Deliverable D – Conceptual Design

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Abstract

The purpose of this document is for each team member to develop ideas to be considered for the project. These ideas will be organized within subsystems. The ideas produced will be analyzed to develop one fully functional design concept to be followed for the project.

Table of Contents:

Introduction:

This deliverable illustrates our team's journey through the ideate phase. Each member brought ideas to the table and through analysis and discussion difficult decisions were made pertaining to the end result. Here we have developed a set of subsystems that need to be present to fulfill the requirements set in our design criteria and will ideate ways to represent them. These subsystems will be analyzed using a selection matrix to develop a design idea to be used throughout the remainder of the semester. At the end we will have one cohesive story to present through our virtual environment.

Concerns:

The\ ability to enact one's will upon others without the need for manpower is of great concern. One of the most difficult parts of managing a large empire is over expansion and bad leadership. The resulting in-fighting and lack of resources can even lead to collapse. With lethal autonomous weapons (LAWs), the need for human resources can be completely diverted and a small group of people can use LAWs to enact their will upon countries and previously sovereign nations with or without majority acceptance. This allows already powerful nations that threaten other nations with tariffs and military power to enact a more direct control over "problematic nations."

Thus the focus of our design will be on demonstrating the role of LAWs in expanding and controlling empire. We will demonstrate this from the perspective of a citizen living in those conditions.

Subsystems:

- **How governments can use LAWs to control citizens and changes that would be made to citizen lives.**
    - This subsystem will guide the thematic portion of our design.
        - The role of LAWs in law enforcement.
        - Liberties and privileges that may be stripped from citizens.
- **Integration of Educational Materials**
    - This subsystem will focus on how we can present real-world information to the user in the virtual environment.
- **Virtual Interactive Component**
    - This subsystem will deal with ways the user can interact with the environment.
        - Sound design.
        - Environmental features (Propaganda, warning signs, LAWs)
        - Larger Environmental Features (Buildings, skybox, lighting)

Design Ideas:

- **How governments can use LAWs to control citizens and changes that would be made to citizen lives.**

(Erfun):

- LAWs can be used to violate dress code or other methods of detecting who is and is not a cooperative member of society.

(Lane):

Within the environment outlined in this project governments would need to take serious actions to protect citizens' lives. Realistic government-controlled laws that can be implemented within our design include,

- Protective glasses must always be worn when citizens are outside the constraints of their home. These glasses will affect the tracking and targeting capabilities of autonomous weapons.
- A strict curfew of 8pm will be implemented. All citizens must be within their homes by exactly 8pm every night.
- An immediate evaluation of government funds will be completed to fund defense efforts.
- All citizens under 18 must be accompanied by an adult outside their homes.
- All public establishments have the responsibility of opening their doors to any civilian in need at all times.

(Mercy):

Realistic laws that can be implemented by the government in this environment are

- Lockdown implementation to reduce unauthorized access
- A surge in the use of surveillance
- Freedom of expression and speech are suppressed because citizens do not feel safe

(‘Abd al-Wahid):

- The government will employ the use of constant drone surveillance surveying the city for autonomous weapons.

- **Integration of Educational Materials**

(Erfun):

- Users could interact with environmental cues that trigger narration. For example, looking at a billboard for a brief period or interacting with a poster could trigger narration.
- The environment can be ordered in a linear way to keep the information ordered.

(Lane):

The user can be shown real world information through the integration of the following techniques,

- News posters
- Design aspects that correlate to what is seen in everyday life (not portraying any landmarks relating the environment to a real place).

(Mercy):

Real- word information can be presented to users in this project virtual environment through

- Interactive stimulations
- Use of multimedia
- 3D visualization

(‘Abd al-Wahid):

- Realistic and appropriate surroundings

- **Virtual Interactive Component**

(Erfun):

- Users should be able to interact with the environment in some fun ways, throwing bricks, rocks, or tearing posters.
- This way we can give users the option to resist and see what the potential outcomes of resistance would be.

