

# **Oculus Rift Planetarium Project**

Report-2 2015-01-22

## **Achievements so far**

- Designed and purchased custom PC set up
- Constructed dedicated test rig
- Initial tests performed on existing games/demo material  
on both existing low powered machines and new test rig
- Tried on local staff and gathered reactions/comments
- Initial technical discussions with:  
Fabien Chereau, developer of Stellarium  
John Taylor, developer of Google Sky  
Jay from Puffer Fish Displays

See report-1 for more details.

## **Key conclusions from testing/technical conversations**

- Motion sickness issues are mostly to do with lateral motion, not with head rotation. This bodes well for planetarium style use, from a fixed viewpoint. Helps if landscape always present for reference.
- For many games etc a high powered PC is needed. We should stick to software with a minimalist approach, so a high frame-rate can be achieved even with a low-powered machine. Stellarium seems well suited to this.
- For multiple users in the same room, we considered at first the idea of running from a central server, controlled by the show presenter, feeding to each headset. We concluded that this would not work, because of (a) speed, (b) cabling complexity, (c) lack of flexibility. Note that the headsets are not yet wireless capable. Each needs to be physically connected to a machine.
- A better option is for each headset to be run from its own (compact, low powered) machine. Each machine runs its own copy of Stellarium. The user can look around as they wish, but the configuration (date, location, zoom level, which catalogues are being viewed etc) is controlled from a central location by the presenter, who can for example also show an arrow pointing at what to look at etc. The user-machines speak to the central machine by local wifi network.
- Stellarium has a simple configuration system and API for controlling this which should make the above possible using a simple message bus type system. This should then be easily scaleable to internet-based shows.
- We also believe it should be possible to watch a standard "dome master" style full dome movie.

## **Next steps**

go down this list as far as we manage:

- obtain contracted effort for software tasks.

With single headset/PC:

- view Stellarium through Oculus.
- view standard dome master video
- view World Wide Telescope display
- write report on how this all worked

For one user PC/headset + central presenter PC

- design message bus system to interface with Stellarium controls
- choose list of commands to send
- alter configuration of Stellarium on remote PC connected by wifi
- connect audio stream from presenter PC to user PC
- test drive running show for single user
- write report on how this all worked

For multiple user PCs + central presenter PC

- broadcast identical Stellarium-altering messages to whichever PCs connect
- provide means for monitoring collection list
- demonstrate multi-user show
- write report on how this all worked

For internet connected PC

- achieve message and audio stream passing over TCP/IP (XMPP?)
- demonstrate show in different room
- write report on how this all worked