



HEIDELBERG FÜR SIE

PREPARED FOR

Prof. Dr. Gerd Moeckel
Prof. Josef Hermanns
SRH International students

PREPARED BY

Amadou Gueye
Bhushan Sakhalkar
Smruti Puranik
Ashwini Sarode
Zeba Gunjarge

Table of Contents

1	Project Description	4
2	Target State - Moscow Analysis	6
3	Market Analysis	9
4	Requirement Analysis	11
5	User Stories and Use Cases	14
6	Application Flow Diagram	36
7	User Interface Design	37
8	Project Structure and Network Plan - Project Structure - Product Structure - Gantt Chart - Milestones - Action Nodes	40
9	Risk Analysis	51
10	Stakeholder Analysis	57
11	Project Process Models	59
12	Technological Aspects and Concept Details	61
13	Executive Summary	64
14	References	66

LIST OF TABLES

Table 1 : Responsibilities

Table 2 : Moscow Analysis

Table 3 : Cost Estimation

Table 4 : Risk Score Index

Table 5 : Risk Analysis

Table 6 : Stakeholder Analysis

LIST OF FIGURES

Figure 1 : Market Analysis Data

Figure 2 : Application Flow Diagram

Figure 3 : UI/UX Design

Figure 4 : Project Structure Plan

Figure 5 : Product Structure Plan

Figure 6 : Gantt chart

Figure 7 : Milestones

Figure 8 : Stakeholder Matrix

Figure 9 : Agile Procedure

Figure 10 : Benefit of Agile Development

Figure 11 : Flutter Description

Figure 12 : Technical Architecture

TEAM ROLES

Responsibilities	Amadou	Bhushan	Smruti	Ashwini	Zeba
Requirement Analysis	I	I	R	I	I
Project Description	I	I	I	R	I
Market Analysis	I	I	I	I	R
Target State	I	I	I	I	R
MoSCoW Analysis	C	R	C	R	I
Application Flow	I	I	R	R	I
UI/UX Design	I	I	R	R	I
User Stories	C	R	C	C	I
Use Case	I	R	I	I	I
Gantt Chart	I	I	I	I	R
Milestones	R	I	I	I	I
Project Structure Plan	I	R	I	I	I
Network Plan	I	R	R	R	I
Technical Architecture	I	I	R	R	I
Risk Analysis	R	R	I	I	I
Cost Estimation	R	I	R	I	I
Stake Holder Analysis	I	R	I	I	I
Project Process model	R	I	I	I	I
Technological Aspects	R	I	I	I	I
Executive Summary	I	I	I	I	R
References	R	R	R	R	R

Table 1: Responsibilities

Responsible	R
Informed	I
Consulted	C

1. PROJECT DESCRIPTION

Online platforms have gained a lot of importance in the past few years as it provides a smooth and convenient path to grow a business and also provides a safe and secure way for the customers who like to explore and shop. Increase in the usage of the internet has brought the world closer as every country has globally established its place in the virtual world. These platforms have largely contributed to economic growth of each and every country. Be it entertainment platforms or any e-commerce platform, the service provider and the customer are largely benefitted. But still there are many small scale businesses despite being in a developed and modern city do not have a platform to establish themselves and adapt to the modern business solution. The importance of providing an online platform to these small businesses and self-employed individuals can be realised by looking at the unfortunate Covid-19 pandemic. The economic destruction was widespread and clearly evident due to the lockdown imposed to fight corona. Small businesses surely suffered and many businesses were even closed permanently.

Keeping in mind all the small businesses and shop owners we are bringing into action a digital online platform for our city of Heidelberg. This application will open doors for both small and well-established businesses to expose themselves to the citizens of Heidelberg. This application provides a stage where a business owner and self-employed individual effortlessly login and provide services to their customers. These shops can display their products on the application page so that the customer can explore an array of items he or she can purchase. Shop owners can also provide information about their offline services if they wish to also promote in-store visits. “HEIDELBERG FÜR SIE” will also allow customers or users to get information about each and every shop in Heidelberg along with its location and information about the service provided. Users can find shops and services based on the categories, reviews and ratings about the services provided. Registered users of the application can experience a hassle-free payment system to pay for their online purchases.

This application is not just an e-commerce platform but also proves to be an eco-friendly e-commerce system as it uses Heidelberg's central logistic department services to deliver the goods and products to the customers. Latest technologies like drones, electric driving and other eco friendly vehicles will be used resulting in minimising CO2 production and optimising traffic scenario.

2. TARGET STRUCTURE

Initial State

Heidelberg is one the most beautiful city specially the market area from Bismarckplatz to Hauptstrasse. It has well-known brand stores, beautiful boutiques , outlets, small candy shops, Christmas Market shops, Cafes, Restaurants etc. But due to the pandemic COVID-19, all shops and stores were closed as part of lockdown. During this small shop owners have suffered a lot and lockdown has affected their businesses. Heidelberg City needs an online platform for all shop owners and customers to conveniently buy and sell their products. The infrastructure will be accessible to the users through an interactive application.

Target State

We as part of an IT Consultancy Company would provide the business model of a complete online infrastructure for the market of Heidelberg City in form of a Mobile Application. The infrastructure provides for inclusion of all the stores, boutiques, outlets, family owned businesses, cafes, Restaurants , freelancing services, supermarkets etc. The application would display all nearby shops which are there in the vicinity of users. The infrastructure would therefore be an effective combination of business model and technology.

High Level Objectives-

- Vocal for local – The main objective is to provide an online platform for small shop owners of Heidelberg City to compete with larger manufacturers in the respective industries.
- To encourage customers to buy from local shops
- To decrease dependency on bigger platforms such as Amazon etc.

Result Objectives-

- Easy accessibility to any shop of Heidelberg City
- Benefits given to shop owners

Process Objectives-

- Marketing of the Product Application for more customers
- Budget Management
- To complete the project with defined milestones

Personal Objectives-

- To help the Heidelberg city for having a convenient online platform for buying products offered by local shops.
- Be a part of the initiative to reduce pollution and save the environment by using appropriate resources for delivery such as electric cars.

Moscow Analysis:

SHOULD HAVE	MUST HAVE	WILL NOT HAVE
Location/GPS	Search by name pincode and category	Pin/Make a shop as your favourite
Shop List with details and Address	Add Reviews	Use Coupons/Avail Discounts
Menu Bar	View Reviews of shops	Notifications from Shops to customers
Filter by distance/ reviews/rating	Wishlist	
View Product List	Edit/Delete products	
Product Page (Price Rating and description)	Register vehicle	
Cart	Daily opening and closing timings	
Login/Registration Single Sign on	Sale and other offers	
Authentication by email/otp	Order Tracking	
Payment options	Click and Collect	
Delivery Categories	If Location is not allowed Use Approximate location using x y coordinate positioning	
Add shop/ Add existing website link	Barcode Scanner to show all the products	
Add/ List Products		
Terms and Conditions for Del exc.		
Accept Orders for shops and delivery		
Order Confirmation		
Api to Send news information/Shop and Logistics database		

3. MARKET ANALYSIS

Goal

Main objective of the project is to provide an online platform to small and local shop owners who have suffered a lot during pandemic COVID-19. Below figure shows there are more than 210 shops in Heidelberg city. Around 20% of these shops are clothing stores, 10-15% are Restaurants and Cafes. Heidelberg is a tourist city, therefore Heidelberg market offers a wide range of different shops which includes beautiful craft stores, candy stores, chocolate shops, wine stores, fabric stores, handmade craft stores, some family owned businesses etc. These stores don't have any online presence. We want to provide an online platform for all of these small and local shops so that they can compete with larger organizations in the market.

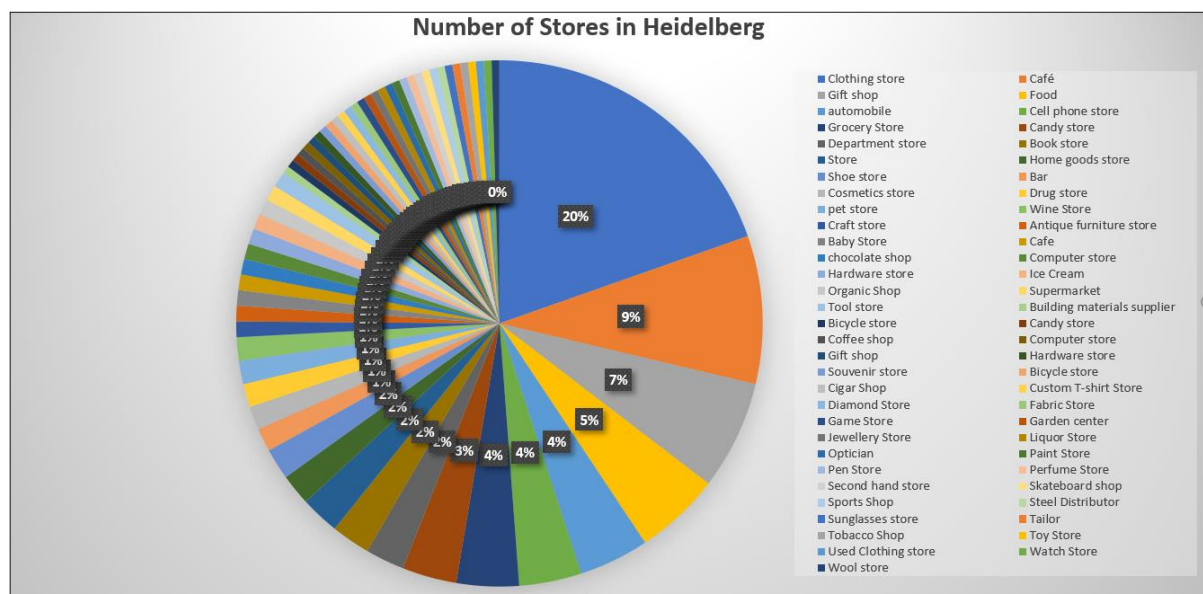


Figure 1: Market Analysis Data

Target Customers

1. Customers

Our first target is end users who will be using Heidelberg für Sie Mobile application, they can order, purchase or avail services which are offered by the local shops in Heidelberg. We will update the users with all ongoing sales and offers in the Heidelberg market such as Christmas Market and other events.

