

SEPM Resources:

- SEPM Artefacts (Presentation File, Meeting Notes etc):
<https://github.com/KieronHolmes/SEPM-Deliverables>
- SEPM Prototype: <https://github.com/AlexGeorgeLain/sepm-development>

Presentation Transcript:

Cover Slide

Hello, and welcome to our presentation for our software engineering project management module project.

Our project is a car racing game called Track-Surf, developed specifically for our client, Group 2.

In the following slides, we will outline our design and plan, the project phases, and the project status.

Finally, we will provide a short outlook of the game's interface and its functionality.

Slide 1: Project Overview

Here's a quick overview of the "Track-Surf" project:

Group 2, a large childrens toy manufacturing company, are looking to develop a game suitable for 3 to 7 year olds and we have been tasked with planning and undertaking the development work for this.

In a series of meetings held with Group 2 at the requirements gathering phase, a total of 10 requirements were agreed upon and signed off for development.

From the agreed 10 requirements, we have identified and categorised 5 as being high priority - due to their significance to overall product functionality and usability. At this stage, all priority requirements have been implemented and tested. Some requirements from the low priority list have been implemented, however, the rest will be developed during the second phase of this project.

On the left side of the slide, you can see a snap from the Main Menu of our Track-Surf game. In a later slide of this presentation, we will go into more details about the game and its capabilities.

In the rest of the slides, we'll be discussing the project management concepts that we have applied so far as well as our plan for the completion of this project.

Slide 2: Game Design

As the Track-Surf game is targeted at young children between the ages of 3 and 7, we have decided to keep the design fairly simple and easy to use.

Activity diagrams are very useful in software development. They are used to document a program flow and can show the main activities as well as the relationships between them (Eriksson and Penker, 2000). This is why we have chosen to depict Track-Surf with a simple activity diagram.

The idea, as shown in Figure 2 here, is for a user to be able to see all the available options at a glance once the game is launched.

It brings the user straight to the main menu page and shows the menu options such as play, settings and profile.

We have designed the game in such a way, that a user can immediately start playing with a default profile, without a need of changing any settings.

However, If the user desires to change the game settings, they'll have the option to change the car or the game track or both, otherwise the user can return to the main menu.

The profile option allows a user to select a personalised existing profile, or create a new one, whichever is preferred and of course the user can always return to the main menu.

Slide 3: Project Plan

With a full understanding of the requirements and a concise model of the track-surf project, we then proceed to the planning phase.

Following the completion of the requirements gathering phase in collaboration with Group 2, we created a Project Plan to divide our high-level tasks.

To do so, we split our available timeframe into seven sprints of about ten days each. Afterwards, we organised each task into a sprint, with the elemental ones in the first sprints.

We kicked off our first sprint by planning our future meetings. This allowed us to arrange our schedule beforehand and meet whenever was suitable for everybody in the team.

Additionally, we discussed possible designs for our game. Finally, we completed the first sprint by drafting a number of documents, including a Risk assessment document, task estimations and the definition of Done for the user stories.

During the second sprint, we set up our GitHub repo, where we granted permissions for each member of the team, in order to start building and testing our demo of the game.

In the third sprint, we worked on our first two user stories, in addition to a Status review.

In the course of the fourth sprint, our tasks included the completion of three further user stories, in addition to the commence of the first phase of User Acceptance Testing along with a regression test. Furthermore, we started the documentation of our project.

In the fifth sprint, we worked on the sixth, seventh and eighth user stories. Additionally, we will perform our usual status review.

During the sixth sprint, we will work on the ninth and tenth user stories, in parallel to our weekly status review.

On the seventh and final sprint, we will perform our final User Acceptance Testing prior to the deployment of the game, in order to release it with no issues. Finally, we will attend our post mortem meeting to determine what went right and what could be improved.

Slide 4: Project Estimates

Estimation is one of the most important tasks in project management but also one of the biggest challenges that project managers face (Berlin et al., 2009). This is owing to the fact that poor project estimation has been identified as one of the responsible causes of detrimental project outcomes (McLeod and McDonnell, 2011).

It should be noted that software development effort estimates are deemed critical to the success of a project as they form the basis for budgeting and planning (Grimstad et al, 2006). With that in mind, we have estimated the *Track-Surf* project effort using a combination of two widely known methods; the Program Evaluation & Review Technique or as called PERT and the Planning poker method.

Rather than using a fixed time for each task, the Program Evaluation & Review Technique uses three-time estimates, taking into consideration some measure of

uncertainty that might be associated with the actual completion of a task (Douglas, 1978). It is conventionally calculated using the formula $(O + 4M + P) / 6$ where O is the optimistic estimate, M is the most likely estimate and P is the pessimistic estimate.

Planning poker, on the other hand, has proven to be an effective approach as it brings experienced team members together to provide an estimate with clear justifications (Calefato & Lanubile, 2011). Calefato & Lanubile's 2011 paper further acknowledges that planning poker fosters good collaboration and has yielded great results, particularly in areas of uncertainty or missing information.

