# Lucrum - the intelligent financial advisor

Final Report 02809

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### 1 INTRODUCTION (AH)

In the ever-evolving landscape of technology, the intersection of user experience (UX) design and financial services plays a vital role in shaping accessible and efficient solutions for individuals (aged 18-30) seeking financial to stay on top of their finances. The complexity and difficulty of the processes one has to go through, especially for housing benefits, can be a daunting task for young adults. Our motivation is rooted in simplifying and enhancing this experience, offering a multifaceted mobile application that serves as a one-stop solution for applying for housing benefits, tracking expenses, managing income, and receiving personalized guidance through an AI-based ChatBot. We aim to empower young adults by providing them with the tools and support they need to navigate their financial journey semlessly. As we have proceeded with the present project, it was important to explore the competitive market and see what others have done in a similar area. Skatteguiden, Mymonii as well as Banc of America, has done a great job with their platforms, providing different features and easy-to-use designs. Banc of America has excelled with Erica (Virtual Financial Assistant), which includes several ways to quickly answer the users questions. Skatteguiden and Mymonii offer diverse functionalities and a user-friendly interface. In our report, we critically examined these solutions, highlighted their strengths and identified areas where our mobile application could stand out and offer an even better user experience. By conducting this research, we in team 15, hope not only to add something valuable to the world of financial technology but also to improve the financial situation of young adults. We aimed to create a mobile app that is carefully designed, competitive, and helps users manage their finances effectively.

### 2 RELATED WORK (TJ)

Prior to developing the prototype of our app, we analyzed the Danish personal finance app landscape, focusing on two apps, Skatteguiden and MyMonii, that align with our app Lucrum's focus. Skatteguiden, designed for adults, offers a streamlined user interface and a robust tax assistance platform, including deduction identification, student income limit tracking, topskat-tracking, income summaries, and an efficient tax filing system. MyMonii caters to children and parents, providing features for monitoring children's expenditures, setting savings goals, and managing pocket money linked to specific chores.

However, a gap we identified in these apps and our problem description is the integration of intelligent chat interfaces that could enhance user interaction with the core functionalities of the app.

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To address this, we explored the integration of advanced LLM technologies like GPT-4 into apps and services. To guide our integration we were inspired by current methods leveraging LangChain for its capabilities in integrating domain knowledge and workflow automation, aiming to bring a more interactive and intelligent dimension to our app, Lucrum.

### 3 ITERATION #1 & #2 (TJ)

The initial prototype of our app featured a home screen designed for quick access to all functions and a basic overview of budget and spending, but with the chat feature isolated on a separate, undefined screen. User feedback from think-out-loud tests in various focus groups highlighted the home page's overlapping functions and a cluttered, unappealing design. Responding to this, we streamlined the home screen's buttons, introduced a dark mode matching our landing page, added colors, and enhanced vision of the chat functionality. The think-out-loud helped us in narrowing down the scope and made it clear that we shouldn't include a card page and should use other icons for the overview and settings page for the aesthetic reasons.

We still hadn't developed any of the tax help and housing benefits functions which was should be the focus of the app.

Images are included as follows and referenced with Fig. 1



Figure 1: Change in appearance in first and second iteration

### 4 ITERATION #3 (NEL)

New feedback from week 10's prototype in the form of think-out-loud tests informed us of the redundant blue buttons on the home page and settings, confusion about the scope of the app regarding "just another bank/investment app" vs a personal financial advisor, and by extension a lack of unique, useful features four our target group. Based on this, we figured we had strayed too far from our initial idea about the customers' need for financial advice and how our UVP solved that distinct from other banking apps, so we streamlined the flow and features of our app in the direction of what we originally set out to.

Therefore, in the third iteration, we; added and integrated MitID with the sign-up/log-in page, overhauled the home page with a new focus, streamlined the icons and navigation throughout the app, i.e. by accessing settings through the profile, added unique features related to taxes, and created our initial housing page.



