Redesigning Mobile Top-up Experience

Lycamobile

CA2

User Research and Interaction Design

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Project Files

General Work File Directories:

Miro Board https://miro.com/app/board/o9J_lU6M9Zk=/
One Drive https://iadt-my.sharepoint.com/personal/mcevoyde_iadt_ie/_layouts/15/onedrive.aspx?id=%2Fpersonal%2Fmcevoyde%5Fiadt%5Fie%2FDocuments%2FPgDip%20in%20UX%202020%2D21%2FM2%2FAgnieszka%20Przygocka&originalPath=aHR0cHM6Ly9pYWR0LW15LnNoYXJlcG9pbnQuY29tLzpmOi9nL3BlcnNvbmFsL21jZXZveWRlX2lhZHRfaWUvRWw2U2ZzM29UemxHalpidDR2NzMzV29CSzZWTDdBd296b1Zidmxnd0ZkcjZPZz9ydGltZT1pUlFsMTFnQjJVZw
Figma - User Research https://www.figma.com/file/fnOBmNsetdh9GfcsXlvICI/1.-Lycamobile-User-Research?node-id=1%3A25
Figma - Design and Testing https://www.figma.com/file/Xu1ZOIQCoSq4a1EG9HQnVV/2.-Lycamobile-Design-and-Testing?node-id=1%3A25

User Research Files:

Heuristic Evaluation (Google Sheets) https://docs.google.com/spreadsheets/d/1E-vTFyrP3bHqC7mGFnBymwJ73PwJa_wF9vvi-XHND5E/edit#gid=0
User Research Questionnaire (Google Forms) https://forms.gle/ozfANbSuFY9D8RV7A
User Interview Script (Google Docs) https://docs.google.com/document/d/1VXrsYLpgB6h8Yt8-bE4y2Grqhn6BlvyAY5K-_Ii8H0g/edit?usp=sharing
Data Clustering for Persona Development (Google Sheets) https://docs.google.com/spreadsheets/d/19bjqkukWvN1xJ2g4P8usnuRcrM9-gAgEkVBMnX0tto0/edit?usp=sharing

Low-fidelity Iteration

Figma Paper Prototype https://www.figma.com/proto/Xu1ZOIQCoSq4a1EG9HQnVV/2.-Lycamobile-Low-Fi-Design-and-Testing?node-id=242%3A50&viewport=585%2C942%2C0.09583614021539688&scaling=contain&page-id=242%3A0

Mid-fidelity Iteration

Axure Mid-fidelity Prototype https://ui3cib.axshare.com/#id=xe5zfy&p=home&sc=1&c=1

High-fidelity Iteration

Pinterest Moodboard https://www.pinterest.ie/Gockaprzy/projects/lycamobile/

Axure High-fidelity Prototype https://7bb2q4.axshare.com/#id=xe5zfy&p=home&sc=1&c=1

Usability Test Results & SUS Results - High-fidelity prototype https://docs.google.com/spreadsheets/d/1DT-5avuKOmrlh1VT0QDI9Ps0Vw_-XpJupTU-xzwOreo/edit?userstoinvite=arnoldago@gmail.com&ts=608afffb&actionButton=1#gid=2

Measuring Success

Usability Test Results & SUS Results - Existing Website https://docs.google.com/spreadsheets/d/19npd4V730oYf9wQJp3uV3jrTqXqNGF8_Uvkuv4aN8jQ/edit#gid=2

Final Presentation (Figma) https://www.figma.com/proto/If5vkZocUS3ZfqlNvkW0Jl/3.-Lycamobile-Presentations?page-id=701%3A27640&node-id=701%3A28549&viewport=-21584%2C-14072%2C0.728736400604248&scaling=min-zoom

1. Introduction

Lycamobile Ireland offers inexpensive calls to the UK and international calls to Asia, Africa, Europe and America. Lycamobile's mission is to connect friends and family around the world. The Pay As You Go International SIM has over 15 million customers enjoying the Lycamobile brand and a new customer joining every 2 seconds.

To purchase credit call, the existing customer has to enter a mobile number and personal details on the website, then provide a form of payment and finally get their top-up or bundle. If they had signed up for auto top-up, they would be charged automatically.

Through the online feedback and personal experience, we learned that many Lycamobile customers are frustrated with the top-up experience on the Lycamobile website. Some customers do not own credit cards, and their only option is to use a voucher or ask someone else to top-up their phone.

This report summarises research methodology and findings, presents recommendations based on these findings and the new design to address user experience problems. It justifies the use of research methods and discusses shortcomings of the taken approach. Lastly, it shows how we measured the success.

To get the best possible outcomes, we were using multiple methods and multiple metrics to conduct research. The triangulation approach, recommended by Joe Dumas in his paper "User-based Evaluations in The Human-Computer Interaction Handbook", helps to ensure that research will provide the recommendation to improve the user experience. It is unusual that with only one method, we can address the issues.

The key deliverables are heuristic evaluation, competitive analysis, user persona, and a high-fidelity prototype. We compared the results of testing the final prototype with the results from the existing website, and the findings are presented in this report.

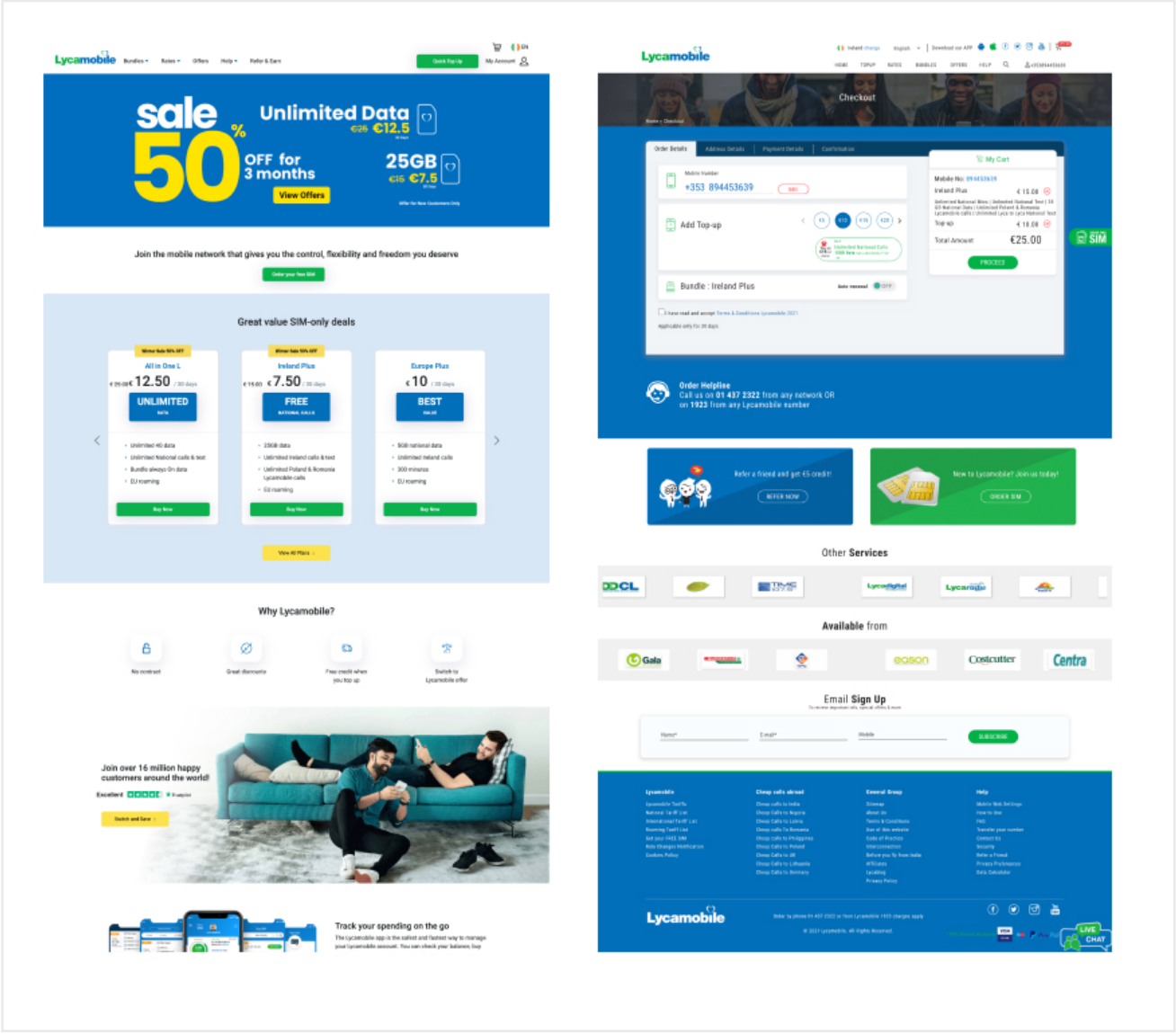


Fig. 1.1 Existing Lycamobile website

2. Problem Identification

2.1 Customer Feedback

The relevant Trust Pilot reviews analysis helped gauge how customers felt towards the Lycamobile website (Appendix 2.1). Lycamobile had a Trust Pilot score of 4.3/5–1,317 users, which is an excellent score. After analysing the reviews further, it becomes clear that opinion about the top-up via the website was not favourable, and the high score was related to other services.

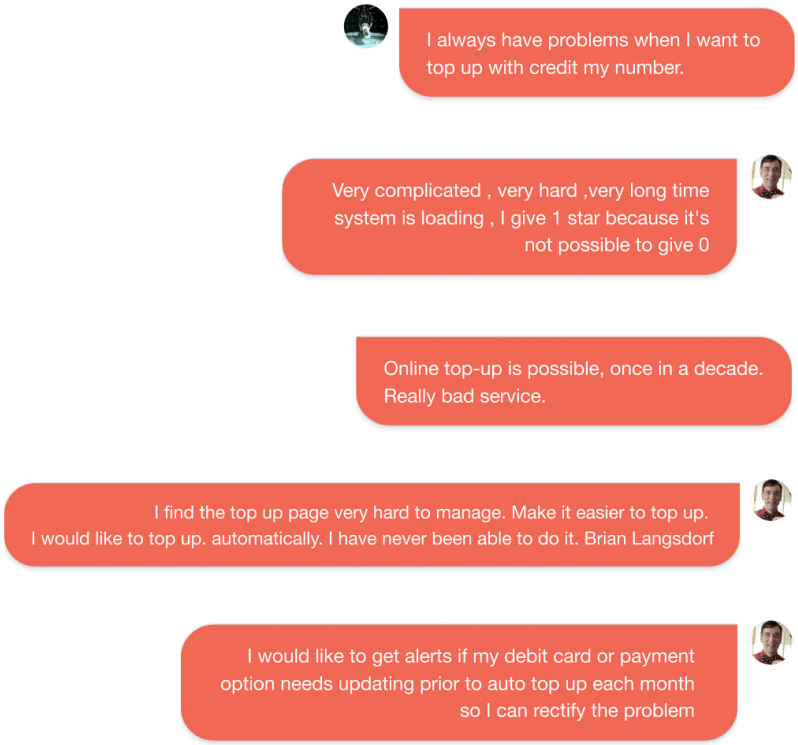


Fig. 2.1 Examples of Trust Pilot reviews

One of the main findings were Customers' difficulties with buying top-up via the Lycamobile website. That was causing frustration, negative reviews and decreased loyalty. In the longer-term company would have to face loss in revenue and tarnished brand reputation. Improving the success rate of online top-up could bring more business and reduce the volume of calls to the Customer Service.

2.2 Heuristic Evaluation

To better understand problems on the existing website, we conducted a heuristic evaluation (Nielsen 1992). It is a fast and inexpensive method, and it allowed us to identify number of UI issues. Still, some usability problems cannot be identified with heuristics, and it is a good practice to run it together with usability testing for the best results. The cause of customers frustrations may lie in some of the interactive elements of the website while they attempt to complete tasks. Expert evaluation might not be able to detect them.

We used the heuristic evaluation process recommended by Euphemia Wong (Wong 2020). The list of relevant heuristics was composed (Appendix A2.2). We chose appropriate guidelines from the multiple professional UX sources. We collated all the results in a spreadsheet [URL: Heuristic Evaluation Google Sheets]

It was calculated by what percentage the website complies with the guidelines. For each checklist item rating of -1 (doesn't comply with the heuristic), 0 (kind of complies), 1 (complies) was added. If a heuristic was not relevant, the field was left blank.

	EVALUATORS BRIEF
	Welcome! We are going to evaluate lycamobile.ie website against chosen heuristics (guidelines). The goal of this evaluation is to identify usability problems. As an expert you will be asked to follow evaluation steps and use your knowledge and experience to find usability issues. Please get familiar with the evaluation steps, goals, elements to be evaluated and heuristics, before you proceed. This is individual evaluation, so please review the website on your own.
	The evaluation process:
1	Read list of goals and elements of the website we are going to focus on (see EVALUATION PLAN tab)
2	Read the list of heuristics in the HEURISTICS tab. You will assess tesco.ie website against these heuristics.
3	Print evaluation checklist (see tab CHECKLIST TO PRINT)
4	Open lycamobile.ie and sign in. Go to the Home Page.
5	Go through the interface a number of times and examine and assess the efficacy of the chosen elements of the website. Focus on the goals of the system and elements to be evaluated . You can then break goals down into appropriate tasks, and test each in turn.
6	Check appriopriate box - complies, kind of complies, doesn't comply. If a guideline isn't relevant, leave the rating blank.
7	You can add a comments.
8	Check your number in the EVALUATION PLAN and enter your findings in the EVALUATION RESULTS tab in the column with your number.
9	Enter your results to the EVALUATION RESULTS tab. For each checklist item enter a rating of **-1** (doesn't comply with the guideline), **0** (kind of complies), **1** (complies). If a guideline isn't relevant, leave the rating blank.
	The goals of the system:
1	User should be able to find a navigation to the Top-up Page.
2	User should be able to log in and understand information on the dashboard.
3	User should be able to understand how to change payment method
4	User should be able to understand how to add new credit card.
5	User should be able to add €10 top-up to cart.
6	User should be able to find how to switch off notifications.
7	User should be able to add address details.
8	User should be able to add payment details.
9	User should be able to find information about CVV.
10	User should be able to change €10 top-up to €20 in the cart.
11	User should be able to find information about auto-renewal.
12	User should be able to find out how much all the products in the cart cost.
	We will evaluate the following elements of the website:
1	Home Page
2	Dashboard
3	Quick Top Up - Order Details
4	Quick Top Up - Address Details
5	Quick Top Up - Payment Details
6	Quick Top Up - Payment Methods
7	Quick Top Up - Confirmation
8	General
	Note

Fig. 2.2 Heuristic Evaluation Brief

We evaluated the website against 103 heuristics which were grouped into categories. The results show that payment details have the lowest score - below 20%, checkout around 30%, shipping, and billing only slightly above 40%. The main issue in the technical considerations category was the performance of the website.

