**VSim2 – Functional Requirements List**

Last updated 9/18/2017

1. PRIORITY ENHANCEMENTS (These must happen!)

# remaining functions of prototype TO BE ADDED (see notes BELOW FOR DETAILS)

1. **Narrative Player Functionality (connecting icons to actions, etc.)**
2. **Functioning Embedded Resources (Sam had started this, but am not sure how far she got)**
3. **Branding**
4. **Content Creator Settings**
5. **Navigation Settings**
6. **Locking, Disable Navigation, Expiration Dates on Export**
7. **About (VSim, Model Info, and Current Coordinate (HPR-XYZ))**
8. **Help menu**
9. **And when we’re all done: send Lisa info on how to share the Git site information with potential programmers**

# general operation / NAVIGATION

**A. Goal: Expand loading capabilities and reduce overall .vsim file size**

1. Correct loading problem of latest releases to test
2. ALMOST DONE. Add additional loaders (definitely .obj, .3ds, kmz, an direct SketchUp import if possible), but we still need to get .dae working (OBJ AND 3DS LOADERS ADDED; STILL NEED CUSTOM SKP LOADER … Hao started work on this .)
3. Read and save text bits in .flt files related to binary and time slider switches
4. Correctly interpret animations in .flt files and save them in .vsim files (they are read now, but not saved)
5. Correctly interpret DOF nodes in .flt files and save same in .vsim files (don’t appear to work at all now … may be a loader issue and requires additional testing
6. Add way for user to designate units of the model that repopulates the navigation settings so that they work properly for the model in question (eye height, zoom, acceleration factor, etc.) … maybe a menu box connected to Open Model?
7. Add texture compression on the saving of VSim files, scan to delete duplicate textures, and update/delete calls or however that needs to work internally to make a smaller .vsim file.
8. Speed up save of .vsim file (why does it take so long?)

**B. General enhancements**

1. Add ability to increase scale for LODs … this is a three-part fix … first is to make it work … second is to link it to its keyboard shortcut … third is to implement the LOD scale in the Navigation Settings.
2. Implement the rendering options and advanced settings in the Navigation Settings of the prototype.
3. Add advanced settings including environmental changes (ala uSim … environmental lighting control and aerial fog, particle systems, real-time shadow casting, WATER!, etc.)
4. Add a ‘Help’ menu to only include critical items for user (e.g., navigation modes, etc.) and or add ‘how to begin/use this software’ info on initial launch (as overlay on top of the current blank screen?)
5. In the ‘model info’ section of the content creator settings include more space than in the prototype for discussion about the modeled environment (e.g., history, context, importance)
6. OSG: Add elevator and strafe capabilities to flight simulation mode (e.g., holding down the ALT key while holding down the left mouse button and moving the mouse up and down or side to side would result in an elevator or strafe motion) (THIS MECHANISM IS IN PLACE … MODIFY SO THAT SPEED IS EXPONTIAL FROM CENTER OF SIMULATION WINDOW)

**C. Goal: Redesign the time slider**

1. Graphically articulate the central time in different color or larger (or something)
2. Delete Enabled radio button? (I don’t really understand how this is intended to wok … so you can add model bits and assign them times?)

# Narratives

1. Narrative Player: Connect buttons and make them work
2. Narrative Player: Add fade at end of node overlay (it fades in, but pops out)
3. Narrative Player: Add keyboard short cut for Play/Pause that is linked to setting to wait for click before progressing on a narrative
4. Narrative Player: Add ability to go backwards on a narrative (currently only allows forward movement)
5. Narrative Player: Automatically add an appropriate icon to the overlay to signal that the node has been set to pause until ‘P’ key is pressed OR PUT REMINDER IN STATUS BAR
6. Narrative Player: More text on display for each narrative title within its menu bar icon? (Currently shows portion of narrative title and author info) CURRENTLY LONGER TEXT ENABLED, BUT NEED RULES ON HOW THEY DISPLAY ON THE NARRATIVE PLAYER
7. Narrative Editor: Allow the movement of widgets on overlays using arrow keys for more precise adjustments (and/or show and allow changes with XY coordinates?)
8. Narrative Editor: Add ability to associate a node with specific date on time slider. (I think this would require the (1) addition of a radio button and entry field for a date on the node options menu, (2) addition of a check routine when the ‘Edit the Resource’ window pops up to know whether to grey out the date option or not, (3) a change to the Narrative export so the date is saved, and (4) a change to the Narrative play function so that when you first hit a node there’s a date comparison and the geometry is changed if necessary.) Should this also include being able to associate with a specific binary switch?
9. Node Editor: Add Background screen in edit box
10. Node Editor: Scroll on text boxes with lots of text (currently works in edit mode, but w/o scroll bar)
11. Node Editor: Add scaling of image in node editor
12. Node Editor: Refine the users’ ability to manipulate the background screen of a text element. This includes adjusting the edge of the background screen relative to the text. ADD MARGINS

