Altes München

Master Lab Course Games Engineering: Connected Mobility

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Abstract.

With the growing interest of virtual reality and real-life scenario simulations, many applications emerged to close the gap from simple entertainment products to reaching a bigger market, takin the example of Assassins screed series, Pokémon Go and Virtual showrooms. These games and applications using gamification aspects are now seen in many domains ranging from healthcare to promoting tourism.

Games, especially the ones replicating a real-life location, are sought to influence the travel destination of its players. These games try to integrate the desires of a tourist and a habitual gamer in a virtual environment. They try to upgrade the passive absorption of real-life scenarios to a more interactive and participating form, by increasing the level of engagement.

Although many papers discuss the impact of video games on the behavioral aspects of their players, many fail to express the influence on the travel destination.

In this project we aim to find the exact aspects and features in games, which will increase the level of engagement of the player and contribute to their decision-making regarding travel destinations.

1. Introduction

The main goal of this report is to deliver the current progress on Altes München. Altes München is a game which was developed in order to investigate improved solutions for user interaction in mobile applications for travel recommendation.

In that regard the game is initially designed to target the Mobile platform and explore different core mechanics in games which may lead to a change in decision-making by gamers regarding tourism.

Additionally, the game is replicating a historical layout of the city of Munich in its initial founding state during the Wittelsbach dynasty from 1180A.D until 1780A.D, to keep the player engaged and more invested.

All these different aspects are then evaluated through a survey after conducting some initial guided user studies.

This report will display the process and features that have been either implemented or scheduled to be integrated in this game.

We will also go through the points evaluated by the survey and will discuss the obtained result.

Finally, we will draw conclusions on the features and aspects which may increase the possibility of the player to visit the respective areas that was experienced during the game play.

2. Related work

While setting up the general idea of the game and before deciding which mechanics are to be implemented, many of these features were already inspired by previous studies, namely:

- Open world game (Rainoldi, 2022)
- Attachment to main character, story line and specific scenes. (Sajid, Cao, xinchun, & M., 2018)
- Scavenger Quests. (F. Xu, 2013)
- Free interaction with random NPC (Non-Playable Character). (Anders Tychsen, 2008)
- And High-definition graphics. (Aris Politopoulos, 2019)

3. General Game Design

3.1. Game Story and World

As the main goal of this game is to promote tourism in Munich, the game world was inspired by a historical map of the city. Due to the lack of data during this chosen era we decided to follow the city layout map from the 18th century, as shown in the figure below. Additionally, many complementary features and details, like the color of the

walls, the general population houses and gardens were inspired by the roman empire, as the Wittelsbach's paladin were granted duchy over Munich by the Roman Emperor.

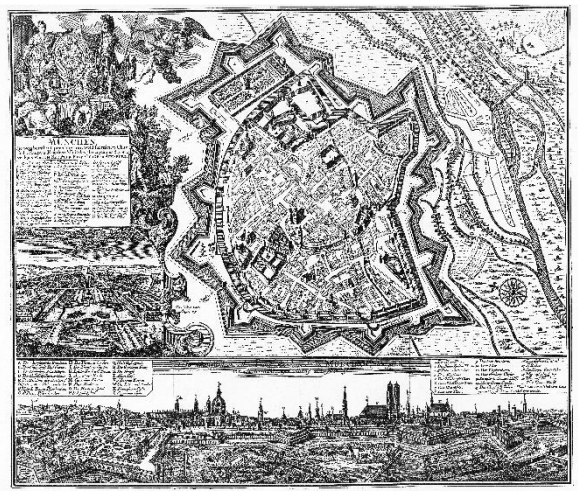


Figure 1: Map of the Duchy of Bavaria (European map and 18th century Stock Photos and Images, n.d.)

The player is a wanderer born from one of the remaining old Celtic tribes. They were granted immortality, sorcery and fighting skills as they are the reincarnation of the God Dagda.

As a traveler, they wander into the duchy of Bavaria to explore the surroundings, help its people, experience the foundation of this newly created city and help battling the mythological creatures disturbing the peace of this town.

