



uOnity

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A Look into MinesActionCanada

- Global Organization
- Prevent the development of baneful weapons
- Implementation of laws and norms
- Initiatives have included the Ottawa Treaty banning anti-personnel landmines, the Arms Trade Treaty, the Convention on Cluster Munitions and the Treaty on the Prohibition of Nuclear Weapons.
- Currently working to prevent autonomous weapons from being developed.



**MINES
ACTION
CANADA**



Problem Statement

Autonomous weapons are moving forward in the development process and many are considering their usefulness in war. Design a VR experience that raises the ethical concerns of these weapons in an attempt to convince those in support of them.

Autonomous Weapons

- Weapons that can select and apply force to targets without human interaction.
- AI drones, robots, and machines used for warfare.
- Our experience uses AI drones to increase realism.



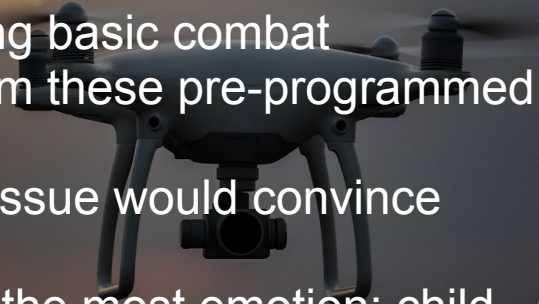
Preliminary Stages of Project - Research

- Client Data
- Examples of Autonomous Weapons and their dangers
- Examples of Warfare (Syria, Ukraine, etc)
- Planning out what ethical concerns to focus on
- Empathizing with client and asking them questions
- Questions focused on project parameters (how much gore, how long, etc)



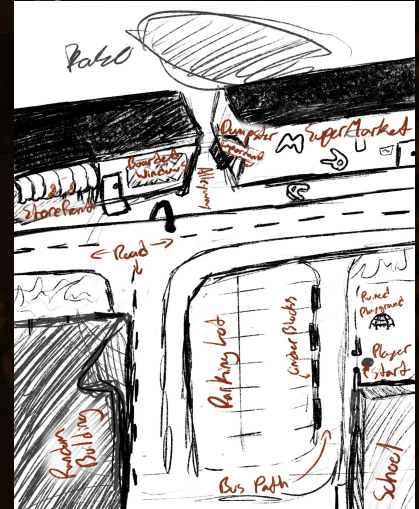
Concept

- Effects of the fog of war and military AI understanding situations
- AI needs help understanding basic combat situations and deviation from these pre-programmed events could cause issues.
- An example of this type of issue would convince user of ethical concerns.
- Target that would bring out the most emotion: child.
- Autonomous weapon chosen is AI drones due to their simplicity and realism
- Our user will observe the blatant mistakes performed by the drone and be able to understand the ethical concerns.

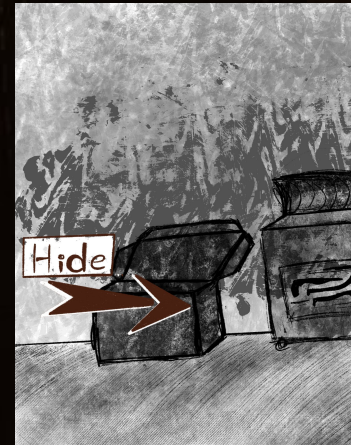


Prototype 1

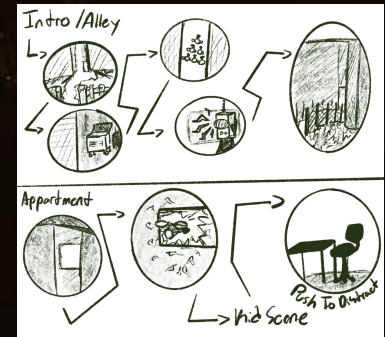
- General idea behind the story along with sketches.
- Very basic unity movement and setting.
- Used to test game mechanics and the compatibility of assets assets
- Served as a proof-of-concept for story
- Served as Unity practice
- Relatively low-fidelity prototype
- Low cost (using only free assets)