2. Shop Owners

Shop owners will be the most important user of this system. The shop owners will be able to register their business on Heidelberg für sie App and they can provide all the details of their shop and products with description. This will enable them to expand their business and shop owners will not be dependent only on customers who visit them in physical store. This platform will increase their sales since users can buy the products online.

3. Logistics - Delivery Executives

The last but not least target customer of this application is Delivery Executives of the logistics department who will be allowed to use the application only after accepting terms and conditions of providing the eco-friendly service for delivering the goods. They will be part of the central logistics department of Heidelberg city.

Strategy

Due to the increasing amount of pollution our goal is to provide an eco-friendly e-commerce system which will be using central logistic department services of Heidelberg. This department will deliver the goods and products to end users by using eco-friendly methods such as electric vehicles, cars, drones and other resources which will help to minimize the CO2 production and it will also reduce the traffic.

4. REQUIREMENT ANALYSIS

Requirement analysis is the process where the user expectations for an application/project are analyzed, validated, recorded and software requirements are managed.

- Resource Requirement:

Total number of required employees will be categorized in the following.

- UI/UX Designer
- System Architect
- Full-Stack Developer
- Quality Assurance Tester
- Business Analyst
- Scrum master / Project Coordinator

All the employees will work under the guidance of Scrum Master.

- Functional Requirements:

Due to the pandemic people are forced to stay at home and the current scenario has resulted in people relying on the famous applications for their day to day needs like groceries, food, medicines etc. and the sector which is affected the most due to it is the local shops and businesses. The primary goal of our application is to uplift the businesses of small store owners of the Heidelberg city.

There are two Login options in the homepage, one for the customer and one for the retailers or store owners and logistics.

The Customer: The privacy of the customer is very important for us, that is why they will have an option to give out their location or just select their locality if they don't want to disclose their precise location. After getting the location or the area code, the interface will show the customer all the nearby services available, for example: if the customer is looking for food options the app will provide him with the nearby restaurants with the reviews from people of Heidelberg, the customer can order and pay it on the app itself and the food will be delivered to them. Just like this the customer will be able to choose from a vast variety of services present in the city like laundry, Medicines, Plumbing, Cleaning etc.

The Business Owners: Although the Customer is given the priority but we have given a separate thought on the business owners as well and they have been given equal importance. On Signing up they can add their business details, If they already have their website they can just link it to our app but if they don't have one we will create a page for them, the shop owners will have the access to update or remove data from their page according to their stock or latest trends, so the chances of them going out of business will be minimal. The delivery and logistics will be handled separately by the Central Logistic Department, where the non-essential items would be delivered only once or twice in a locality whereas the delivery of essential items would be done daily but with eco friendly vehicles only.

- Operational Requirements:

The application should be compatible with both the operating systems i.e. Android and IOS. Users should be able to view all the shops and services nearby without particularly searching for them in Heidelberg. Also, they will be able to buy and opt for delivery service. Shopkeepers, Freelancers and Logistics should be able to register their business as well as will have the option to update and alter their stock and services.

- Technical Requirements:

Front-end Technologies:

- Flutter

Back-end Technologies:

- Firebase
- Node

IT Security

Servers

- Customer Requirements:

To introduce an application or platform which will help customers (Users) to browse the nearby shops, services and Logistics / (Shopkeepers, Services and Logistics) to register their business. In advance, the application should also provide viewing and purchasing of products available in shops for users and editing, adding and viewing the list of the products available in shops and delivery of the same for shopkeepers.

5. USER STORIES AND USER CASES

Agile Methodologies:

In this Project we will be using Agile methods for planning and execution. Agile is an iterative methodology where instead of contract negotiations, customer collaboration is given more importance. In Agile the customer requirements are broken down into Epics which are further broken down into User Stories.

In Agile different styles such as kanban, scrum etc can be used to tackle these user stories. In our Project we will be using Scrum.

We will be involving the product owner in each iteration to take their feedback and see if our understanding of the problem statement is mutual.

In Scrum the major roles involved are:

1. Product Owner: An Expert who represents the Stakeholders and the customer.
2. Development Team: A group of Developers who after understanding the problem, will bring the solution into reality in form of an app.
3. Scrum Master: A motivated individual who would coordinate the scrum meetings and see to it that the discussed points and work packages are well executed.

User Stories:

Sprint 1:

Title	Description
Location/ Gps	Every User will have to give access of their location to the app for better and easier shop/ service search

Title	Description
Shop List with Details and Address	All the Customers will be able to see all the shops that are registered on the app and are in their vicinity.

Title	Description
Filter By Distance/Reviews/Ratings	Every User will be able to enhance their search by filtering the shops based on their distance, reviews and ratings.

Title	Description
View Product List	Every User will be able to see all the Products that the shop that they selected has to offer

Title	Description
Product Description	Users will be able to see all the information, like price, description and ratings about the product that they selected

Title	Description
Cart	Users Can Check the product they have selected and it's quantity and price before proceeding for payment

Title	Description
Registration/Login/Single Sign on	Users will have to login/ register to buy any product online.

Title	Description
Delivery Option	Users can choose the delivery option.

Title	Description
Payment Options	Users will be able to select a method of payment.

Title	Description
Add Shop/ Add Existing Shop link	Shop owners will be able to Add their shop or if they have an existing website/app, integrate that into our system.

Sprint 2:

Title	Description
Accept Orders for Shops And Delivery Executives	Shop Owners and Delivery Executives will have the option to accept or reject the orders after the customer has placed his order.

Title	Description
Order Confirmation	After the payment has been made, the customer would be redirected to an order confirmation page.

Sprint 3:

Title	Description
Menu Bar	<p>Shop Owners and Logistics' Persons will be able to login/register through the menu bar.</p> <p>The menu bar will also have categories that the new provider(group 5) will provide through api.</p>

Title	Description
Terms and conditions for the delivery executives.	The Delivery Executives will have to agree to the common Terms and conditions that are set by the Heidelberg Logistics department

Sprint 4:

Title	Description
Api to send news/ shop and logistics information to the news platform.	Shop Owners and the Logistics department would be able to create news feed which would be packaged into an api and sent to the news platform.

Use Cases:

Use Case 1	
Sprint Number : 1	
Author	Business Analyst
Title	Location/ Gps
Stakeholder	Customers(Citizens,Tourists)
Use Case Description	Every User will have to give access of their location to the app for better and easier shop/ service search
Normal Flow	<ol style="list-style-type: none"> 1. User Opens the app 2. User is asked for the Gps/location permissions

Use Case 2	
Sprint Number : 1	
Author	Business Analyst
Title	Shop List with Details and Address
Stakeholder	Customers(Citizens,Tourists),Shop Owners
Use Case Description	All the Customers will be able to see all the shops that are registered on the app and are in their vicinity.
Normal Flow	<ol style="list-style-type: none"> 1. After giving their location permissions to the app. 2. The app will fetch shops that are in their vicinity and will display it.

Use Case 3	
Sprint Number : 1	
Author	Business Analyst
Title	Filter By Distance/Reviews/Ratings
Stakeholder	Customers(Citizens,Tourists),Shop Owners
Use Case Description	Every User will be able to enhance their search by filtering the shops based on their distance, reviews and ratings.
Normal Flow	<ol style="list-style-type: none"> 1. After taking a look at the shops in the vicinity shown by the app. 2. The Users can enhance their search by filtering on the basis of reviews, rating and distance.

Use Case 4	
Sprint Number : 1	
Author	Business Analyst
Title	View Product List
Stakeholder	Customers(Citizens,Tourists), Shop Owners
Use Case Description	Every User will be able to see all the Products that the shop that they selected has to offer
Normal Flow	<ol style="list-style-type: none"> 1. After Selecting a store that the User wants to view 2. They will be redirected to the next page which will have a list of all the products that the shop has listed.

Use Case 5	
Sprint Number : 1	
Author	Business Analyst
Title	Product Description
Stakeholder	Customers(Citizens,Tourists),Shop Owner
Use Case Description	Users will be able to see all the information, like price, description and ratings about the product that they selected
Normal Flow	<ol style="list-style-type: none"> 1. After viewing all the products the user selects on the one that he wants/likes 2. They will then be redirected to the product page, which will have all the information like price reviews as well as rating on it.

Use Case 6	
Sprint Number : 1	
Author	Business Analyst
Title	Cart
Stakeholder	Customers(Citizens,Tourists),Shop Owner
Use Case Description	Users Can Check the product they have selected and it's quantity and price before proceeding for payment
Normal Flow	<ol style="list-style-type: none"> 1. After Selecting which product, after selecting the products and clicking on buy. 2. Users will be redirected to the cart where they can view the quantity, the total price of the product as well as the total price they will pay after all the tax inclusions.

Use Case 7	
Sprint Number : 1	
Author	Business Analyst
Title	Registration/Login/Single Sign on
Stakeholder	Customers(Citizens,Tourists)
Use Case Description	Users will have to login/ register to buy any product online.
Normal Flow	<ol style="list-style-type: none"> 1. After viewing their product in the cart the users can proceed to buy after clicking on proceed to buy. 2. They will be redirected to a login/registration page. 3. Users with their accounts and simply login and new users will have to register themselves.