# Embedded resources

**I. Goal: Enhance the content creator’s ability to set, control, and manage ERs (see DH199 work)**

1. Add a simplified way for managing ERs (necessary for when there are hundreds of resources)
2. Add the ability to re-order resources (they currently display in the order in which they appear in the ER file; this made developing the Karnak publication very difficult)
3. Add the ability to automatically number resources for citation purposes
4. Add the ability to ‘go to’ a resource’s trigger center and viewpoint (possibly through the ER dialog box)
5. Add in HPR comparison to Auto Launch (so that it only launches if the user’s xyz hpr is within some algorithm of the resource’s xyz hpr) … (Big task … this is the stuff of the SUI paper and should only be implemented when we have a GOOD solution)
6. ER Creation Menu: When editing a resource that’s an annotation, the blank bit when you browse for a file should be grayed out
7. ER Creation Menu: Box for source should be half as big as it is currently
8. When Show All is implemented, it should allow for ability to edit the user categories (see prototype to confirm mechanism).

**J. Goal: Enhance VSim’s ability to handle text on the ERs**

1. As per the request for narratives, add the ability to handle italic, underline, accent characters, and bold in ERs. It should be able to accept copy-n-paste of bibliographic entry and retain formatting
2. Adding a scroll bar on the side so that the ERs can contain longer texts (also requested for narratives)

**K. Goal: Enhance the user’s experience with ERs**

1. Add a toggle to show/hide icons (or glowing red spheres) that mark the center of the trigger zone for the resources so that users can find them; these markers could change color after a user has accessed them
2. Change locking mechanism so that it’s possible to lock only the established categories and all ERs in those categories instead of the whole file … this would allow peer reviewers and secondary scholars to add their own categories and would facilitate in-world mark up
3. Add ability for user to see source and copyright information on the ERs
4. Add a legend toggle on the ER bar. When set to show, a box would show the ER categories and their designated colors (requested from a test user of the Digital Karnak package)
5. Add the ability to associate resources with a specific binary switch state. (Discuss first … we now have the ability to associate with a year range, but not binary switch state … this could be as simple as adding an extra setting in the resource menu and running a comparison before the display of the resource, but VSim doesn’t currently save switch names so it will be hard to do for binary switches)

2. BUGS (VSim 2.0)

# bUGS

1. CRITICAL BUG FIX: Crashes easily from button mashing … how to bullet proof software from bad user behavior?
2. CRASHES when trying to open Window -> Font and Color Styles when there’s no model loaded or there’s no narrative opened
3. CRASHES when no widget is selected and you hit ‘Delete’
4. Fix behavior of Narrative Player when Narrative title is long (it messes up the buttons)

3. NOTES FOR WORK ON INCOMPLETE FEATURES

# LOCKING MECHANIsm COMMENTS FROM PROTOTYPE NOTES (APPLICABILITY wILL DEPEND ON HOW THIS IS IMPLEMENTED)

1. Change configuration of the ‘File’ drop down menu to clarify the Save and Export/Lock functions. (E.g., when saving and locking a narrative or ER file, providing an ARE YOU SURE? Moment.)
2. When saving a narrative, at the question to lock the narrative (options: YES or NO), the user should be given an option to CANCEL that just voids the save action (in the prototype, hitting ESC at that screen locks the narrative … this is bad)
3. When saving and locking a narrative or ER file, the lock flag should ONLY be set for the version being saved, not the active version in memory (currently, saving a locked version sets the lock flag and the user can’t save a subsequent unlocked version)
4. Expand the portion of the description visible in narrative info when locked (currently only three or four lines show, thus requiring extremely short descriptions)

# EMBEDDED RESOURCEs COMMENTS FROM PROTOTYPE NOTES

1. Confirm and possibly correct where VSim gets information on default programs to use when launching embedded resources (in the Sandbox, users can’t change the default and sometimes it’s not set at the most desirable option … this could be a problem in other lab-like situations)
2. NOTE: rethink how we handling locked ER files (currently strips out the file type)
3. ERs: When unlocked, ‘Edit’ shows full resource description; when locked, that should change to ‘Info’ and allow the details to be seen (now, once locked you can’t see author/source or rights) … alternatively, maybe these things should be added to the ‘more’ display
4. ERs: enable Ctrl + A (shortcut for select all) in description box & Authors/Source
5. ERs: Enforce the title character limit
6. Change display of ERs so that the title color is always white (now it changes between white and the category color when you switch between “more” and “less”)

