Software Engineering Group Project

Group 36: Project Envisioning

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1. USER UNDERSTANDING

1.1 Stakeholder Analysis

Stakeholder	Type	Power	Interest	Requirement	Concern
Client Marketing Director	Primary	High	High	Reporting to a varied client base	Software hard to work with
Client Finance Director	Primary	High	Average	To be able to visualise cost of each campaign	There might not be enough data
Client Company CEO	Primary	High	Average	To see how users interact with the ad campaigns	The data might be too hard to understand
Client Tech Director	Primary	Average	Average	Code is easy to integrate and maintain	Low quality software delivered
Marketing Data Analyst	Primary	High	High	To be able to analyse advertising campaigns	Too much raw data for humans
Website Owner	Primary	Average	High	Being able to run ads on their website	Users might not like their data collected
Search Engines	Secondary	Low	Low	Displaying relevant ads to users	Users might not like their data collected
Ad Design Team	Secondary	Average	High	To be able to create ads that fit certain campaigns	Users may not enjoy adverts
Website Users	Tertiary	Low	Low	To be able to interact with websites	Ads hindering browsing experience
Competitor Companies	Tertiary	Low	High	To be able to create similar designs	Clients may not want design changes

1.2 Personas

Sarah, 30 - A Senior Marketing Leader

Sarah manages a marketing analyst team and reports directly to clients on the ad campaign performance. She struggles with analysing her client's data as they each have a unique custom campaign. She wants a dashboard that allows her to see campaigns and how they perform time. This could be aided with visuals as well as raw data. This would make her job easier and would allow her to focus on well performing campaigns.

Goals	Frustrations
See data about key metrics	Each client has different requirements
Save time analysing data	Data changes over time
Determine successful campaigns	Websites have different viewers

Philip, 41 - Client Company CEO

Philip has been in the marketing industy for 15 years in which he worked in various positions. He wants to see the data gathered by a campaign. He also wishes to be able to compare it to other campaigns that could and have been run. He wants the functionalities to be understandable even to people who don't have a strong marketing background, like his clients. This way he hopes to build trust with the clients.

Goals	Frustrations
See data on key metrics	Understanding marketing data
Determine successful campaigns	Comparing campaign performance
Improve client relations	Explaining to clients underperforming campaigns

Josh, 32 - Client Tech Director

Josh is a tech lead responsible for the software solutions used at the client company. He wants well-documented code that his team could modify and build on top of after the project is delivered. He is concerned about third-party code being of low quality. He prefers a simple cross-platform tech stack that could be easily integrated with the company's current systems.

Goals	Frustrations
Cross-platform solution	His team has a hard time with foreign code
Documented code	System can't be easily integrated
Good quality code	Clients can't run software on their machines

Robert, 23 - A Marketing Data Analyst

Robert has recently joined the company asa marketing analyst with no previous experience in the industy. His job is to analyze client campaign data, extract particular audiences from it, and provide data analysis reports to company managers and relevant staff. He wants a dashboard to help him get data more quickly and efficiently that is intutive in its operation and provides tips on how to use it.

Goals	Frustrations
Finding particular audiences	Generating inaccurate data
Analyzing data effectively	Performing analysis manualy
Quickly learn the new tool	Working with advanced marketing dashboards

Alice, 48 - A Senior Finance Director

Alice struggles with adequately budgeting for the current and planned ad campaigns. She wants to be able to get live data on the cost of the campaigns so she can report to the ad campaign clients and recommend ajustments to budget and target audiece background. There are various metrics needed to make an appropriate asessment on campaign performance that should be included in the analysis

Goals	Frustrations
Visualize campaign costs	Seeing performance for all client campaigns
Report on campaign costs	Metrics can vary day to day widely
Get key metrics like CPA, CPC etc.	Spotting under-performing campaign before it ends

Deborah, 39 - DIY Online Shop Owner

Deborah is owner of an online shop selling DIY producs. She wants to run ad campaigns for her shop but doesn't have the expertise for it so she contracted the client agency to help her. She would like to better understand the performance of the ad campaigns on different planforms. That way she could find out which platforms to prioritize posting to. She doesn't understand marketing jargon so tool tips explaining terminology would be great.