Figure 2: Change in appearance to the third iteration

### 5 ITERATION #4 - FINAL VERSION (NRN)

In the latest and final iteration, we've implemented significant qualityof-life enhancements to ensure a more seamless user experience. Key improvements include an optimized flow that facilitates smoother navigation and interaction, which can be seen in the final executable prototype. To enhance readability, we've increased the font size, catering to accessibility and usability standards. A major feature of this iteration is the integration of direct AI messaging across the majority of pages. This innovation positions the AI as an interactive advisor, offering real-time guidance and support to users. These changes not only improve the overall aesthetic of the interface but also significantly boost user engagement and satisfaction. With the implementation of our advanced chatbot on different pages, the app is now more closely aligned with our objective of providing a personal financial advisor. This integration not only elevates the user experience but also solidifies our commitment to delivering innovative, user-friendly financial guidance. Furthermore, based on the feedback received, we made strategic adjustments to the color scheme of our interface.



Figure 3: Change in appearance to the final iteration

In response to valuable user feedback, we refined the final iteration of our landing page design, focusing on streamlining the app's descriptive content to reduce the amount of text. While we received varied feedback regarding our title text, we ultimately chose the most popular suggestion, 'Make more bread and get ahead.' This title resonates effectively with our younger target audience, aligning well with their interests and preferences.

In addition to all of the snippets above, check out appendix D.

### 6 DISCUSSION (AH, NRN)

In the domain of application design, it is crucial to recognize that the process is perpetual. To stay competitive in a rapidly evolving industry, continuous development and improvement of the user interface (UI) and user experience (UX) are imperative. The commitment to meet user needs and demands requires an ongoing effort to refine and enhance the application based on user feedback and industry trends. While our current UX and UI design represents significant progress, we recognize the importance of introducing additional micro-interactions to enhance the personalization of the user experience. Implementing features such as click/hover effects to reveal text, hover animations on buttons or clickable text, or boxes in our chat page and login page, as well as incorporating progress indicator bars, can contribute to creating a smoother and more focused user experience. These micro-interactions aim to provide users with a sense of personalization and engagement.

Another crucial aspect requiring attention in our current design is the notification system. Aiding users in achieving their goals and enhancing the overall user experience plays a vital role. The inclusion of various notification types, such as alerts or errors when a user mistypes password or username on the login page, messages and announcements to notify users of upcoming bill payments or exceeding their monthly budget for example, can provide valuable feedback and guidance. Strengthening this feature will contribute to a more intuitive and user-friendly application.

The iterative nature of application design demands continuous attention and responsiveness to user needs. The identified areas for improvement in micro-interactions and notifications exemplify our commitment to evolving with user feedback. By embracing this dynamic approach, we navigate a path toward user-centric design, ensuring our application remains both competitive and user-friendly in a dynamic digital landscape.

Additionally, the app's user engagement could be significantly improved by incorporating subtle yet impactful personalization features, such as the ability for users to upload a profile picture and customize their profile. Enhancing security transparency through the inclusion of last login details and information on connected devices would also provide users with a sense of trust and control. Moreover, offering customization options that allow users to personalize the apps appearance, including themes, colors, and font sizes, would suit each individual user's preferences and accessibility needs. As previously discussed, the integration of budget adherence notifications could gamify the experience, adding a layer of interactivity and fun to the financial management process, thus making it more compelling and engaging.

### 7 CONCLUSION (NEL)

The initial spark of inspiration for choosing this project came about when we looked at the current landscape of apps and recognized the high costs & barriers to entry, and the knowledge gap that complicated tax laws exclude young people like ourselves from taking advantage of. Given the recent developments in AI-powered tools in 2023, we knew there existed an untapped potential for an app like Lucrum.

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That said, when we set out to design the app, we did not expect to go through so many iterations. The MVP that we originally envisioned was shattered the first week after interviewing and testing the first designs, slogans, and prototype. One interview in particular made us realize we tried to appeal too broadly and made us narrow down our target group. Week after week, we came to realize how invaluable the feedback we received from our "10 seconds"-, "think-out-loud"-, and "A-B"-testing came to be and our explored how tiny changes in the UX elicited positive responses.

In conclusion, we learned the importance tailoring our product in response to our customer's needs. A few times, internal disagreements about design decisions or feature implementation were solved by consulting potential users. By struct uring our workflow after the agile development cycle, we were also able to quickly plan, iterate, and evaluate every step of the way. Overall, this left us better off in understanding the depth of any future software jobs, we may find ourselves in.