RESULTS SUMMARY

#	Review Checklist	Raw score E1	# Questions	# Answers E1	Score E1	Average Score
1	Information Architecture	3	6	6	75%	**75%**
2	Navigation	-1	12	12	46%	**46%**
3	Links	1	8	8	56%	**56%**
4	Design and Layout	-6	11	11	23%	**23%**
5	Heading, Titles and Labels	1	5	5	60%	**60%**
6	Content / Information Search	-5	8	8	19%	**19%**
7	Purchase Decision Making	3	7	7	71%	**71%**
8	Checkout	-6	14	14	29%	**29%**
9	Shipping and Billing Details	-1	6	6	42%	**42%**
10	Payment Details	-7	11	11	18%	**18%**
11	Form Validation and Errors	0	6	6	50%	**50%**
12	Help	-1	5	5	40%	**40%**
13	Technical Considerations	-2	4	4	25%	**25%**
			103	103	**43%**	

Fig. 2.3 Heuristic Evaluation Results Summary

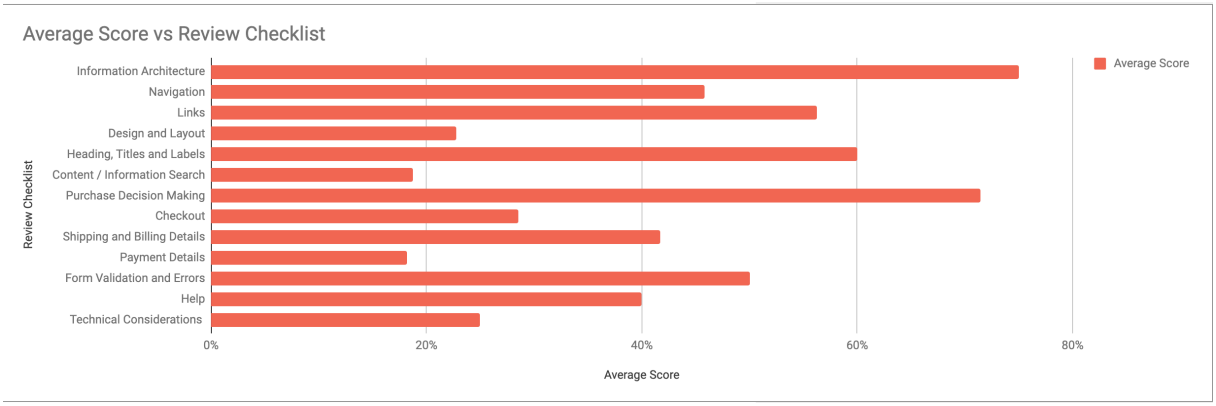


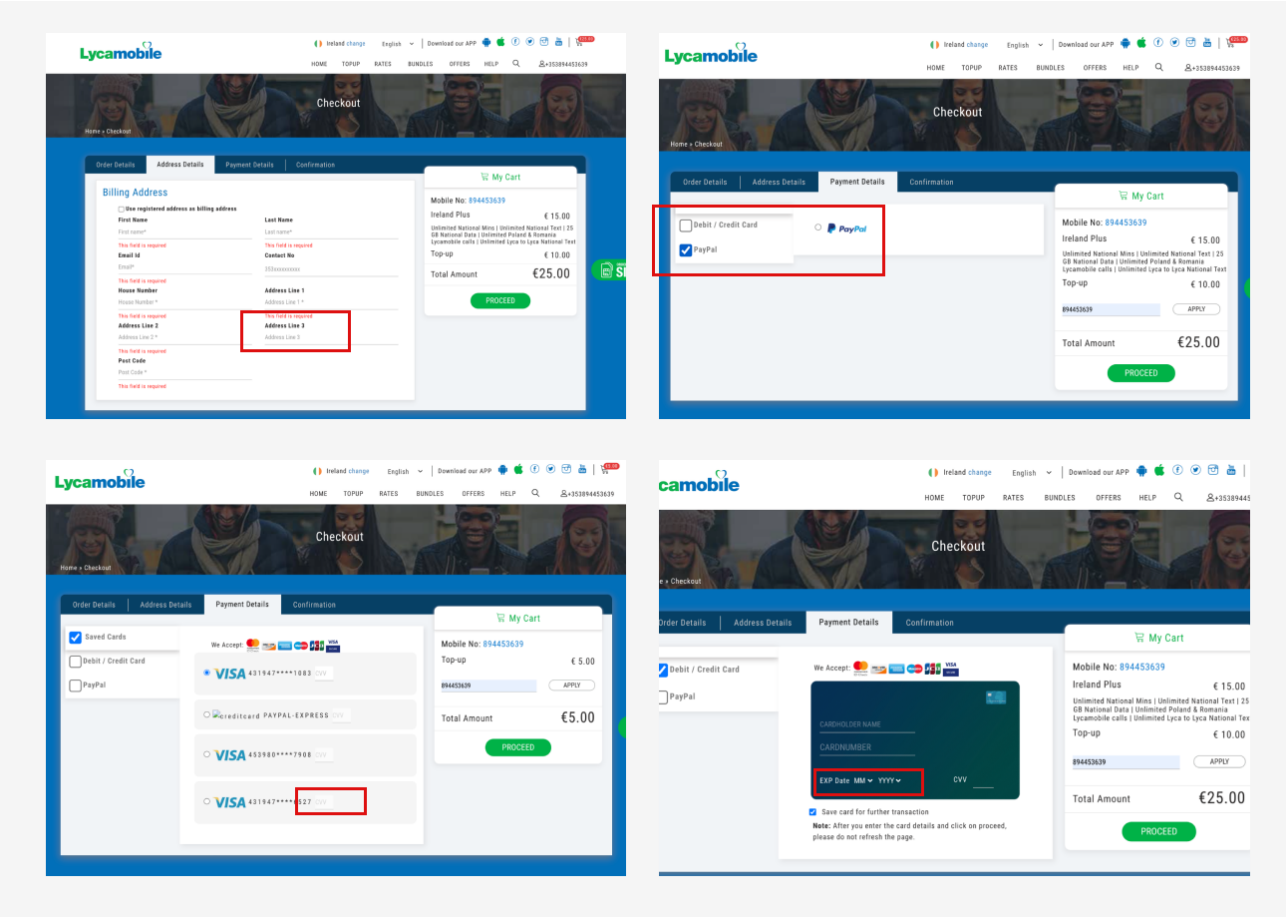
Fig. 2.4 Heuristic Evaluation Average Score vs Review Checklist

IDENTIFIED ISSUES

Severity Ranking: 0 - don't agree that this is a usability problem, 1 - cosmetic problem, 2 - minor usability problem, 3 - major usability problem; important to fix, 4 - usability catastrophe; imperative to fix

ID	Where	Task #	Category	Issues	Severity Ranking (0, 1 ,2, 3, 4)				Final Rating	Heuristics Violated #	Ease of Fixing (0,1,2,3)
					E1	E2	E3	E4			
1	General			A lot of unecessary graphics and images. There is a lot of images, some are pixelated, they are not consistent in style.	3				3		
2	General			Unnecessary backgrounds	3				3		
3	General			Tabs, buttons with differnet styles, not clear whicha are primary,	2				2		
4	General			Different top navigation on Home Page and Bumdles Page	4				4		
5	General			Some content has same color as links.	3				3		
6	General			Not enought white space, difficult to find information	4				4		
7	General			Very busy site, a lot of different navigational components, styles, fonts.	4				4		
8	General			Lack of visual hierarchy	4				4		
9	General			UI elements are not aligned	2				2		
10	General			Website is not visually pleasing	3				3		
11	General			Lack of consistency	4				4		
12	General			Too many fonts with differnet line heights, sizes	3				3		
13	Home Page			Links shown as full URL	3				3		
14	Home Page			Links are not designated after clicking on them	4				4		
15	Top-up			Tabs on Bundles page are shown as buttons	3				3		
16	Quick Top Up - Confirmation			Top-up amount apears to be selected, but clicking Proceed, throws an error.	4				4		
17	Quick Top Up - Order Details			Clicking Add Bundle accordion breaks user flow, we are redirected to Bundles Page	4				4		
18	Quick Top Up - Order Details			Difficult to accomplish tasks	4				4		
19	Quick Top Up - Order Details			Information not clearly organized	3				3		
20	Quick Top Up - Address Details			Multi-column form Address Details is in two columns.	3				3		
21	Quick Top Up - Address Details			Too many form fields - 4 fields for address	2				2		
22	Quick Top Up - Address Details			No autocomplete address, for example by zip code	2				2		
23	Quick Top Up - Address Details			Indicators of required fields are in placeholders	3				3		
24	Quick Top Up - Order Details			Steps are displayed as tabs and they are not numbered.	4				4		
25	Quick Top Up - Order Details			Wrong component - tabs used as a stepper	4				4		
26	Quick Top Up - Order Details			Distracting informations -other services, available from, etc...	4				4		
27	Quick Top Up - Order Details			Carousel slowing down the website	4				4		
28	Quick Top Up - Address Details			Users have to check an option to sse 'Shipping Address' as 'Billing Address' , should be default	3				3		
29	Quick Top Up - Payment Detail			Expiration date divided into two dropdowns	3				3		
30	Quick Top Up - Payment Detail			Year as 4 digits	4				4		
31	Quick Top Up - Address Details			No information why Contact No is required	4				4		
32	Quick Top Up - Payment Detail			Lack of Dynamic Thumbnail Hint or a Tooltip for the 'Security Code' Field	4				4		
33	Quick Top Up - Payment Detail			Lack of Luhn Validation of the Credit Card Number Field	4				4		
34	Quick Top Up - Payment Detail			Spaces in the 'Credit Card Number' Field are not autoformatted	4				4		
35	Quick Top Up - Payment Detail			Lack of clarification that 'Cardholder Name' should be typed exactly as it's printed	4				4		
36	Quick Top Up - Payment Detail			Credit Card Field Sequence doesn't match to the Physical Card's Information Sequence	4				4		
37	Quick Top Up - Payment Detail			No payment trust badges	3				3		
38	Quick Top Up - Payment Detail			No recognizable security/payment logos	3				3		
39	General			Lack of micro instructions to prevent errors.	4				4		
40	General			Localized Input Masks for Restricted Inputs are not used	4				4		
41	General			Lack of context sensitive help, e.g. CVV tooltip	4				4		
42	General			Very slow performance	3				3		
43	Home Page			Buttons made of images not text.	3				3		
44	Quick Top Up - Order Details			Placeholders are confusing for the users and they should be avoided.	3				3		
45	Quick Top Up - Payment Detail			Users have to select PayPal Payment twice	4				4		
46	Quick Top Up - Payment Detail			CVV field next to saved cards is difficult to see, no information what it is.	2				2		
47	Quick Top Up - Confirmation			No information what went wrong when transaction fails.	4				4		

Fig. 2.5 Heuristic Evaluation - Identified Issues



2.6 Identified Issues on Payment Form

Many elements on the payment form didn't comply with heuristics. The billing address has four address lines and no proper labels or hints. It is challenging to know what to enter into each line. Placeholders are confusing for the users, and they should be avoided (Sherwin 2014). It is challenging to identify which fields are required as an asterisk is in a placeholder.
Users have to select PayPal Payment twice.
CVV input field is challenging to see, has no label, and there is no information on what CVV is.
The credit card form doesn't follow the order of the details on the credit card. Expiration is divided into two dropdowns which add extra clicks for the user.

These findings confirmed that there are issues with top-up and payment flow, so we decided to conduct user research to understand better users pains and goals related to the top-up and payment functionality of the website.

2.3 Competitive Analysis

We conducted a competitive analysis (Appendix A2.5) to compare the strengths and weaknesses of the websites providing mobile top-up services.

With the feature comparison, we discovered that most of Lycamobile's direct competitor's websites didn't offer top-up features like custom top-up amount of voucher activation.

Fig. 2.7 Competitors - Feature comparison

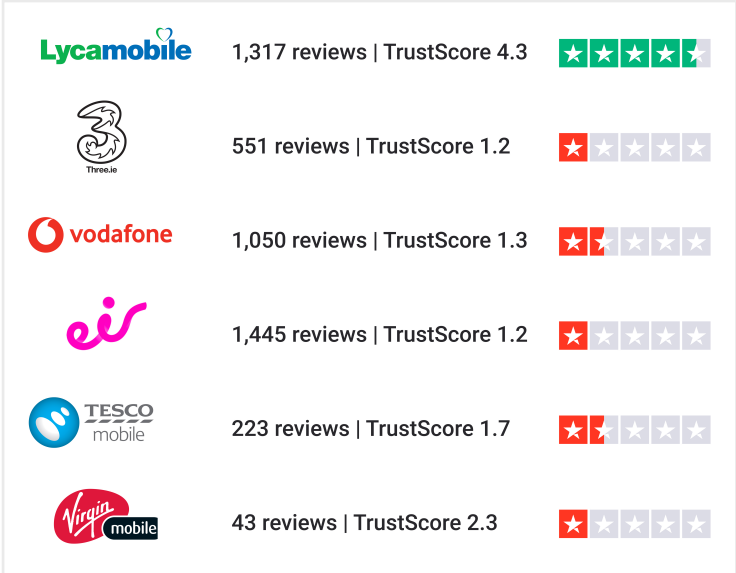


Fig. 2.8 Competitors - Trust Pilot Reviews

3. Project Plan

With multiple research methods, deliverables and iterations on the design, it was essential to organise work well and allocate time for each of the steps on this project.

The first task was to create a project plan updated at each milestone to record the progress. There were four phases of the project with critical activities. We also included time for writing a report.

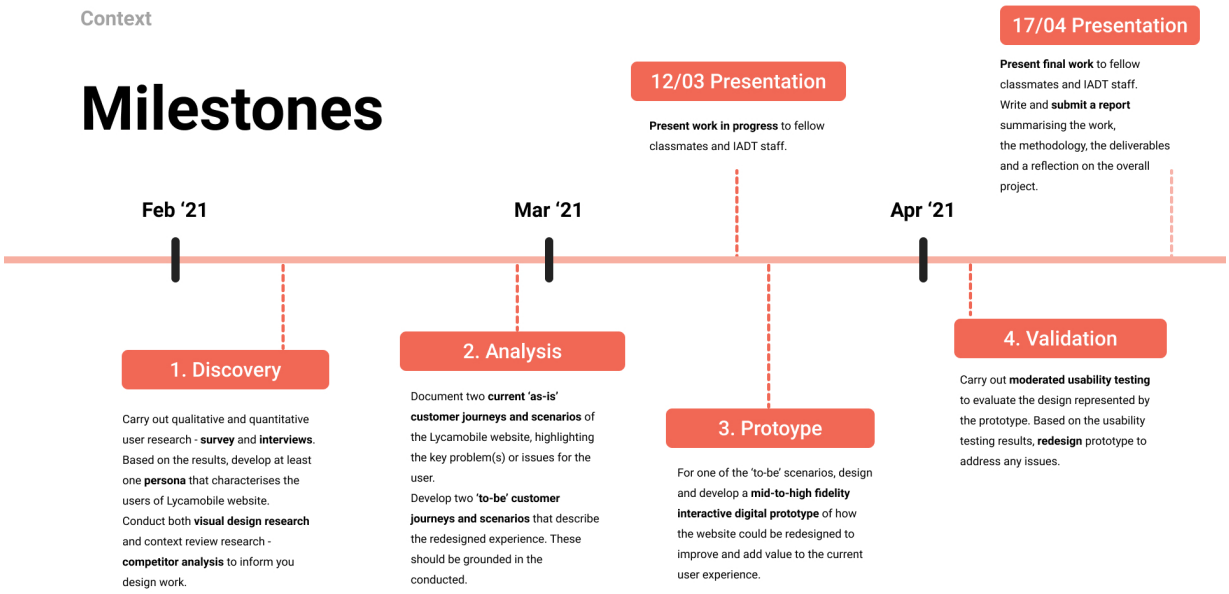


Fig. 3.1 Project Milestones

The plan was recording work progress, and it was adapting to the changing activities of the project. For example, a change to the final submission date extended the time allocated for the usability testing.