General Setting

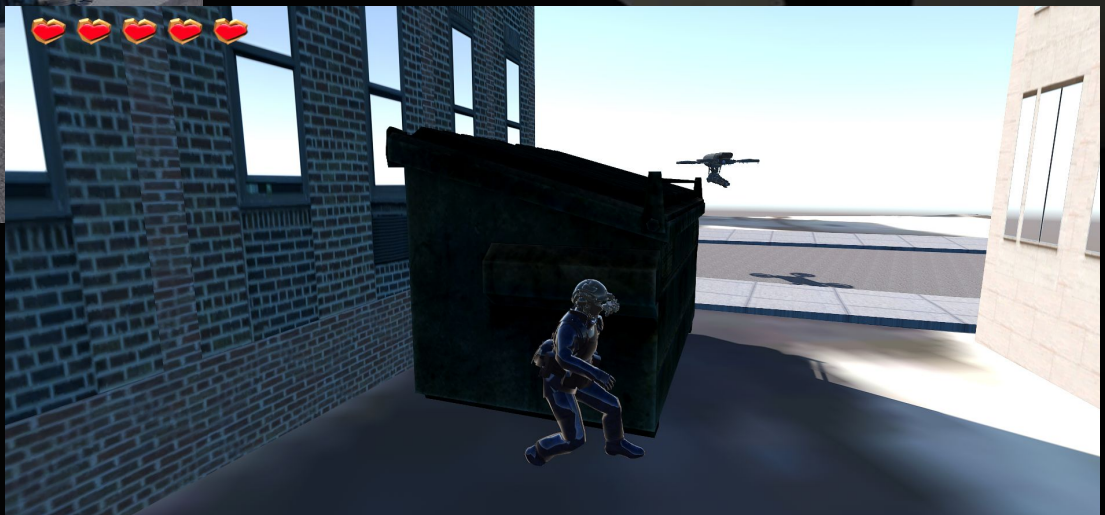
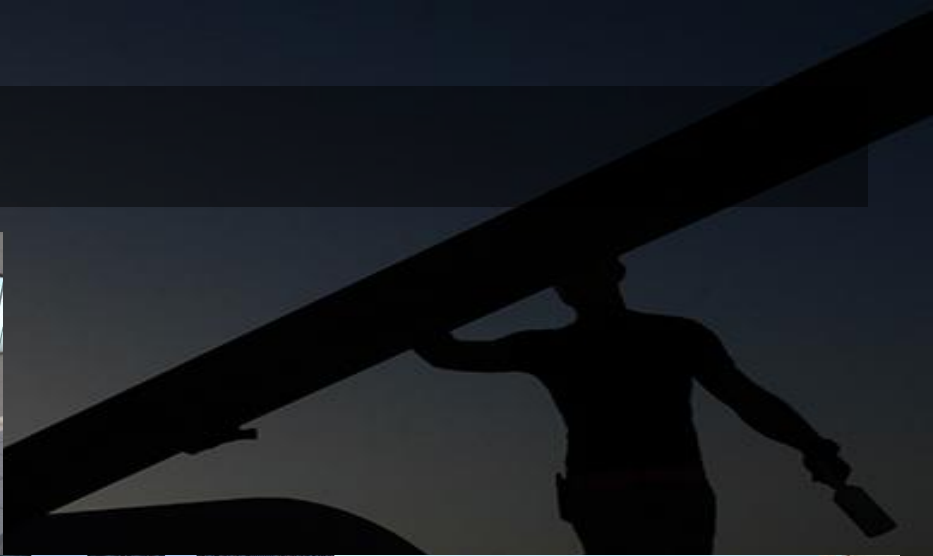