	<p>4. Users can also sign up using already existing accounts like facebook/google.</p> <p>5. Users will also be authenticated using otp/email for safe and secure payment.</p>
--	--

Use Case 8	
Sprint Number : 1	
Author	Business Analyst
Title	Delivery Option
Stakeholder	Customers(Citizens,Tourists),Shop Owners, Logistics

Use Case Description	Users can choose the delivery option.
Normal Flow	<ol style="list-style-type: none"> 1. After Logging in the user will be able to see the Delivery Options. 2. He can choose between normal, and quick delivery. 3. Only Perishable items will be delivered quickly all the other items would be delivered according to the delivery schedule 4. Faster delivery of non perishable and non essential items would be charged extra.

Use Case 9	
Sprint Number : 1	
Author	Business Analyst

Title	Payment Options
Stakeholder	Customers(Citizens,Tourists),Shop Owner
Use Case Description	Users will be able to select a method of payment.
Normal Flow	<ol style="list-style-type: none"> 1. After Selecting the delivery method, users will be redirected to the payment options. 2. Where they will be able to choose from different payment methods like debit card ,credit card and paypal.

Use Case 10	
Sprint Number : 1	
Author	Business Analyst

Title	Add Shop/ Add Existing Shop link
Stakeholder	Shop Owner
Use Case Description	Shop owners will be able to Add their shop or if they have an existing website/app, integrate that into our system.
Normal Flow	<ol style="list-style-type: none"> 1. After Opening the app and registering/ logging in from the menu bar 2. Shop owners will see two options. 3. Add shop or Add Link of their existing shop. 4. With the help of these options the smaller shops that do not have a online presence will be able to create one and the shops that have their websites/web apps will be able to integrate their business into the system without any hassle

Use Case 11	
Sprint Number : 2	
Author	Business Analyst
Title	Accept Orders for Shops And Delivery Executives
Stakeholder	Shop Owner, Logistics, Customers
Use Case Description	Shop Owners and Delivery Executives will have the option to accept or reject the orders after the customer has placed his order.
Normal Flow	<ol style="list-style-type: none"> 1. After the Customer Has placed the order. 2. The Shop Owner Would have to Accept that particular order and then that order would get placed to the central logistics department of Heidelberg.

	3. The Logistics Department would then assign that order accordingly
--	--

Use Case 12	
Sprint Number : 2	
Author	Business Analyst
Title	Order Confirmation
Stakeholder	Customers(Citizens,Tourists),Shop Owner
Use Case Description	After the payment has been made, the customer would be redirected to an order confirmation page.

Normal Flow	<ol style="list-style-type: none"> 1. Once the User has successfully finished with the payment. 2. They would be redirected to the order Confirmation Page. 3. Where they would be able to see their order, the shop that they have ordered from and their delivery address.
-------------	---

Use Case 13	
Sprint Number : 3	
Author	Business Analyst
Title	Menu Bar
Stakeholder	Shop Owner, Logistics, Customers

Use Case Description	<p>Shop Owners and Logistics's Persons will be able to login/register through the menu bar.</p> <p>The menu bar will also have categories that the new provider(group 5) will provide through api.</p>
Normal Flow	<ol style="list-style-type: none"> 1. The Shop Owners and Logistics Person can directly go to the menu bar and login/Register. 2. The Customers can view the categories through the menu bar

Use Case 14	
Sprint Number : 3	
Author	Business Analyst
Title	Terms and conditions for the delivery executives.

Stakeholder	Logistics, Customers
Use Case Description	The Delivery Executives will have to agree to the common Terms and conditions that are set by the Heidelberg Logistics department
Normal Flow	<ol style="list-style-type: none"> 1. All the delivery executives will have to follow and accept the common delivery guidelines set by the Heidelberg Logistics Department 2. In a brief overview which would state that all the non essential deliveries for one area would be done together. 3. All the necessary and perishable items would be delivered urgently but with eco friendly vehicles only.

6. APPLICATION FLOW DIAGRAM

The schematic diagram of the application flow in view of user stories and use cases is as shown below.

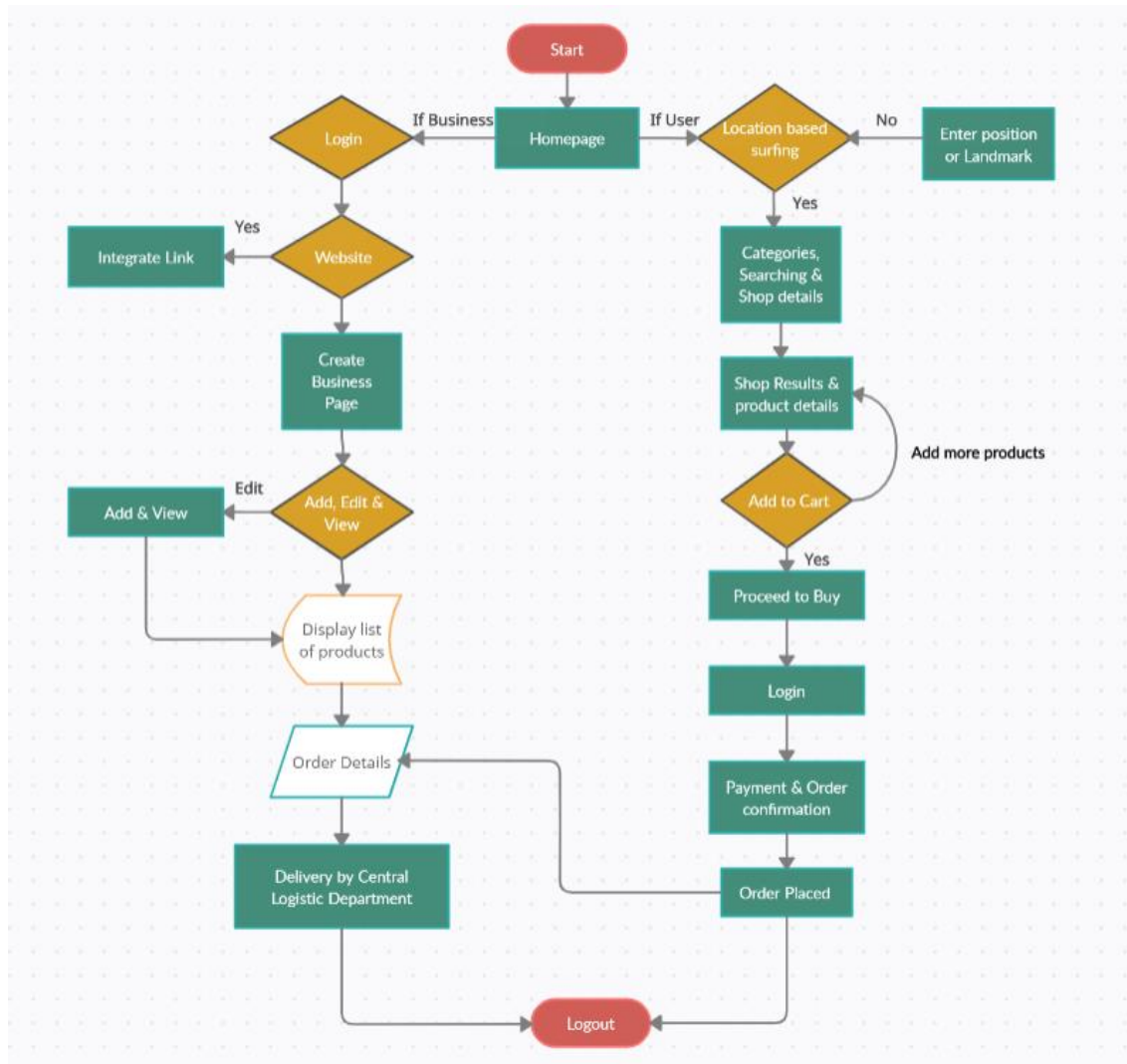
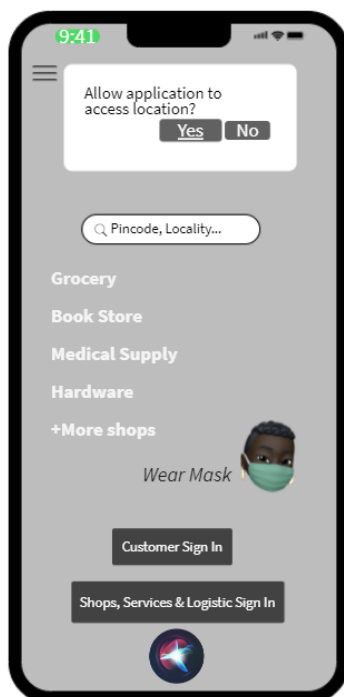


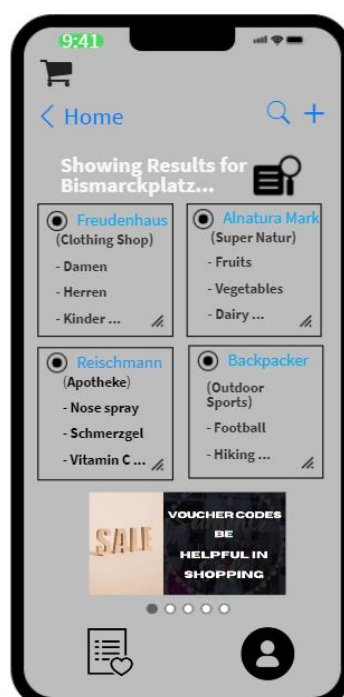
Figure 2: Application Flow Diagram

7. USER INTERFACE DESIGN

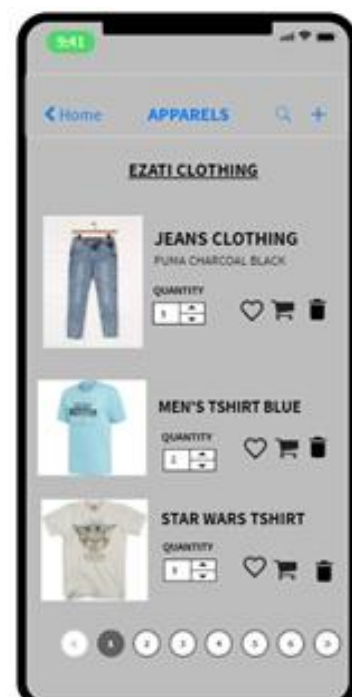
The User Interface design explains how the user will interact with the application. The opening page for the customers will be the Home page where users can have personal positive experience of searching all the services shops in the beautiful city of Heidelberg. Users can be both customers and shop owners. Separate interface designing has been done for both the users. The basic structure and the should have to be implemented are represented below.