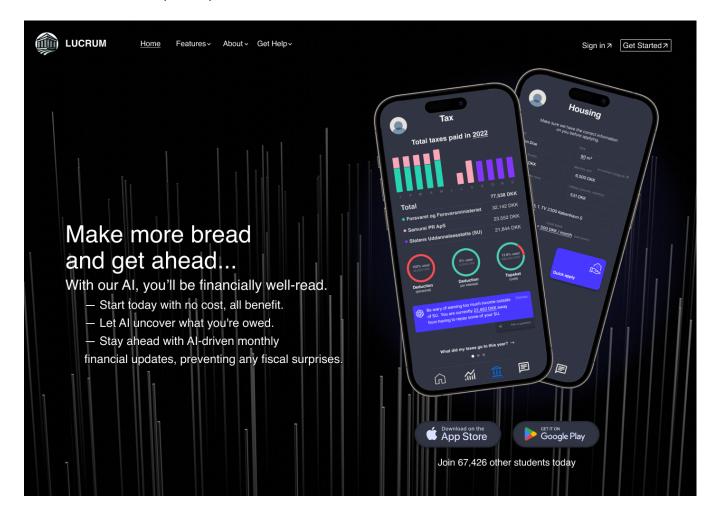
### **8 CONTRIBUTIONS**

	Anthony (AH)	Nicholas (NEL)	Noah (NRN)	Thor (TJ)
INTRO	X			
RW				X
ITER 1 & 2				X
ITER 3		X		
ITER 4			X	
DISC	X		x	
CONC		X		

# Link to Executable prototype

# ITERATION #4 (Final version) - Week 12/13

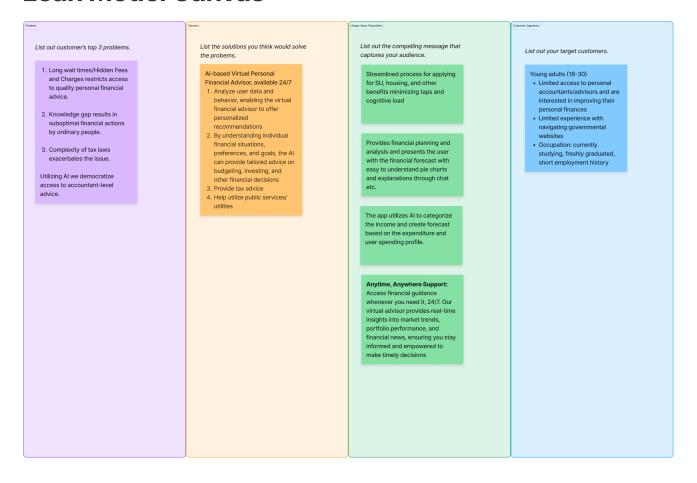
### A LANDING PAGE (FINAL)



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#### Final

# **Lean Model Canvas**



### C USER STORY MAP (FINAL)

#### Final

# **User Story Map**

User



**Persona:** Recent college graduates and young adults seeking a deeper understanding of their financial status and seeking informed advice to make intelligent financial decisions.

Goal

Insights that offer clients personalized, proactive guidance to help them stay on top of their finances

**Actions** 

Find and install Lucrum

Log in to Lucrum

Get an overview of your financial situation

Get an overview of government tax & housing Quick apply for "boligstøtte"

nitiate conversations with the Al Change settings

Logout

If iPhone: Open App store If Android: Open Google Play

If it's the first time you sign up, using MitID View financial status and insights on home page

Click overview icon

Navigate to tax/ housing screen through the navigation bar Click the button with a chat icon on the navigation bar Click on profile picture to invoke the sidebar, that slides in from left side of the screen and then click the cogwheel. Click on profile picture to invoke the sidebar, that slides in from left side of the screen and then click the cogwheel.

**Tasks** 

Search for the app's name

Click on "Login" from the Login screen Utilize the bottom navigation bar to access pages for viewing a detailed

