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COMP2211
SEng Group Project

Ad Auction Dashboard
(2024)

Group	24
Version	1
Hand-in	1

Part I.
Envisioning

1. User Understanding

1.1. Stakeholder Analysis

Stakeholder	Type	Role/Description
Client	Primary	They use the dashboard to verify the performance of their campaigns. *More below*
Campaign Analyser	Primary	Compares data across campaigns to identify best return on investment. Uses the dashboard to make these comparisons. *More below*
Campaign Coordinator	Primary	Carries out marketing campaigns. Submits .csv data to the dashboard *More below*
Ad Graphic Designer	Secondary	Member of the agency that designs advertisements. Adjusts designs based on analytics expert's feedback. *More below*
Audience	Secondary	The people viewing the ads. They provide the input that the dashboard uses to affect the performance of the ads (eg. impressions / clicks). *More below*

THE CLIENTS that are having ads curated for them by the marketing agency would be a primary stakeholder in the product.
All clients are directly interacting with the dashboard, using it to analyse the performance of commissioned campaigns developed by the marketing agency. This information provides feedback to the clients as to how successful the advertising campaign was, and indicates whether or not the marketing agency's developed advertisement was effective. The clients also interact with the dashboard by submitting the server log (.csv) to the system.

THE CAMPAIGN ANALYSER who analyses campaign reports would be a primary stakeholder.
They would bring up data from different campaigns on the dashboard, identify the successes / failures of each campaign, compare these against other campaigns, then give this information to the campaign coordinator for them to create campaigns that maximise ROI.

THE CAMPAIGN COORDINATOR who designs the campaigns would also be a primary stakeholder.
They would create campaigns based on feedback from the campaign analyser, carry these out, and then use the dashboard to submit campaign data (in .csv format) to the system.

THE AD GRAPHIC DESIGNER who designs the campaign graphics would be a secondary stakeholder.
The advertisement graphic designer would be instructed on the type of designs that maximise ROI indirectly based on feedback from the campaign analyser that has been passed to the campaign coordinator. They therefore receive output from the system in the form of performance feedback.

THE AUDIENCE viewing the advertisements would be a secondary stakeholder.
They contribute to key statistics including clicks, impressions, bounces, conversions, and any subsequent calculations making use of these values. This therefore acts as a direct input to the application (in the form of .csv files) as it is the data that will be presented to the clients, thus making them secondary stakeholders.

1.2. Personas

1.2.1. Veronica Haileys

[1]

Veronica is a 37 year old first-time entrepreneur who has developed a new product called QuikClean. She has a good standing credit score and was thus able to take a loan out from the bank. She wishes to use this to advertise her product on the web to accelerate revenue and growth.
She struggles to effectively compare data and to analyse different metrics, thus wanting the assistance of a tool that can perform all necessary calculations and present historical data. She is worried that it will be too expensive to acquire customers and will therefore struggle to pay her loan back. As such, she wishes to minimise her cost-per-acquisition by closely monitoring the performance of her running advertisement campaigns and making adjustments to maximise effectiveness. Additionally, she would require a user guidance documentation because the previous software she has used was given no tutorial and was difficult to navigate and use.

1.2.2. Sharon McGee

[2]

Sharon is a 59 year old working full-time as a receptionist in a primary school. Outside of working hours, she also has to take care of her children: Matthew (14 years old), Rebecca (16 years old), and Rhys (7 years old).
She finds it very stressful to provide and care for her children as taking care of a family of four alone is extremely difficult. Due to this, she is always all over the place and would desperately like a chance to relax, needing some assistance with providing / caring for her family.
She is not very technical, but has a keen hobby of online shopping. She runs an Etsy store on the side to gain additional income and is actively looking for new products that she can list for sale on her store.

1.2.3. Bill Hawks

[3]

Bill is the manager of an online marketing agency with an honours in Advertising and Public Relations. He is 62 years old and designs advertisement campaigns on a commission basis for his clients.
He is very skilled and takes pride in his work, always doing the best he can to satisfy his clients needs. He also enjoys helping people, contributing to multiple charities using his managerial income.
Bill is extremely busy with his work and would therefore like to hire a team of software engineers to put together a tool that himself and his clients could use to present campaign data, such as bounce rate and cost-per-acquisition.

1.2.4. Marcus Hemmering

[4]

Marcus is the founder of a successful business known as "Drinkables". He is 27 years old and engaged to his fiancée of 3 years.
He is very invested in his business and is always interested in learning more things. Due to this, Marcus would like to explore different markets and see which hold potential future success. In order to do this, he would need to run multiple effective advertising campaigns and compare statistical data for each campaign to decide which market has the most potential.
He hopes to gain a large enough net worth through continued ventures in order to be able to set his future wife and children up for life.