In Celtic religion, the Dagda god is associated with fertility, agriculture, manliness, and strength as well as magic, Druidry and wisdom. According to the Norse and Continental Germanic Mythology, Celtics and Germanic people believed in mythical creatures, and their belief continued even after the Christianization of their people. Therefore, the player will have the ability to fight these different mythological creatures, namely:

- Elves: Believed to roam even within tribes.
- Werewolves: Until the 19th century people claimed they saw them.
- Dragons: Believed to roam in the mountains and countrysides.
- Giants: Believed to roam in the mountains and countrysides.

3.2. Faced Challenges

The whole game, world story and temporal setup was decided after researching different initial ideas and technologies. In this section these difficulties will be discussed.

3.2.1 Lack of Technologies

The initial idea was designed to promote tourism for the current state the city of Munich to showcase its modern architecture. Therefore, it was first experimented with third party service providers, namely Mapbox (mapbox, n.d.) to incorporate a 3d map of the city into Unity3D. However, mapbox only provides blocks of primitive shapes as a representation for each building with faulty heights and no realistic texturing. For these reasons this idea was dropped as it conflicts with one of our main features, which is building a high-definition realistic environment.

While still searching for other technical solutions, a good way to get around previous problems is to get geographic data from the Geodateninfrastruktur Bayern (Bayern, n.d.) provided by the Bayerishe Vermessungsverwaltung (Landesamt für Digitalisierung, n.d.). With this approach we can generate 3d buildings with correct height, and with help of satellite images, remap the whole look of the environment and apply it to the 3d mesh models. However, with this approach we stumble into a big problem, as each block of building, hence every 3d model had to be textured individually, which is an unrealistic expectation for this scope of project.

3.2.2 Lack of Assets

After facing many technological challenges for our initial approach, it was then decided to search for readily available 3d model of the whole city of Munich. Luckily this asset was already available with updated buildings of the recent years, with an acceptable LOD (Level of Details) although it was not high definition. Yet this model costs approximately 300euros which again is out of the scope of this project.

3.2.3 Decision

After many weeks of trying and searching, the whole idea was changed to a Medieval timeline, as there were many available assets to allow the creation of high-end environment from scratch. To stay faithful to the original goal of this game, which is promoting tourism, it was decided on the Wittelsbach dynasty era, as during this era the city of Munich was constructed. To keep the story more exciting and engaging some research was done, to decide on which additional elements to incorporate in the game. As a result, we were inspired by mythology in creating enemies, powers and playable characters.

3.2.4 Self-made Assets and Mesh Optimization

After acquiring all the assets and deciding to create high resolution environment from scratch. Many of the used assets were not optimized for in-game use. Consequently, many problems were faced during the implementation and especially the rendering.

These assets had a high count of faces and vertices, so it was necessary to reduce these models' complexity while also keeping their realism and high resolution.

To achieve that, every model used in the game was processed via subdivision then decimated in blender to acquire a low-poly model, while applying a normal map that was generated from the high-poly mesh model. With this method although the assets have a low polygonal count, they still maintain their realistic look to a certain degree.

3.3. Playable Character and Background Story

To increase the involvement of the player with the game, the player has a possibility to choose between four playable characters, with a Celtic German appearance.

Each of these characters has a different background story, but they all share similar motive and general story. Additionally, the player can choose an element which enhances their ability and is envisioned to have different behavior and attacks.

3.4. Game Quests and General Features

As the main goal of this game is to promote tourism, the game contains quests which directs the player accordingly to explore the different monumental elements of Munich, while keeping its RPG (Role Playing Game) aspect, fun factor and staying faithful to the mythology believed by the Celtic German people.

3.5. Current Progress

This game is still in its early phases, and many of the features which were decided on and then later discussed and evaluated by the survey are still not completely implemented. The reason behind this approach, is to set a foundation for all the presumably important feature to achieve our goal, namely promote tourism, then decide which from these are the most important and will contribute to achieving the goal, then finally work on these features more in depth and implement them to a satisfactory level of engagement.