3.1 Home Page



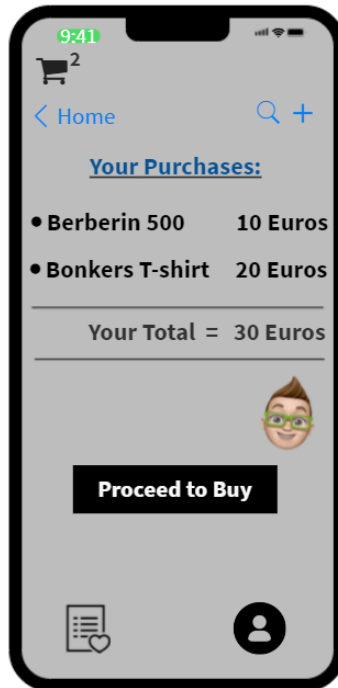
3.2 Search Results



3.3 Product List



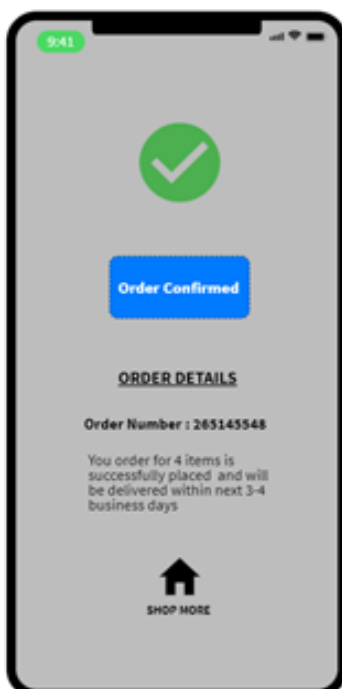
3.4 Product Details



3.5 Cart Details



3.6 Sign Up for Customer



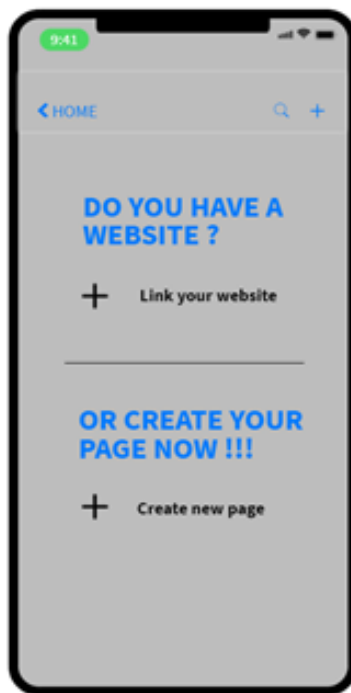
3.7 Order Confirmation



3.8 Login Page



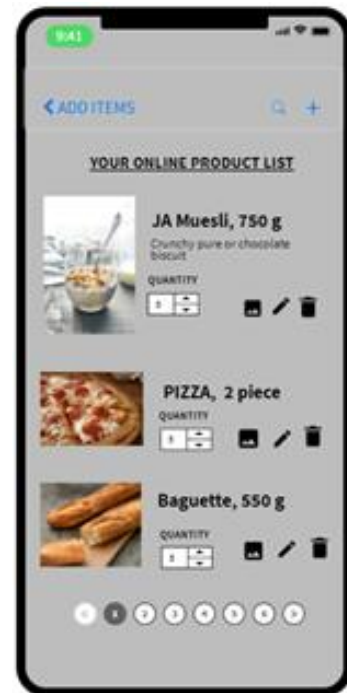
3.9 Sign Up for Business



3.10 Website/Create Page



3.11 Edit, Add & View
for Business



3.12 Product List

Figure 3: UI/UX Design

8. PROJECT STRUCTURE AND NETWORK PLAN

Project Structure Plan:

The below mentioned is our project structure plan based on the workflow. The Project is subdivided into 5 main topics.

These main topics are divided into smaller work packages that are independent and can be measured with respect to time and effort.

These work packages are of help in determining the cost and effort required to complete a particular task.

Such a sub division of bigger tasks into smaller work packages helps in continuous monitoring of progress.

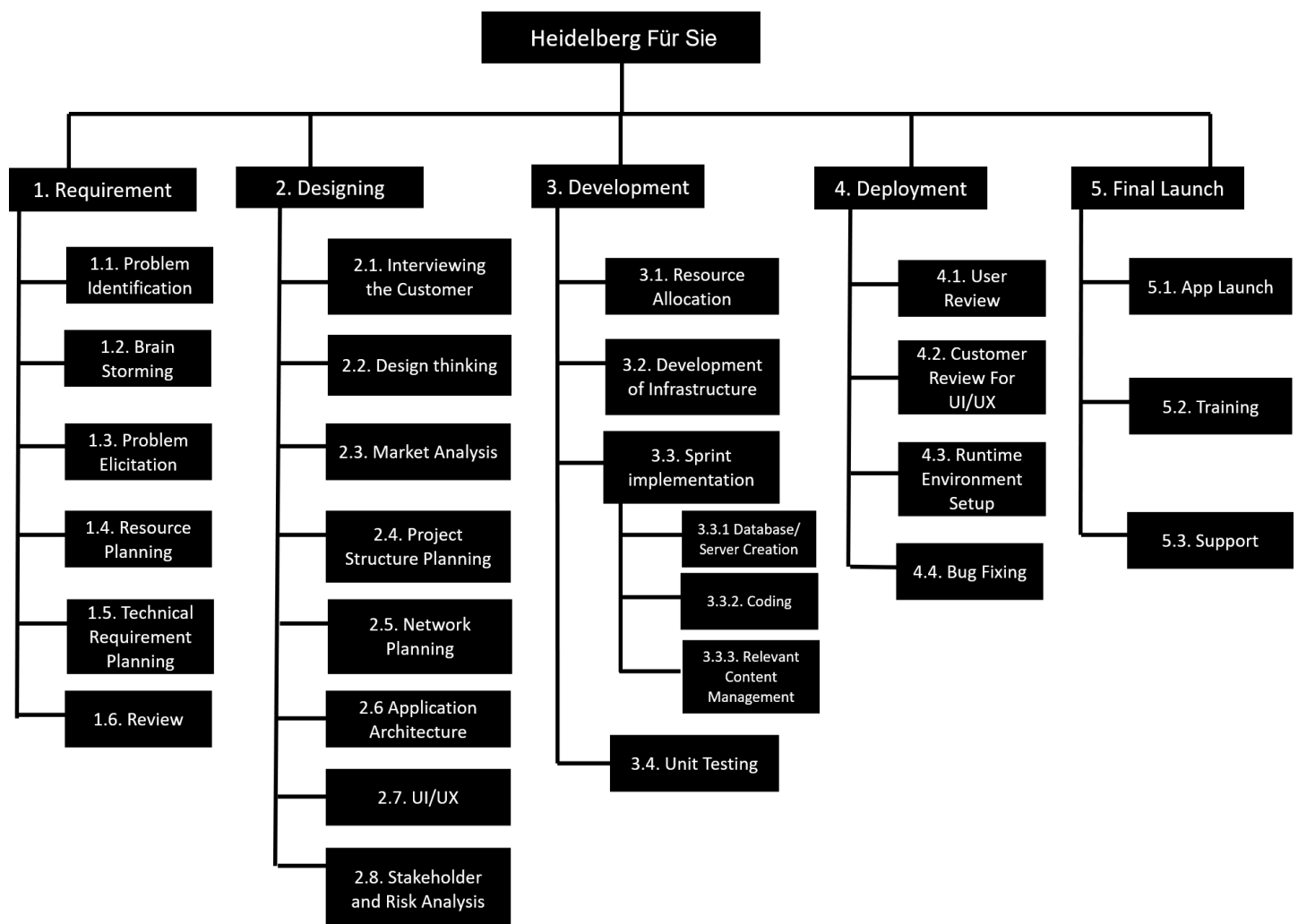


Figure 4: Project Structure Plan

Product Structure:

The following defines the importance of the Product Structure:

It helps in determining the deliverables at the end of the Project.

The complete Product Structure helps the customer as well as the Developing Team/Business Team to better understand and agree to the requirement analysis.