2. Requirements Planning

2.1. User Stories

Epic 1: Viewing Numerical Data

1. As a client I want to view the number of clicks so that I'm able to track the number of people that have clicked my ads

2. As a client I want to view the number of bounces so that I'm able to track the level of user retention on my website

3. As a client I want to view the number of uniques so that I'm able to track the number of unique users that click on an ad during the course of a campaign

4. As a client I want to view the number of impressions so that I'm able to track the number of people that see my ads

5. As a client I want to view audience data so that I can target the majority

6. As a client I want to view the total cost so that I'm able to track the performance of my ad

(YELLOW = CLIENT | BLUE = AGENCY)

Epic 2: Viewing Calculated Data

7. As a client I want to view the CTR so that I'm able to track the click to impression ratio

8. As a client I want to view the CPA so that I'm able to track the cost to acquire a user

9. As a client I want to view the CPC so that I'm able to track the cost-per-click

As a client I want to view the CPM so that I'm able to track the cost-per-thousand impressions

10. As a client I want to view the bounce rate so that I'm able to track the amount of money wasted for each bounce

Epic 3: Graphing Data

11. As a client I want to view historical data so that I can optimise campaigns

12. As a client I want to view metric charts to track the performance of my ad

13. As a client I want to view multiple charts at once so that I can compare campaign data

14. As a client I want to be able to see performance metrics per time or day or per day of the week so that I can have a more detailed understanding of how my ad is performing

Epic 4: Configuration

15. As a client I want to filter the metrics and charts so that I can analyse my ad campaigns in greater detail

16. As a client I want to define how bounces are registered so that data is personalised to my liking

17. As a client I want to be able to load and compare data from multiple campaigns so that I can have all my insights of all my ads in one place

18. As a client I want to customise the appearance of the application so that I can make it my own and enjoy my time using it

Epic 5: Input / Output

19. As a client I want to export campaign data so that I can share it with others

20. As a campaign coordinator I want to submit campaign data so that it is updated across the dashboard

21. As a client I want to receive error messages so that I can troubleshoot issues (e.g. login failure)

22. As a marketing agency member I want to receive error messages so that I can troubleshoot issues (e.g. login failure)

23. As a client I want to print the analysis so that I can analyse without access to the internet

24. As a client I want to be able to save summary charts to files so that I can easily share with relevant people

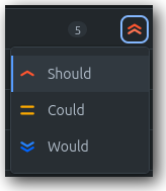
Epic 6: Access

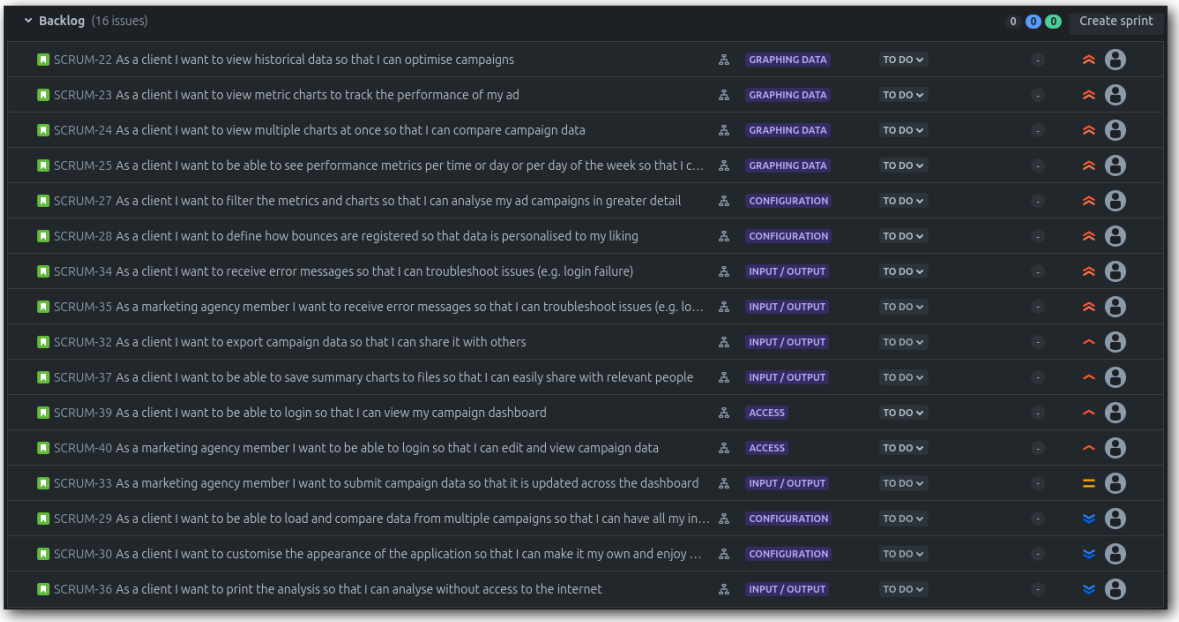
25. As a client I want to be able to login so that I can view my campaign dashboard

