James High fidelity prototype Evaluation

1. Technology audit

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| Feature | Presence | Associated Problems |
| Operation of the users presence | Present | Awkward to see hand avatars in the sky while in 1st person POV |
| Lack of Haptic Feedback | Present | Would have like haptic feedback when successfully grabbing/ dropping objects |
| Interactive Techniques | Present | Ray casting worked well. Would have like a snap to effect for grabbing objects |
| Realistic Graphics | Mixed | Instructions were too close to user and too low resolution making them hard to read. |

1. Heuristics rating and interpretation of problems encountered

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|  | Heuristic | Rating | Problems Encountered |
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| 1 | Natural engagement | S | No undo functionality, Could not grab all points of the terrain, point constraints were not exactly centred on top of hills, did not finding using the pencil to TP intuitive, Zoom affected FPV scale as well (also 12), Zooming seemed to affect ridges incorrectly (also 12) |
| 2 | Compatibility with the user’s  task and domain | - | No Problems |
| 3 | Natural expression of action | S | No way to measure scale, no way to move point constraints, No haptic feedback |
| 4 | Close coordination of action  and representation | D | Walking in FPV was too slow (also 12) |
| 5 | Realistic feedback | S | Textures to not scale correctly(also 1,12), Could teleport onto constraints in FPV |
| 6 | Faithful viewpoints | - | No Problems |
| 7 | Navigation and orientation  support | A | Reset tools orientation and distance was confusing |
| 8 | Clear entry and exit points | N/A |  |
| 9 | Consistent departures | - | No Problems |
| 10 | Support for learning | S | Skipped instructions accidently |
| 11 | Clear turn-taking | N/A |  |
| 12 | Sense of presence | D | Problems from 1,4,5 |

1. Classification of problems encountered with severity ratings and suggested design improvements

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| Feature | Problem Description | Problem rating | Design Change |
| Graphics | Textures did not scale correctly | Inconvenient | Use specialized terrain simulation software |
| Presence | Zooming caused some unrealistic effects | Annoying | Use specialized terrain simulation software |
| Interaction | Could not grab terrain at all points, No undo, Point constraints not centred, No way to measure scale, No way to move constraints, No haptic feedback when interacting | Severe | Make all points on the terrain grabbable. Add undo and delete features, add user measuring tool, vibrate controller on successful grab |
| Environmental features | Textures and ridges scaled incorrectly | Annoying | Use specialized terrain simulation software |
| Controls | Using the pencil to TP is unintuitive | Distracting | Specialized TP tool / Change tool visually depending on action selected |
| Hardware | N/A |  |  |