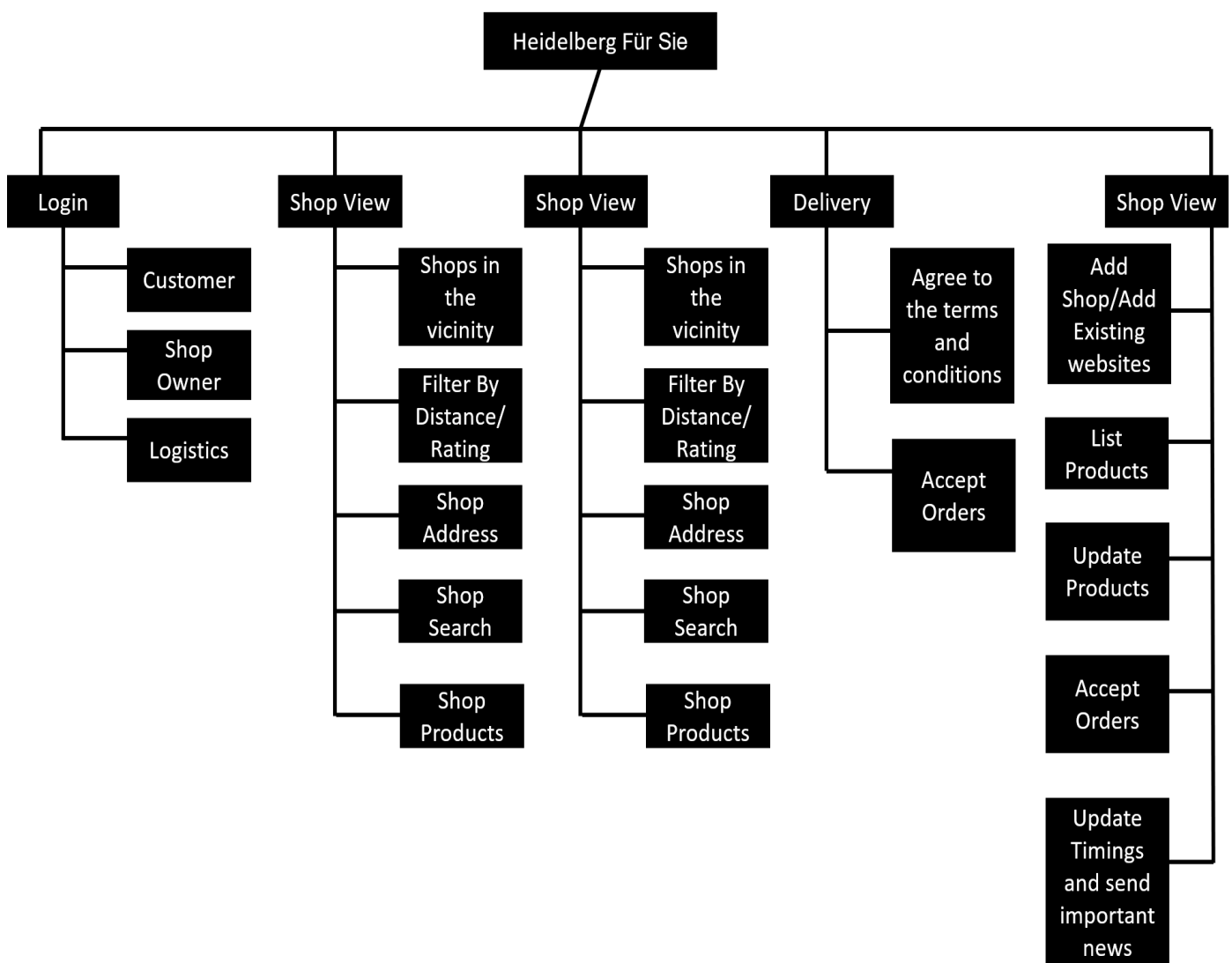


Figure 5: Product Structure Plan

9. GANTT CHART

Gantt chart is a bar graph which is used to describe the timelines of various phases of a project, It consists of a detailed project plan which defines start and end date for every step. Gantt chart helps to define the milestones and achieve them.

	Name	Duration	Start	Finish	Predecessors	Resource Names
1	Heidelberg Fur Sie	243 days	1/11/22 9:00 AM	12/16/22 9:00 AM		
2	Requirements Gathering	43.875 days	1/11/22 9:00 AM	3/11/22 5:00 PM		Business Analyst
3	Resource Requirement	8 days	1/11/22 9:00 AM	1/21/22 9:00 AM		Business Analyst
4	Functional Requirement	8 days	1/21/22 9:00 AM	2/2/22 9:00 AM	3	Business Analyst
5	Operational Requirement	5 days	2/2/22 9:00 AM	2/9/22 9:00 AM	4	Business Analyst
6	Technical Requirement	3 days	2/9/22 9:00 AM	2/14/22 9:00 AM	5	Business Analyst
7	Requirements finalization and confirmation	0 days	2/14/22 9:00 AM	2/14/22 9:00 AM	6	Business Analyst
8	Project Analysis	18 days	2/16/22 8:00 AM	3/11/22 5:00 PM		Business Analyst
9	Project Documentation	3 days	2/16/22 8:00 AM	2/19/22 5:00 PM		Business Analyst
10	Market Analysis	4 days	2/21/22 8:00 AM	2/24/22 5:00 PM	9	Business Analyst
11	Stakeholder Analysis	5 days	2/25/22 8:00 AM	3/3/22 5:00 PM	10	Business Analyst
12	Moscow Analysis	3 days	3/4/22 8:00 AM	3/8/22 5:00 PM	11	Team
13	Budget Analysis	3 days	3/9/22 8:00 AM	3/11/22 5:00 PM	12	Finance Team
14	Completion of Project Analysis and documentation	0 days	3/11/22 5:00 PM	3/11/22 5:00 PM	13	Business Analyst

Figure 6.1 : Gantt Chart

	Name	Duration	Start	Finish	Predecessors	Resource Names
15	Project Planning and Organization	17.875 days	3/9/22 9:00 AM	4/1/22 5:00 PM		Business Analyst
16	Create project organization structure	3 days	3/9/22 9:00 AM	3/14/22 9:00 AM		Business Analyst
17	Initial setup with local shop owners/logistics	5 days	3/14/22 9:00 AM	3/21/22 9:00 AM		Business Analyst
18	Workflow Management - Definition of work flow and milestones	2 days	3/21/22 9:00 AM	3/23/22 9:00 AM		Business Analyst
19	Create work breakdown structure	2 days	3/23/22 9:00 AM	3/25/22 9:00 AM	16; 17; 18	Business Analyst
20	Risk Analysis	4 days	3/25/22 9:00 AM	3/31/22 9:00 AM		Business Analyst
21	Technical Risk	1 day	3/25/22 9:00 AM	3/28/22 9:00 AM		Business Analyst
22	Fuctional Risk	1 day	3/28/22 9:00 AM	3/29/22 9:00 AM		Business Analyst
23	Project Risk	1 day	3/29/22 9:00 AM	3/30/22 9:00 AM		Business Analyst
24	Management Risk	1 day	3/30/22 9:00 AM	3/31/22 9:00 AM		Business Analyst
25	Environment Setup	2 days	3/31/22 8:00 AM	4/1/22 5:00 PM		Team
26	Setting up Servers and Databases	2 days	3/31/22 8:00 AM	4/1/22 5:00 PM		Team

Figure 6.2: Gantt Chart

	Name	Duration	Start	Finish	Predecessors	Resource Names
27	Mobile Application Development	120 days	4/1/22 8:00 AM	9/15/22 5:00 PM		Development Team
28	Sprint 1	47 days	4/1/22 8:00 AM	6/6/22 5:00 PM		Development Team
29	Allow location Access - GPS	3 days	4/1/22 8:00 AM	4/5/22 5:00 PM		Development Team
30	Shops List with details and address	3 days	4/5/22 8:00 AM	4/7/22 5:00 PM		Development Team
31	Filter by distance/ reviews/rating	3 days	4/7/22 8:00 AM	4/11/22 5:00 PM		Development Team
32	View Product List	3 days	4/11/22 8:00 AM	4/13/22 5:00 PM		Development Team
33	Product Description	4 days	4/13/22 8:00 AM	4/18/22 5:00 PM		Development Team
34	Shopping Cart	4 days	4/18/22 8:00 AM	4/21/22 5:00 PM		Development Team
35	User Login/Registration	3 days	4/21/22 8:00 AM	4/25/22 5:00 PM		Development Team
36	User Authentication	3 days	4/25/22 8:00 AM	4/27/22 5:00 PM		Development Team
37	Payment options	8 days	4/27/22 8:00 AM	5/6/22 5:00 PM		Development Team
38	Delivery Categories	8 days	5/6/22 8:00 AM	5/17/22 5:00 PM		Development Team
39	Add shop/ Add existing website link	8 days	5/17/22 8:00 AM	5/26/22 5:00 PM		Development Team
40	Add/ List Products	8 days	5/26/22 8:00 AM	6/6/22 5:00 PM		Development Team
41	Edit/Delete products	1 day	6/6/22 8:00 AM	6/6/22 5:00 PM		Development Team
42	Sprint 1 Successful deployment and testing	0 days	6/6/22 5:00 PM	6/6/22 5:00 PM	29;30;31;32;33;34;35;36;3...	Development Team
43	Sprint 2	41 days	6/8/22 8:00 AM	8/3/22 5:00 PM		Development Team
44	Search by different parameters	8 days	6/8/22 8:00 AM	6/17/22 5:00 PM		Development Team
45	Add Reviews	8 days	6/17/22 8:00 AM	6/28/22 5:00 PM		Development Team
46	View Reviews of shops	8 days	6/28/22 8:00 AM	7/7/22 5:00 PM		Development Team
47	Register Vehicle	8 days	7/7/22 8:00 AM	7/18/22 5:00 PM		Development Team
48	Accept Orders for shops and Order confirmation	13 days	7/18/22 8:00 AM	8/3/22 5:00 PM		Development Team
49	Sprint 2 Successful deployment and testing	0 days	8/3/22 5:00 PM	8/3/22 5:00 PM	44;45;46;47;48	Development Team
50	Sprint 3	13 days	8/4/22 8:00 AM	8/22/22 5:00 PM		Development Team
51	Menu Bar and wishlist	5 days	8/4/22 8:00 AM	8/10/22 5:00 PM		Development Team
52	Order Tracking	5 days	8/10/22 8:00 AM	8/16/22 5:00 PM		Development Team
53	Selecting Approximate location	5 days	8/16/22 8:00 AM	8/22/22 5:00 PM		Development Team
54	Sprint 3 Successful deployment and testing	0 days	8/22/22 5:00 PM	8/22/22 5:00 PM	51;52;53	Development Team