Click to Hide Feature



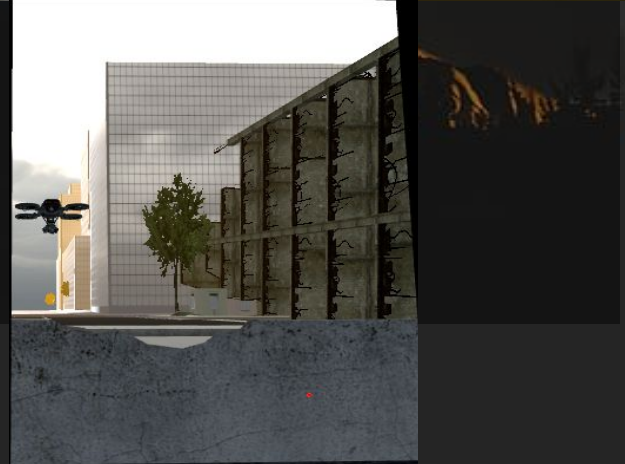
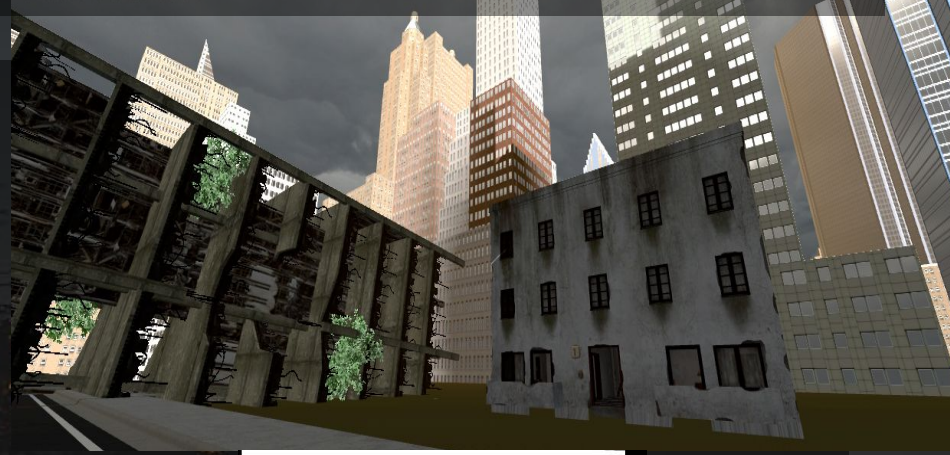
Storyboard

