



Game Design Document

CSC404 Supplemental Notes

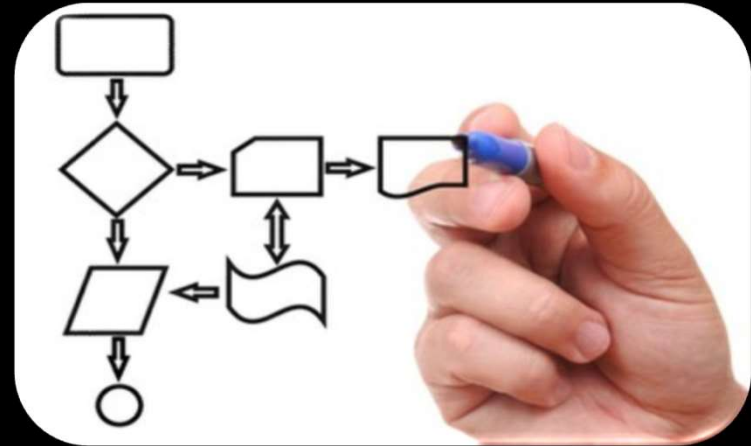
The Design Document

- The **design document** describes all aspects of your game, without actually creating code.
 - Acts as a contract between designer and client.
 - Also acts as a blueprint for future developers.



From Software Engineering

- Based on the idea that computer scientists should create software the way architects create buildings.



- **Understanding** of what the software will do.
- **Analysis** of the necessary software components.
- **Planning** of the development of each component.
- **Coordination** of the team and the development.

Design Document (background)

- **Software Design Documents** (SDDs) in the game industry often outline the following:
 - High level summary.
 - Background on project domain (definition of terms, etc).
 - The game requirements, and how to achieve them.
 - Constraints (both technical and non-technical).
 - Development procedures and coding guidelines.
 - Languages and tools that will be used.
 - Definitions of variables and a description of their usage
 - Logical structure and logical processing steps.
 - Error, alarm and warning messages.
 - Performance & reliability.

The Game Design Document

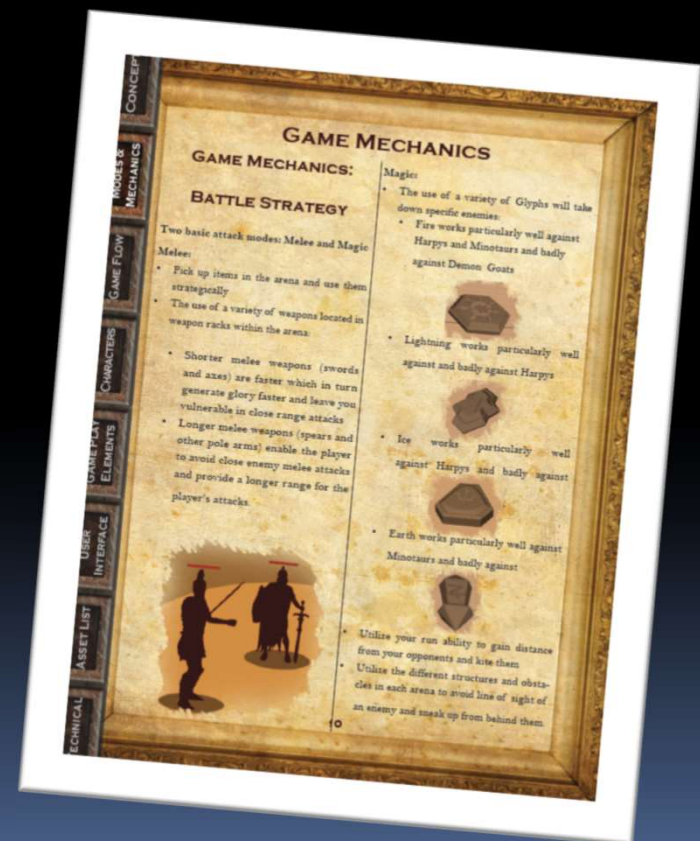


HOW TO CREATE A MODERN GAME DESIGN DOCUMENT

Design Doc Requirements

- Your design document must have:

- A description of your game
- A description of your team
- Gameplay description
- Character designs
- Level designs
- Music & sound design
- Control flow diagrams
- Development timeline

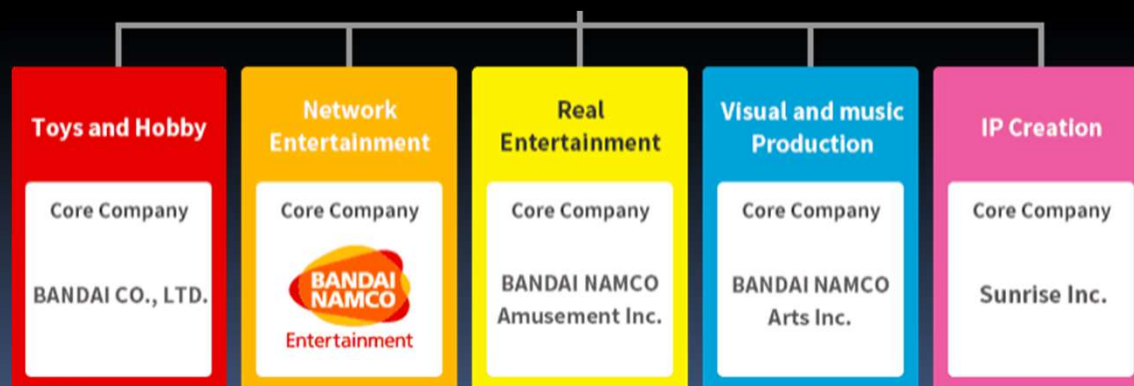


Game Description

- Start with the pitch of your current game.
- Elaborate with more details:
 - Aesthetics (reference samples > mood boards)
 - Dynamics (player experience)
 - Controls (player actions, interface devices, etc)
 - Inspiration (reference specific mechanics from specific games)

Team Description

- For each team member, state the strengths and the areas of responsibility.
 - Remember that these roles indicate who takes the lead for certain game elements.
 - The entire team must work on the entire game!



Gameplay Description

- How is the player meant to play the game?
 - Overall game arc
 - Player goals, as tied to the mechanic
 - Find the keys, light the cauldrons, etc.
 - Mechanism that the player uses to achieve these goals.
 - What are the main fun elements?
 - What else will make this fun?
- Illustrations help tell this story.



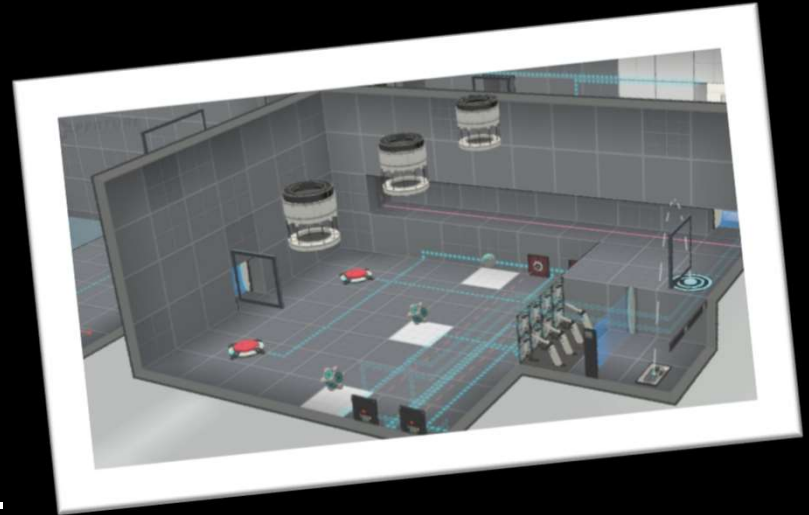
Character Designs

- Player character (detailed)
- Non-player characters (less detailed)
- Character development systems (stats, powerups)
- Other level assets
 - Items that are key to the gameplay.
- More than just sketches, please!
 - Prove that you can make these.