Select box corresponding to details category of interest

Swipe left to enter the housing screen Write or voice a message to the AI in the chat box or press one of its frequently asked questions Click on any preferences that you would like changed or updated

ess logout to return

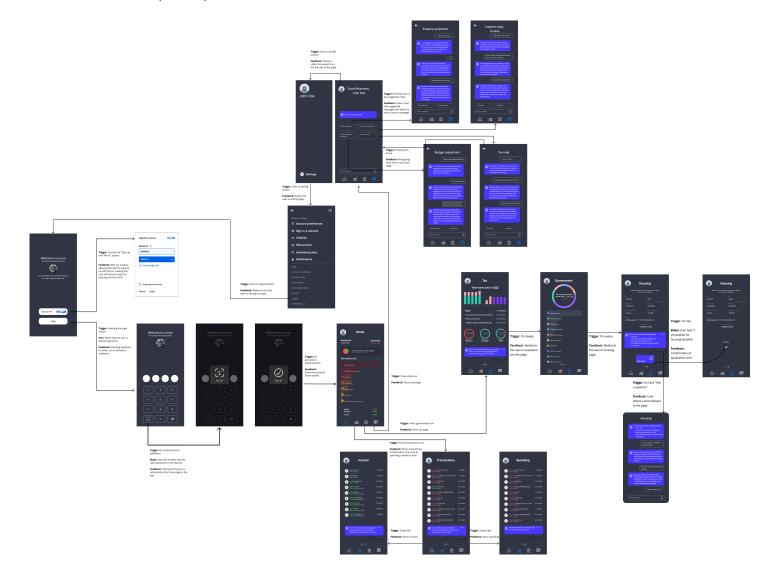
Download and install

Prompt for either biometric (fingerprint/face) authentication or code typing Use navigation bar to view a detailed spending and income history to identify areas for improvement

Provide insights based on recurring payments, averages and user history Fill out information and press "Quick apply" to apply for "boligstøtte".

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# D WIREFRAMES (FINAL)



### **E VALIDATION (FINAL)**

# Testing / Validation Week 12 Peer Review 02809E23 WK12+WK13 < > Group 15 Group 15 Target Target

From the presentation I got the impression that the app looks more like a tracker rather than an advisor. The solution brought also seems a bit broad, as from what I understood give advice, but how exactly and what kind of advice could be a bit more underlined.

From the two new landing pages, "Make more bread, and get ahead" is the most catchy, but might also be too "playful". I think your presentation is a bit too detailed, I would like a better overview of what your app actually does. It can be difficult to understand where the advisory is.

I think the first landing page you showed was the best option (A), but overall maybe a bit less text is good to provide an easier overview.

If your target user group are younger people i think the "Make more bread and get ahead" landing page is the best one. Is the main purpose of your app a Q&A app, or a glorified banking app? So underly what is the advisory part of your app, what makes your app differ from a bank app. The validation you made was great.

For young people, I think the second LP is better. You did a lot of great validation. Very nice visualizations, use of colours, etc. Since it is for people new to finance, does it introduce people to these aspect? DOes it ease you into the whole thing? Maybe discuss barrier of entry in your report since you probably want that to be as low as possible.

The prototype is well thought out, but the amount of text on each screen can be overwhelming.

Maybe the landing page could be more precise(having too much text). The prototyping is good, interactive. The ChatBot idea is nice but it could be more clear. The app is having too much content to go through. Just a suggestion that the presentation could have more about the app.

Very nice app. But Group 15 spent a lot time on presentating the iterations. Maybe they should focus more on the MVP.

Lucrum(Personal financial advisor)-It would have been great if the landing page had less text and more graphics to explain the idea. Overall, the idea is great, and it justifies the user need however, I felt the text was too much on the wireframes as well as on the Landing page instead I was looking for more graphics and less text.

Greatest one of them all. Well done with highlighting the iterative process of your prototypes

it's a really cool-looking app, but I don't like the navigation bar icons, they are too cartoony for the look you're going for.

In this application perhaps something is missing that actually makes it unique, it looks very much like a banking app, it lacks the advice part that is supposed to be the reason for installing the app. The chatbot could be better utilised.

I prefer the second landing page. The new colors look way better than last week, specially for the contrast. I like that you display the taxes in a different page. I think having the housing would be helpful. The size of the text looks small, maybe it is because of the presentation but just check it is easy to read (specially the tax with the circular diagram and the text under it and in the Alchat) Luctum: It would be nice to see only the core features of the apps in the landing page and more 'young' design for the target user.

I really like the combination of the chatbot and the finance. There is already a finance chatbot but its not combined with your purchase, could it also have an overview of what you invest in?

Nice presentation, I loved how you showcased the iterative process. Specific target group. A bit confusing on what kind of app it is, which means the scope might not be super clear. A lot of text in all the landing page examples, but very nice you tested and validated the landing page.

