [Create virtual walk inside the property] : virtualWalk ()
Personalization and Searching Customization
11.1[Select property for renting or buying purpose]: bool_rent_buy ()
Rent and buy Selection
11.2 [search by locations] : searchLoc ()
d1
11.0 [Access to search property]: search ()
Search Property
Property Store
1.0 [has account]: login()
User Authentication
Saved Search Property list
d2
12.0 [access to the saved list]: savedSearchList ()
12.1 [select saved property from list]: selectProperty ()
5.0 [is user]: userLogin()
User
Background Customization
Feature Customization
6.0 customizeBackground()
6.1 customizeFeature()
a1
28.0 [need Attorney after payment]: goAttorneyDir()
Owner Wallet
27.1 [transaction success]: payOwner()
Company Wallet
26.2 fraudDetection()
c
AI Fraud Prevention
27.0 [is not fraud]: retainPayment()
26.2 [is fraud]: sendReport()
Report
y2
7.0 [calculate tax, loan, affordability and currency for the property] : cal ()
Calculator
7.1 [Check property value] : valueCheck ()
Property Value Calculator
7.2 [check property tax] : taxCal ()
d3
Data Visualization Software (USER)
9.0 [Visual the property] : visual ()
Visualization
9.1 [Search for fully built property on Map] : searchProperty ()
9.3 [3D render the incomplete property blueprint] : VRViewer ()
Map Function
3D rendering Function
9.2 [check property safety rating] : criminalCheck ()
10.1 [Edit map] : returnMap ()
10.0 [Edit 3D View] : returnRender ()
9.4 [Design interior blueprint of the property] : interiorDesign ()
Crime Data Function
Interior design Function


11.3 [specify properties for property]:
searchFilter ()
11.4 [access to property list]:
propertyList ()
d1
Location list
Search filter
Property list
24.0 [enquires]:
askQuestion()
b2
11.5 [Access to property]:
Property ()
12.2 [customer change mind and return to the property list]:
returnPropertylist ( )
11.6 [save property to the list]:
saveProperty ()
23.0 [Access to the forum]:
Forum ( )
d2
Property
y1


d3
Property Tax Calculator
7.3 [Check foreign currency] :
currencyCheck ()
Currency Calculator
8.7[Edit Property Value] :
returnPropValue ()
8.6 [Edit on Property Tax] :
propTaxCal ()
7.4 [Check income affordability]
affordCheck()
8.5 [Edit on Property Tax] :
propTaxCal ()
7.5a [check the Rental income after purchase if affordable] :
rentProp ()
7.8 [Check on property depreciation] :
propDepCal ()
Affordability Calculator
Rental Property Calculator
Property Depreciation Calculator
8.2 [Edit on affordability Calculator] :
returnAffordCal ()
8.1 [Edit the Rental Property calculator] :
returnRentCal()
8.4 [Edit on affordability Calculator] :
returnAffordCal ()
7.6 [Check loan amount if unaffordable] :
refinanceCal ()
8.0 [recalculate depreciation] :
returnDepCal ()
7.9 [Calculate total cost need to pay] :
closeCostCal ()
7.5b [check the Rental income after purchase if affordable] :
rentProp ()
7.7 [Refinance existing property] :
refinanceCal()
Home Loan Calculator
Refinance Calculator
Closing Cost Calculator
8.3 [Edit Home Loan Calculator]:
returnLoanCal ()


z
Staff list
13.4
Lchat_ID ( )
13.7
[feedback and rating on staff to average out their performance]:
return_rating ( )
Staff
15.0[Check on their average performance]:
Check_rating ( )
13.5 [choose to message]: Lchat_msg ( )
14.0 [choose to make phonecall]:
Lchat_Phone ( )
Message
phone
13.6 [give feedback and rating on staff performance]:
feedback_rating ( )
Feedback and rating


13.2 [Choose language prefer for chat]:
LChat_lang ( )
13.3 [list out staff that can communicate using specific language]:
Lchat_ID_lst ( )
Live chat
language
z
13.1[Access to the livechat]: Livechat ( )
y1
y2
Forum
16.0
forumSearch ( )
19.0
returnForum ( )
13.0[Access to the forum]:
Forum ( )
Search Forum
16.1
[search using post category]:
forumSrc_Cat ( )
17.0
[search using location]:
forumSrc_Loc ( )
Post management
Forum Category
Country and state
18.0
[user want to create post]:
Post_mg( )
20.2
[view post list]:
forumPost_lst ( )
18.1
Create_post ()
Post list
20.3
[view post]:
forumPost( )
Post
20.0
[user want to post comment]:
Comment_ mg ( )
Comment and reply management
22.0
returnCsection ( )
20.4
[view comment] :
viewComment ( )
20.1
Create_comment ( )
Comment
20.5
[view reply on comment]:
viewReply ( )
21.0
Create_reply ( )
reply

1.2 Description of Block Diagram

1.2.1 Data Visualization Software

Customers can visualise the completed or incomplete built property and do some rendering or interior design on their property prior to purchase. Customers can perform a map function in order to search the location of the property on the map. Once customers find the location, they can execute a crime data function to discover the safety rating surrounding the desired property. Customers are also allowed to return back to the map function if they want to search another property.

On the other hand, for incomplete built property, if customers urge to decide whether the property fits their desire, they can use 3D rendering software to create realistic and compelling visualisation of the property in order to make them more understand and visualise the space. If customers are happy with the space they require, they can continue to perform an interior design function to create floor plans and customise the interior spaces by adding furniture, decor or lighting or other design elements based on their own demand. Customers also can go back to the 3D rendering function to make some changes.