Figure 6.3: Gantt Chart

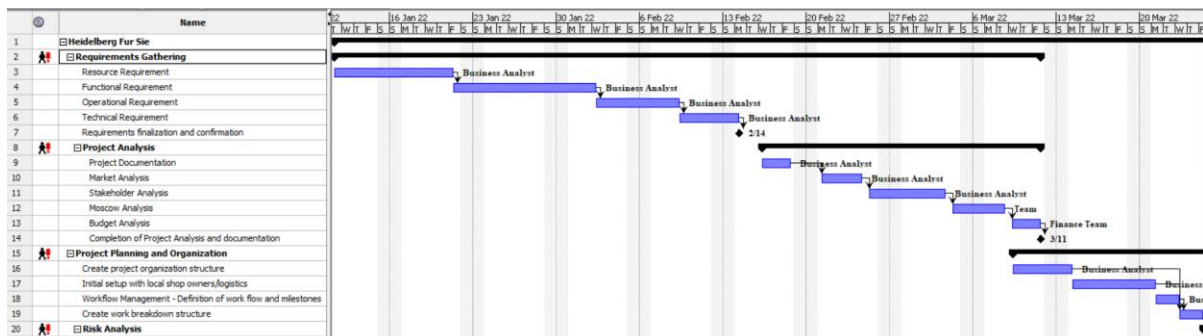


Figure 6.4: Gantt Chart

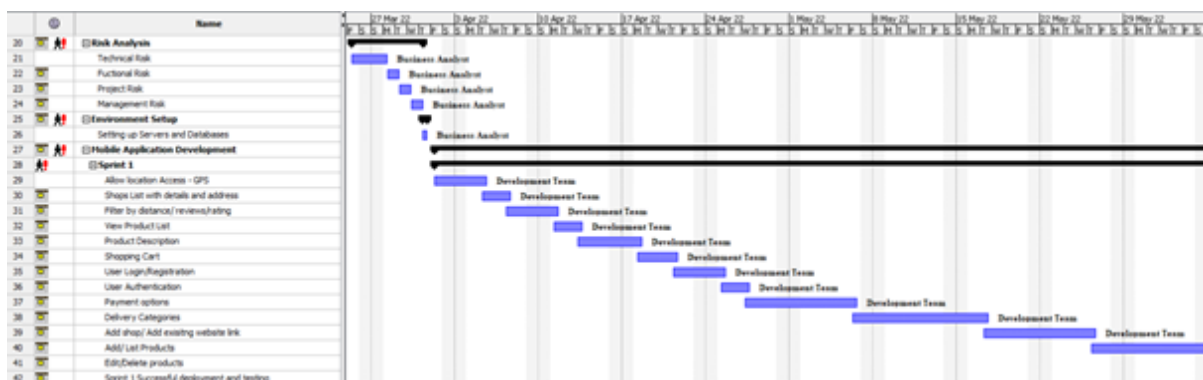


Fig 6.5: Gantt Chart



Fig 6.6: Gantt Chart

10. MILESTONE

Milestone:

A milestone is a specific point of time when a particular task is achieved. These points in time and the achievements associated with them are decided during the project structure plan. The following lists the benefits of defining milestones:

- Monitoring the progress of the project
- Meeting deadlines
- Marking important dates
- Evaluating efficiency and performance



Figure 7. Milestones

Project Timelines The project is estimated to run for 1 year which will include requirement analysis, design and planning, development, and testing phase.

- In the first part, the business analysts will document the important features and functionalities and understand the requirements from the prospective shop owner and a customer. This part is necessary to evaluate what is the current understanding level of the customer that will

make the order and the shop owner which will use it to upload his product and how the application can be developed to help shops that were affected by the pandemic.

- Design and planning part of which is part of the first phase will involve the technology that is to be used for developing the user interface and the backend. This will require involvement of designers, developer in summary of the IT team. So that they can discuss and finalize all technological issues that should be included in the project.
- The Second part is the development phase where the team will start with a database according to the plan that was discussed in the second phase of the project and also the sprint planning. Since we are using agile methodology we should follow the implementation phase, the process of sprint planning, development, and testing in an iterative way.
- Finally in the third and final phase the product will be released first in order for some users to verify fixes that should be done. Once that is verified on this first Release modification and last requirement of the customer will be included in the project.
- After the User has tested the app another release will be done which is going to be the final one part of the testing process then the product will be launched for the intended customers to use.

11. COST ESTIMATION

Listed below are the cost estimates for the resources that are required for the project. Cost estimation is an iterative process and hence these estimates are subject to change based on the following factors:

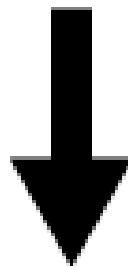
Resources	Duration in Months	Units	Cost per hour unit (Euros)	Total cost (Euros)
Business Analyst	11	2	25	€88,000
UI/UX Designer	11	2	20	€70,400
Full Stack Developers	12	3	20	€115,200
Project Manager	12	1	30	€57,600
Scrum Master	11	1	30	€52,800
Technical Architect	10	2	35	€112,000
Quality Assurance Tester	12	2	25	€96,000
Content Writer	11	1	15	€26,400
Internet/WLAN	12			€5,500
Working area	12		15	€28,800
IT-Security	12	1	35	€67,200
Server	12	1		€1,920
Logistics	12			€10,000
Total				€731,820


Table 3: Cost estimation Table

12. ACTION NODES

Action Nodes is the act of actions which are executed when a scheduled activity is performed. It indicates the dependencies of the conditions preceding from beginning to end. It is a visual representation of the complete project making it easy to understand.

Earliest Start Date 11.1.2022	Duration 24 days	Earliest End Date 13.2.2022	
Number 1	Name of Action Requirement Analysis		
Time Buffer 0	Resources Project Manager, Business Analyst		
Latest Start Date 11.11.2022	Entire Buffer 2	Free Time 2	Latest End Date 15.2.2022





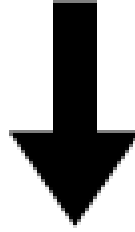
Earliest Start Date 14.2.2022	Duration 31 days	Earliest End Date 30.3.2022	
Number 2	Name of Action Design		
Time Buffer 2	Resources UI/UX Developer		
Latest Start Date 16.2.2022	Entire Buffer 2	Free Time 2	Latest End Date 1.4.2022



Earliest Start Date 30.3.2022	Duration 120 days	Earliest End Date 15.9.2022	
Number 3	Name of Action Development		
Time Buffer 2	Resources Project Manager, Full Stack Developers		
Latest Start Date 1.04.2021	Entire Buffer 3	Free Time 10	Latest End Date 18.9.2022



Earliest Start Date 18.9.2022	Duration 65 days	Earliest End Date 17.12.2022	
Number 4	Name of Action Testing		
Time Buffer 0	Resources Quality Assurance Tester		
Latest Start Date 18.9.2022	Entire Buffer 3	Free Time 3	Latest End Date 20.12.2022



Earliest Start Date 18.12.2022	Duration 3 days	Earliest End Date 20.12.2022	
Number 5	Name of Action Final Release		
Time Buffer 2	Resources Project Manager, Business Analyst		
Latest Start Date 20.12.2022	Entire Buffer 10	Free Time 10	Latest End Date 30.12.2022

13. RISK ANALYSIS

Risk is made up of two parts: the probability of something going wrong, and the negative consequences if it does.

Risks can be hard to spot but if not identified at an early stage the consequence would be severe which could in potential have an effect on cost, time as well as reputation. This makes Risk Analysis a very unique and important tool. Risk Analysis by definition is identifying the potential risks, sorting them into different categories, studying the effect of each of these risks and finding a viable solution. Risk analysis consists of different risk management strategies such as mitigation, delegation, avoidance and acceptance.

Once the risks are identified, how to categorise them and which strategies to use is decided according to the risk score.

The risk score is calculated using the formula -

$$\text{Risk Score} = \text{Probability of that risk} * \text{Criticality of that Risk}$$

Risk Score Index		
Criticality	Probability	Risk Score
Low	Low	1
Medium	Medium	2
High	High	3
Extreme	Extreme	4

Table 4: Risk Score Index

Risk	Reasons	Criticality	Probability	Risk Score	Mitigation Strategy	Action
Insufficient Requirements	Not enough communication between Product Owner and Team	4	2	8	Mitigation	Use Agile approach
Improper Coordination between the Business Analyst and the developers	Insufficient Meetings to discuss the plan between Business and Development Team	4	2	8	Mitigation	Constant Team Meetings Involving both the Business Side and the Development Side
Insufficient Resources	Resources allocated to other Projects	3	1	3	Avoidance	Use Sufficient Resources
Improper planning	Less Buffer leading to Unhealthy Business model	4	1	4	Mitigation	Add A Good Buffer, about 40-50% which would in turn make the model healthy

Complex UI	Lack of UI/Ux Specialist and improper design thinking	4	3	12	Mitigation	Consider A Specialist UI/UX Developer. Take Feedbacks from the Customer.
Team getting constantly shuffled/changed	Disorganization of the team members and wrong leadership	3	2	6	Avoidance	Proper Team Formation
Very low interest from customers	Lack of Marketing, not convincing Design, lack of incentive, and improper launch timing	4	2	8	Mitigation	Take The Opinion And Interests of the Customers into account and constantly keep them in touch
Wrong Shop information	No verification of the provided information	3	4	12	Mitigation	Verify Shops Before Adding them
Invalid/no permissions to use GPS/Location	Privacy of the customer	2	2	4	Mitigation	Use the approximate Locality to create a relevant search