Goals	Frustrations
Find the channel to grow	Understanding marketing terminology
Identifying potetial new clients	Identifying channels driving business growth
Making campaigns more cost effective	Working with advanced marketing dashboards

2. REQUIREMENTS PLANNING

2.1 User Stories

ID	User Story
01	As a <Senior Marketing Leader> I want <to be able to easily analyse any user data from multiple campaigns> so that <I can choose the most successful campaigns>
02	As a <Marketing Data Analyst> I want <a diverse range of metrics> so that <I can measure the campaign performance>
03	As a <Marketing Data Analyst> I want <charts over diverse time periods for metrics> so that <I can visualize the campaign performance over time>
04	As a <Senior Finance Director> I want <to know the distribution of costs per click> so that <I can budget appropriately campaigns in the future>
05	As a <Senior Finance Director> I want <to be able to print reports from the app> so that <I can keep paper records for audit>
06	As a <Agency Client> I want <filtering by gender, age, time frame and context> so that <I can better understand the ad's audience and adapt the marketing strategy accordingly>
07	As a <Marketing Data Analyst> I want <to be able to compare charts on the same metrics> so that <I can report on performance for different time frames>
08	As a <Client Company CEO> I want <to be able to define a bounce in reports generated> so that <reporting stays consistent with our company standards>
09	As a <Agency Client> I want <data to be read from files in a specific format> so that <the application can be used with search engine data tables>
10	As a <Client Company CEO> I want <the ability to save reports to files> so that <records of campaign performance are kept>
11	As a <Client Company CEO> I want <dark mode as a design option> so that <the application is more enjoyable to use>
12	As a <Marketing Data Analyst> I want <hints about metrics and functionalities> so that <I can learn faster how the application works>
13	As a <Agency Client> I want <hints about metrics and functionalities> so that <I can use the application without marketing knowledge>
14	As a <Client Company CEO> I want <a user manual included> so that <current and new employees can learn how to use the system>
15	As a <Senior Finance Director> I want <to know the total campaign cost> so that <I can budget appropriately campaigns in the future>
16	As a <Agency Client> I want <to easily find the total users reached through the campaign> so that <I can understand the overall campaign performance>

17	As a <Agency Client> I want <a mobile versions of the application> so that <the data is available on the go>
18	As a <Client Tech Director> I want <API integration> so that <the data can be securely retrieved instead of importing files>
19	As a <Client Tech Director> I want <automatic file importing based on table format> so that <files to be imported don't have to be specified>
Non-functional and Technical User Story	
20	As a <Client Tech Director> I want <a flexible tech stack> so that <the system can be easily integrated>
21	As a <Client Tech Director> I want <a fast and responsive application> so that <millions of entries are processed efficiently offering a good user experience>
22	As a <Client Tech Director> I want <a well-documented code> so that <my team could update and maintain the software>
23	As a <Marketing Data Analyst> I want <an intuitive UI> so that <there is less of a learning curve using the application>
24	Research appropriate software infrastructure
25	Setup version control and testing pipeline
26	Setup automatic code documentation
27	Dashboard design prototyping

2.2 Product Backlog

Note that T-Shirt size in this case is meant to express relative complexity between stories (not actual volume of work to be done).

Backlog ID	Story ID	Story Description	Priority	Size
01	02	Number of Impressions, Clicks, Uniques, Bounces, Conversions	MUST HAVE	L
02	02	CTR, CPA, CPC, CPM, Bounce Rate	MUST HAVE	L
03	03	Time frame and granularity options	MUST HAVE	M
04	04	Cost per Click distribution	MUST HAVE	M
05	06	Gender, age, time frame and context filtering	MUST HAVE	M
06	08	Bounce redefinition option	MUST HAVE	S
07	09	Reading data from specified files	MUST HAVE	M
08	15	Total campaign cost	MUST HAVE	S

09	16	Total unique users reached	MUST HAVE	S
10	21	Large dataset handling	MUST HAVE	M
11	22,26	Code documentation	MUST HAVE	M
12	24	Infrastructure research	MUST HAVE	S
13	25	Version control and testing pipeline setup	MUST HAVE	M
14	01	Multiple campaign analysis	SHOULD HAVE	L
15	10	Saving report to various file formats	SHOULD HAVE	M
16	14	Application user manual	SHOULD HAVE	L
17	20	Cross-platform support	SHOULD HAVE	M
18	23,27	Intuitive UI prototyping	SHOULD HAVE	M
19	07	Multiple campaign data comparison	COULD HAVE	L
20	11	Dark mode design option	COULD HAVE	S
21	12,13	Metric and functionality hints	COULD HAVE	M
22	19	Automatic input file detection	COULD HAVE	S
23	05	Report printing	WON'T HAVE	M
24	17	Mobile version of application	WON'T HAVE	XL
25	18	API integration	WON'T HAVE	L

3. REQUIREMENTS PLANNING

3.1 Increment Plan

Note that there are three sprints of different lengths: two, two and six weeks respectively. While not recommended to leave "Must Have" tasks for the last sprint, we chose to include a significant amount of them in the third sprint because it is significantly longer than the other two.