Focus more on the main essence of the app. Does not give me that much "help" to what i can do or need to do with my economy.

I would say it looks to dark for me

Figure 4: Actual validation from week 12 presentation. Something went wrong with last week's submission.

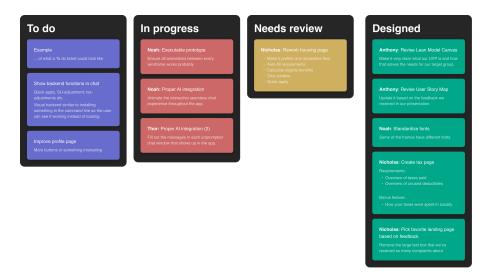


Figure 5: SCRUM: Example of how we planned our work flow iteratively from our feedback

# ITERATION #3 - Week 11

## F LANDING PAGE (ITERATION #3)

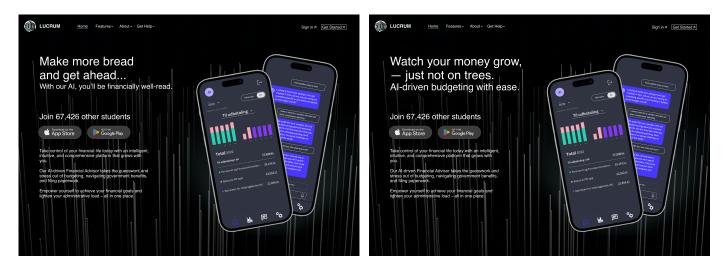


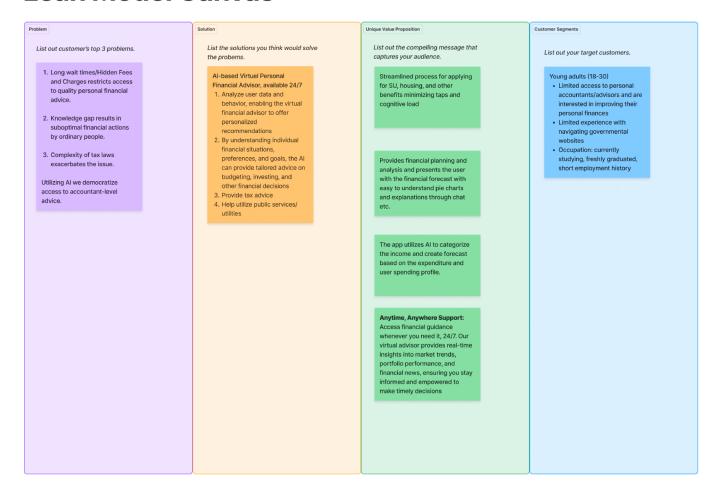
Figure 6: Landing Pages from previous week (zoom in for better quality)

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### G LEAN BUSINESS MODEL CANVAS (ITERATION #3)

#### Week 11

# **Lean Model Canvas**



### Week 11

# **User Story Map**

User

Young adults aged 18-30 **Persona**: Recent college graduates and young adults seeking a deeper understanding of their financial status and seeking informed advice to make intelligent financial decisions.

Goal

Insights that offer clients personalized, proactive guidance to help them stay on top of their finances

Actions

Find and install Lucrum

Log in to Lucrum

View a dashboard for an overview of your financial situation Enter details page for more info on income, expenses

Initiate conversations with the AI

Change settings

If iPhone: Open App store

If Android: Open Google Play If it's the first time you log in, use MitID First login: Follow the guide tips through the menus or option to skip

Click overview icon

Click the button with a chat icon on the navigation bar

Click the cogwheel on the navigation bar

Tasks

Search for the app's name

Prompt for allowing biometric (fingerprint/face) authentication on future logins Select and view account balances, transaction history, and upcoming bills (pie chart / diagram)

Select box corresponding to details category of interest Write or voice a message to the Al in the chat box or press one of its frequently asked questions

Click on any preferences that you would like changed or updated

Download and install

Prompt for allowing automatically importing all your transactions from your bank

Provide insights based on recurring payments, averages and user history

# I WIREFRAMES (ITERATION #3)



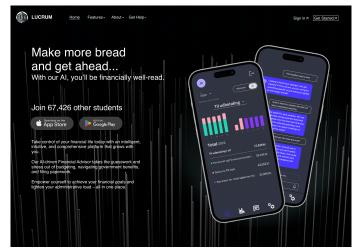
# J VALIDATION (ITERATION #3)

