Feasibility Demo

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# Research Question

To what extent is the user experience of movement-based gameplay mechanics effected by procedural-based level generation, and is this this a negative or positive effect.

# Aim

To investigate, compare and evaluate the differences between static-made game worlds and procedurally generated game worlds. The focus will be on the how movement-based and movement-enhancing gameplay mechanics relate and adapt to the game-space that they are in. Should developers and companies be more open to the idea and use of procedurally generated levels and worlds in movement-based video games.

# Objectives

1. To study the uses of procedural level generation in movement-based video games and investigate how movement-based gameplay mechanics, such as wall running, will respond to the non-manually sculpted game worlds.
2. To study how the use of movement-based gameplay mechanics can vary in different or procedurally generated environments.
3. Investigate the development and uses of level-based procedural generation tools and algorithms inside of Unreal Engine 5.

# Changes From Proposal

As it stands, there are no major changes regarding the planning of the project since the research proposal. The only point worth noting will be my use of procedural generation tools inside of Unreal Engine 5.

# Risk Assessment

The largest and most prominent risk that faces this project is time.

This will be due to a multitude of factors ranging from larger-scale to smaller-scale risks. As procedural generation is a new concept to me, a lot of research and planning will be required for the tasks ahead – taking a massive chunk of my already limited time. Secondly, personal and external matters will also impact the time risk of this project as I am a father of two sons, both under the age of two years, and so time isn’t always available and is somewhat of a luxury.

My plan to use the built-in Unreal Engine 5 procedural generation tool can also play as a risk factor against the project. This is mainly due to the lack of testing done prior to this project, the tool may be insufficient regarding depth, flexibility or other. This may result in a Wave Function Collapse algorithm needing to be developed from scratch – which would impact the project immensely.

To combat these risks, a gnatt chart was developed in order to help the planning and following of time management. Gnatt charts are a good source of planning as not only can you plan your tasks ahead but can also estimate the time taken for each task. This allows for efficient time scaling for the project ahead. In short, tasks will be prioritised and depending on the weight of the priority will result of the urgency and importance of the task to the overall result of the project.

Reviewing of progress and code reviewing will also allow for accurate reflection and learning/adapting of future tasks and their time management. Here, meetings with my dissertation advisor will come in useful as to having a reliable and expert ‘outside’ perspective on my progress and upcoming tasks.

To avoid further risk to the project, especially regarding stress and scope creep, stretch goals will not be discussed or planned. In many cases, if stretch goals are planned ahead of time, it can disrupt the project’s flow and performance of the researcher – especially if the researcher is goal-orientated.

Additionally, some smaller risks may occur.

One may be illness. Illness is a common occurrence, especially around this time of year – winter. Illness can be devastating to some individuals, rendering them completely unable to work and study.

A screenshot of a computer

Description automatically generatedAnother is loss or breaking of a device. The breaking of, or loss of a device can also be devastating. To avoid this, all my work is being tracked via GitHub so that in this case – no work or progress is lost.

# Testing

Regarding testing of the project throughout development, I will be enlisting some peers and other individuals around me. This will include both individuals with, and without software and QA testing knowledge. Additionally, to ensure accurate result to the complete project, the individuals used in development-build will not be used for the post-development build(s).

# Process

The process will be well documented via Github. Proper source control is key to any project and so it will be highly emphasised here. Source control features such as branches, small and frequent commits and code reviews (before merge to main) will be utilised among other industry-standard practice.

# Gnatt Chart

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# Features

Below, you will find a list of some of the planned and already present features of the project.

* Wall Running (Implemented)
* Player Dash (Implemented)
* Player Teleport/Blink (Planned)
* Sprint (Planned)
* Stamina System (Planned)
* Basic Player Movement (Implemented)
* Check Point (Objective)
* Static/man-made level (Implemented)
* Procedurally Generated Level (Implemented)