4D World

Requirements Document

Team Members
Ryan Culp
Sean Cameron
Romain Briot

Sponsor:
Scott Tilly

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Premiss:
   The 4D World is a game about interacting with a fourth spacial dimension in various ways to get through the game world. The player will be able to move normally through the normal X, Y, and Z dimensions but they will also be able to move along extra dimensions, here on refereed to as "Phase-shifting" or doing a "Phase-shift".

Key:
- ◆ Top priority
  Standard priority
  ♠ Least priority

Movement:
- ◆ The player shall be able to use W to move forward.
- ◆ The player shall be able to use S to move backward.
- ◆ The player shall be able to use A to strife left.
- ◆ The player shall be able to use D to strife right.
- ◆ The player shall be able to turn left by moving the mouse left.
- ◆ The player shall be able to turn right by moving the mouse right.
- ◆ The player shall be able to look up by moving the mouse forward.
- ◆ The player shall be able to look down by moving the mouse back.
- ◆ The player shall be able to use SPACE to jump.
- ◆ The player shall be able to use E to Phase-shift right.
- ◆ The player shall be able to use Q to Phase-shift left.
- ◆ The player shall be able to interact with items they are in phase with.
- ◆ The player shall not be able to interact with items they are out of phase with.
- ◆ The player shall be able to left click to interact with key objects.
- ◆ The player shall be able to right click to hold moveable objects.
- ◆ The player shall be able to hold the left and right mouse button to throw moveable objects.

Phase-shift:
- ◆ The player shall be able to see and interact with objects he is in phase with.
- ◆ The player shall not be able to interact directly with objects he is out of phase with.
  The player shall be able to see objects he is out of phase with, but near phase with, as holographic objects.
  These holographic objects shall be translucent.
  Objects the player is higher in phase with shall have blue holographs.
  Objects the player is lower in phase with shall have dark-red holographs.
  Object holographs shall not be subject to physics.
  Object holographs shall share X,Y,Z dimensions as the object they represent.
  The player shall be able to move into phase with an object he shares X,Y,Z range with.
  If the object is movable, the phase range of the object will shift with the player's.
  If the object is moveable, but can't shift with the player without colliding into another object, the player shall not change phase.
  If the object is not moveable, the player will not change phase.

Physics:
- ◆ All measurements will be expressed to the player in SI units.

- ◆ The player shall be subject to gravity.
- ◆ All world objects shall be subject to gravity.
- ◆ World gravity will be a constant 9.8 m/s^2.
- ◆ Objects that share a phase range will be subject to collisions.
  - ♠ Objects that share a phase range shall be subject to normal 3D physics as though that phase where one of the 3 primary dimensions.
- ◆ Objects that do not share a phase range shall not collide with each other.
- ◆ The player shall be able to interact with objects he shares phase range with.
- ◆ The player shall not be able to interact with objects he does not share phase range with.
- ◆ All objects shall be subject to friction.
- ◆ The player shall be subject to friction.
- ◆ Thrown objects will move as the user expects in 3 dimensions.
  - ♠ If the user was phase-shifting while throwing the object, the object will continue to phase-shift until it comes to rest.
  - ♠ If the thrown object's phase-shifting causes it to collide with another object, it will reverse the direction of it's phase-shifting.
  - ♠ Object shapes shall be able to change across their phase range.
  - ♠ Every phase section of an object will be considered for applying physics to an object.
- ◆ Water will behave the as the user expects in 3 dimensions.
- ◆ The player shall be able to swim in water.
- ◆ The player shall be able to breath under water.
- ◆ The player shall not be subject to water pressure.
- ◆ Objects shall not be subject to water pressure.
- ◆ Water shall be non-flammable.
- ◆ All liquids shall be considered colored water, with the exception of oil.
- ◆ Oil will be opaque black.
- ◆ Oil shall be flammable.
- ◆ The player shall not be able to enter any bodies of oil.
- ◆ The player shall be blocked from unwanted actions by clear, visible, obstacles.
- ◆ All areas will be considered to have the same constant air make up.
- ◆ The air in all area's will be non-flammable, but support flame as the user expects.
- ◆ All areas will have an atmospheric pressure of 1 Atmosphere, regardless of area size or height.
- ◆ All electronic objects will work by magic.
- ◆ Electronics will only work if powered.
- ◆ Electronics can be powered internally or externally.
- ◆ All power sources are infinite.
- ◆ Powered electronics will always work.
- ◆ Electronics only need power, and player interaction to work.

