MoSCoW Feature List : 08/11/17

Must Have
Button Class System

Controller: Visibility Configuration
Controller: Button Mapping Options (controller schemes)
Controller: In-game Model Changing

Object Interaction System: Grabbable Objects
Object Default: Drawers
Object Default: Cupboards

Movement / Teleportation System

Scene Transition and Loading System

Intuitive GUI Interface

Should Have
Controller: Button Mapping (User defined)
Controller: Different Models for Spectator and In-Game Perspectives

Object Interaction System: Grabbable Objects (Sound Collision Framework)

Object Default: Leavers
Object Default: Doors

Automated Testing System

Could Have
Controller: Ghost or Physical Controller Model In-Game

Object Interaction System: Grabbable Objects (Additional Refinements)
Object Default: Chests / Boxes - fixed lid / removable lids

Dr. John Williamson's Scene State Machine With Interface

Won't Have (This Time)
Oculus family support

- Avoid to focus on refining and expanding the Vive feature set and getting it released
- Summer project - port to Oculus platforms (the Oculus Go will be released by then as well)

Automated Testing System

Must Have

- Ability for user to record / capture their input and playback over an existing scene
    - Force ghost playback system
    - TrailsHD capture input and recreate motions?

Should Have

Could Have

Will Not Have

Button Classes

Must Have

- A class system of different types of buttons
    - Horizontally anchored buttons
    - Vertically anchored buttons
    - Buttons anchored onto other objects with their axis relative to the object they are anchored onto
        - E.g. A button on a soap dispenser should not be trigger if we pick up the soap dispenser and shake the item. It should only trigger when the user presses down on the button on top of the dispenser

- Restrict player from spamming the input to the button while the event associated with the button occurs
    - User presses button and even if they continue to press it while the event occurs this input is ignored
    - Maybe allow the developer to allow this spam queue (toggle button)

Should Have

- Automated timing (if possible) to detect how long the button should block input whilst an event associated with the pressing of the button plays out
    - Allow user to custom define the duration themself
    - E.g. If the animation associated with the button press is 4.5 seconds the auto detection would block input for 4.5 seconds. Should the user want a 5 second window then they can tick a checkbox and set the blocked window duration as 5 seconds

Could Have

Will Not Have

Controllers

Must Have

- Controller visibility with object interaction
    - Checkbox on item to switch between the two modes:
        - Controllers remain present with object interaction (default setting)
        - Controllers disappear with object interaction (similar to Job Simulator)
    - Perhaps a global option on the controller to switch the default from visible to invisible for all interactions (on an individual the controller level)

- Controller button mapping
    - Default set of common control layouts

- Change the controller model easily to a different model than standard controller (in-game perspective)

- Default settings for both controllers to interact with an object in the same way and allow for user to set each controller to interact with the object differently
    - E.g. Drawer has both controllers able to open the drawer. User may define that only the right controller may open this drawer
    - E.g. Grabbable / Object Pick Up script has both controllers able to pick up an item. User can set it so that the right controller picks up the item but the left controller has some other script setup to store the item in an inventory

Should Have

- Controller button mapping (user defined)
    - Allow user to map on button-by-button basis
        - This gives increased accessibility for users with limited hand motions and controls
        - E.g. Some users can’t mash the button for a QTE so the developers now give a mode where they only have to push the button once

- Different model of the controller on the spectator view and in-game view
    - In-game it is the default (or user set) controller model
    - Spectator view (people watching the gameplay feed in Unity / external display) have a different set controller model
    - Toggle option
        - Use same model for both views
        - Use different models for both views

Could Have

- Ghost or Physical controller model in-game
    - https://youtu.be/Sp0knS9S8fo?t=250
    - Toggle option modes
        - Always ghost
        - Always physical
        - Hold button to become physical / vice versa
    - Default to controller model if none other specified

  - Default to ghost passthrough for objects

Won’t Have (This Time)

<u>Intuitive GUI Interface (GUI Tackling Decoupling & Repetition)</u>

Must Have

- Clean and clear design

- Explanatory text outlining the purpose of each subsection of a window
  - Explain more to the user through the GUI while keeping it simple and clear to use
  - Communicate to the user the purpose of each section

- Explanations of how changes echo / ripple through and affect the system
  - Tackles problem accidentally deleting one object causing a lot of problems which the developer is unaware of
  - Explanations of how changes might break the system if not done correctly

Should Have

Could Have

Will Not Have

<u>Movement / Teleportation</u>

Must Have

- Ability to set up teleportation to specific teleportation points
  - Developer places teleport markers to the specific points in the environment that the player is permitted to teleport onto during play

- Ability to set up teleportation for a floor space
  - Tag system / Can teleport onto option (I don’t know the exact system I’ll use yet) that states the user can teleport onto this area