SPRINT 1			SPRINT 2			SPRINT 3		
ID	Story Description	Size	ID	Story Description	Size	ID	Story Description	Size
07	Reading data from specified files	M	01	Number of Impressions, Clicks, Uniques, Bounces	M	03	Time frame and granularity options	M
11	Code documentation	M	02	CTR, CPA, CPC, CPM, Bounce Rate	L	04	Cost per Click distribution	L

12	Infrastructure research	S	08	Total campaign cost	S	05	Gender, age, time frame and context filtering	M
13	Version control and testing pipeline setup	M	09	Total unique users reached	S	06	Bounce redefinition option	S
17	Cross-platform support	S	10	Large dataset handling	M	14	Multiple campaign analysis	L
18	Intuitive UI prototyping	L	15	Saving report to various file formats	M	16	Application user manual	L
22	Automatic input file detection	S				19	Multiple campaign data comparison	L
						20	Dark mode design option	S
						21	Metric and functionality hints	M

3.2 Sprint Backlog

The backlog include a total estimate value for the sprint. This is done to later assess the team's productivity in terms of points assigned to tasks and adjust our future estimates.

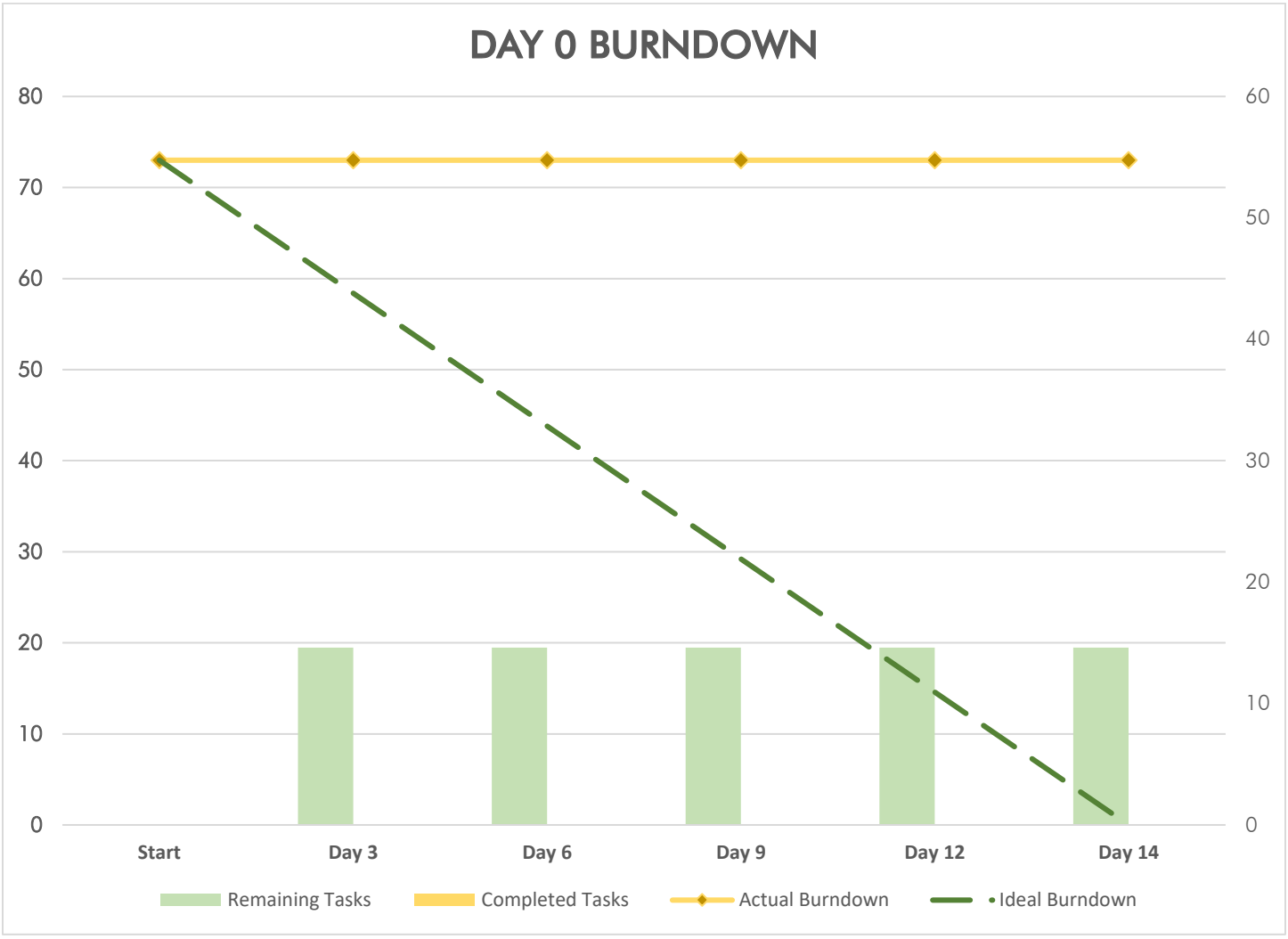
Value	Meaning (or equivalent)
0	No value producing work involved, only research or planning
1	Only a few lines of code needed or minimal work (about 1h)
2	There are significant changes to a single file (up to 3h)
3	There are significant changes to several files (up to 3h)
5	A new independent component is added with minimal changes (up to 5h)
8	A new independent component is added with significant changes to other components (up to 10h)
13	A new component that needs significant changes/redesigns to other components (up to 20h)
21	A significant system redesign involving core components being rewritten (should be avoided)