Performance & Maintenance:
- ◆ The game shall maintain at least 30 frames per second.
- ◆ Game time shall be in player time.
  - Initial load time shall not exceed 1 minute.
  - Further loading screens shall not exceed 30 seconds.
    - ♠ There shall be no memory leaks.
  - All scripts shall work on a PC or web player.
    - ♠ Any script that is limited to PC or web player shall say so in comments at the top of the script.
    - ♠ All scripts shall be C# or Javascript.
    - ♠ All scripts shall have comments.
    - ♠ All scripts shall be backed up through cloud storage or SVC.
- ◆ The web version shall require the Unity web player on the player's computer.
  - The web version shall work across all browsers that support HTML5.
  - The web version shall be available at http://www.geocities.ws/muwa/Nu%20World/Nu%20World.html.
  - The web version at http://www.geocities.ws/muwa/Nu%20World/Nu%20World.html shall be updated every month that progress is made on it.

Content:
- ◆ All content shall be suitable for all ages.
- ◆ There will be absolutely no gore.
- ◆ There will be absolutely no violence.
- ◆ There will be absolutely no form of gambling.
- ◆ There will be absolutely no mild or strong language as defined by the ESRB.
- ◆ There will be absolutely no use of drugs.
- ◆ There will be absolutely no suggestions of drugs.
- ◆ There will be absolutely no use of alcohol.
- ◆ There will be absolutely no suggestions of alcohol.
- ◆ All dialog shall be in English.
- ◆ There will be a tutorial available in the main menu.
- ◆ The tutorial shall first teach the player basic movement.
- ◆ The tutorial shall then teach the player the basics of phase-shifting.
- ◆ The tutorial shall then go over the basic rules of interaction with phase-shifting.
- ◆ The tutorial shall then go over the basics of any other knowledge the player will need to play the game.

GUI:
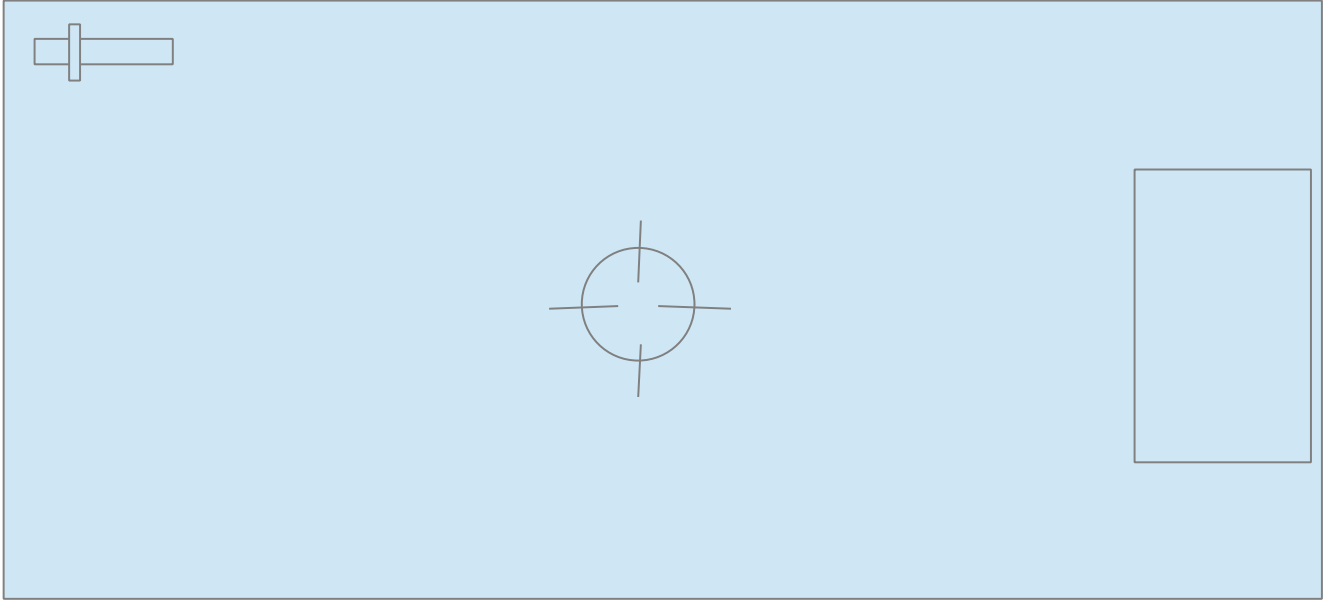
1. Phase indicator
2. Focus retical
3. Frames per Second (optional)
4. Objective tracker