4. Survey

4.1. Survey Structure

The Survey is composed of five sections:

- A general description of the current state and the purpose of the survey.
- A Platform related questions section: Determine the most playable and fun means of interaction and how to reach higher audience.

- A World and Story related section: Evaluate the total environment aesthetics, how pleasing the game world is and how willing the player is to visit the modeled place.
- An Aspects and Features related section: where each, implemented and non-implemented feature is evaluated. The goal is to determine how big of a role each one of these aspects play, in engagement with its playable character.
- And finally, a Conclusion section for general feedback.

4.2. Survey Conduction Environment

The survey was conducted under direct supervision of the developer, as many of the features are still not fully. Each tester with a range of age between 23 years old and 28 years old were handed the same version of the game and asked to answer the questions in parallel. Other questions relating to interaction methods, buttons, and GUI elements (Graphical User Interface) were also asked and taken into consideration but were not part of the official survey questions.

4.3. Survey Questions and Answers

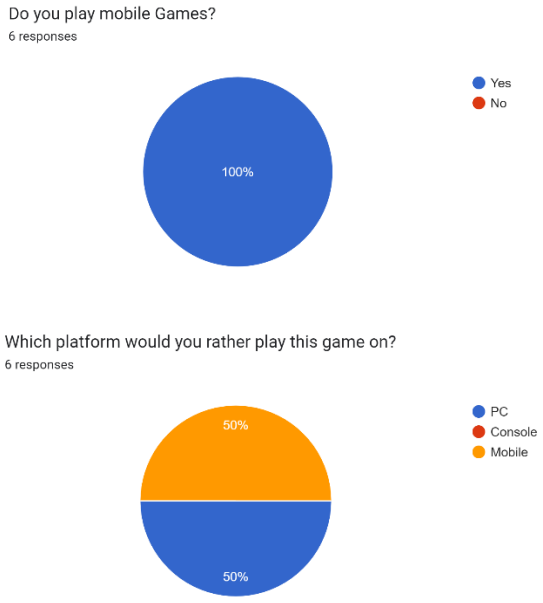


Figure 2: Platform Related Questions: Determine best playable platform

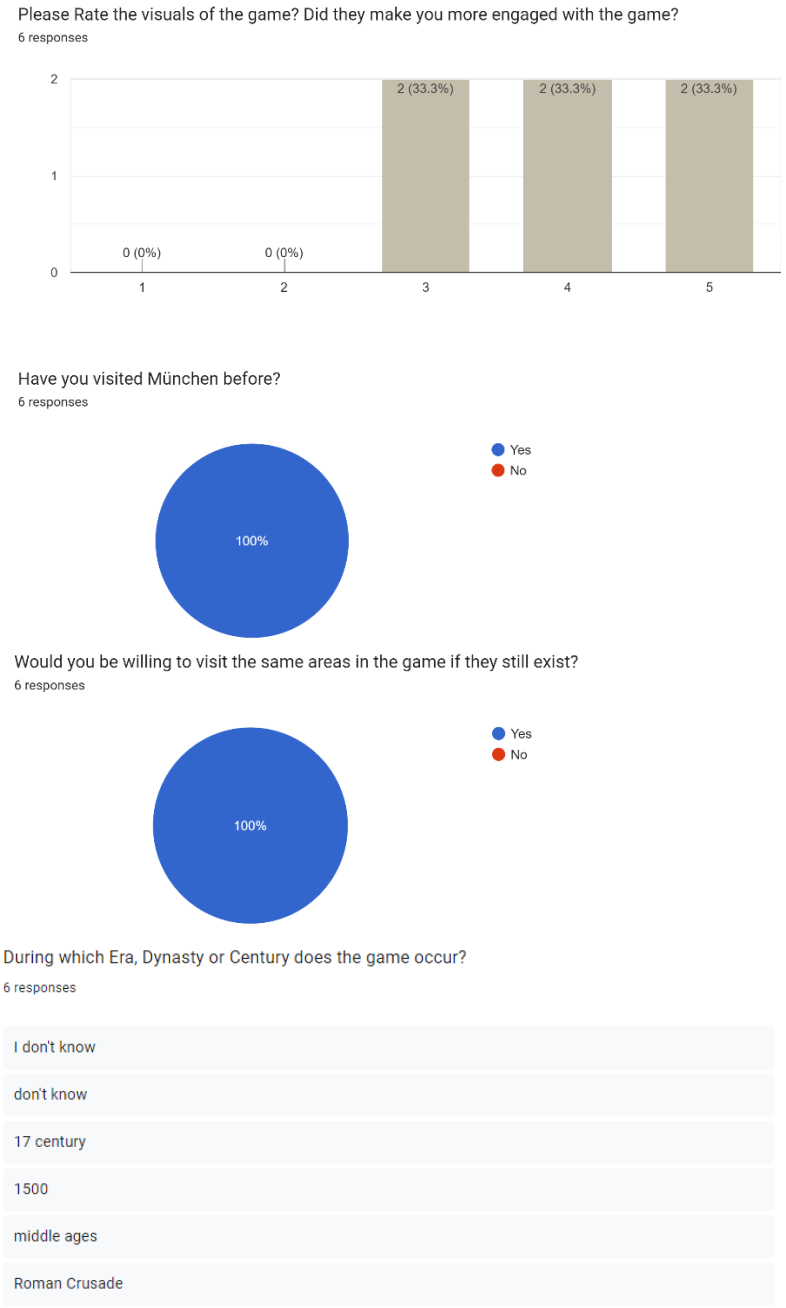
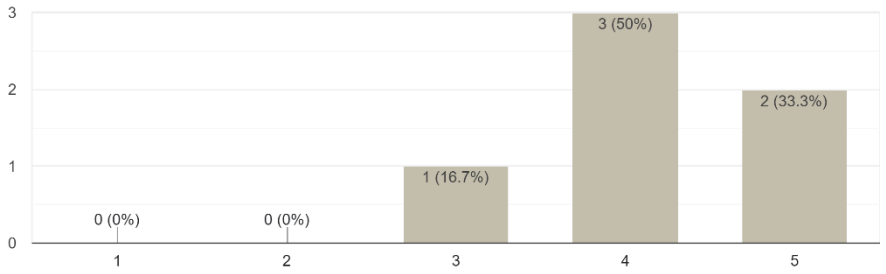


Figure 3: World and Story Related Questions: Determine the probability to visit Munich after playing the game and test the player knowledge

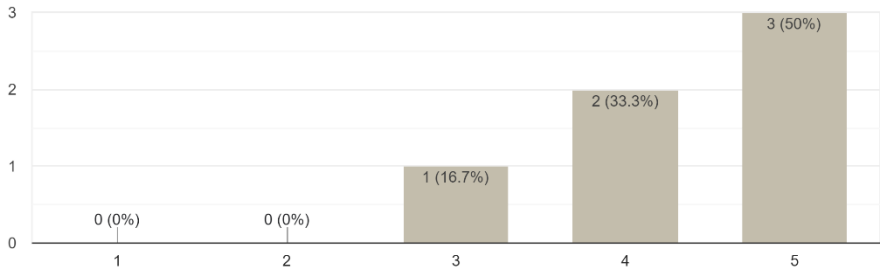
Did the possibility to choose different playable characters increase your engagement to the game?

6 responses



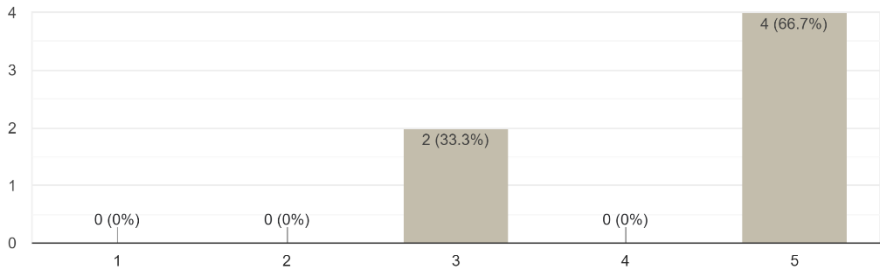
Did the fact that these playable characters have different background stories increase your engagement to the game?