# Week 11 - Testing/validation

Users	Test type	Prototype	Feedback / responses	
Group 1 (n. 16)	Presentation feedback	Landing page	"Money grows"? Investment app, sounds like a scam.     Change phone images. Looks like customer support.	
Group 1 (n. 16)	Presentation feedback	Арр	General:  MitID - login  Navigation is confusing  No reason to have logout button everything (just on settings)  Savings / upcoming is confusing  Keep income / spending as the same button instead of two seperate  Achievements / goals notifications?  Annotations on budget  Total spendings and income  More white lines for cleanliness  Avatar icon is useless. Make it the settings?  Navigation bar color too dark  Have the Al more "integrated" into the app instead of solely a chatbot.  Tax page:  What is tax? Information page?  Fradrag  Better overview over tax. What does my tax go to?  Topskat?  State-govern sites are confusing. Let the app explain it in simple terms?  Chat page:  More colors? Slightly boring.	
Group 2 (n. 54)	Presentation feedback	Landing page	Nice & fun slogan, but sounds like a stock app at first impression Changes to the filler text. Nobody reads that shit.	
Group 2 (n. 54)	Presentation feedback	Арр	General: Indication on income / spending page for swiping (two bullets) Flow Can only access tax & housing pages from homescreen? Homescreen ball is clear, but where do you change budget? Piechart of spending? Have a nicer overview rather than just transactions. Fontsize slightly bigger Make it only available for danish student - no internationals. Wouldn't work with banks outside DK.	
The slogan The filter te  App: Users find t The logout Savings an Notification  Evaluation  Evaluation  For the Tax The Chat p  Additionall design, and		App: Users find the navig The logout button's Savings and income Notifications for ach The total spendings A cleaner design wi The avatar icon is d There's a call for bet For the Tax page, int The Chat page is de Additionally, there is design, and a pie ch	dered nice and fun but gives the impression of a stock app. revision as it's perceived that nobody reads it.  ation confusing and the login process mild. placement is questioned, suggesting it only be on settings. e/spending are suggested to be combined into a single button. nievements, goals, and budget are requested. and income should have annotations on the budget. th more white lines is preferred. eemed useless, and the navigation bar color is too dark. tter AI integration into the app, beyond just a chatbot. formation on taxes and a simpler explanation of where they go is desired. escribed as slightly boring, with a suggestion to add more colors.  es specific feedback calling for only cases of tax & housing pages to be swiped from the home screen, a clearer home screen nort of spending for a better overview. Also, there are requests for increased font size and the app to be exclusive to Danish ternational student access, as it wouldn't work with banks outside Denmark.	

# ITERATION #2 - Week 10

### **K** LANDING PAGE (ITERATION #2)

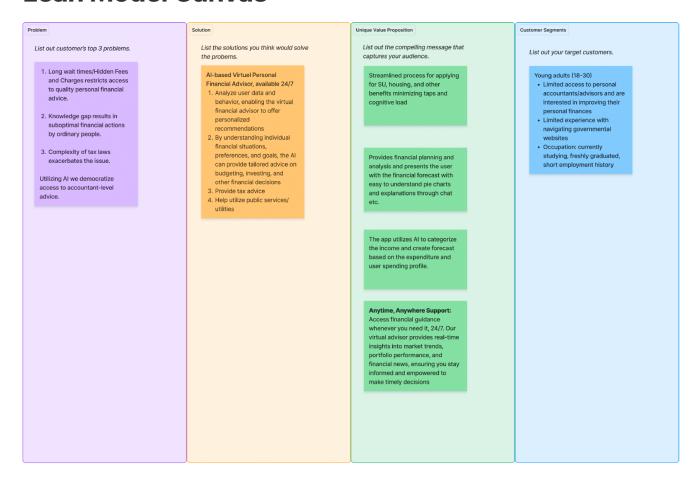




### L LEAN BUSINESS MODEL CANVAS (ITERATION #2)

#### Week 10

# **Lean Model Canvas**



### Week 10

# **User Story Map**

Voung adults aged
18-30

Insights that offer clients personalized, proactive guidance to help them stay on top of their finances

Actions

Find and install Lucrum

Log in to Lucrum

decisions.