Should Have

Could Have

- Ability for the user to toggle between a straight line and arc line to indicate where the player will move to

Will Not Have

Object Default: Chest / Boxes Classes

Must Have

- Fixed lid chests
    - Lid attached to chest and user can lift along to open
    - Gravity toggle
        - No gravity: remains in place when let go by player
        - Gravity: falls back to default when let go by player

- Removable lid chests
    - Removable lid affected by gravity of any other item
    - When lid removed

Should Have

- Fixed lid chests
    - Moves along an axis
        - User can specify point serving as the limit to which lid may be raised
        - Default: 90 degrees for horizontal chest

- Removable lid chests
    - Ability to set up in-game magnetic snap in place for lid and its chest
        - E.g. Suppose you have a cardboard box with a removable lid. User can remove the lid and place items in the box. Rather than carefully place the lid back on top of the box allow the developer to enable a magnetic snap. So if the player puts the lid remotely close to its default position it will snap onto the top of the box and its original position

Could Have

Will Not Have

Object Default: Cupboards

Note: Cupboards are a cross variant of doors and drawers

Must Have

Should Have

Could Have

Will Not Have

Object Default: Doors

Must Have

- Push or pull doors

Should Have

- Star Trek sliding doors
    - Doors open based off player proximity
        - Preferably with a WHOOSH

Could Have

- Door handles
- Keycard / locking system associated with a door
    - Keycard system requires player have a certain object to trigger the door opening

Will Not Have

Object Default: Drawers

Must Have

- Universal drawer which can be used in non-quadrilateral spaces
    - Consistent use and response in any rotation / shape of setting
    - Must not respond differently if drawer is positioned at a rotation and not aligned directly with the Unity world X-Y axis

- Drag and drop script and you specify the front of the drawer and a second point to indicate how far you are able to pull it
    - Default to front if second point not given

Should Have

- Specify the axis on which the drawer moves
    - Default to 90

Could Have

- Ability to toggle gravity on and off for a drawer
    - E.g. A VRTK drawer just sits in midair if there's no cabinet surrounding it
    - E.g. With gravity on we can pull a drawer out of a cabinet and it will fall to the ground if we let go of it
    - *NOTE:* This might be very time consuming and annoying from both my development perspective and the user's perspective as their drawer models sink into the cabinet due to not being a perfectly snug fit

Will Not Have

Object Default: Leavers

Note: Leavers are similar to buttons except that the rather than a push event they are triggered on pull

Must Have

- Horizontal and Vertical leavers

Should Have

Could Have

- Leavers anchored onto other items

Will Not Have

Objects & Object Interactions

Must Have

Grabbable script allows user to pickup and interact with object

- User may define snap point on object for pick up
    - When user picks up the object the position that the user holds the item will snap to the designated point on the object
    - E.g. User can set it so that a sword always snaps to the handle even if the user attempts to pick up the object at the top of the blade

Grabbable script default and customisable controller setup

- Rather than setup the scripts for both hands independently, setup the default as the same script is applied to both controllers
    - E.g. User specifies one one script and both controllers interact and pick up the object in this way
- Allow the user to specify if want the each hand to do a different thing
    - Toggle option which opens two controller script sub-boxes
- *Idea:* Default is to preconfigure the script for each controller as the pick up / grabbable script and have this default to both controllers
    - E.g. User drags grabbable script onto item and then they are able to pick up the item with both controllers by default

Items do not ghost through other items

- Physics react normally
- Use velocity opposed to joints?

Smooth collisions between objects

- Idea: Weighting associated with items so that a very small block cannot push a much larger block

Gravity toggle for objects

- Allow the user to toggle gravity on and off for an object
- Allow the user to easily change the gravity value associated with an object
    - E.g. The default value is 1 where 0.1 is floatier gravity and 2.2 is stronger gravity

Should Have

Sound collison framework between objects

- When one object hits another a sound is produced

Could Have

Interaction Highlighting

- When the user hovers the controller over an interactive / grabbable object allow the user to easily setup a highlighting method to indicate to the user that this object is an interactive object
    - Highlight the object on hover
    - Controller vibration on hover
    - Controller transparent on hover
    - Change controller model on hover

Will Not Have

<u>Scene Loading</u>

Must Have

- Single drag and drop script to transition between two specified scenes upon some event occurring
- A selection of parameters to change the skybox, replace the floor grid,etc. of the SteamVR transition area between scenes

Should Have

Could Have

Will Not Have

<u>State Machine</u>

Allows users to specify a set of scenes and the conditions to transition from one scene to the next via a GUI

Must Have

- Allow users to set up a set of scenes and the transitions events associated with each scene code free from a graphical interface

Should Have

Could Have

Will Not Have