# GENERAL COMMENTS FROM PROTOTYPE NOTES

1. Change font size on ‘About > About VSim’ display (not critical, but it’s too large and sort of embarrassing … it seems to be around 18 and could easily drop to 12)
2. Move ‘Current Coordinates’ so that it’s the last item on the About menu
3. Add HPR to the About -> Current Coordinates listing
4. Add file filters for the Mac version on Open and Import functions (in testing, users were unsuccessfully picking random file types when trying to import ER files)
5. Add a branding overlay to use the same text/image menu and features as the Node Editor
6. Add image/movie creation

4. DESIRABLE ENHANCEMENTS (These would be nice)

# Narratives

1. Add the ability to print the nodes from a narrative (essentially this would be like printing PowerPoint slides and would print the nodes/keyframes with overlay information two to a page; see also request for ability to print ERs)
2. Add expanded functionality for transitions and timing of overlay information (timing, ability to display text before and after node itself, etc.)
3. Add the ability to set speed for narrative in addition to seconds between nodes (walking pace, 6 miles per hours, etc.)
4. Add path mechanism as alternative to using keyframes to establish route for a narrative, includes the ability to set eyepoint along that path, edit path, and ability to attach to said path while controlling gimbal and speed. If time, expand path mechanism to include path manager menu, ability to attach objects to path (with offset, speed, starting/stopping/pausing), replay path, generate off-line video from recorded path, etc. (See USim and Claire’s DH199 work)

# Embedded resources

1. Add the ability to print ERs, either all or by category
2. Add the ability to set both a trigger center and a viewpoint (would be used to match model to a file or URL image … currently we only have a single center)
3. Add icons or text with file extensions for each ER that will indicate what will happen when the resource is launched (similar to our re-position signal)
4. Add the ability to graphically adjust the anchor location and trigger zone (and/or make the setting for the activation zone more meaningful … I think it’s currently in ‘units’)

5. CHANGES TO CONSIDER (Maybe next round?)

**A. General and Narrative-related new feature requests**

1. Complete image and offline movie maker … continue on work done by XinLi … revised specs to be written … must include options to hide screen bugs and branding overlay on video
2. Resource manager and resource manager menu (ala uSim RC files). This would track component files … and allow settings for ‘import at launch’ and ‘import now.’ Is this desirable? SEE MODEL INFORMATION IN VSIM 2.0
3. Relative paths for .ere file resources? Is it possible to add this? Is it desirable?
4. A few options for skies? (Removes the need for sky domes)
5. Map? (People often ask for these, but I’m personally on the edge)
6. Compass? (Requested by a user, but hard for generalizable software)
7. Avatars or animated scenes? (Suggested by a few users)
8. On-line? (I’d argue no)
9. Quizzing feature? (Suggested at DH2013 tutorial)
10. Learning module for moving through space in 3D simulation (Suggested at DH2013 tutorial)
11. Navigation: Add a jump or bird’s eye view keystroke (recommended by one test user)
12. Time slider from spreadsheet? (ala Google Earth; important for models other than .flt)
13. Node Editor: Add in free form ‘pencil’ and options to change width, color, and opacity?

**B. ER-related opportunities to consider and discuss**

1. Opportunities to link to definitions and other information from within the ERs themselves (recommended by a user; might be difficult)
2. ERs: Ability to merge multiple .ere files
3. ERs: Sort search results? (Desirable by category? Title?)
4. ERs: Ability to display a single resource in multiple locations (is this desirable?)
5. ERs: Ability to visually change the scene to better identify the referent of the ER (Highlight? Lowlight? Glowing icon?)
6. ERs: Launch resource only after movement in model (Is this desirable? It was Scott’s suggestion)
7. ERs: Ability to control the timing of their display (is this really desirable?)
8. ERs: Mechanism for making narrative nodes show up as embedded resources (this would allow overlay text and images to appear within the simulation window rather than default programs, but would require sophisticated view comparison)
9. ERs: Sound?   
   (By which I mean resources that are sound files and something more sophisticated than launching one file after another … spatially organized with software to handle overlaps and relative volume that adjusts according to distance from point of origin, and accommodates multiple sound files at once (both narration and effects), fading as one moves away from resource, forcing sound player to back layer (instead of covering simulation window), etc.)