Level Design

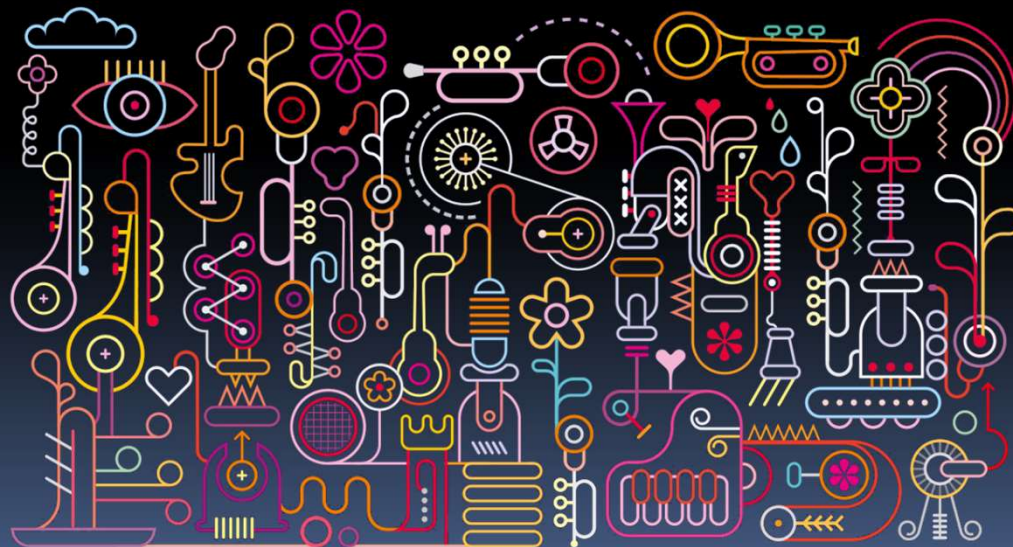
- **Invest time here.**
 - Overall level progression.
 - Show the purpose of each level, and how these levels introduce skills and build up the experience.
 - Show the thought and polish you've put into your level designs.
 - Be sure you can make them!



5-minute paper sketches do not inspire confidence.

Music & Sound Design

- What are the music and sound elements that your game will feature?
 - If you're not all in constant contact, this is a good time to set up an agreed mode of communication.



Control Flow Diagrams

- Do you have a levelling system?
 - Show how the progression works.
- Do you have a puzzle to solve?
 - Show how the player needs to solve it.
- Do you manage a complex set of inputs?
 - Show how these inputs come together.

Development Timeline

- Assign somebody (usually team lead) to coordinate development from the GDD to the playable prototype.
 - Set up SMART goals for everybody on the team.
 - Have the team commit to these goals.
- Always have something playable.
 - Take lessons from the game jams. Don't assemble all the parts just before the next presentation!
- Work on things that are easy and important first, with a priority on important.



General GDD considerations

- The #1 item when creating a document:

Do not approach any document like a checklist.