6 responses



Did the fact that you can choose different elements and impact the game (in the future) increase your engagement to the game?

6 responses



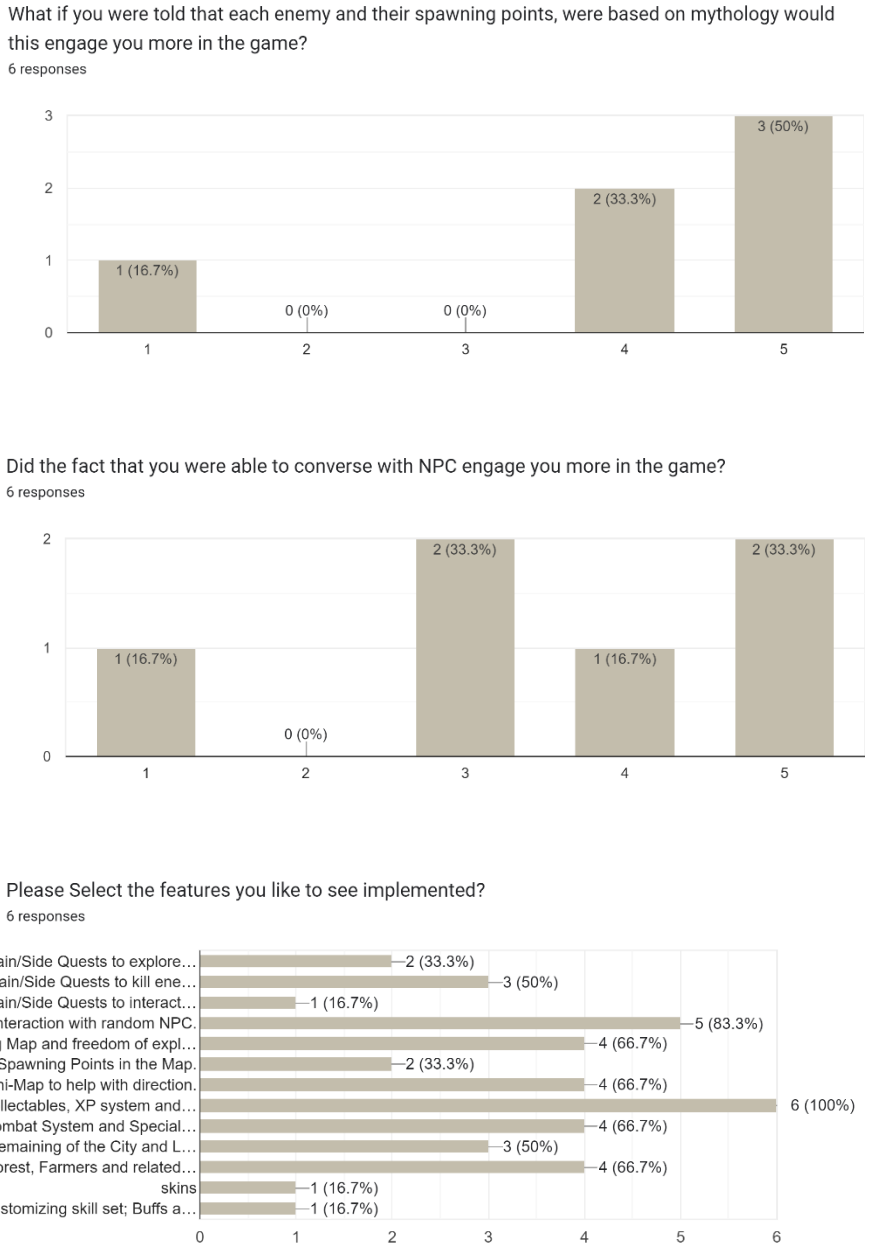


Figure 4: Aspects and Features Related Questions: Determine the exact features which play a role in engaging the player with the game and may influence their choices