SPRINT 1				
Backlog ID & Description	**ID**	**Task Description**	**Size**	**Dependencies**
07 - Reading data from specified files	07.1	Design file selection prompt	5	-
	07.2	Error checking and recovery	3	07.1
	07.3	Setup independent database	8	-
	07.4	Interface application and database	3	07.3
	07.5	Import specified files	5	07.4
	07.6	Test correct data importing	2	07.5
11 - Code documentation	11.1	Research and pick documentation framework	0	-
	11.2	Setup automatic documentation generation	2	11.1
	11.3	Host documentation webpage	3	11.2
12 - Infrastructure research	12.1	Research GUI library, version control	0	-
	12.2	Document choices and decisions	0	12.1
13 - Version control and testing pipeline	13.1	Setup GitHub repository	1	-
	13.2	Setup unit testing	2	-
	13.3	Setup testing pipeline in version control	2	13.1/13.2
17 - Cross-platform support	17.1	Test successful build and run on various operating systems	3	13.1/18.3
18 - Intuitive UI Prototyping	18.1	Design dashboard home screen	5	-
	18.2	Code dashboard home screen	13	18.1
	18.3	Code window flow and available controls	8	07.5/11.2/17.1
	18.4	Test basic dashboard functionality	3	18.3
22 - Automatic input file detection	22.1	Implement automatic file detection	2	07.6
	22.2	Test correct data importing	2	22.1
		SIZE ESTIMATE TOTAL	**72**	

3.3 Day 0 Burndown Chart

Note that previously 0 valued tasks where given a value of 1 in this table because unlike with the sprint, we are measuring team performance, not only pure value delivered.

Backlog ID	Size Estimate	Day 3	Day 6	Day 9	Day 12	Day 14	Points left
07	26	0	0	0	0	0	26
11	6	0	0	0	0	0	6
12	2	0	0	0	0	0	2
13	4	0	0	0	0	0	4
17	3	0	0	0	0	0	3
18	29	0	0	0	0	0	29
22	3	0	0	0	0	0	3



4. PROJECT SET-UP

4.1 Risk Analysis

Risk	Probability P = [1 - 5 (high)]	Severity S = [1 - 5 (high)]	Risk Exposure RE = [P x S]	Mitigation
Task size underestimation	4	4	16	Regular team meeting are in place to evaluate team's workload and overall performance. "MUST HAVE" tasks are reallocated.
Loss of code	2	5	10	Version control is setup, and all changes are immediately pushed on a separate branch for the task before merging with master.
Conflicting design decisions	3	3	9	Tracking dependencies closely and updating the backlog accordingly.
Group member not delivering on time	2	4	8	Project members will keep in touch and monitor each other to ensure that each member delivers on time. Work will be promptly reallocated depending on task priority.
Change in requirements	2	3	6	Weekly meeting with client (supervisor) to evaluate the work done. Regular checks of email communications.
Group member leaves the team	1	5	5	Agile methodology offers the flexibility needed to reassess the goals to deliver the highest priority features.
Poor quality code	2	2	4	Coding standards are agreed on following the Google code style and documentation. Automatic unit testing when attempting to upload code will stop buggy commits.

4.2 Summary of Agile Methods

The distributed nature of a team poses a challenge to implementing the agile process in our team. To address this challenge, our team has leveraged various internet technologies to establish a robust infrastructure for team communication and progress sharing. Specifically, we have adopted WhatsApp as our primary communication tool due to its diverse set of features for managing conversations pertaining to different topics. In addition, we have integrated Trello as our task management tool and GitHub (git) for version control of production code. By utilizing Trello, team members can easily monitor their assigned tasks or take initiative by accessing the task list. With GitHub, we have created a secure and backed up development environment.

Moreover, we have made use of a shared workspace in Google Drive to facilitate collaboration on documents and share draft ideas. Despite the adoption of these tools, face-to-face communication remains paramount for project success. Therefore, our team has committed to four scrum meetings, two of which will be face-to-face. By leveraging these technologies and communication practices, we aim to overcome the challenges posed by a distributed team and successfully complete our sprint goals.