Progress Updates

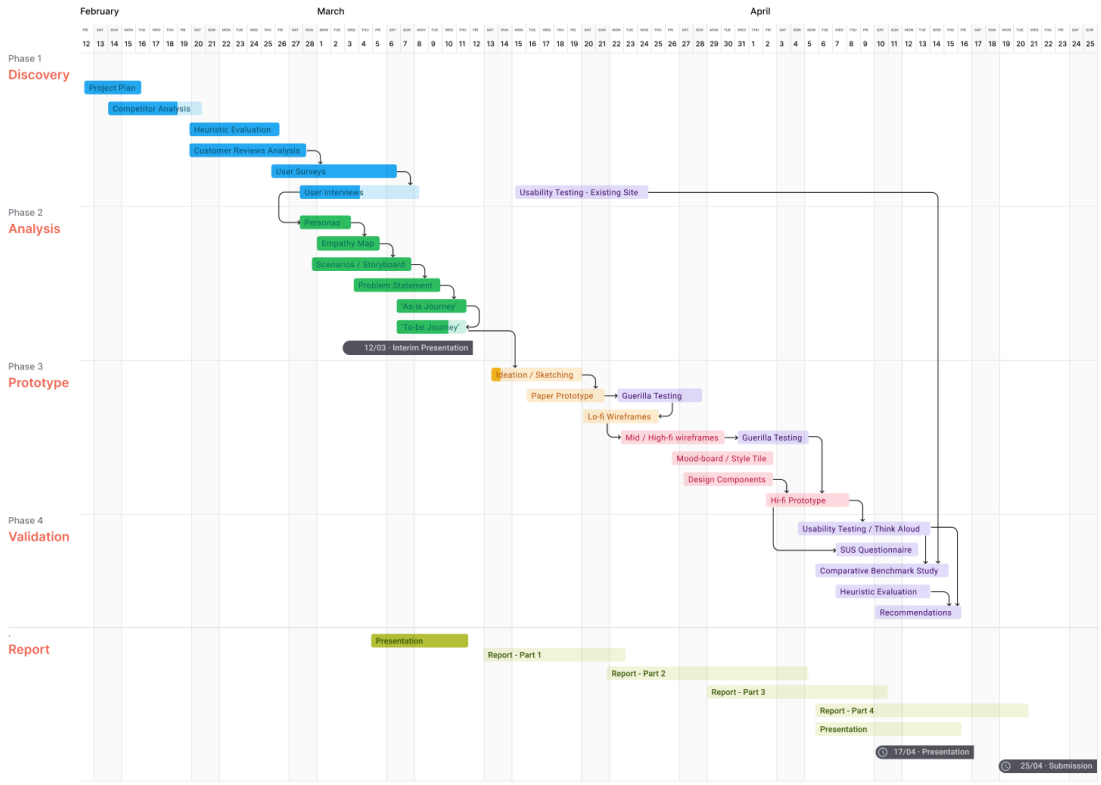


Fig. 3.2 Project Plan at Interim Presentation

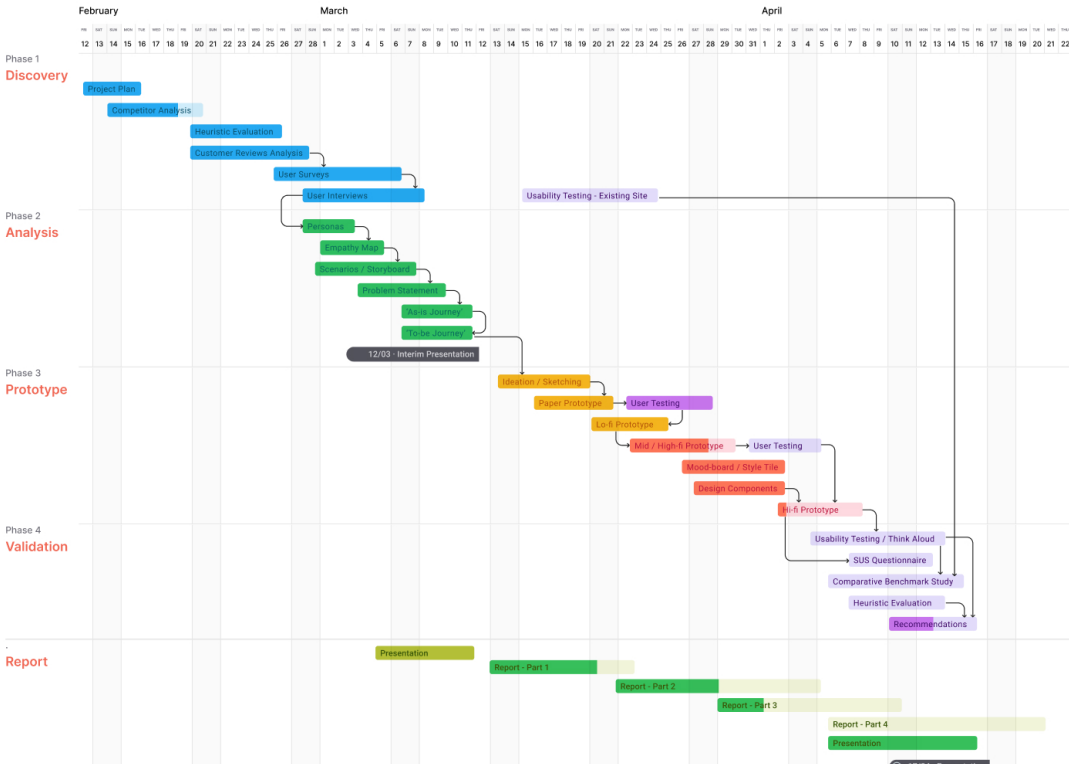


Fig. 3.3 Project Plan at final Presentation

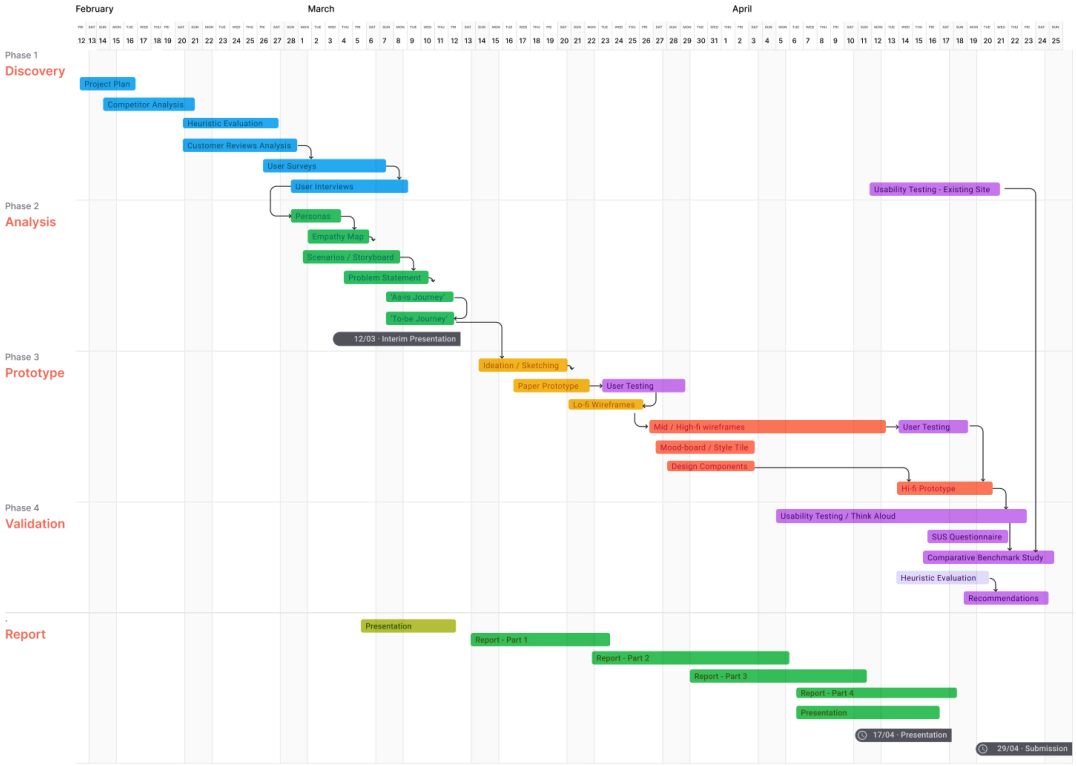


Fig. 3.4 Project Plan at Final Submission

3.1 Project Files

The primary tool to organise work was Figma, as it is less restrictive than the Miro board and allows to include prototypes. All the artefacts were created in three Figma files.
The first file contained user research work - surveys, competitors, heuristic evaluation, persona, scenarios, journeys [URL: Lycamobile User Research (Figma)] .
The design and testing file was used to work on three design iterations - paper prototype, mid-fidelity and high-fidelity prototypes. It also helped to organise test plans and results, and findings. [URL: Lycamobile Design and Testing (Figma)]
In the third file, we were working on the presentations. [URL: Lycamobile Presentations]

3.2 Detailed Test Plans

Some of the research methods required more detailed planning. These plans were kept in the Google spreadsheets. The details of running sessions, research objective, tasks, evaluation scope, success criteria, test results, and summaries were kept together to ensure that no information is lost. The heuristic evaluation shown in Appendix A2.3 was organised this way. The link to the spreadsheet can be found here: [URL: Heuristic Evaluation Google Sheets]

The evaluation plan (Appendix A2.3) contains study objectives, research questions, elements to be evaluated, goals of the system and the step by step process of running evaluation:

1. Establish an appropriate list of heuristics.
2. Decide on the elements to be evaluated.
3. Run evaluation and look for problems. Record all the issues in detail. Use Evaluation Checklist.
4. Establish complete list of problems.
5. Suggest potential solutions for these problems on the basis of the heuristics. (mark them on the web screenshots).
6. Put together evaluation summary (associate with recommendations).

Similarly, with a Google spreadsheet - "Rainbow Spreadsheet" (Sharon 2013), we planned usability testing. The plan lists goals, metrics, scope, participants, tools and the list of tasks with expected behaviour. It contains success criteria for scoring scenarios.

The plan, together with success criteria, can be found in Appendix A2.4 or under these links [URL: The Rainbow Spreadsheet - Proposed Lycamobile Website], [URL: The Rainbow Spreadsheet - Existing Lycamobile Website]
In addition, we were using user testing.com which also helps to track all the sessions and summarise the results (Appendices A5.3, A7.2)

3.3 Additional Tools

For the visual research, we were using a mood board created with Pinterest. That way, it was easier to keep a record of links to the images. [URL: Pinterest Moodboard]

With DocuSign, we kept organised process of signing consent forms.

Miro board [URL: Miro Board] and One drive [URL: One Drive] were used purely as a communication tool with the lecturers.

4. User Research Methodologies

To verify the initial findings and assumptions, we conducted user research with customer questionnaires and interviews. We also had a chance to interview a stakeholder of a mobile service company. That interview helped to understand the business goals.

The research participants were limited to those who live in Ireland, have prepaid phone or pay as you go plans, and have experience with Lycamobile and other network providers. With participants screening, we were increasing our chances of collecting valuable information.

4.1 User Research

Our research goal was to collect qualitative and quantitative data, which will be a basis to build a persona (Nielsen, J. 2010) and gain empathy for the users.

We prepared a Google Forms online questionnaire [URL-Mobile Service Providers Questionnaire] to collect the customers' demographic data and behavioural preferences. The survey was designed to collect quantitative information with Likert scale questions and qualitative insights with several open-ended questions.

The demographic information is useful for putting the survey responses into context Preece et al (2014,p. 244). Multiple choice questions were aiming to find out more information about the participants habits and Likert scale questions to find out about their likes and dislikes.

Forty-five participants answered the questionnaire. We asked some of the Lycamobile customers who left reviews on the Trust Pilot to answer the questionnaire, but it wasn't limited. Prepaid plans customers of other network providers were also participating in that research.

In addition, we conducted four user interviews asking mostly open-ended questions to collect qualitative information and understand users goals and requirements, obtain information about their behaviour related to online top-up (A4.1 User Interview Script).

It was necessary to use both types of data. With only quantitative insights, we would risk persona being too subjective and not representing the typical customer (Hackos & Redish, 1998).
We exported data to a spreadsheet for analysis. [URL: Lycamobile Data Clustering for Personas]

4.2 User Research Findings

Our goal was to identify the problems, needs and requirements of the customers who purchase credit call. With the online questionnaire, we gathered quantitative data that showed that:

- 51.1% of customers would like to top up the device automatically when the balance gets low.
- 37.8% would like to top up using other payment methods like PayPal, Amazon Payments, etc.

- 37.8% would like to be able to specify the amount to top-up.
- 30% prefers to top up online via a debit or credit card.
- 11% top-ups using voucher
- 20.6% tired to top up online before and had problems with it
- The amount the top-up is €10 for 15.6% of the respondents, €15 for the 11.1%, €20 for 17.8%

Appendix A4.2 shows the results of the survey.

For a group of Lycamobile customers, credit card payment was not an option, and they have no choice but to use other methods like purchasing vouchers with cash. Despite building the primary persona to include the needs of credit card payers, we decided to take into consideration customers who use vouchers. That information surfaced during the course of the project, and it was too late to change the scope entirely.

4.3 Persona Development

By collating the user questionnaire answers in a spreadsheet and converting them to numeric values on a scale of 1-5, we created a heat map [URL: Lycamobile Data Clustering for Personas]. It allowed us to visually identify clusters of customers sharing similar behavioural attributes and demographics (Dong 2010).

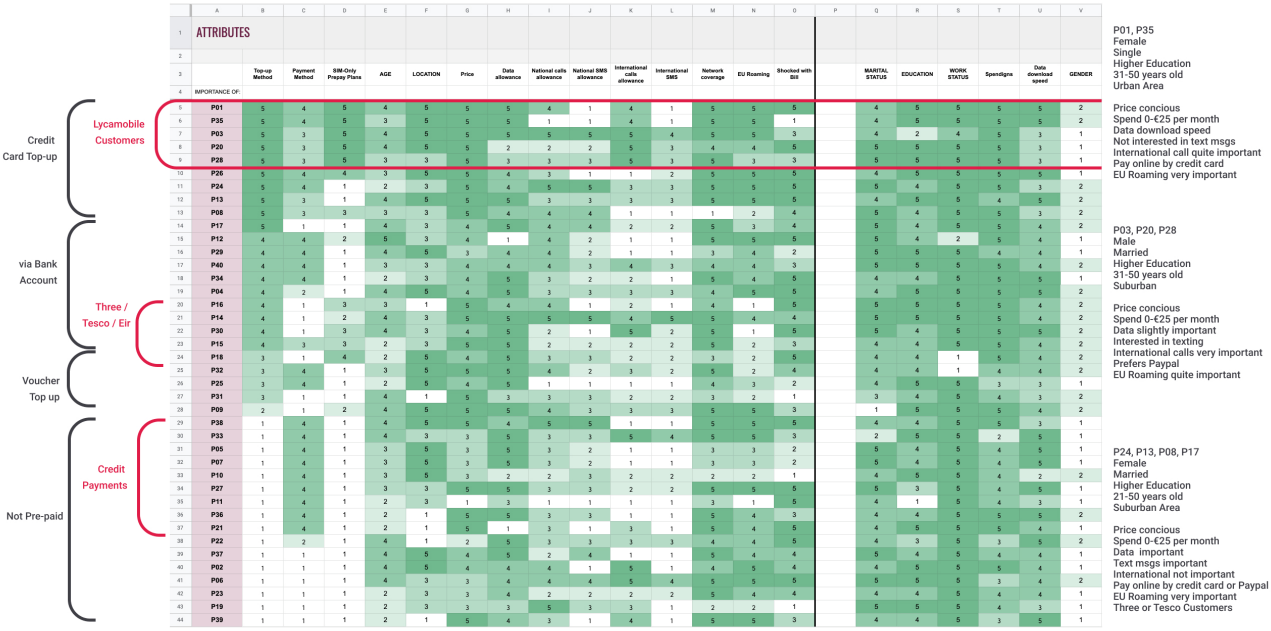


Fig. 4.1 Clustering Heat map

As a result, we were able to identify three clusters, a base for our primary persona. Qualitative insight was helpful to complete the profile of our persona - Lidia.