(Lane):

The design can be implemented with unique aspects to allow the user to interact with the environment, this can be done with,

- A built-in sound system guiding the user through the environment.
- The ability to partake in implemented government laws (i.e., putting on protective equipment)
- Walking through built-in safety features such as underground tunnels.

(Mercy):
Design features that can facilitate the user's interaction with the environment are

- Use of adaptive sound to make interaction with the environment realistic
- Use of warning signs to provide important information to the users
- The use of lighting to show and influence the moods of the user.
- The use of tracking monitors on user

('Abd al-Wahid):

- Walking through built-in safety features such as underground tunnels

Modified Sub System Concepts:

- **How governments can use LAWs to control citizens and changes that would be made to citizen lives.**
  - Protective glasses must always be worn when citizens are outside the constraints of their home. These glasses will affect the tracking and targeting capabilities of autonomous weapons.

  - A surge in the use of surveillance
  - Lockdown implementation to reduce unauthorized access

As a team the above design aspects were selected as we felt they were the most realistic and conformed to the needs of our user. Firstly, we decided that technological protective glasses were a unique and interesting safety feature that could be implemented in the real

world. Our team related this idea to masks worn during the Covid-19 pandemic. Although the circumstances are very different, both are personal forms of protection and the world proved they were willing to use a facial apparatus. Secondly, we felt as though an increase in surveillance was an obvious choice for this category. It allows for greater protection against autonomous weapons. On the other hand, we felt as though it would be hard to portray the government increasing defends funds within the constraints of this project. We decided that our limited time would be better spent elsewhere.

- **Integration of Educational Materials**
- 3D visualization
- Design aspects that correlate to what is seen in everyday life (not portraying any landmarks relating the environment to a real place).
- Use of multimedia
- News posters

The use of multimedia and newsposters was identified by our team as an excellent way to make the virtual world feel real for the user. By implementing these in our design we will allow the user to relate to what they are witnessing in our virtual world.

- **Virtual Interactive Component**
- A built-in sound system guiding the user through the environment.
- Use of warning signs to provide important information to the users
- The ability to partake in implemented government laws (i.e. putting on protective equipment)
- The use of lighting to show and influence the moods of the user.

- Walking through built-in safety features such as underground tunnels.

A narrator was an aspect that our team identified early in the design process as something we would like to implement. The group agreed that the video could be overwhelming to our users and that a voice guiding them through it would greatly enhance their experience. Additionally, the use of lighting to imply moods to the user is a very effective way to catch the user's attention. This feature is simple and realistic, yet it will be extremely effective in our project.

Fully Functional Solutions:

Solution 1: The first solution will be made up of the following aspects:

- Protective glasses must always be worn when citizens are outside the constraints of their home. These glasses will affect the tracking and targeting capabilities of autonomous weapons.
- Use of multimedia
- News posters
- A built-in sound system guiding the user through the environment.
- The use of lighting to show and influence the moods of the user.
- The ability to partake in implemented government laws (i.e. putting on protective equipment)

Solution 2: The second solution will be made up of the following aspects:

- A surge in the use of surveillance
- Design aspects that correlate to what is seen in everyday life (not portraying any landmarks relating the environment to a real place).
- Walking through built-in safety features such as underground tunnels.

Solution 3: The third solution will be made up of the following aspects:

- Lockdown implementation to reduce unauthorized access
- 3D visualization
- Use of warning signs to provide important information to the users

Solution Analysis (Selection Matrix):

Solution 1:

	Design Specification	Relation (>, <, =)	Value	Units	Verification
1	Create a real-world environment where lethal autonomous weapons rule.	=	yes	N/A	Testing Final Product
2	Produce a video demonstrating the final product that can be shown to lawmakers	=	yes	N/A	Testing Final Product
3	Emotionally move audience	=	yes	N/A	Testing
4	Demonstrate how civilians would adapt or lives would change under this law.	=	yes	N/A	Testing
5	Tell a story	=	yes	N/A	Testing

Design Specification	Relation (>, <, =)	Value	Units	Verification
Budget	<=	50	$	Keeping Receipts
Duration	~=	1	min	Testing
Play Space *1	~=	1.5	m^2	Testing
Can not refer to specific people or places	=	yes	N/A	Testing