Prototype 1



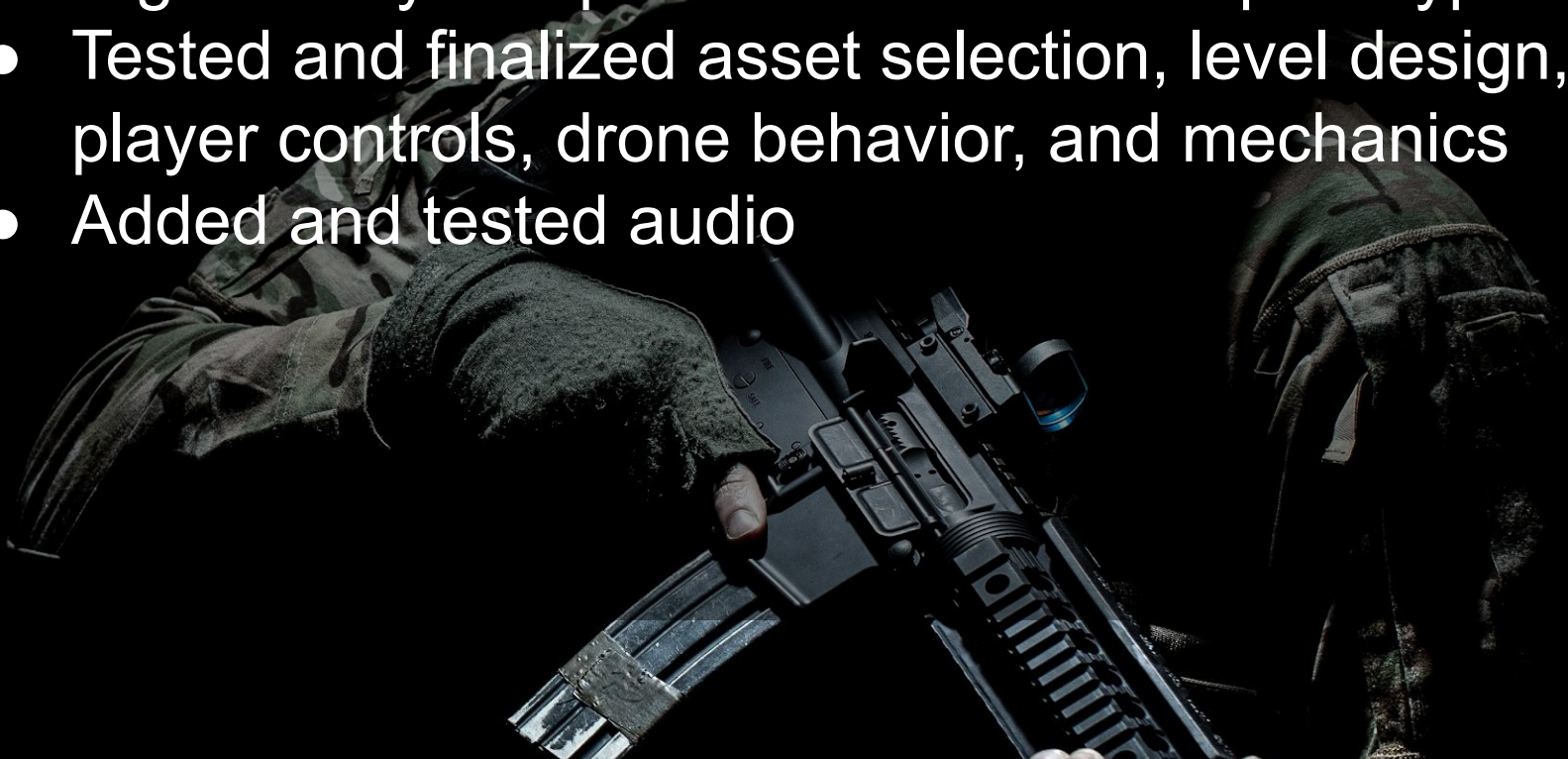
Prototype 2

- High-fidelity comprehensive prototype
- Tested assets, player mechanics, environment design, and VR integration
- Solidified which assets to replace and which ones to keep and which to replace
 - Importantly, this prototype finalized the details of our setting and the main building in which the latter half of the experience would take place
- Allowed group to practice environmental storytelling and the use of Steam VR



Prototype 3

- High-fidelity comprehensive near-final prototype
- Tested and finalized asset selection, level design, player controls, drone behavior, and mechanics
- Added and tested audio



Prototype 3



WASD EQ/Arrow Keys to translate the camera
Right mouse click to rotate the camera
Left mouse click for standard interactions.



Particles	Play	Stop
Particles	15	15
Speed Range	4.2 - 7.1	
Show Bounds		
Show Only Selected		

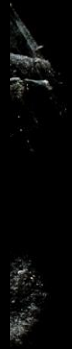
Bill of Materials - Paid Assets

Item #	Item Description	Quantity	Price	Extended Price (+ HST & GST)
1	War Background Ambience FX	1	\$24.99	\$28.24
2	3D Character Models (Child)	1	\$19.99	\$22.59
3	Slum Town Asset	1	\$21.50	\$24.30
Total Spent in Paid Assets:				~\$75.13

Bill of Materials - Free Assets & Materials

Item #	Item Description	Quantity	Price	Extended Price (+ HST & GST)
1	Drone Asset	1	Free	\$0
2	3D Scanned Vehicule & MISC Object Assets	4	Free	\$0
3	Skybox Asset	1	Free	\$0
4	Poster board	1	Free	\$0
5	Animated Fire & Smoke Assets	2	Free	\$0
Total Spent in Free Assets & Materials:				\$0

FINAL PRODUCT



Storyline to Follow

- A soldier (the player) has been given a mission to scout the nearby area for any civilians who may have missed the mandatory evacuation notice.
- As the player moves through the beginning of the town, it becomes immediately apparent that there is a drone patrol about to fly overhead and the player is guided into an alleyway to hide. The drone flies over the character's head and the coast is clear for the player to continue the search.