26. As a marketing agency member I want to be able to login so that I can edit and view campaign data

2.2. Product Backlog

Our backlog was created using Jira, which allowed us to create overarching "epics" that represented a collective group of related stories. This helps us to abstract collectives of stories under different themes, with implementation tasks listed under each story. Each story has been given a MoSCoW priority based on the specification and been ranked in expected order of completion. We are also able to assign each story to a specific team member, and thus effectively distribute the workload as we go. An image of our backlog has been attached below:

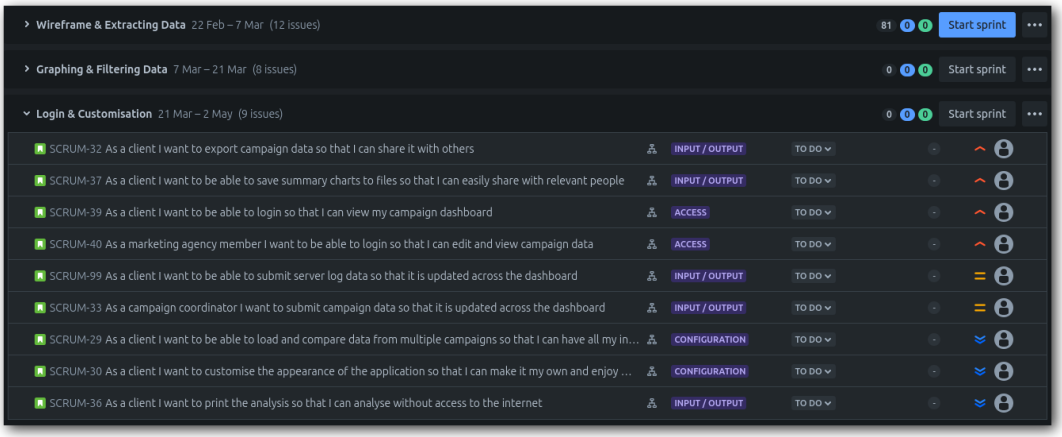




3. Project Planning

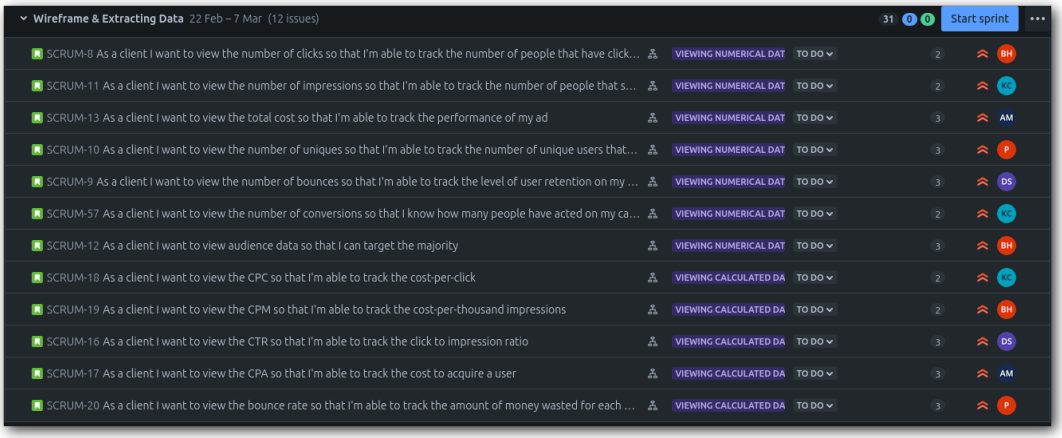
3.1. Increment Plan

To make our increment plan, we took stories that made sense to be developed together (as the delivered product at the end of each increment should be functional) and made sure that any later dependencies relied on earlier sprints (with low-priority stories at the end):