See dashboard for an overview of your financial situation

Persona: Recent college graduates and young adults seeking a deeper understanding

of their financial status and seeking informed advice to make intelligent financial

Enter details page for more info on income, expenses, opportunities

Enter the assistant page

Initiate conversations with the AI

If iPhone: Open App store

If Android: Open Google Play If it's the first time you log in, use MitID First login: Guide the user with tips through the menus

Click details icon

Click the button with a chat icon

Ask questions by typing your questions in the input field

**Tasks** 

Search for the app's name

Prompt for allowing biometric (fingerprint/face) authentication on future logins Select and view account balances, transaction history, and upcoming bills (pie chart / diagram)

Select box corresponding to details category of interest

Click on the option "See what Al can do" Ask questing by using your voice

Download and install

Prompt for allowing automatically importing all your transactions from your bank

Provide insights based on recurring payments, averages and user history

## N WIREFRAMES (ITERATION #2)



# O VALIDATION (ITERATION #2)

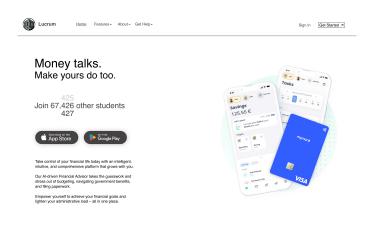
# Week 10 - Testing/validation

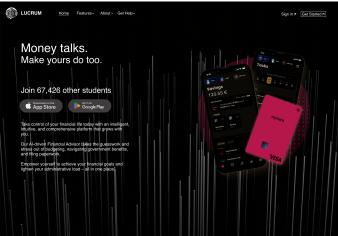
Users	Test type	Prototype	Prompt / questions	Feedback / responses
User 1	Think out loud	Арр	Instructed to navigate through the application, providing detailed feedback on their impressions.	Interface confusing; needs simplified navigation.  Color scheme too depressing; suggest more vibrant, positive colors, especially blues.  Too many clicks required; streamline for efficiency.  Appreciate detailed info; clarify app's main purpose.  Add budget tracking; offer daily/weekly/monthly views.  Include upcoming expense info for informed decisions.
				Implement financial goal-setting feature. Enlarge buttons/input areas for better interaction. Keep background light but more dynamic.
User 2	Think out loud	Арр	Instructed to navigate through the application, providing detailed feedback on their impressions.	Kinda dope. Expenses i stedet for bills.  If I had investments, I'd really like to look at that. But there are stock prices available, so I can't see the use case.  'Investment opportunities' sounds like a scam. And there are a billion other websites for that, right? Is this really an action I'm interested in in this context? I think I would go somewhere else for that kind of advice.  In conclusion, What I want to get out of it is to become aware of things I'm not aware of. Not advice on what to invest in.  Dark mode? Always a fan, but it needs to be complemented with some colors. Too gray. But on the other hand, it's clear what you can integrate with. Add color to what you can click on.
User 3	Think out loud	Арр	Instructed to navigate through the application, providing detailed feedback on their impressions.	More visualisation (plots). It's more convenient for easy viewing without having to click through everything.  House actions? What is that.
Group 1	10 Seconds test	Landing page	Asked to observe the landing page for ten seconds, then recount all memorable details.	Keywords: Money, Al, download, login, "money talks"  Specific Observations: Only remembers lower left part, dark colors, criticism of too much focus on "money talks"  Understanding of App: Unclear about app's function, no recollection of name

