# Driller Odyssey Technical Design Document (TDD)

## **A screenshot of a computer program Description automatically generated**

Figure 1. A model of a drill rig created in 3Ds Max.

## **DRILLER ODYSSEY**

Document version number 1.3

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Development Requirements

Development

|  |  |
| --- | --- |
| **Unreal Engine Editor (5.5.0)** | Used to create and manage 3D environments, assets, lighting, and more key game elements, with Unreal Engine 5 offering Nanite and Lumen which are new geometry and illumination features. |

*Table 1. Development Tools*

Game Engine

*Unreal Engine, version 5.5.0*, is the chosen game engine for the development of *Driller Odyssey*, as it has integrated services that can assist in rendering, animation, and physics without the need for programming scripts. Tools used include:

* **Asset Management System –** Used to manage the 3D models imported from 3Ds Max, along with the attached textures and materials.
* **Grey Box Environment –** Used level design tools including the grey-box environment first-person template to model levels using basic geometry.
* **Play-In-Editor (PIE)** – Allowed real-time navigation of grey-box levels to test and validate the level’s environment proportions.

API Versions

* **Unreal Engine API (5.5.0)**

2D/3D Software

The 3D software used for *Driller Odyssey* is:

* **3Ds Max** **(2025)** - an industry-standard 3D modelling software. It has been utilized to create assets including scenery elements including a drill rig, crystals, and a laser beacon, and character elements such as a drill.

Project Management

The tools used for project management were *BitBucket* and *Trello*.

* **Trello –** used for organizing the development process of *Driller Odyssey* into smaller tasks and sorting those tasks into separate lists of what to complete and what has been completed.

Source Control

The source control used is GitHub, a reliable system that provides features for task tracking, merges, and push and pull requests.

* **Server Software –** GitHub is used to host Driller Odyssey’s repository.
* **Client Software –** GitHub Desktop is used to commit and push changes made to the repository.

Sound Software

Sound recording and editing software.

The sound recording and editor software used is:

* **Audacity –** Free and user-friendly editor and recorder.

Asset Specifications

**Model file format:** *.FBX*

**Poly Count:**

* **CharacterVehicle –** 2,403
* **Scanner –** 402
* **LaserBeacon –** 8,132
* **Switch –** 1,985
* **EnergyCrystalNew –** 2,276

Project Structure

The following screen captures show the project structure:

A yellow folder with a blue and a blue folder

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Figure 2. Directory structure.

A screenshot of a computer screen

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Figure 3. Models folder.

File Naming Convention

Files were named using the following conventions:

* **Assets** – PascalCase

A screenshot of a game

Description automatically generatedLevel / World Details

Figure 4. Basic level one.

A screenshot of a video game

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Figure 5. Level two, increased difficulty.

**A screenshot of a computer

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Figure 6. Asset list.

Development Plan

|  |  |  |
| --- | --- | --- |
| Milestones | Date | Deliverable |
| Pre-Production End | 25/11/2024 | * Initial concept art for models |
| Milestone 1 | 01/12/2024 | * Began character model creation (drill) |
| Milestone 2 | 10/12/2024 | * Began other models, finished character model |
| Alpha | 08/01/2025 | * All models completed * All materials added |
| Beta | 17/01/2025 | * Textures created * Animation created * Began development of sounds |
| Final | 23/01/2025 | * TDD * Closing Kit * Video demo * Completed portfolio |

*Table 2. Development plan.*

**Playtesting**

Testing was undertaken after completing the modeling, applying a texture, and again after adding an animation. The final playtest took place on Unreal Engine where animations and textures failed to work.