P01, P35

Female
Single
Higher Education
31-50 years old
Urban Area

Lycamobile customer
Price concious
Spend 0-€25 per month
Data download speed
Not interested in text msgs
International call important
Pay online by credit card
EU Roaming very important

P03, P20, P28

Male
Married
Higher Education
31-50 years old
Suburban

Lycamobile customer
Price concious
Spend 0-€25 per month
Data slightly important
Interested in texting
International calls very important
Prefers Paypal
EU Roaming quite important

P24, P13, P08, P17

Female
Married
Higher Education
21-50 years old
Suburban Area

Three or Tesco Customers
Price concious
Spend 0-€25 per month
Data important
Text msgs important
International not important
Pay online by credit card or Paypal
EU Roaming very important

Fig. 4.2 Clusters

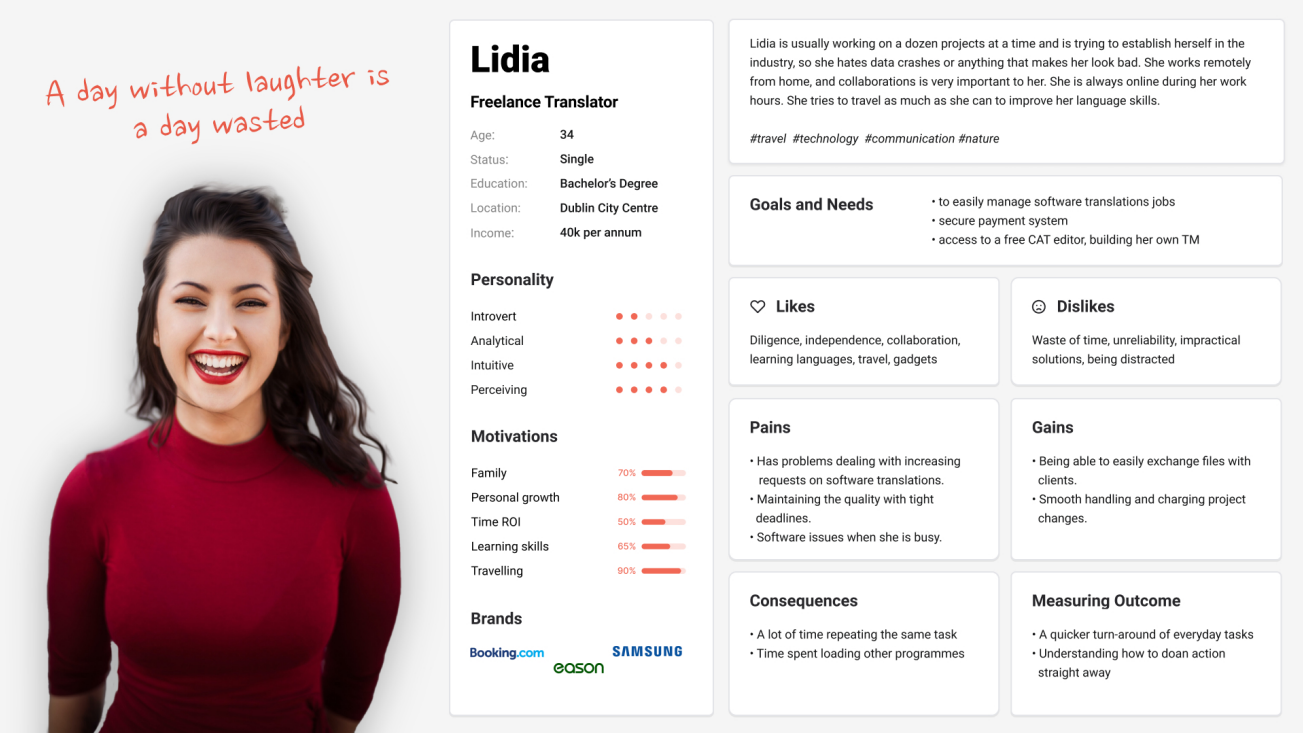


Fig. 4.3 Primary Persona - Lidia

Lidia is a 34 years old freelance translator who is single and lives in Dublin. She values travel, communication, personal growth. Usually, she is working on multiple projects at a time. She works

remotely from home, and collaboration is essential to her. She is always online during her work hours. She tries to travel as much as she can to improve her language skills. She doesn't like wasting her time and using unreliable services. Her biggest pains are related to the increasing requests for software translations and maintaining tight deadlines.

Persona helped to keep users needs in mind when developing a solution. To understand how users might feel when trying to accomplish their tasks, we created an empathy map for our primary persona.

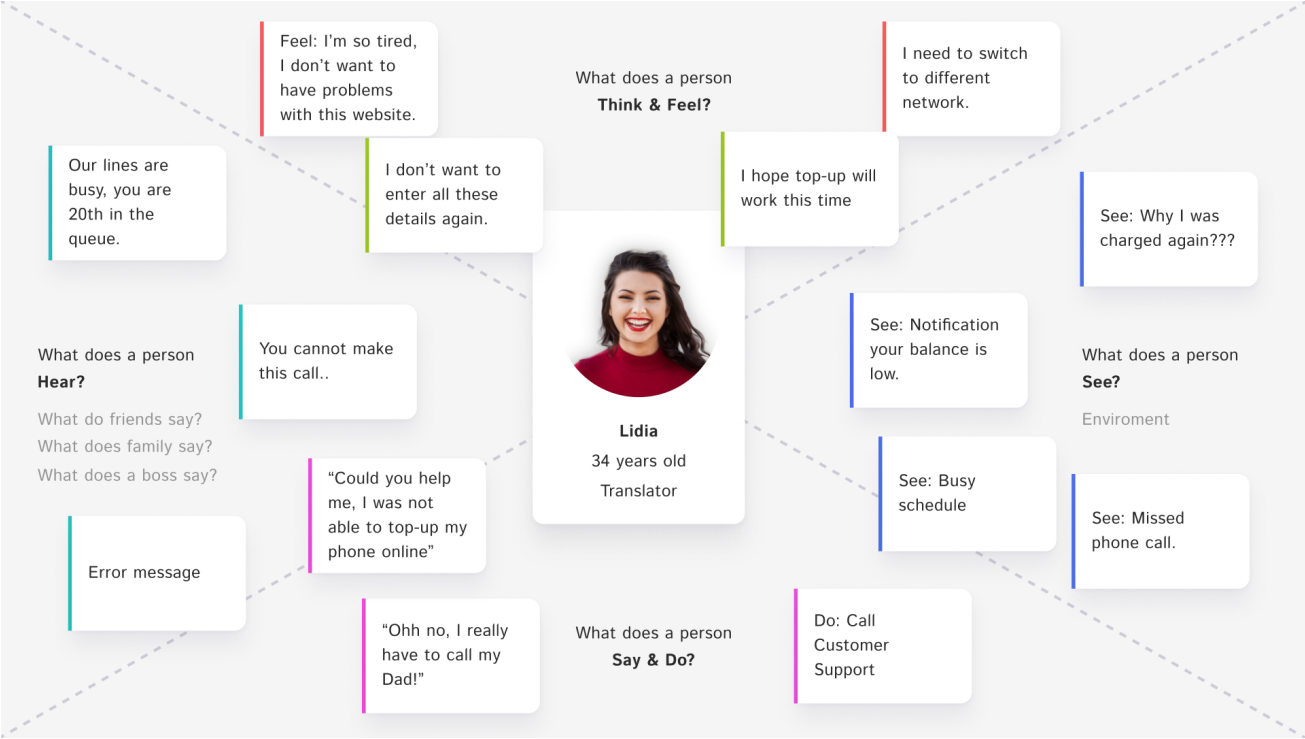


Fig. 4.4 Empathy Map for Lidia

4.4 "As is" User Journey

We have analysed the current customer journey for our persona. This process helped us to identify step by step issues which customers might face when trying to buy credit call. It also allowed us to see opportunities for improvement.

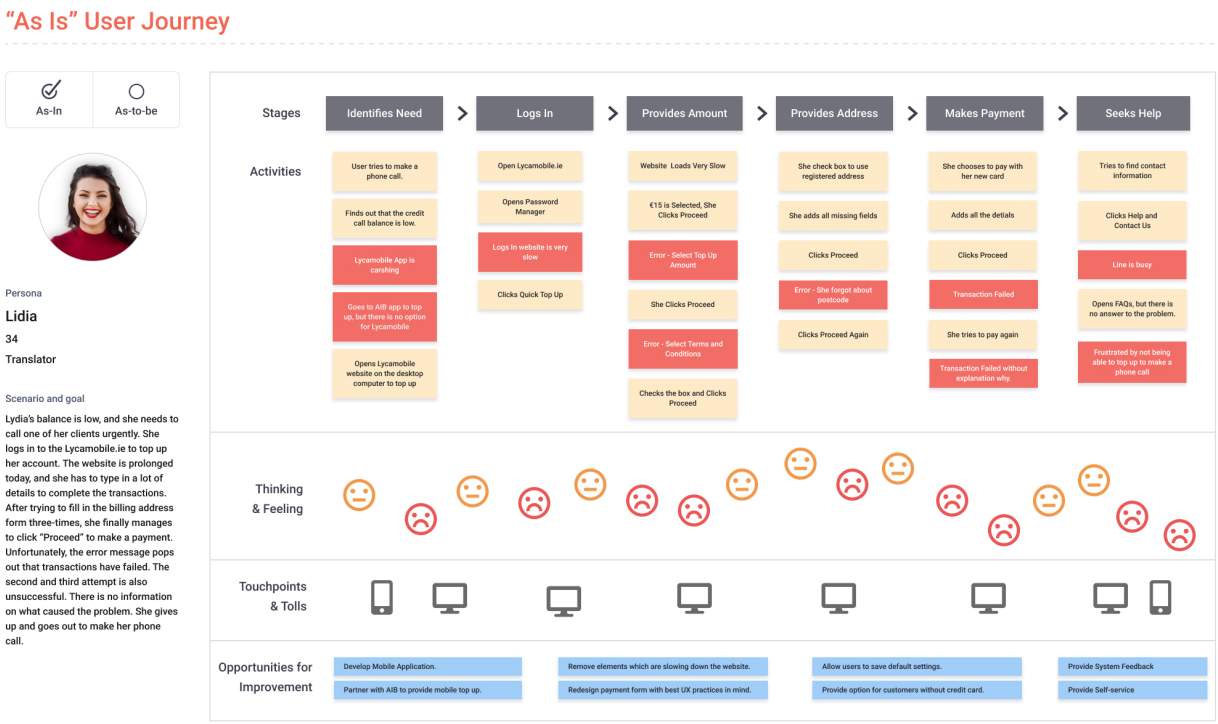


Fig. 4.5 As-Is User Journey

4.5 Problem Statement

After conducting user research and analysing the results, we were able to define the problem statement:

> **"Design a better way for the Lycamobile Customers to efficiently and effectively top-up their phone on the lycamobile.ie website with or without credit card."**

This statement evolved during the research as we were gathering more information.

4.6 "To be" User Journey

Taking into consideration Lidia's needs, we mapped the desired user journey to discover the ideal experience. It helped to visualise the sequence of steps and situations in the perfect case scenario.

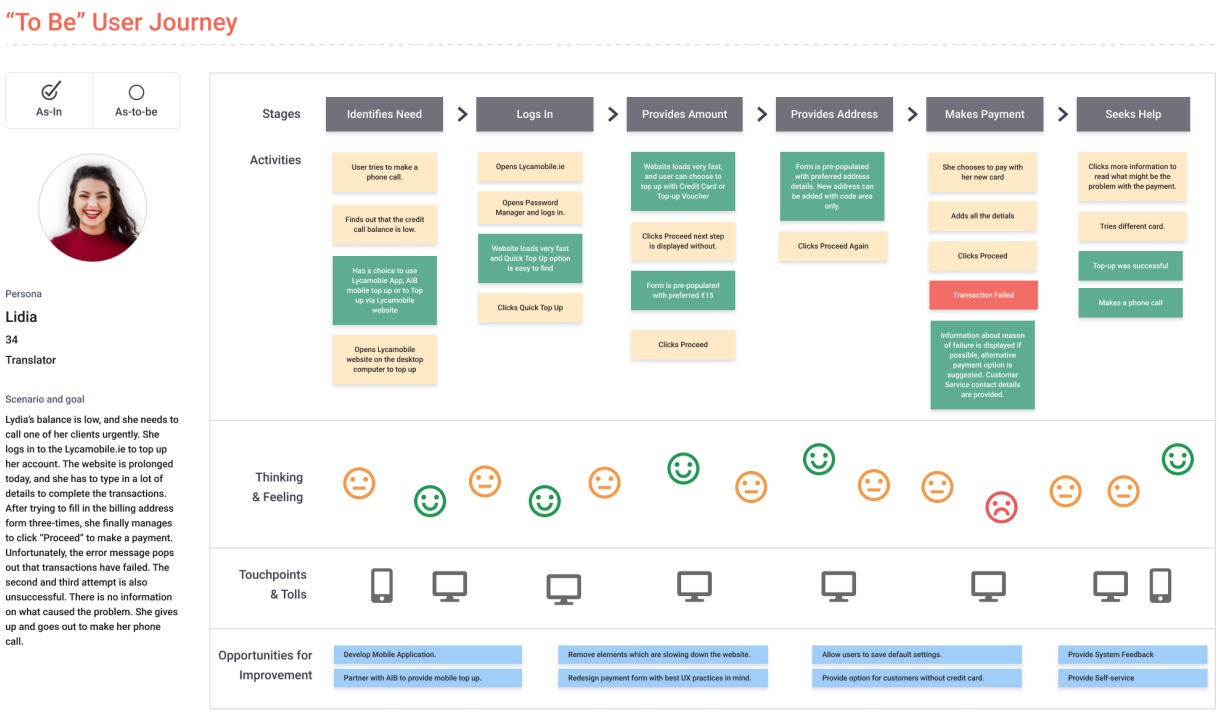
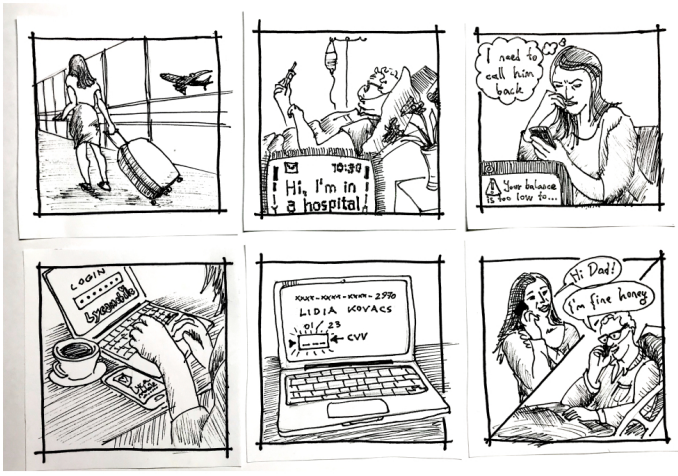


Fig. 4.6 To-Be User Journey

We created a storyboard illustrating our personas experience with the Lycamobile website. It helped to capture, relate, and explore the website usage in a real-world setting.



Lidia is travelling to another country and she is planning to work from there for a couple of weeks.

She receives a text message from her father, who was admitted to a hospital.

She is worried and wants to ring him back straight away, but her top up is too low to make a phone call or to use the internet.

Fortunately she has her laptop with her and she uses the hotel's wifi connection to log in to Lyca Mobile.

Once she is logged in, with all her personal and card details saved there, she can top up by typing in her cvv code only.

She rings her father back and they have a nice chat. Her dad is ok, he was just had a minor bicycle accident.

Fig. 4.7 To-be Storyboard and Scenario

5. Design Decisions

The design process included three main iterations. During each of them, an interactive prototype was created and tested for usability. The design in the first of the iterations was based on the user research findings, competitive analysis and heuristic evaluation.
The design in the second iteration took into consideration findings from the first iteration.
The final high-fidelity prototype was improved according to the recommendations from the second iteration, and it was tested to measure the project's success. With each iteration level of fidelity of the prototypes was increasing. With such an approach, we made the process more efficient and solved significant problems early.

Through the think-aloud testing (Nielsen 2012), we were able to identify if the proposed design helps Lidia accomplish her tasks. We determined the problems that still need to be addressed.

5.1 Low-fidelity Paper Prototype

In the low fidelity iteration of the project, we chose a paper prototyping technique based on simplicity and flexibility (Hackos & Redish 1998). We made it interactive with Figma. That way, there was no need to physically swap screens in front of the user, and we could test it remotely. Users could go through as if it was an actual website and spot out major usability issues (Unger and Chandler 2012). There was no need for a high-fidelity prototype at this stage since all the extra functionalities it provides were not adding anything relevant for the first testing with users. (Preece et al., 2014)

The to-be journey was a starting point for creating the prototype focusing on the top-up, payment and dashboard screens [URL: Figma Paper Prototype]. We also added a new feature - voucher activation as we found out during the research that it is vital for the customers.