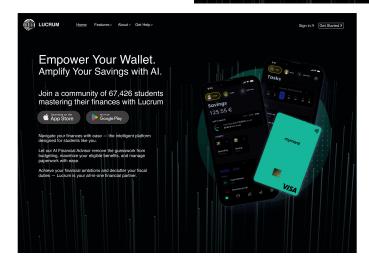
Group 2	10 Seconds test	Landing page	Asked to observe the landing page for ten seconds, then recount all memorable details.	Keywords: Stocks, crypto, student usage, Bloomberg vibes  Specific Observations: Monitors stocks, helps earn money, code- like light strips, too much text for quick reading, especially on iPhones, exclusivity  Understanding of App: Financial monitoring tool Recollection of Name: Remember slogan but not the app name	
Group 3	10 Seconds test	Landing page	Asked to observe the landing page for ten seconds, then recount all memorable details.	Keywords: "Money talks", 67,429 students, difficulty in reading,	
Group 4	10 Seconds test	Landing page	Asked to observe the landing page for ten seconds, then recount all memorable details.	Keywords: Hard to read text, download app, AI, financial, dark theme, financial club  Specific Observations: Text length and visibility issues, app related to finance and AI  Understanding of App: Financial tool, possibly an economy planner or financial wrapper  Name: "Money talks"	
Group 5	10 Seconds test	Landing page	Asked to observe the landing page for ten seconds, then recount all memorable details.	Keywords: Money talks, sexy, prominent line background, 46,000 students, bank in left-hand corner  Understanding of App: Unclear, possibly related to money, banking, or investing  Name: "Lucrum"	
Evaluation		User Interface & Design: Simplify navigation for ease of use.  Adopt a more vibrant color scheme, with a preference for blues, to make the interface engaging.  Streamline processes to reduce the number of clicks needed.  Enhance dark mode with additional colors for better clarity and highlight interactive elements.  Functionality & Features:  Clarify the app's main purpose and streamline content for better understanding and easier readability on all devices.  Add budget tracking with different time views and upcoming expense information for informed financial planning.  Introduce a financial goal-setting feature.  Improve text readability and button/input area sizes for better user interaction.  Content & Offerings:  Address skepticism around 'investment opportunities'; focus more on providing financial insights rather than specific investment advice.  Increase use of visual data representations like plots for user convenience.  Clarify ambiguous terms like 'house actions.''  General Perception:  The app is seen as useful for financial monitoring but its purpose is sometimes unclear.  The slogan "Money talks" is memorable but may overshadow other aspects of the app.  Users suggest the app seems tailored more towards students and has an exclusive, club-like feel.			

# ITERATION #1 - Week 9

### P LANDING PAGE (ITERATION #2)



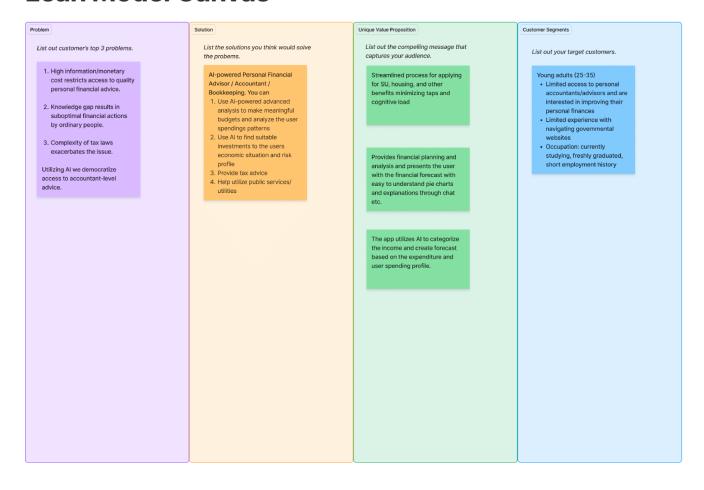




### Q LEAN BUSINESS MODEL CANVAS (ITERATION #1)

#### Week 9

# **Lean Model Canvas**



### Week 9

# **User Story Map**

User

Young adults aged 18-30 **Persona**: Recent college graduates and young adults seeking a deeper understanding of their financial status and seeking informed advice to make intelligent financial decisions.

Goal

Insights that offer clients personalized, proactive guidance to help them stay on top of their finances

Actions

Find and install Lucrum

Log in to Lucrum

See dashboard for an overview of your financial situation Enter details page for more info on income, expenses, opportunities

Enter the assistant page

Initiate conversations with the Al

If iPhone: Open App store

If Android: Open Google Play If it's the first time you log in, use MitID First login: Guide the user with tips through the menus

Click details icon

Click the button with a chat icon

Ask questions by typing your questions in the input field

**Tasks** 

Search for the app's name

Prompt for allowing biometric (fingerprint/face) authentication on future logins Select and view account balances, transaction history, and upcoming bills (pie chart / diagram)

Select box corresponding to details category of interest

Click on the option "See what Al can do" Ask questing by using your voice

Download and install

Prompt for allowing automatically importing all your transactions from your bank

Provide insights based on recurring payments, averages and user history

## **S WIREFRAMES (ITERATION #1)**