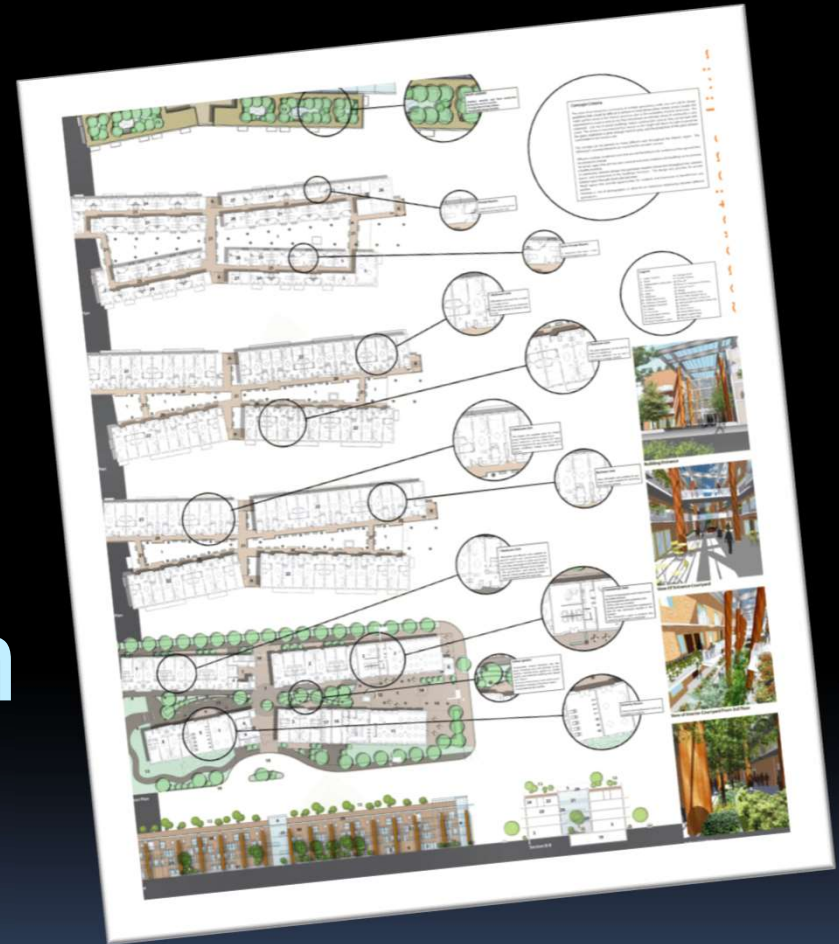
- The list items on the previous page are a reminder of what you need, not a linear set of instructions to follow.
- There has to be a sense of flow and cohesion.

- The #2 item when creating a document:

Create the document with your reader in mind.

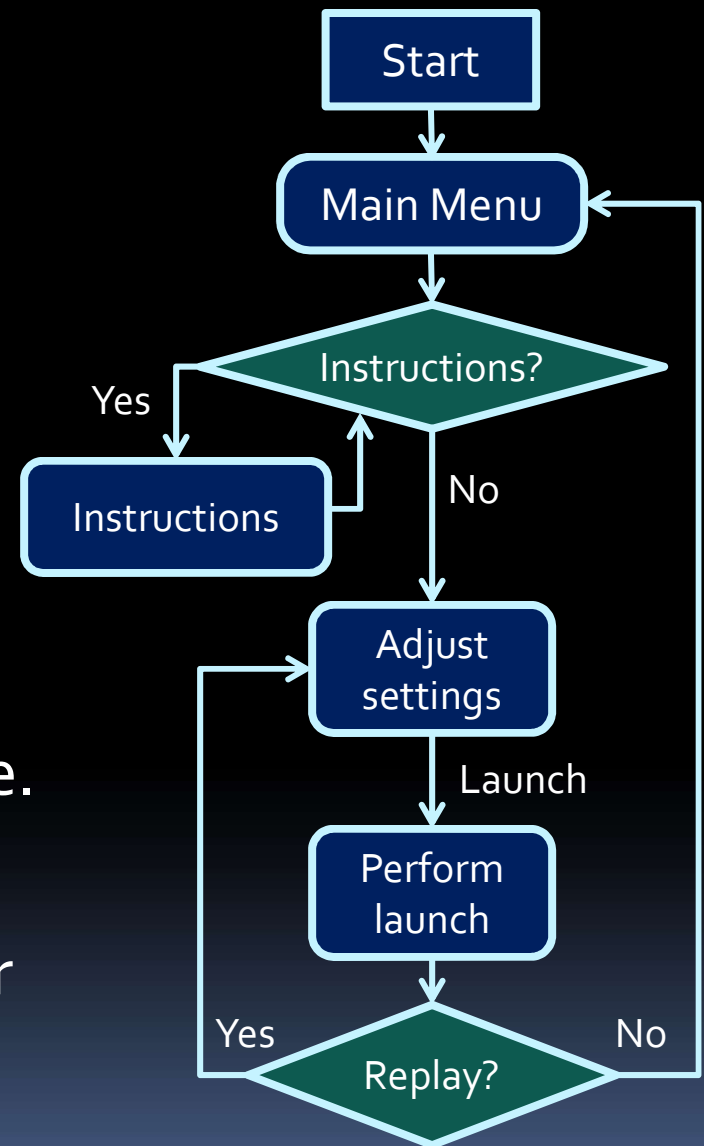
- Should answer all questions on how to create the game.