Property Management also can visualise, capture and edit the property's image and tenant's information. Management can perform a property management function in order to view tenant's information or do a 3D scanning of the property using 3D scanning function. The 3D scanning function can allow management to capture images of the interior and exterior of a property to create a 3D digital model. Management can perform virtual staging functions to add furniture, decor to the empty space; They can return to the 3D scanning function if they want to capture an image of another property. Once they have completed decoration, management can create a virtual walk inside the property so that they can allow the customer to view virtually inside the property. Staff can return back to the virtual staging function if they need to make changes.

1.2.2 Financial Management Software

Financial management software including calculators for customers to get approximate value of payment by calculating supplementary cost, and do payment to buy or rent property. Customers can use a calculator to calculate tax, loan, affordability, and currency before purchasing property. Customers can check the property value using a property value calculator. After calculating property value, customers can calculate the property tax by performing a property tax calculator. Foreigners can check the property value and tax using a currency calculator. Customers can check their income affordability and see whether they can afford to buy the property using the affordability calculator. After customers know they can afford the property, they can check the rental income they can obtain after purchase through the rental property calculator. Alternatively, if they cannot afford, they can check on the loan they can obtain and repay using a home loan calculator. Another option is provided where customers can calculate how much money they can refinance from their existing property using

a refinance calculator. After finding out they can afford the property, they can calculate the rental income they can gain after purchase using a rental property calculator. Customers are allowed to calculate the property depreciation based on the years or locations after purchase using property depreciation calculator. Lastly, customers can obtain a sum or total amount needed to pay in order to buy the property by performing a closing cost calculator.

The payment can be done using e-wallet or bank transfer, after selecting the payment method, the system will send an one-time password (OTP) request to validate the payment. Furthermore, artificial intelligence is used to prevent suspicious activity, if fraud is detected, the system will send a report for further investigation. While in contrast, if the payment is done successfully, the money will go into the company wallet then transfer to the property owner's wallet once the customer receives the property.

1.2.3 Personalization and Searching Customization

Personalization and Searching Customization allows customers to navigate the online platform and search their preferred property in a way they like. After entering the customer page, the customer can perform customization then start performing search action. When a customer login to the property store with their account, the store validates the customer account with OTP request. The customer then can customise features and background of the store to select the content, function they want the store to provide.

Customers can use search engine to search for the property that is currently either for renting or sale on site. Customers can signify their intention to the property by selecting between the given two options which are "rent" and "buy "before performing a search on the property. Next, the customer can type in the location information where the customer intended to search for property. The search engine can support customers to search for property within range from region to country based on the latest map information. Other than this, Customers can narrow down the scope of searching property through search filters. Customers can efficiently and quickly search for the property that meets their requirements by specifying the properties on the property, such as property type, price, floor size and more. After these, customers can also save their preferred property post into a favourite list that allows customers to track back to the post conveniently while getting the latest update of information by notification consistently.

1.2.4 Client Relationship Management

Client relationship management component including forum, live chat, in app chat function, review function for customer to have interaction with other customers, official and meet their needs. Customers can use forums that allow them to engage in various discussions and information exchange on various

topics about property. Customers can automatically access the recent popular discussion and question on the forum by default. If Customers want to search for a more specific topic, they can use the search engine provided inside the forum to search forum posts by specifying their category, such as Property agent, Home buying, Home selling and more. Customers can search by country and state if they need to obtain information or conduct surveys for property on the specific location. Customers can create posts through post management if they want to conduct a survey, question, or reflection on some topics. Customers can always change and label categories for their post if necessary. Comment and reply can also be created using the comment and reply to management.

In addition, customers can access the live chat function if they have further inquiries for the system. Customers can choose their preferred language use for the incoming communication. After that, customers can choose one from a list of staff that meet the requirement. Customers can check on their overall performance and rating that accumulated from their previous activity. After selecting the staff, customers can choose between making phone calls directly or messages using the in-app chat function. Customers can make their feedback and rating on staff's performance after they have ended the communication with staff.

Buyers may reach management using the in-app chat feature with questions. To make sure that our clients are informed about the condition of the property and the necessary paperwork. The function provides checklists like property inspections and documentation. As the buyers and the property management are both our clients. The in-app chat we used had an AI dispute feature. It could be challenging for both parties to come to an agreement. Based on historical e-commerce dispute data, the AI will respond to the dispute. They can even interact face-to-face via an online meeting if their issue requires more assistance. When management's free time, meeting time is required, or document execution is complete, the system will alert management. The time for document execution may then be entered by management. Management will also be informed to provide scanned papers as confirmation after execution. This ensure there will not be any miscommunication between buyers and management about legal issues.

Most of the software merely lets customers post reviews. Our system allowed management, commonly referred as a vendor, to leave reviews on their customers. After the completion of the legal formalities and handing over the keys. Buyers and managers are both eligible to write reviews based on their involvement in the property transaction. Considering that they can assess one another, each party will treat each other politely. Our review's statistic feature may be used by management to compile data and produce graphs based on client feedback. It will aid management in enhancing their areas of weakness or hone their areas of strength. All reviews from both parties must pass an explicit content filter before being published to the appropriate review area. Also, we added a response feature that allows every

customer including management to leave feedback on reviews written by others. All these features are included to preserve the standard of our customers. To conclude, we make sure that all our clients' demands are met, and our software serves to conduct quality businesses.

1.3 Objectives

- To develop a client relationship management component for businesses to manage the interactions with customers and prospects.
- To develop a financial management software component for business component to manage their finances more effectively and help customers to create budgets, calculate loans and manage investments.
- To develop data visualization software component for customers to view and render the design virtually and for management to build the property's image.