Addresses and shop timing/information not getting updated	Not getting proper information from the News Api	3	2	6	Delegation	Delegate the task to the News group to provide proper api
Payment Gateways not working properly	Server Down/Network Issue	4	3	12	Delegation	Integrate the payment gateways from the parent company itself.
Existing shop websites not getting properly integrated.	Deprecated versions and non integrative format	1	2	2	Avoidance	Include most of the formats during the the software development
Loopholes in Terms and conditions for delivery executives	Improper Legal Terms	2	1	2	Avoidance	Proper Legal Work
Data breach.	Improper Data Security	4	2	8	Delegation	Have a Team for Data Security
Authentication errors.	Unstable network/coding error	4	1	4	Mitigation	Proper Unit Testing for all features

Insufficient size of Database.	Less Anticipation of data and improper data categorization, wrong choice of database	4	4	16	Mitigation	Consider an Expert's Opinion for for effective database choice.
Too much loading time.	Network issue or huge dependencies	3	2	6	Mitigation	Use Lesser Dependenci es or Use CDN(Content Delivery Networks)
Filters not working properly	Technical Problem	3	1	3	Mitigation	Proper Unit Testing
Irrelevant Shops getting displayed.	Technical Problem and wrong categorization	2	3	6	Mitigation	Proper Unit Testing and Proper Categorizati on.
Application Crash	Too many Users and improper network platform	4	2	8	Mitigation	Manage the user interaction and divide the users into different servers.
Malwares	Insufficient Security	4	2	8	Delegation	Have a Team for Security

Incompatibility on all operating systems	Not Taking all the operating systems into consideration	3	1	3	Avoidance	Consider all operating systems
Constantly Changing Screen sizes	Not Updating the App with respect to the changing market	2	2	4	Mitigation	Keep Updating the App so that it remains responsive with the current market screen sizes.
Insecure Payment	Lack Of strict Privacy policies	4	2	8	Mitigation	Plan Proper Privacy policies to ensure secure payment
Development Technology becoming outdated	Lack of Awareness and planning	4	2	8	Mitigation	Use in Demand Technologies

Table 5: Risk Analysis

14. STAKEHOLDER ANALYSIS

Stakeholders	Influence	Interest	Attitude
SRH Hochschule	4	4	Positive
City of Heidelberg/Mayor	4	4	Positive
Citizens of Heidelberg	2	4	Positive
Tourists	1	3	Positive
Shop Owners	3	3	Positive
Logistics	3	3	Positive
Business Analyst	4	2	Positive
Developers	4	2	Positive
Project Manager	3	2	Positive
UI/UX	4	2	Positive
Competitors	1	4	Negative
Legal Team	3	2	Positive

Table 6: Stakeholder Analysis

Stakeholders are individuals, groups or organisations who have interest in the project and can provide different resources to affect the outcome of the project.

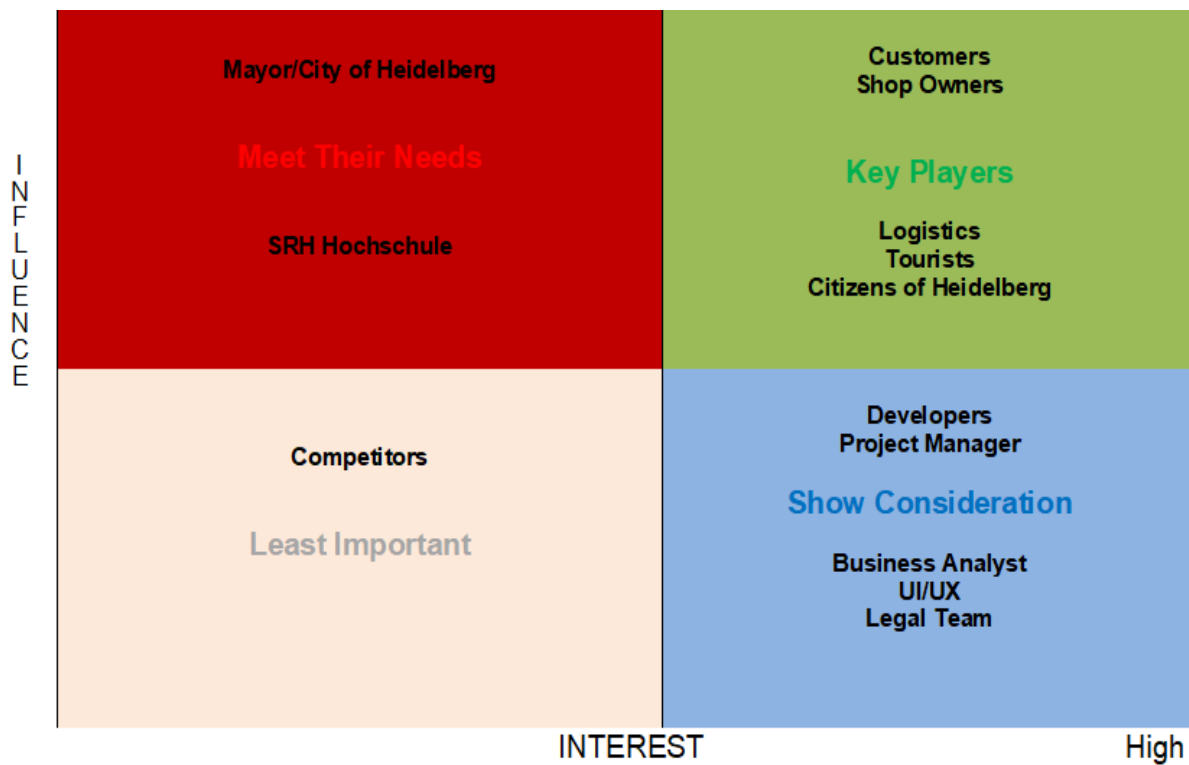


Figure 8: Stakeholder Matrix

15. PROJECT PROCESS MODELS

For this project we will use Agile methodology during the implementation and coding phase it allows constant delivery timelines, maximum utilisation of resources, easier incorporation of feedback from stakeholders, and early detection of bugs.

Agile methodology is a practice that promotes continuous iteration of development and testing throughout the software development life cycle of the project. In the Agile model, both development and testing activities are concurrent, unlike the Waterfall model.

Agile software development emphasizes on four core values.

1. Individual and team interactions over processes and tools
2. Working software over comprehensive documentation
3. Customer collaboration over contract negotiation
4. Responding to change over following a plan



Figure 9. Agile Procedure

The flexibility provided by the Agile methodology makes it easier to incorporate requirement changes even during the development phase. It also provides opportunities to detect application bugs from the early phase of development which ensures a better delivery quality. Customer satisfaction is increased as the product is reviewed at regular intervals which in turn increases the business value.

Major benefits of visual project management for Agile include:

- Visibility of project details
- Increased team efficiency
- Ability to adapt to changes
- Ability to scale

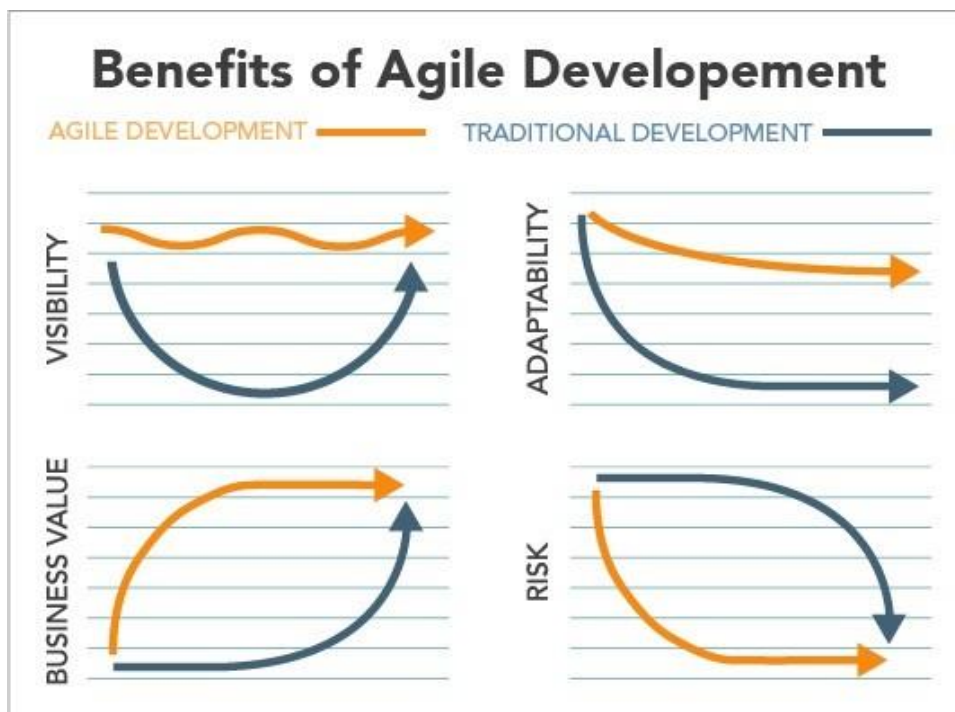


Figure 10. Benefit of Agile Development

Agile also helps us to respond to changes or feedback from the customer quickly without derailing many year's worth of plans. Just enough planning and shipping in small, frequent increments let us gather feedback on each change and integrate it into future plans at minimal cost.

16. TECHNOLOGICAL ASPECTS AND CONCEPT DETAILS

Instead of developing an iOS app separately and Android app separately, flutter will be used along.

Flutter is a cross-platform UI toolkit that is designed to allow code reuse across operating systems such as iOS and Android, while also allowing applications to interface directly with underlying platform services. The goal is to enable developers to deliver high-performance apps that feel natural on different platforms, embracing differences where they exist while sharing as much code as possible.



Figure 11. Flutter Description

Back-End Technologies:

JSON and serialization, It is hard to think of a mobile app that doesn't need to communicate with a web server or easily store structured data at some point. When making network-connected apps, the chances are that it needs to consume some good old JSON, sooner or later.