Using a combination of both methods, our team of seven experienced developers came together to provide three time estimates for each task. In the end, we arrive at a total optimistic time estimate of 30 days, a most likely time estimate of 41 days and a pessimistic time estimate of 58 days. On inserting these numbers into the PERT equation, we got an overall estimate of 42 days for the Track-Surf project.

Slide 5: Risk Assessment

We have used a real-time technique for risk identification, called Brainstorming (Royer, 2000). For this process, we encouraged the participation of every team member. We kept this matrix reviewed and updated regularly so that risks could be maintained on an acceptable level, and with a mitigation plan available.

Our goal was to identify high impact risks and work on a risk-avoidance strategy. Minor impact risks can be mitigated through a risk reduction strategy, minimizing the project exposure risks.

The most critical risk identified in our risk matrix was the possibility of misunderstood requirements. Being the most impactful risk, we have tackled this risk through a continuous process of reviewing these requirements with stakeholders. Communication through every possible channel and feedback from users are fundamental strategies to avoid this risk.

Another crucial risk found is scope creep which could affect delivery time and schedule in general. To avoid this, we have worked on a series of documents such as the Vision and Scope Document and the Definition of Done. It gives us a clear picture of the scope and limitations of the project.

Slide 6: Planned Schedule

After deriving the project estimates and taking all risks into consideration, it became easier to schedule the tasks using a Gantt chart as shown in Figure 3 here. This

shows all twenty three high-level tasks, the task owner, the duration for each of the tasks and the percentage completion.

At the time this Gantt chart was produced, only the first five tasks, prior to the development phase had been completed but as of now, we have completed task number 16, which is the status review meeting at the end of Phase 1 development.

The tasks shown here along with the corresponding sub-tasks not shown in this figure were added to Clickup, our chosen Project Management tool and assigned to each responsible team member. Actual Completion dates are updated on Clickup as we progress through the phases.

Using the Gantt chart for planning has been proved to be very effective. Having a visual representation of the entire project and key information such as proposed completion dates and task owner has made it easier to keep tabs on our progress.

In the next slide, we will be discussing in detail the milestones we have achieved and the current project status.

Slide 7: Quality Control

In order to ensure that developers are producing standardised and well-tested code, we have used a series of GitHub Actions to automate the testing and styling workflows.

GitHub Actions is a free utility provided by our chosen Version Control platform.

The GitHub Actions will subject all developer code to automatic testing and restyling, preventing non-functional code from reaching a production environment and causing damage to the final product.

As all code styling is enforced at the repository level, it ensures that all developers are able to independently work on the codebase, with the knowledge that it will be standardised before it is widely shared.

By making sure that our code is tested, we mitigate any issues that might arise before, or after the deployment of the game. Such technique allows us to provide good quality products, satisfying the needs and expectations of every customer.

Slide 8: Milestones

In this slide we can see a high-level overview of key milestones, keeping in mind good practices and aligned objectives between stakeholders and the project team.

The goal is to have a successful project, delivered on time and with the approval of every party involved.

As you can see, the requirement gathering process started on the 17th of November. This step has been reviewed carefully because it represents the backbone of the whole project.

On the 10th of January, we began what we called the “design, planning and estimation” phase. At this moment, we had a complete picture of what the stakeholders wanted and how we would proceed with the resources and experience that our team is capable of delivering.

The development process has been divided into two phases to perform regression tests before the end of each one. It also focuses on delivering the top priority requirements in the first phase. This phase was scheduled to start on the 14th of January and it has been completed.

On the slide, you can see our current state. We are planning to start the second development phase, projected to be ready by the 21st of March, where we have scheduled to perform the User Acceptance Testing Sign-off.

Finally, the project is scheduled to go live by the 4th of April.

Slide 9 - Project Simulation

Our game is developed using Python 3.9. It is a car race game of a player against the CPU. On the main menu, a user can either play directly using the default profile, change the settings, select his/her profile, view the previous high scores, or mute the sound.

In the settings menu, the user can select between two tracks we have designed, or between four different cars.

Once the user clicks “play” the main menu will disappear, and the user will be taken to the actual gameplay. Once the user clicks any button, the race will begin, and the opponent’s car will start moving.

Once the race finishes, if the user wins, they will have the option to save their record, and then either starting a new race, or returning to the main menu.

Further information will be provided during the upcoming demonstration of the game.

Slide 10 - Summarising

The success of this project depends on a strong collaboration between all the actors involved. We have seen that the development team has fulfilled the objectives of the project plan.

We have seen a quality increase from the initial proposal to the planning and design phase, without stepping out of the scope of the project.

Communication has been a fundamental asset during the requirement gathering phase, and has contributed with keeping software delivery on time and detecting issues in early phases of the project.

Customer satisfaction is our shared priority and we will achieve it through the successful implementation of the project.

Slide 11 - Thank you

Thank you for listening to our presentation.