Storyline to Follow

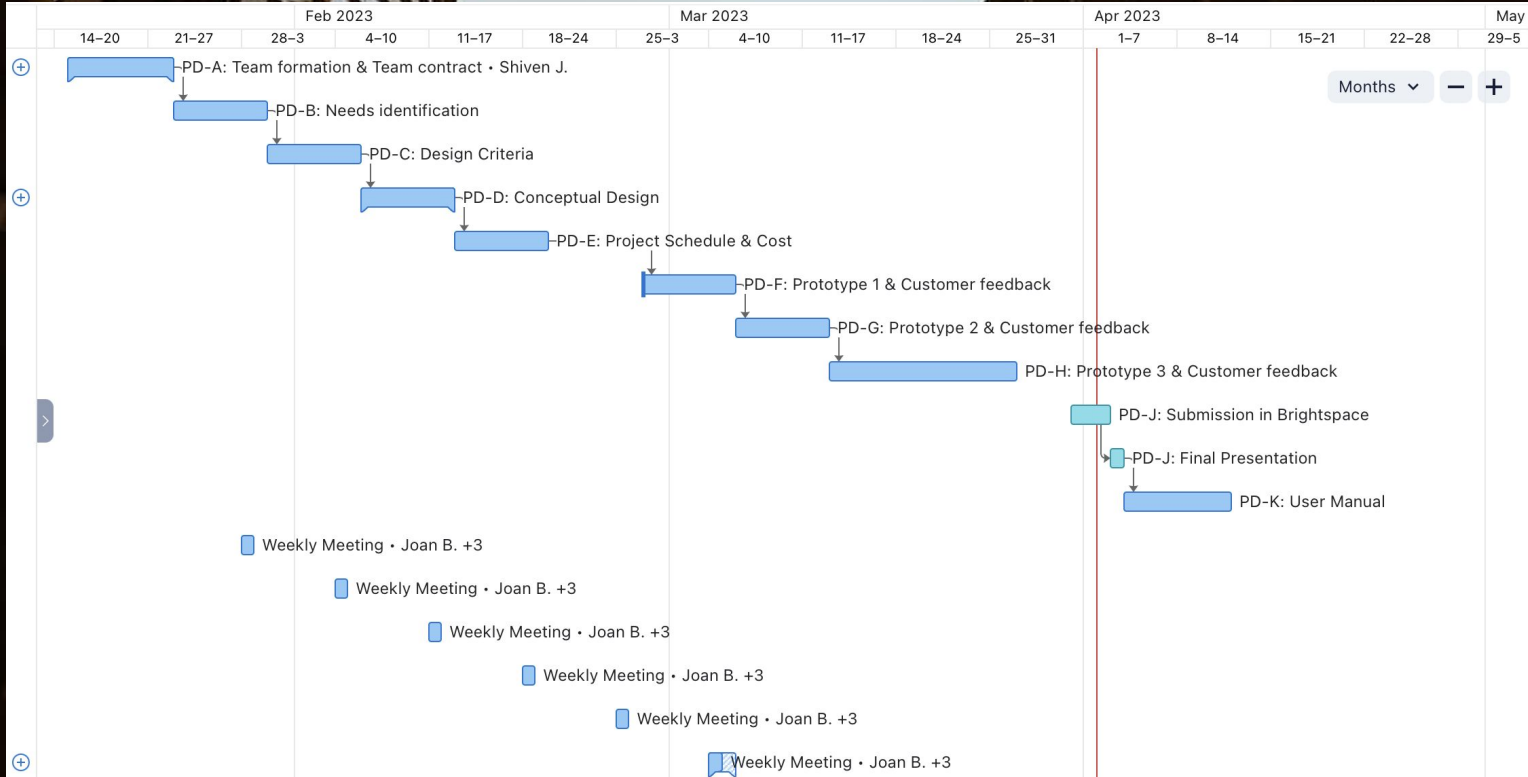
- As the player leaves the alleyway, they are spotted by another surveillance drone and is rushed into a building to hide. It is implied that the drone seeks an alternate entrance into the building, as the player then hears glass breaking upstairs.
- The drone spots a hidden civilian, soon realised by the player to be a child as they scream at the sight of the drone. The player they rushes upstairs as they hear the drone issue commands and orders to the child.

A silhouette of a soldier sitting on a rock, reading a tablet, against a sunset background. The soldier is in profile, facing right, and is holding a tablet computer. The background is a warm, orange and yellow sunset sky over a dark horizon.

Storyline to Follow

- The soldier rushes upstairs to find the child, hearing the drone begin to get more and more hostile as the child does not comply with the orders. The player is then able to shoot the drone.
- As the drone is no longer an immediate threat, it is safe to remain in the location and comfort the child. The experience ends with the soldier radioing the commander for evacuation and safe extraction for the child.

Project Plan



Next Steps & Lessons Learned

- Hire Professional VAs
 - More Environmental Storytelling
 - Enhance the Animations for player and drone mechanics
 - Add a rescue scene
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- Time & Task Management
 - Team Cooperation
 - Conflict Management
 - Consistent Workload Distribution
 - Expectations for the Project