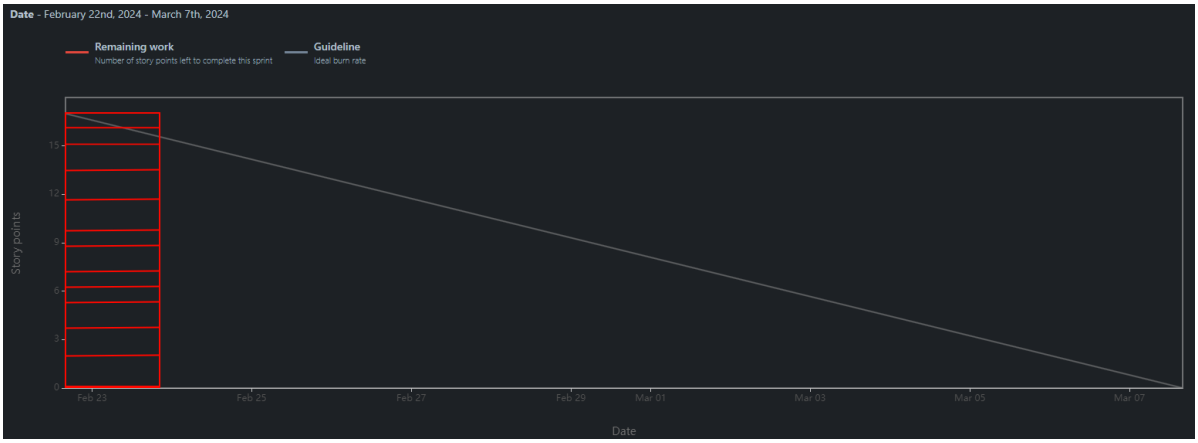
3.2. Sprint Plan

In order to plan this, we first assigned story points to each user story (based on the Fibonacci series scheme: 1, 2, 3, 5, ...) to represent the amount of workload that they would require as it was important that all members got as close to an equal workload as possible. This then made the assignment process much easier as we were able to distribute work in a balanced way by taking the total number of story points and dividing it by the number of group members:



3.3. Burndown Chart

With our sprint now planned, we generated a burndown chart through the Jira tool. This is automatically updated throughout the duration of our sprint based on user story completion, showing our current progress timeline against our expected progress timeline. A bar chart representing stories has been included:



4. Project Set-up

4.1. Risk Analysis

KEY: *P = Probability (1-5, high) ; S = Severity (1-5, high) ; E = Exposure (P * S)*

Risk (Name : Description)	**P**	**S**	**E**	**Mitigation**
Delay: Project delivery time is delayed	3	4	12	Use Jira to track project progress and assign tasks to each member. Check project progress regularly
Coordination : Failure of coordination between project members	2	4	8	Use WhatsApp and ensure communication and coordination between members. Hold regular meetings to ensure the exchange of information.
Technological obsolescence : Whether the technology used during the process is obsolete.	2	3	6	Regularly check the version status of the technology used and update the technology version in time
Participation : The member cannot continue to participate in the development of the project	1	5	5	Develop an alternative plan for how tasks should be reassigned in the event of a sudden lack of members to keep the project on track.

Knowledge : A member has a lack of programming knowledge or expertise in order to meaningfully contribute to the project	2	5	10	Ensure that all members of the project have the minimum capabilities of programming prior to the project.
Code absence : The code becomes lost due to data corruption or accidental deletion.	1	5	5	Ensure that the code base is updated regularly on local and remote repositories.
Integration : The code doesn't integrate between all team members when combined.	4	2	8	Ensure that there's a created template shared between all members so features can be integrated quicker.
Interpretation : Tasks are interpreted differently.	2	3	6	Ensure that the requirements for each feature is defined clearly with as little ambiguity as possible.
Privacy : the code makes the user susceptible to privacy risks like someone else having access to their ad campaign.	2	5	10	Ensure that there is appropriate segmentation so that only those to certain access can see and modify certain parameters.

4.2. Agile Methodologies

In order to facilitate an agile approach to development, we have opted to use:

- **Jira** - tracking user story and epic progress, assigning tasks to group members, planning / tracking sprints, and generating burndown charts
- **GitHub** - version control for our application, useful for resolving merge conflicts
- **IntelliJ** - feature-rich IDE with good built-in git integration
- **JUnit** - used to create test harnesses that can easily be ran against our code
- **Maven** - a built in automation tool used to build and manage projects.
- **JavaFX** - a set of packages used for creating GUI's either locally or on the web.
- **WhatsApp** - allows us to quickly communicate with each other and notify of changes. Enables us to call each other for short (but often) SCRUM meetings online

References

[1] *Persona 1*. [Online]. Available: https://stock.adobe.com/uk/images/portrait-of-a-beautiful-37-year-oldwoman/70516679.

[2] *Persona 2*. [Online]. Available: https://www.masterfile.com/search/en/59+year+old+women.

[3] *Persona 3*. [Online]. Available: https://stock.adobe.com/search/images?k=60+year+old+male.

[4] *Persona 4*. [Online]. Available: https://www.istockphoto.com/photo/27-years-old-man-portrait-gm471749879-26325633.