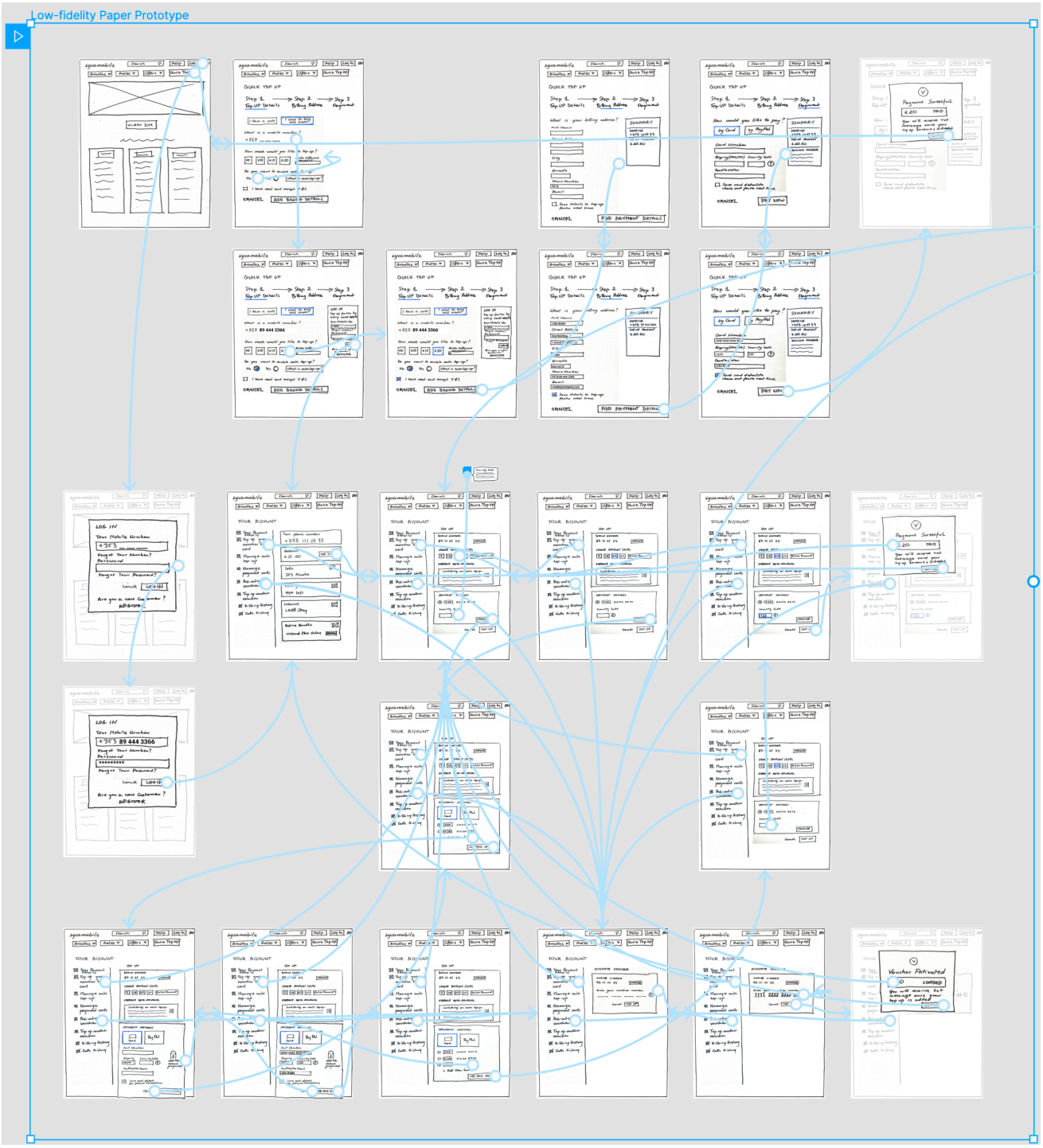


Fig. 5.1 Low-fidelity Paper Prototype

The moderated usability testing of the prototype was conducted remotely with three participants via Teams. The main goal of this activity was to understand and see how users move around it and if they find all the steps quickly to complete their tasks (Appendix 5.1).

During the testing, participants were complaining about the amount of information they have to provide to top-up. Especially address details. They didn't understand why it is required. The voucher activation received positive feedback as it needed only three clicks to complete.

5.2 Task Flow

We mapped a new task flow for the top-up purchase and voucher activation utilising the findings from the previous iteration (Hackos & Redish 1998). The goal was to keep the number of clicks to the minimum.

In the new flow, users have to log in, so there is no need for entering the billing address every time. We enabled login with an email and password or phone number and activation code sent to their mobile. That way, users don't have to remember the password. The login is available from the top menu. We added it also into the top-up flow, so there is no need to open another page. That makes experience seamless.

The auto top-up option was removed from the flow and added to the Dashboard. Users were not interested in that feature during checkout.

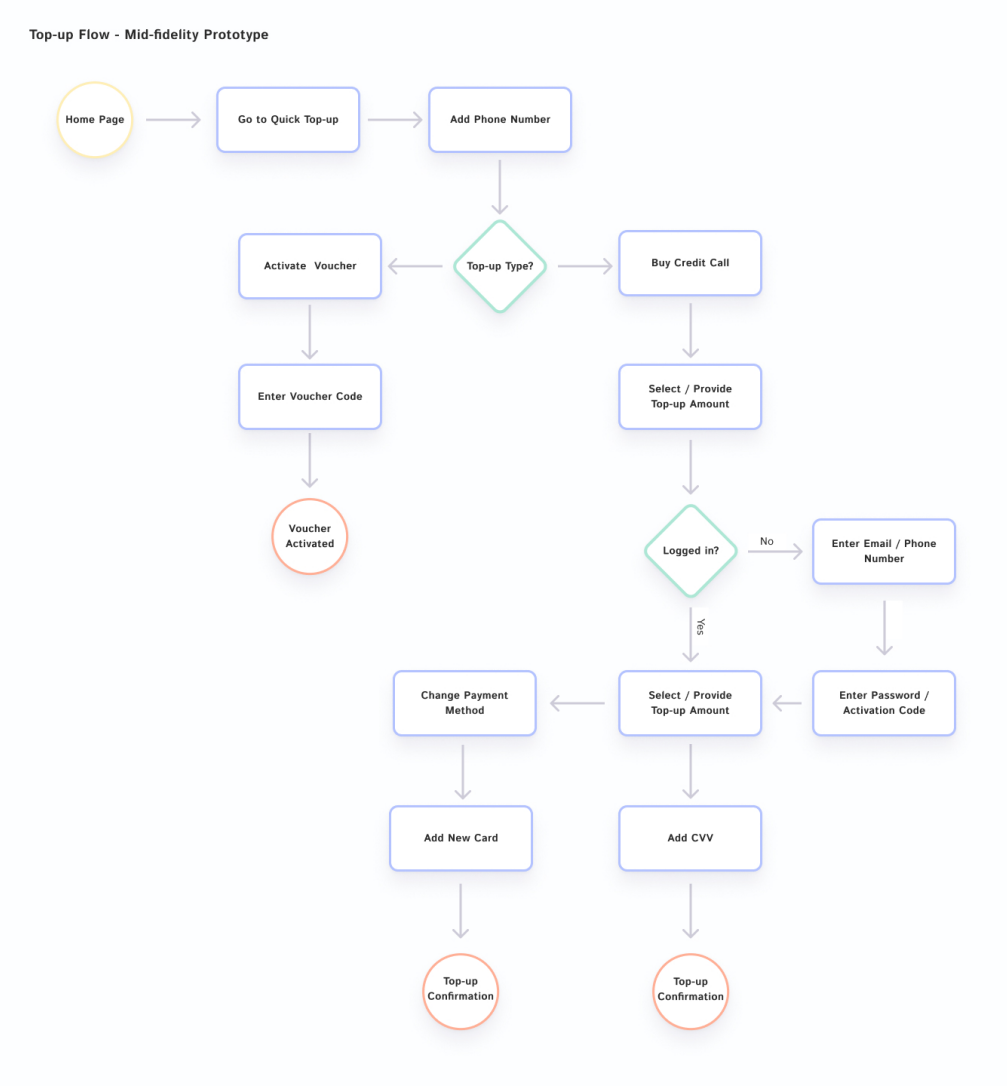


Fig. 5.2 Top-up Flow - Mid-fidelity Prototype

5.3 Mid-fidelity Prototype

The functional requirements evolved once the prototype was created and tested as usability issues were identified in the process (Preece et al., 2014). From paper prototype tests, we knew that cognitive load was a big issue for the users. Too much information, feeling in long forms was a source of frustrations. To reduce cognitive workload, we introduced a progressive disclosure interaction pattern in our design (Nielsen, 2006).

In the first version, we were using accordions to hide some information during top-up. In the second version we proposed multiple screens, rather than one long form.

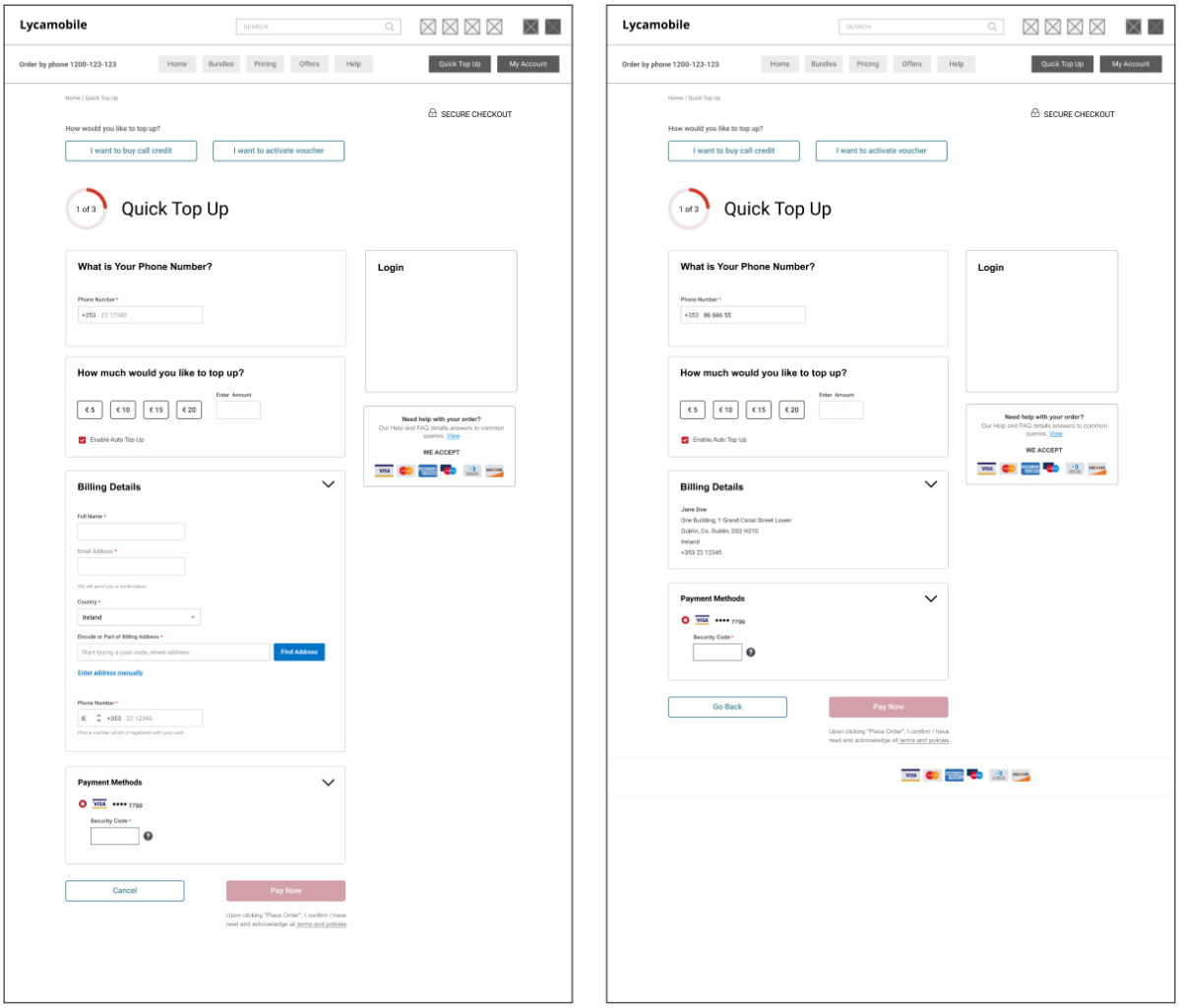


Fig. 5.3 Mid-fidelity Wireframes

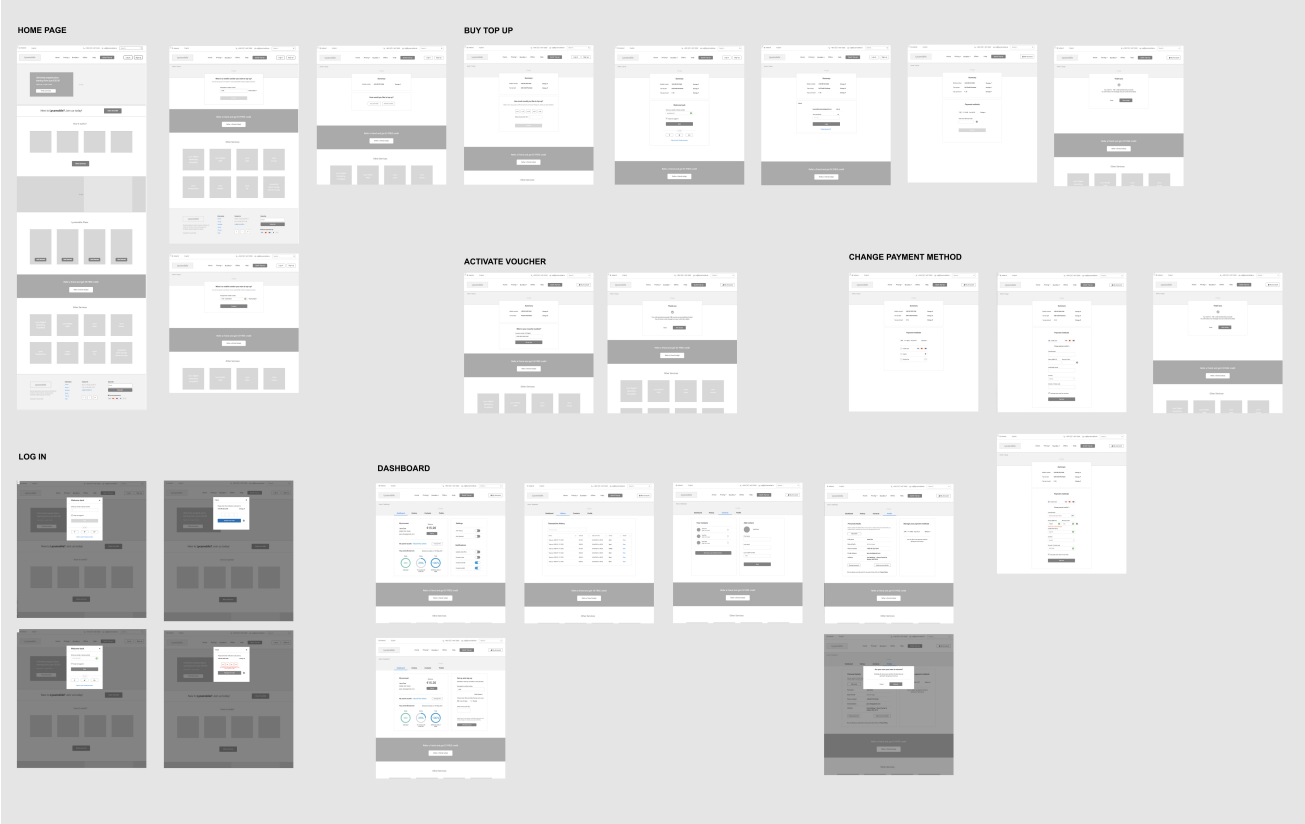


Fig. Mid-fidelity Prototype

We decided to switch to Axure RP to build a mid-fidelity prototype [URL: Mid-fidelity Axure Prototype]. Axure allowed the prototype to be fully interactive, add a dynamic main menu, which was changing depending on whether the user is logged in or no, and was not breaking the top-up flow. With variables, we were able to display information correctly in the summary and confirmation screens. Form validation, input fields masking was also possible in Axure. We wanted to remove any distractions during the usability testing and receive more accurate feedback with these interactions.
We started the redesign of the payment form with analysing guidelines based on the research conducted by Baymard Insitute (Hugo & Christian 2020).
Designing for trust was another pattern that we considered in the payment form showing secure payment icons. A professional appearance gives the user a good gut feeling. The site, which is easy to use and it looks good, builds trust (Harley, 2016).

The unmoderated usability testing of a mid-fidelity prototype was carried out with two participants via UserTesting.com (Appendix 5.3). One moderated session was run via Team.
We wrote a new list of tasks to answer our research questions. (Appendix 5.2)
Usability testing made it clear that participants are not able to find voucher activation option. They didn't think of it as a top-up activity, so could not navigate to it via the Quick Top-up button.
Some users didn't understand the difference between auto-renewal and auto-top up.
Overall feedback was very positive, and participants had no problems completing the top-up flow or adding a new card.