For this project we will be using Automated serialization using code generation.

This means having an external library generate the encoding boilerplate for you. After some initial setup, you run a file watcher that generates the code from your model classes. This approach scales well for a larger project like this one.

Firebase will be used as a comprehensive app development platform and unified backend to speed up development time.

Firebase is a Backend-as-a-Service (BaaS) app development platform that provides hosted backend services such as a Realtime database, cloud storage, authentication, crash reporting, machine learning, remote configuration, and hosting for your static files.

Cloud Functions for Firebase will enable hosted backend code to be triggered in response to events such as HTTP requests, database changes, and authentication triggers. It also keeps the application logic on the server side (in the Google Cloud Platform) to maintain privacy and security.

Firebase Authentication will be utilized as a secure end-to-end identity solution for end-users to support email and password accounts, phone authentication, and Google, Twitter, Facebook logins.

Firebase Security Rules will be used to secure application data in Cloud Firestore, and define which data can be accessed by which users. They are flexible, extensible, and can accommodate various complex rule definitions. Rules are defined independently in the Firebase console or the command line interface.

Google APIs, since the most important part of this project is based on localization using Google Api's is the best option for us. The Google APIs package exposes dozens of Google services that you can use from Dart projects as this one.

Front-End Technologies:

Dart, To develop with Flutter, you will use a programming language called Dart. It focuses on front-end development, and you can use it to create mobile and web applications.

Flutter widgets are built using a modern framework that takes inspiration from React. The central idea is that you build your UI out of widgets. Widgets describe what their view should look like given their current

configuration and state. When a widget's state changes, the widget rebuilds its description, which the framework differs against the previous description in order to determine the minimal changes needed in the underlying render tree to transition from one state to the next.

Technical Architecture :

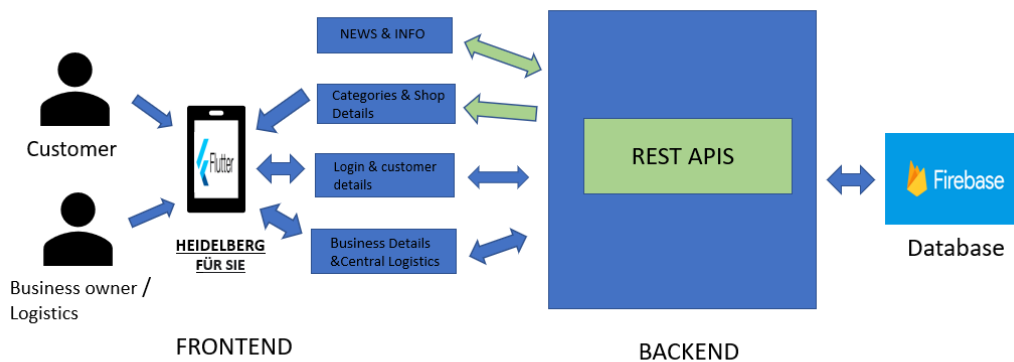


Figure 12. Technical Architecture

The technical architecture explains the connections between the frontend and the backend. One-way and the two way arrows represent the flow of data to and from the database. Technical architecture plays an important role in the entire development lifecycle as selection of proper and reliable technology is necessary for the desired outcome of any software project.

17. EXECUTIVE SUMMARY

Heidelberg fur Sie is an online platform for all local and small shop owners who do not have any online presence to sell their products, basically it is based on the concept of “**Vocal for Local**”. This application helps them to compete with larger manufacturers in the respective industries. With this application, a central logistics and delivery system is provided which works towards environment friendly delivery options to reduce the pollution and CO2 emission. Here, we are developing an effective application for the citizens of Heidelberg to get the products online from local shop owners. It is very helpful especially in situations like lockdowns. We are estimating a budget of **€731,820** with a dedicated **team of around 35 resources**, with an estimated **timeline of around one year or 243 days to be exact**. This report provides market research, risk analysis, project timelines, the software and hardware requirements, , the stakeholder analysis, use cases ,the SWOT analysis matrix and UI designs with user stories for Heidelberg fur Sie Mobile Application.

To summarize, the application helps various end users such as Heidelberg citizens , tourists, shop owners ,freelancers and delivery executives , to effectively use and offer services through mobile application. Main advantages and disadvantages of having mobile applications are given as follows.

Advantages and Disadvantages of Mobile Application

- ☐ User friendly and provides unique user experience
- ☐ Provides personalized experience
- ☐ Safe and Secure
- ☐ Provides better reach by using features like geolocation and push notifications
- ☐ Have access to system resources such as camera or GPS
- ☐ Users spend more time on cell phones than browsers, average daily time spent is 132 minutes

- ❑ Users can apply patches/updates
- ❑ Needs downloading and installation
- ❑ Poor discoverability, difficult to find through search engines - has dependency on App stores
- ❑ Platform Compatibility - Mobile Application development is expensive because they have to be implemented according to different platforms (iOS, Android)

Advantages and Disadvantages of Website

- ❑ Cost effective for smaller companies
- ❑ Easier to find and share than App
- ❑ Fast and Reliable
- ❑ Works on all devices – Does not need separate implementation like iOS and Android
- ❑ App store approval not required – can be launched quickly
- ❑ Do not need to be downloaded or installed
- ❑ Can not track User behavior – difficult to track performance metrics since user uses different web browsers
- ❑ Have smaller scope when it comes to leveraging device hardware and features
- ❑ Patches or updates are applied to entire application

18. REFERENCES

- <https://www.guru99.com/agile-scrum-extreme-testing.html#:~:text=AGILE%20methodology%20is%20a%20practice,c oncurrent%2C%20unlike%20the%20Waterfall%20model>. Date - 07.05.2021, 17:12
- https://www.google.com/search?q=flutter+for+front+end&rlz=1C5CHF A_enTR924TR924&sxsrf=ALeKk00ga-aX2tVP9Fa2AzsAJJOYC uUNNKg:1620311272922&source=lnms&tbm=isch&sa=X&ved=2ahUKEwiU2OPuobXwAhXiQeUKHWE1BcMQ_AUoA3oECAEQBQ&cshid=1620311431244684&biw=1366&bih=600#imgrc=B5nR9h7zmnxT4M&imgdii=AZdYMUl97yP1uM Date - 07.05.2012, 17:12
- <https://www.infoworld.com/article/3237508/what-is-agile-methodology-modern-software-development-explained.html>
Date - 7.05.21 9:56
- https://www.mindtools.com/pages/article/newTMC_07.htm
Date - 7.05.21 3:28
- <https://www.pmi.org/learning/library/stakeholder-analysis-pivotal-practice-projects-8905>
- Smith, L. W. (2000). Stakeholder analysis: a pivotal practice of successful projects. Paper presented at Project Management Institute Annual Seminars & Symposium, Houston, TX. Newtown Square, PA: Project Management Institute.
Date - 7.05.21 6:11
- <https://www.wordtemplatesonline.net/stakeholder-analysis-template/>
Date - 7.05.21 7:02
- https://m.media-amazon.com/images/I/71VBdTC3pWL._AC_UL1500_.jpg Date - May 5, 2021 12:35:26
- <https://i.ebayimg.com/images/g/084AAOSwceZcp0ud/s-l300.jpg>
- <https://pin.it/3iMDImZ> Date: 07 May 2021, 12:21:28
- <https://app.creately.com/diagram/ZGKSyeZIMdB/edit> Date: 05/05/2021 15:38:16
- <https://wireframepro.mockflow.com/editor.jsp?editor=off&perm=Owner&projectid=M796460e3ad7de41d607ce7c4cedd037b1619967064787&publicid=ed01f0ce1017421f84c715fba99b410b#/page/7648a61c979f46b6a0107ffec9b433c6> Date: 06/05/2021 18:04:23
- <https://online.officetimeline.com/app/#/new-from-template> Date - 05.05.2021, 11:11

- <https://i.ebayimg.com/images/g/084AAOSwceZcp0ud/s-l300.jpg> Date - 05.05. 2021, 12:35:13
- <https://meterpreter.org/wp-content/uploads/2018/09/flutter.png> Date - 05.05.2021, 11:43:52
- <https://cookieundco.de/wp-content/uploads/2019/01/Baguette-1.jpg> Date- 04.05.2021, 12:56:31
- https://assets.tmecosys.com/image/upload/t_web767x639/img/recipe/ras/Assets Date - 04.05. 2021, 12:59:34
- <https://www.app-press.com/blog/app-vs-website-which-is-right-for-your-business> Date - 08.05. 2021, 15:59:34
- <https://careerfoundry.com/en/blog/web-development/what-is-the-difference-between-a-mobile-app-and-a-web-app/> Date - 08.05. 2021, 16:30:30
- <https://www.koombea.com/blog/difference-between-mobile-apps-and-web-apps/> Date - 08.05. 2021, 17:35:34
- <https://www.clariontech.com/blog/mobile-app-vs-web-app-which-is-the-right-one-for-you> Date - 08.05. 2021, 17:15:34
- <https://www.valueoftheweb.com/reports/what-are-the-benefits-of-online-platforms/> Date- 01.05.2021
- https://speisekarte.menu/storage/media/company_images/1292708/conversions/thumbnail.jpg Date- 04.05.2021 11:59:20
- <https://www.theseasonedmom.com/wp-content/uploads/2014/07/Easy-Swiss-Muesli-Recipe-10.jpg> Date- 04.05.2021 11:50:52
- <https://firebase.google.com/images/social.png> Date- 03 .04.2021, 20:51:19
- https://ec.europa.eu/information_society/newsroom/image/document/2016-6/cbi_position_the_role_of_online_platforms_dec2015_13842.pdf Date - 05.05.2021, 12:33:01