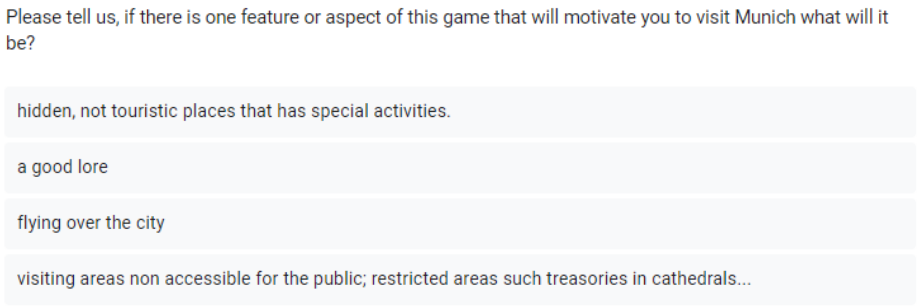


Figure 5: Conclusion Section: Determine some other aspects players may find important which were not mentioned in the questions

4.4. Survey Conclusion

After reading the different comments and answers of the survey in addition to other questions which were asked regarding the GUI (Graphical User Interface) we can conclude that in general although every participant is familiar with mobile games half of them still preferred to play this type of games on a PC. On average we can say that the visuals of the game were satisfactory, and the controls were conventional.

When it comes to most interesting results which play a role in this small study, is the impact on players to visit the presented region. As we can conclude from the answers, all the participants have visited Munich before and are willing to visit these exact areas if they are still available.

Another point to note is that the story and setting was not delivered properly.

When it comes to the in-game features, we can conclude that most testers liked the fact that they can choose their own character with a different background stories and elements in addition to having enemies with a real historical story.

Lastly to confirm what was mentioned in (Rainoldi, 2022) being able to engage in a freer way with the NPC (Non-Playable Character) can be beneficial in some way.

5. Conclusion and the Future of this Project

Generally, we can conclude that the main goal of this game which is to promote tourism is achieved to a certain degree.

As stated before, this report delivers the initial studies and early phase of the game Altes München. To study the aspects of engagement influencing decision making further, this game will be part of a second phase where many of the discussed features

will be implemented or optimized. In that regard and with the help of the survey, it was decided to improve or add these different aspects to the game:

- Build the scene's different map tiles as individual levels for a shorter loading time and better navigation and visualization inside the mini map.
- Add different indicators and populate the main Residenz building, by adding different gates, NPC's (Non-Playable Character), and other objects.
- Change the aesthetics of the playable characters to have more of a realistic feel.
- Reduce the scope of Quests and combat, by decreasing the number of quests including combats to also include game plays, like brewing beer or helping other NPC's.
- Add Inventory, collectable, and ability to purchase elements to increase in-game engagement.
- Emphasize on the story and historical facts by adding more storyline and story telling aspect to the game.

References

Anders Tychsen, M. H. (2008). *Motivations for play in computer role-playing games.* New York: In Proceedings of the 2008 Conference on Future Play: Research, Play, Share (Future Play '08). Association for Computing Machinery.

Aris Politopoulos, A. A. (2019). *"History Is Our Playground": Action and.* Advances in Archaeological Practice | A Journal of the Society for American Archaeology.

Bayern, G. G. (n.d.). *GDI-BY*. From Geodateninfrastruktur Bayern: https://www.gdi.bayern.de/

European map and 18th century Stock Photos and Images. (n.d.). From https://www.alamy.com/: https://www.alamy.com/stock-photo/european-map-and-18th-century.html

F. Xu, F. T. (2013). *Marketing Tourism via Electronic Games: Understanding the Motivation of Tourist Players.* 5th International Conference on Games and Virtual Worlds for Serious Applications (VS-GAMES).

Landesamt für Digitalisierung. (n.d.). *GeoDatenOnline*. From https://geodatenonline.bayern.de/

mapbox. (n.d.). From https://www.mapbox.com/

Rainoldi, M. V. (2022). *Video Game Experiential Marketing in Tourism: Designing for Experiences.* Print ISBN.

Sajid, M. J., Cao, Q., xinchun, L., & M., M. A. (2018). *Video gaming a new face of inducement tourism:*. International Journal for Social Studies.