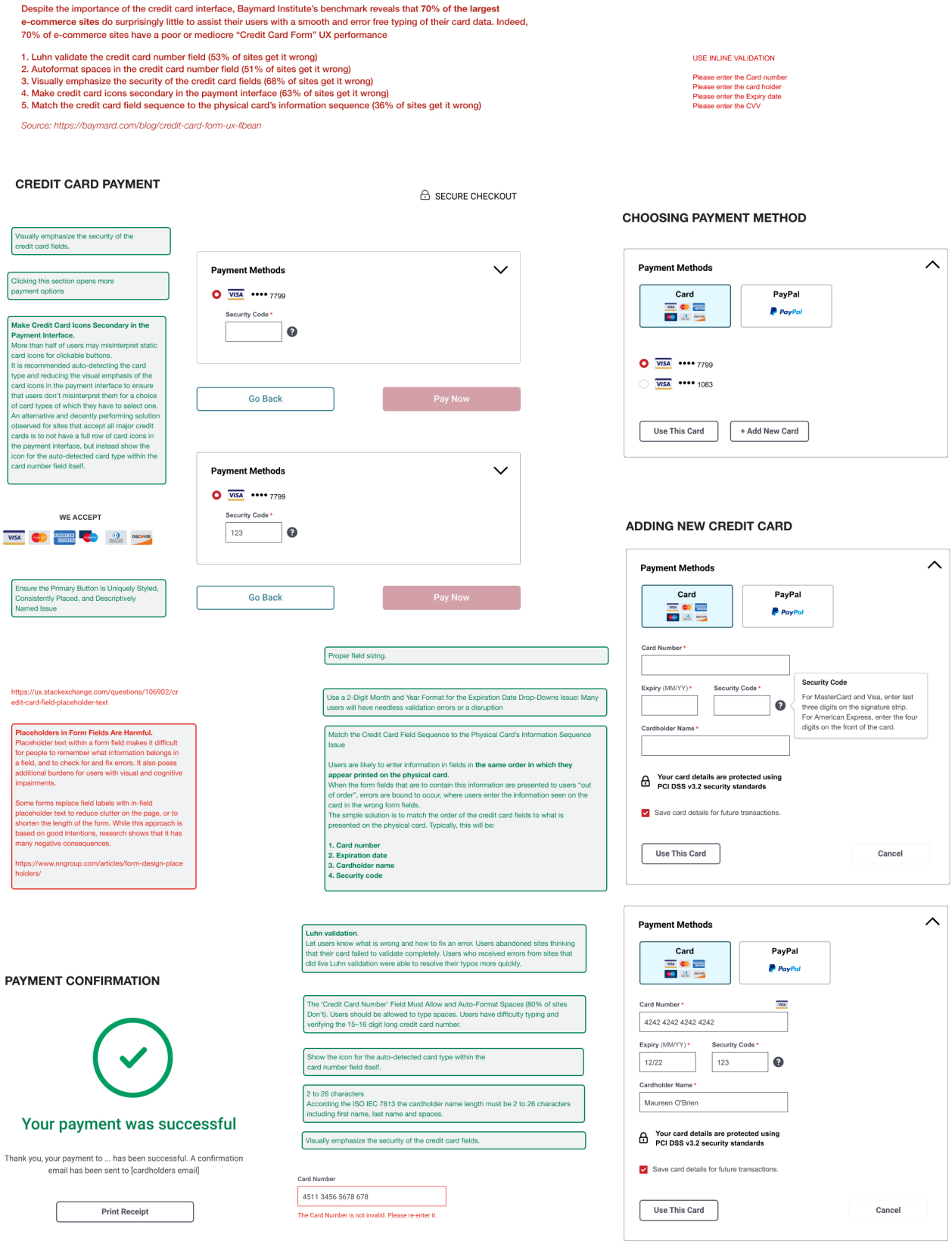


Fig. 5.5 Designing Credit Card Payment Form - Baymard Institute Guidelines

6. High-Fi Prototype, Evaluation and Future Work

6.1 Visual Research

There were design and layout issues identified during the heuristic evaluation. The site is busy, and UI components lack consistency. It has a lot of different navigational elements, styles, fonts. There is not enough white space, and it is challenging to find information. That harmed the customer's cognitive workload.

The first action we took to improve visual aspects was creating a mood board. It helped to visualise how the new design should look and feel [URL: Pinterest Mood board]

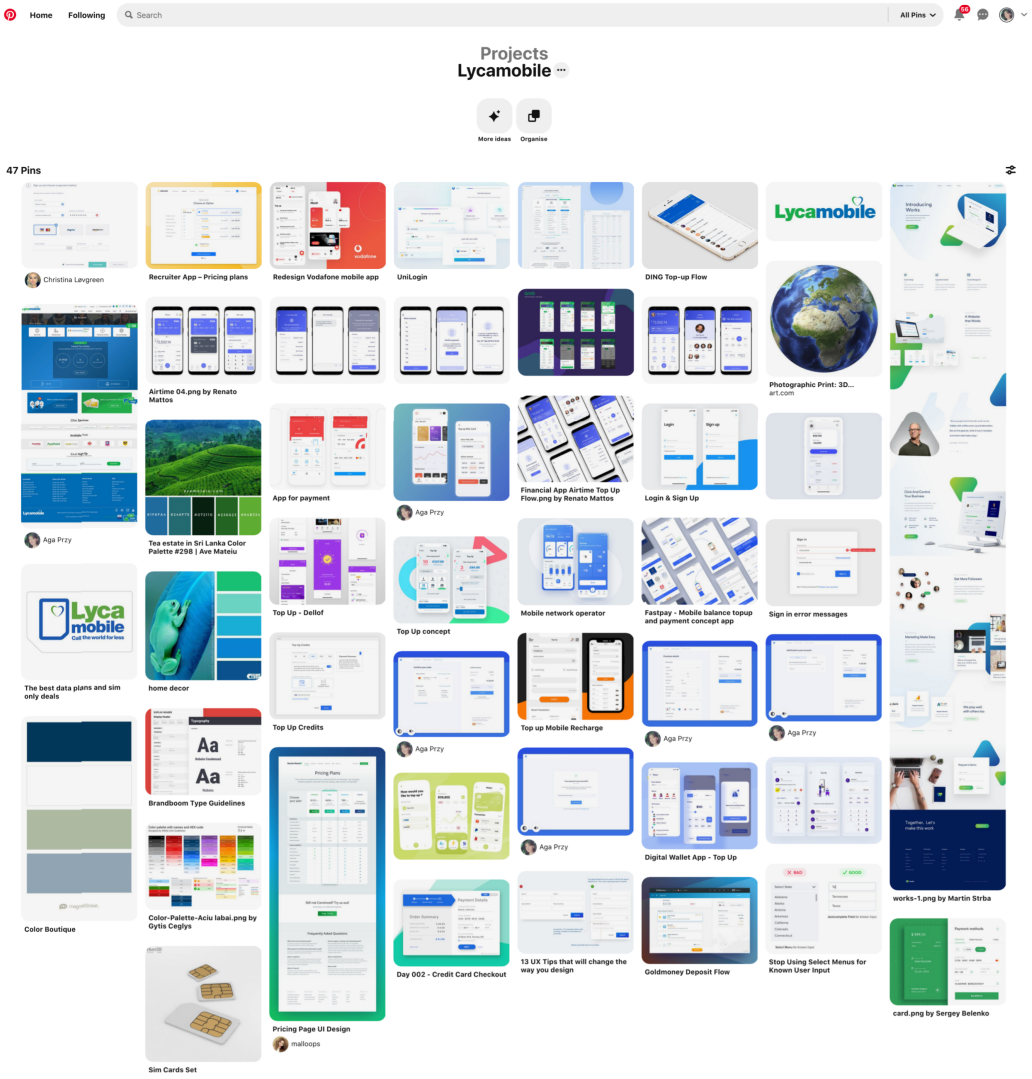


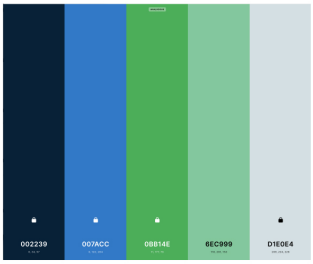
Fig. 6.1 Pinterest Mood board

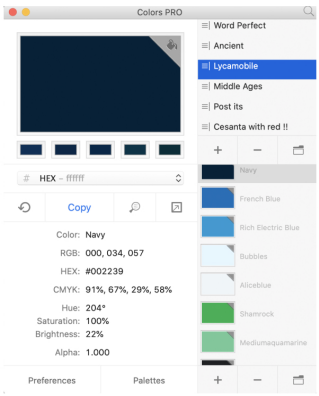
We kept the original branding and colours of the Lycamobile. The colour palette was simplified, and a new website was designed as much brighter and visually lighter.

Branding

Backgrounds

Colours





Typography

Roboto / Regular
Roboto / Medium
Roboto / Bold

Poppins / Regular
Roboto / Medium
Roboto / Bold

Fig. 6.2 Branding, colours and typography

The primary font type on the existing site is Roboto. We decided to pair it with Poppins and remove other font types. The number of icon styles was also reduced. The new design utilises FontAwesome icons.

All the unnecessary images were removed to avoid visual clutter, and we added more space between components. The visual hierarchy was also improved to help users identify primary and secondary buttons and features. That made the checkout process easier for the users.

We created an initial home page mockup before adding all the images and styles to the prototype.

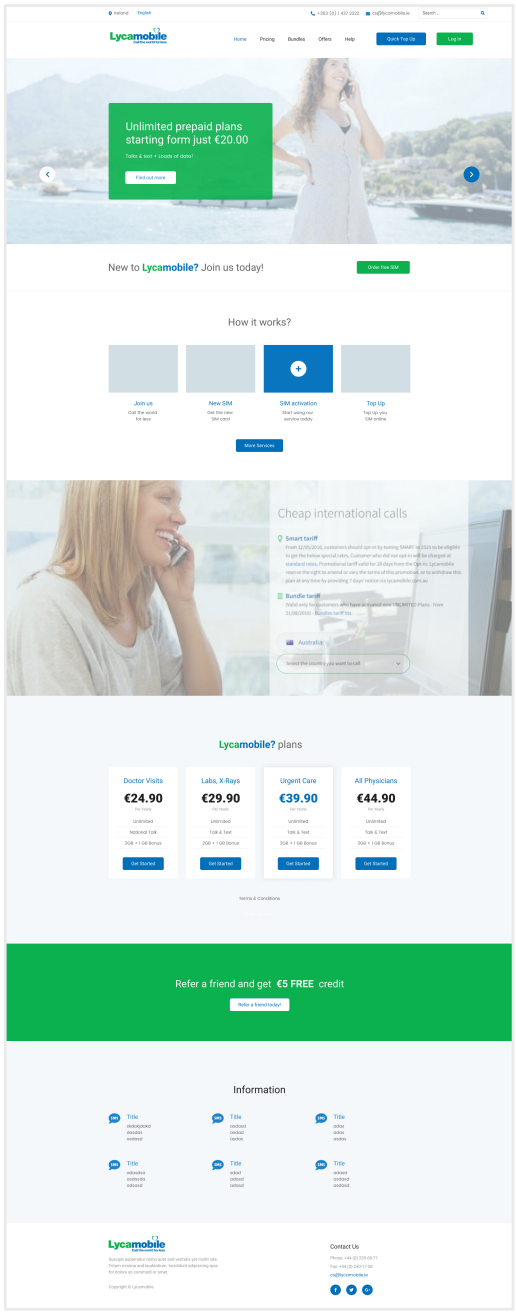


Fig. 6.3 Initial Mockup of Home Page

6.2 Design Components

To speed up the process of building a prototype and ensure consistency, we were using design components. We created our own components toolkit, and didn't use any bigger design system. The mid-fidelity and high-fidelity prototypes were build with atomic design methodology (Rae, 2020).

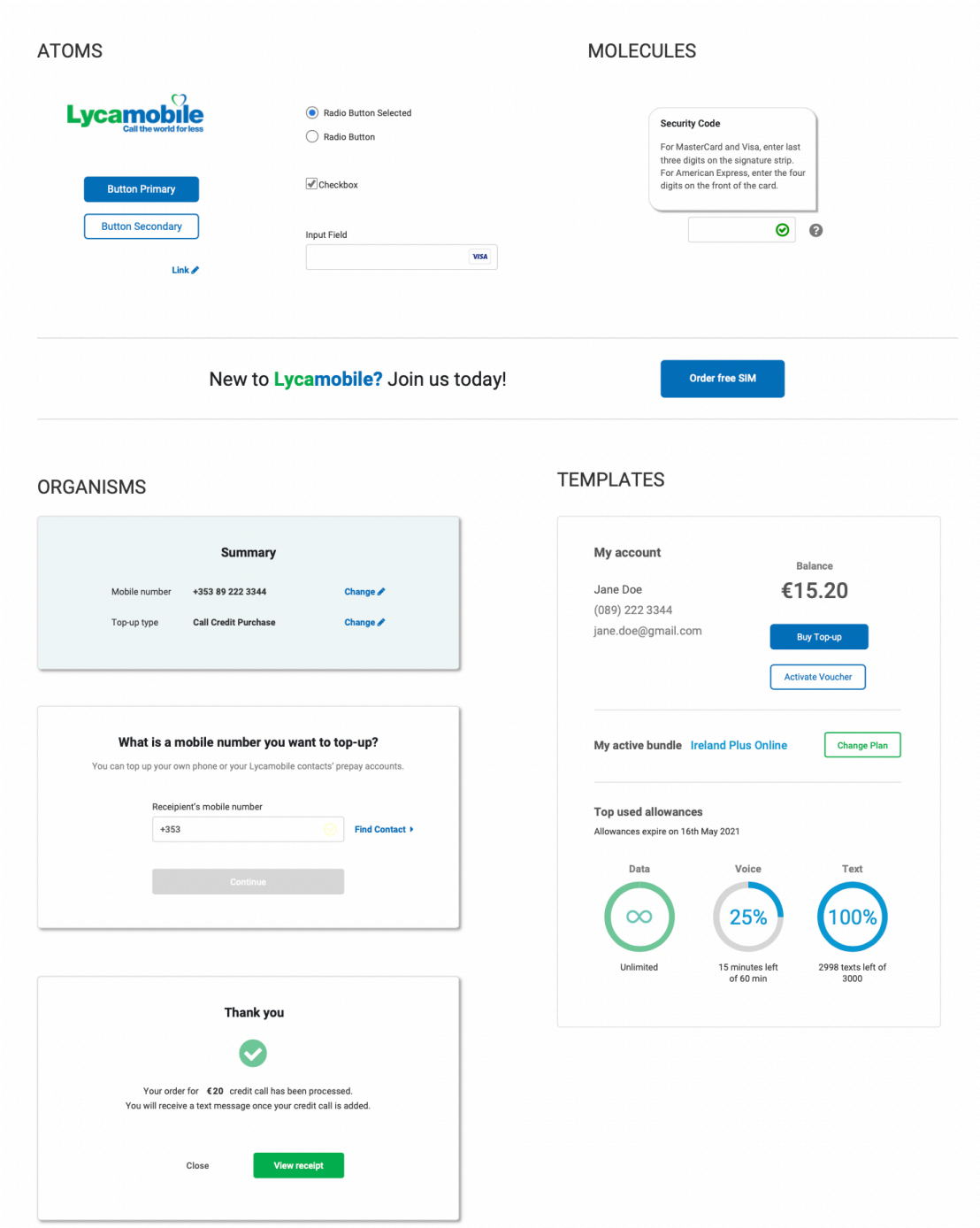


Fig. 6.4 Design Components

6.3 High-fidelity Prototype

The design of the high-fidelity prototype was based on the findings from testing the mid-fidelity one and visual research [URL: High-fidelity Axure Prototype].

After testing it become clear that top-up and voucher activation flows have to be changed. Usability testing participants were not able to find voucher activation option. We updated a user flow to enable voucher activation directly from the Home Page or Dashboard.