Example Game Design Presentation



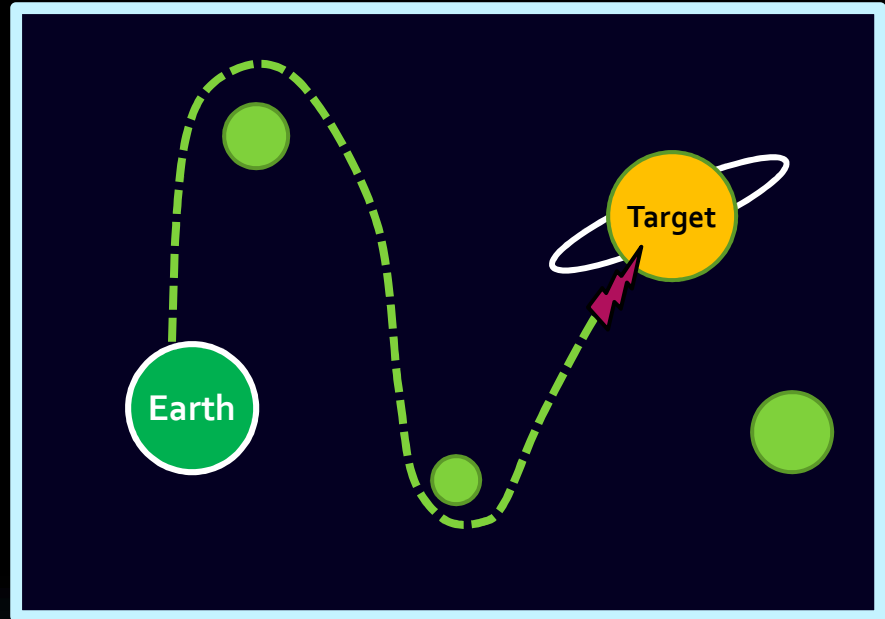
Rocket Launcher

- Game starts with general game options:
 - Instructions & controls.
- Gameplay is broken down into the following stages:
 - Adjust rocket speed and angle.
 - Perform launch simulation.
 - Player can choose to replay or return to main menu.



Level Design

- Each level is made up of a starting planet (Earth), a highlighted target planet, and several intermediate planets.
- Players are given a chance to observe the planets' movements before launching.



Gameplay Outline

- 10 levels total.
- When players click on “Launch”, the rocket takes off at the specified angle and speed.
- As the trajectory approaches the planets in the field, the movement is affected by the equation for universal gravitation:



$$F_g = G \frac{m_1 m_2}{d^2}$$

Score breakdown

- Score is awarded as a sum of time and proximity factors:
 - Each 50 ms of travel time adds 1 point to the overall score.
 - Traveling within 1000 km of a planet increases score by 10 for every 50 ms spent close to planet.
- Level is cleared if target planet is reached, and score is over 100 points.
 - Stars are awarded for every 25 points above 100, to a maximum of three stars.