Solution 2:

	Design Specification	Relation (>, <, =)	Value	Units	Verification
1	Create a real-world environment where lethal autonomous weapons rule.	=	yes	N/A	Testing Final Product
2	Produce a video demonstrating the final product that can be shown to lawmakers	=	yes	N/A	Testing Final Product
3	Emotionally move audience	=	yes	N/A	Testing
4	Demonstrate how civilians would adapt or lives would change under this law.	=	yes	N/A	Testing
5	Tell a story	=	yes	N/A	Testing

Design Specification	Relation (>, <, =)	Value	Units	
Budget	<=	50	$	
Duration	~=	1	min	
Play Space *1	~=	1.5	m^2	
Can not refer to specific people or places	=	yes	N/A	

Solution 3:

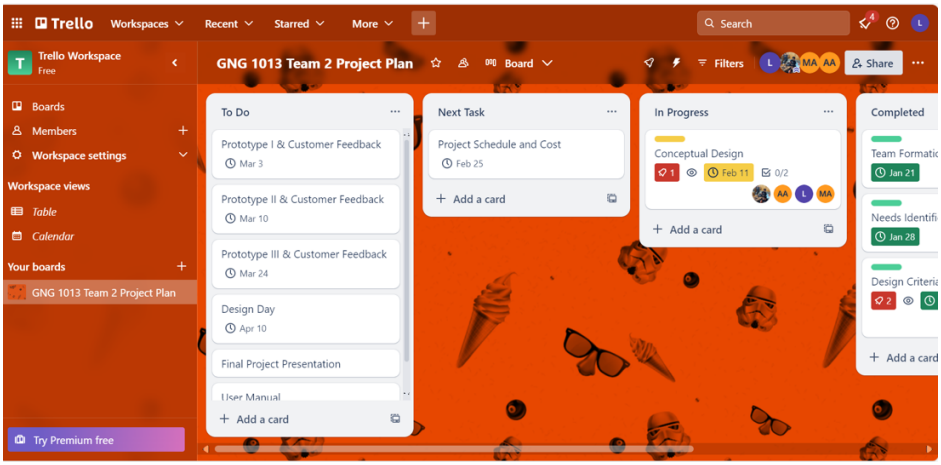
	Design Specification	Relation (>, <, =)	Value	Units	Verification
1	Create a real-world environment where lethal	=	yes	N/A	Testing Final Product

	autonomous weapons rule.				
2	Produce a video demonstrating the final product that can be shown to lawmakers	=	yes	N/A	Testing Final Product
3	Emotionally move audience	=	yes	N/A	Testing
4	Demonstrate how civilians would adapt or lives would change under this law.	=	yes	N/A	Testing
5	Tell a story	=	yes	N/A	Testing

Design Specification	Relation (>, <, =)	Value	Units	
Budget	<=	50	$	
Duration	~=	1	min	
Play Space *1	~=	1.5	m^2	
Can not refer to specific people or places	=	yes	N/A	

Using a selection matrix based on the above design criteria our team ultimately decided solution one was the best option for the project. This solution met the design criteria closely, especially in the highlighted areas. The use of news posters and multimedia meets the design criteria of creating a real-world environment. It will allow the users to feel as though what they are witnessing could take place in their world as well. The use of lighting accomplishes the design need of creating emotions in the users' minds. By using light to imply moods the user's emotions will be stimulated. Finally, by implementing protective and technological eyewear our team will be portraying defense techniques implemented in our virtual world. With the design criteria and needs being met by solution 1, this was the clear best choice to move forward with.

Trello Task Board Update:



Link: https://trello.com/b/A9O6vj6r/gng-1013-team-2-project-plan

Appendix

Solution 2: The second solution will be made up of the following aspects:

- A surge in the use of surveillance
- Design aspects that correlate to what is seen in everyday life (not portraying any landmarks relating the environment to a real place).
- Walking through built-in safety features such as underground tunnels.

Solution 3: The third solution will be made up of the following aspects:

- Lockdown implementation to reduce unauthorized access
- 3D visualization
- Use of warning signs to provide important information to the users