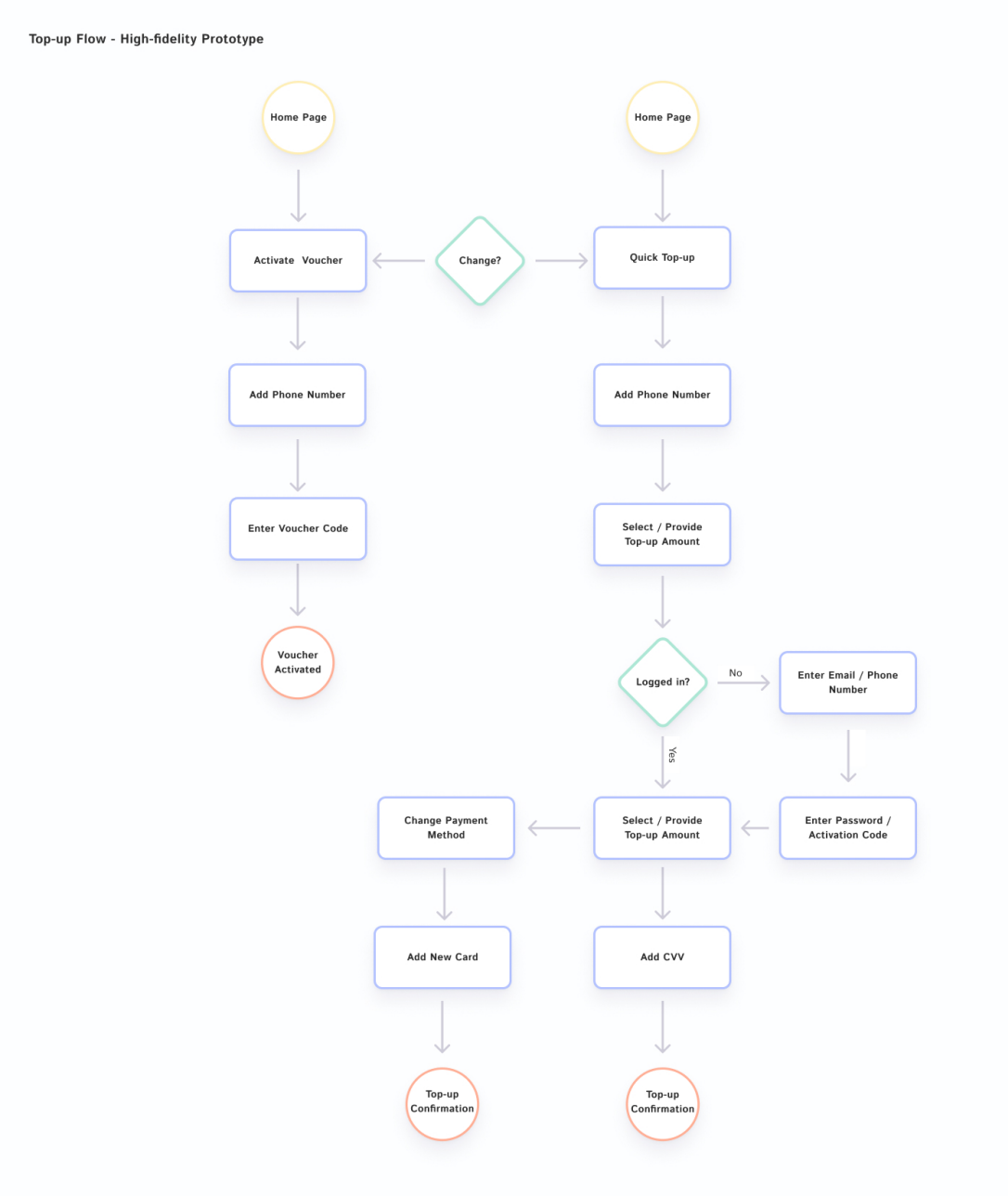


Fig. 6.5 Top-up Flow - High-fidelity Prototype

At this stage, we were ready to add colours, branding, and images to the high-fidelity prototype as per the initial mockup design.

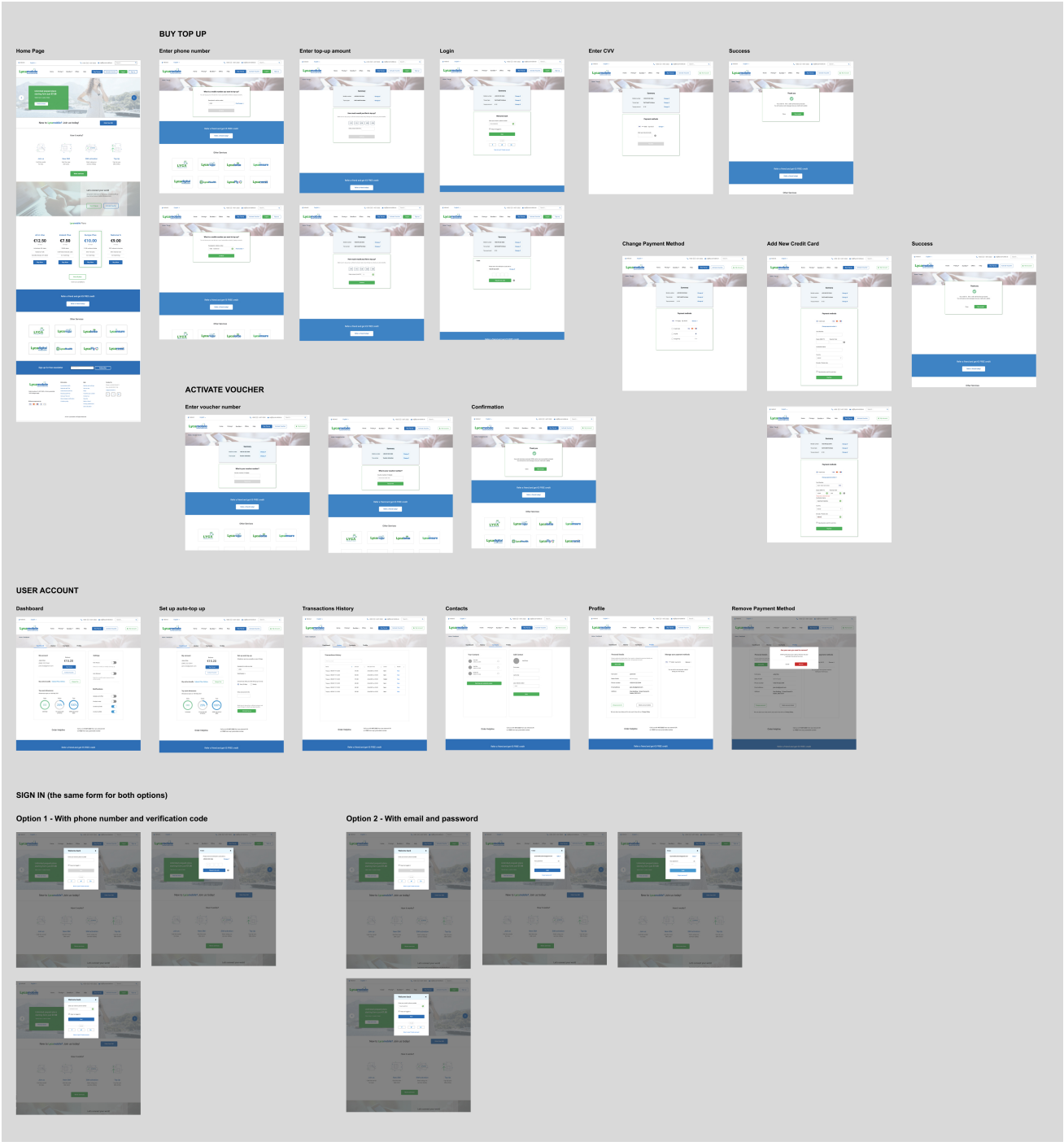


Fig. 6.6 High-Fidelity Prototype

6.4 Usability Testing

To measure the success of the proposed design, we conducted usability testing to check if users can complete tasks faster and with fewer errors. We also verified if the satisfaction level improved. We wrote test tasks to match those tested on the existing website (Appendices 6.1, 6.2).
To gather accurate time measurements, we asked participants to share feedback after completing each activity. The prototype was tested with four participants. Rubin, Chisnell, & Spool (2011) recommends testing with at least 10 participants to get the correct data.Three unmoderated sessions were run on usertesting.com (Appendix 7.2) and one moderated via Teams.
For analysis, the results were collated in the Rainbow Spreadsheet [URL: The Rainbow Spreadsheet - Proposed Lycamobile Website], similar to results from the existing site [URL: The Rainbow Spreadsheet - Existing Lycamobile Website]

We measured effectiveness by counting the number of errors and the number of successful tasks in a given time. The quality of task achievement was divided into Success, Failure and Partial Success. Every request for help was an error (Nielsen 2001).

●	Success	• Completes the task with minimal effort • Reaches destination within 2 attempts • Does not receive hints from the facilitator • Does not encounter error messages • Does not mention frustration • Does not have suggestions for improvement
●	Partial Success	• Completes the task with moderate effort • Reaches destination within 3 attempts • Receives 1 hint from the facilitator • Encounters 1 or 2 error messages • Has to back up or reenter information • Has minor suggestions for improvement • Mentions minor frustration or expresses minor confusion
●	Failure	• Completes with considerable effort • Reaches destination in 4 or more attempts • Receives 2 or more hints from the facilitator • Encounters more than 2 error messages or the same error message more than once • Has to back up or re-enter information several times • Has major suggestions for improvement • Mentions frustration or confusion • Mentions they would have to call or speak with someone to complete the task • Concludes the task is complete, when it is not
●	Skip	• Does not complete the task • Gives up while trying to complete the task and concludes they cannot successfully complete it. • Task skipped due to time
●	N/A	• Not applicable - task not scored

Fig. 6.7 Success Criteria for Scoring Scenarios

By recording the time users spent on tasks, we were able to measure efficiency. We compared the results between the proposed and existing website to check if it is faster to top-up on the proposed design.

Proposed

METRICS

PARTICIPANT	Task 1		Task 2		Task 3		Task 4		Task 5		TOTAL					
	Success (1-4)	Time (MM:SS)*	Success (1-4)	Time (MM:SS)*	Success (1-4)	Time (MM:SS)*	Success (1-4)	Time (MM:SS)*	Success (1-4)	Time (MM:SS)*	Completion Rate %	Success	Partial Success	Failure	Skip	Total Time (MM:SS)
P31	1	01:58	1	01:50	1	01:10	1	01:30	1	00:38	50%	5	0	0	0	N/A
P32	1	02:55	1	02:05	4	n/a	2	02:05	1	00:20	40%	3	1	0	1	N/A
P33	1	02:20	1	00:58	1	00:19	4	n/a	2	01:56	40%	3	1	0	1	N/A
P34	1	01:17	1	01:37	1	00:36	2	01:33	1	00:33	50%	4	1	0	0	N/A
											0%	0	0	0	0	N/A
Average Time		02:08		01:38		00:42		01:43		00:52						
Success	4		4		3		1		3							
Partial Success	0		0		0		2		1							
Failure	0		0		0		0		0							
Skip	0		0		1		1		0							
Completion Rate*	80%		80%		60%		60%		80%							

Existing

METRICS

PARTICIPANT	Task 1		Task 2		Task 3		Task 4		Task 5		TOTAL					
	Success (1-4)	Time (MM:SS)*	Success (1-4)	Time (MM:SS)*	Success (1-4)	Time (MM:SS)*	Success (1-4)	Time (MM:SS)*	Success (1-4)	Time (MM:SS)*	Completion Rate %	Success	Partial Success	Failure	Skip	Total Time (MM:SS)
P01	2	03:40	3	03:30	n/a	n/a	4	n/a	1	00:18	20%	1	1	1	1	N/A
P02	2	04:06	2	03:45	n/a	n/a	4	n/a	1	00:41	30%	1	2	0	1	N/A
											0%	0	0	0	0	N/A
Average Time		03:53		03:38						00:30						
Success	0		0		0		0		2							
Partial Success	2		1		0		0		0							
Failure	0		1		0		0		0							
Skip	0		0		0		2		0							
Completion Rate*	67%		33%		0%		0%		67%							

SUCCESS CRITERIA	
1	Success
2	Partial Success
3	Failure
4	Skip

NOTE:
* To add time type it in format: 00:00:00 (hh:mm:SS)
* For Think Aloud we don't measure time (N/A): P1, P6, P7, P13
* Completion Rate: tasks with success rate 1 and 2 / number of tasks

Fig. 6.8 Benchmarking - Time on Task and Error Rates

After each session, participants were asked to answer the System Usability Scale questionnaire (Brooke 2013) measuring satisfaction level. For more accurate results, we would have to request more participants to answer it.

Each question had a 0-4 rating scale. We collected participant's rating scale for quality, ease of use, likability, user effect, overall features, support, interfaces, output, finding help. The scores were compared between both websites.

Proposed (SUS Score 88.75)

SYSTEM USABILITY SCALE

Use the table below to help you calculate the SUS score for each participant. A line has been filled out as an example.

Reference: http://www.measuringusability.com/sus.php

Participant	1 I think that I would like to use this website frequently.	2 I found the website unnecessarily complex.	3 I thought the website was easy to use.	4 I think that I would need the support of a technical person to be able to use this website.	5 I found various functions in this website were well integrated.	6 I thought there was too much inconsistency in this website.	7 I would imagine that most people would learn to use this website very quickly.	8 I found the website very cumbersome to use.	9 I felt very confident using the website.	10 I needed to learn a lot of things before I could get going with this website.	SUS Score
P31	4	2	4	1	5	1	4	2	4	2	82.50
P32	5	1	5	1	5	1	5	1	5	1	100.00
P33	4	2	4	1	3	2	5	2	4	1	80.00
P34	4	1	5	1	4	1	5	2	5	1	92.50
										Result:	88.75

Value	Key
1	strongly disagree
2	disagree
3	neutral
4	agree
5	strongly agree

Existing (SUS Score 25.00)

SYSTEM USABILITY SCALE

Use the table below to help you calculate the SUS score for each participant. A line has been filled out as an example.

Reference: http://www.measuringusability.com/sus.php

Participant	1 I think that I would like to use this website frequently.	2 I found the website unnecessarily complex.	3 I thought the website was easy to use.	4 I think that I would need the support of a technical person to be able to use this website.	5 I found various functions in this website were well integrated.	6 I thought there was too much inconsistency in this website.	7 I would imagine that most people would learn to use this website very quickly.	8 I found the website very cumbersome to use.	9 I felt very confident using the website.	10 I needed to learn a lot of things before I could get going with this website.	SUS Score
P1	1	4	2	3	2	4	2	4	2	4	25.00
P2	2	5	2	3	2	4	2	5	2	3	25.00
										Result:	25.00
											Poor

Value	Key
1	strongly disagree
2	disagree
3	neutral
4	agree
5	strongly agree

Source: SUS Acceptability Score. Image credit 10up.com.

Fig. 6.9 Benchmarking - Satisfaction (SUS)

	Existing	Proposed
Task 1 Quick top-up	3:53 min 67%	2:08 min 80%
Task 2 Topping up after logging in	3:38 min 33%	1:38 min 80%
Task 3 Remove saved credit card	N/A 0%	0:42 min 60%
Task 4 Set up auto top-up	N/A 0%	1:43 min 60%
Task 5 Switch off notifications	0:30 min 67%	0:52 min 80%

Fig. 6.10 Benchmarking - Time on Task and Error Rates Summary

The results show that with the new design, there was a significant improvement for all three metrics.

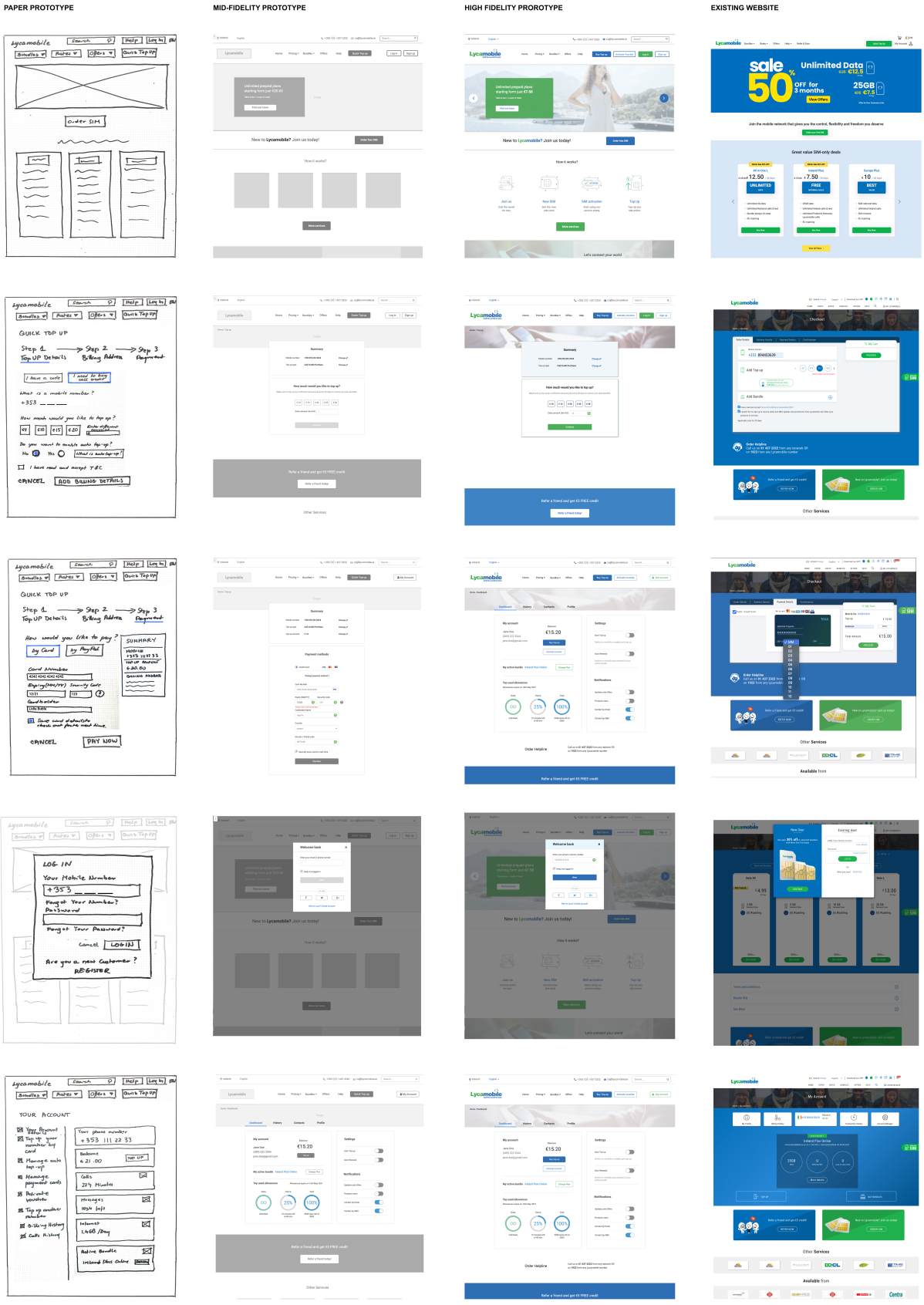


Fig. 6.11 Comparison of three iterations with existing website

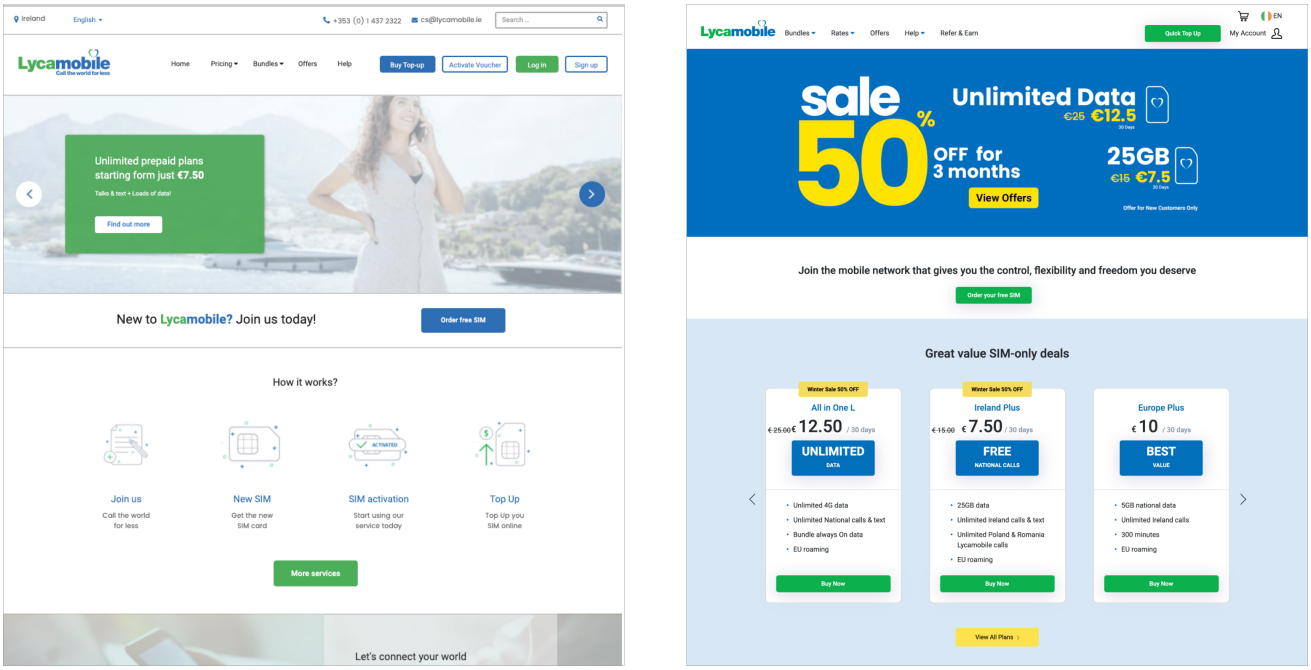


Fig. 6.12 Home Page Proposed vs Existing

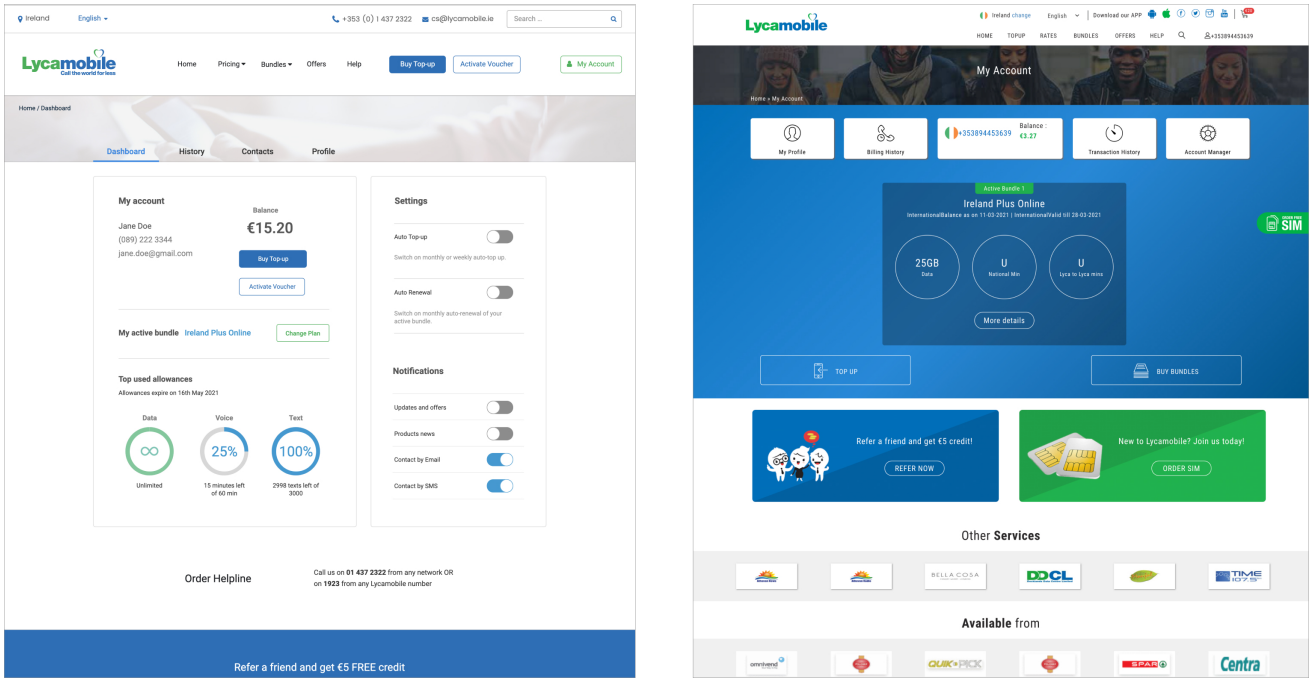
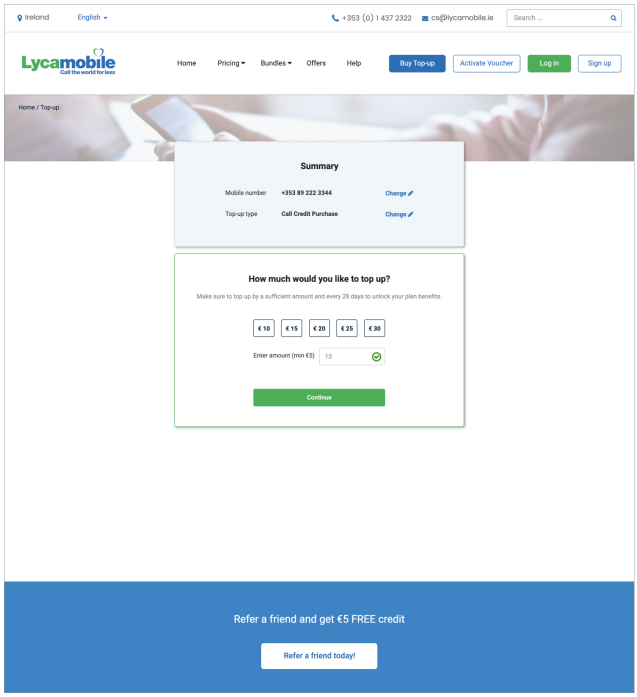


Fig. 6.13 Dashboard Proposed vs Existing



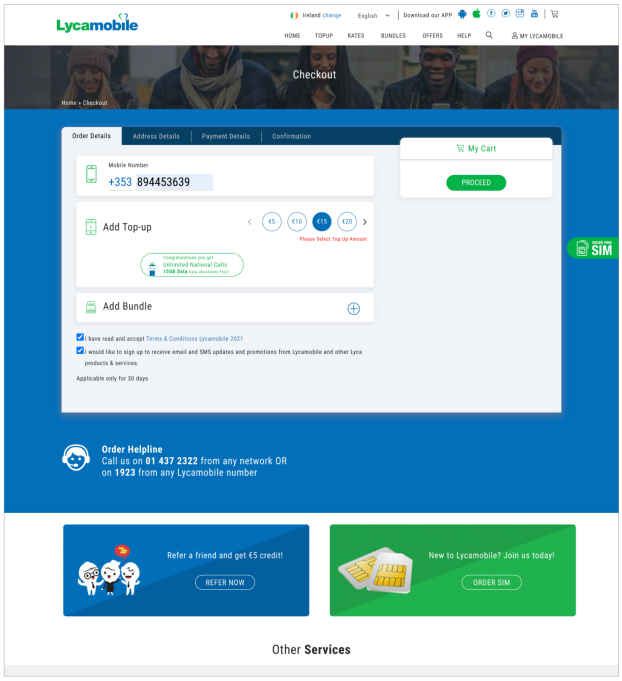
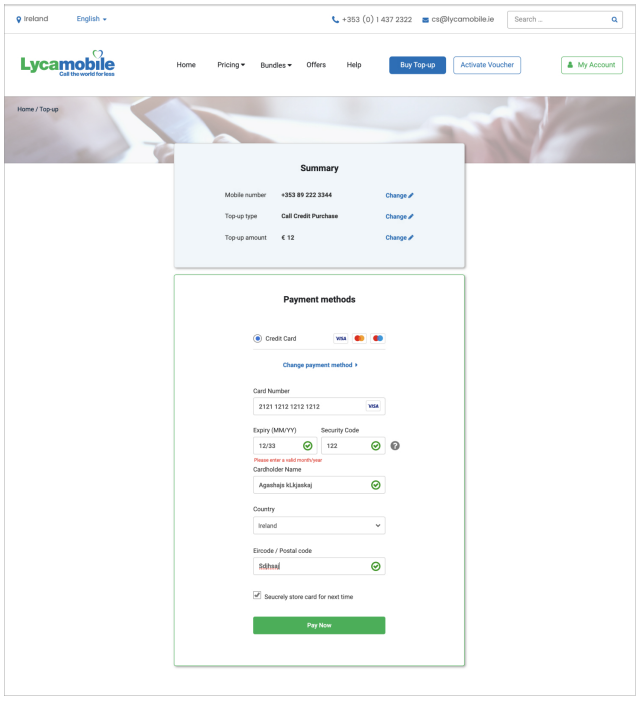


Fig. 6.14 Top-up Proposed vs Existing



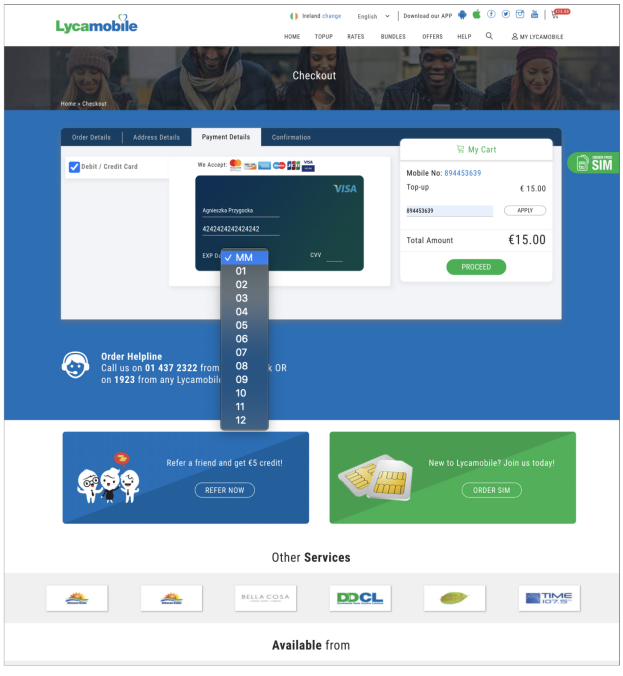


Fig. 6.15 Adding Credit Card Proposed vs Existin

7. Critical Analysis

7.1 Project Approach

The project would benefit if usability testing had more participants. There is also a chance that the SUS score would be different if answered by more participants.
There was a considerable amount of time invested into user research. Some methods were employed with a significant level of detail, and maybe it was too much for this project.
After the research, it became apparent that mobile application would be a more viable solution than a website top-up. Unfortunately, because of this project's scope, it was too late to switch to mobile application design. That could be considered as a future iteration.

7.2 Ethics

To conduct ethical research, we were following the five commandments of usability testing (Mincey 2020). First, we let know all the participants that they will be observed and that we are going to collect information. Before the recording took place, participants were asked to sign a consent form (Appendix A7.1). In most of the cases, we were using DocuSign for that purpose. It is a convenient way as we can add a digital signature to the form. After signing, forms are paired with a certificate of Completion confirming their authenticity.
We assured all the participants that their information and responses would not be shared with anyone. It was emphasized during recruiting and testing sessions.
We made it clear to the participants that they have a right to withdraw at any time.

7.3 Strengths and Weaknesses

Working individually, it was easier to schedule work. There were no conflicting opinions and less time spent on the calls. It was easier to understand research findings as I had to participate in every interview and testing session.
As a solo researcher, it can be pretty challenging to find a large number of survey participants. It took me a lot of messaging to get the questionnaire answered. It is not a case on a group project, as we share the effort with our teammates.
Conflicting schedules with office work were a critical issue in my case, and I had no choice but to take time off from work to complete all the activities. Next time I will allocate more time for the project. I underestimated it.
Being in contact with colleagues was very helpful from the information-sharing point of view, and it was helping mentally. Working solo can be a very lonely experience during the lockdown.

Testing each other's prototypes was great. The best feedback I received from tests run within our group. Sharing resources and learning from each other was invaluable.

It was a massive workload for one person, but the learning outcomes were fantastic! I had a chance to learn how to set up usertesting.com and Loop11 sessions. I gained confidence in running such sessions. The Axure prototyping proved to be an excellent option for unmoderated testing. On the other hand, Figma proved to be a perfect tool for design and prototyping and for organising work and creating presentation slides.

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