Visualization Compute Considerations and Dilemma
Mechdyne’s Core Purpose

“To Enable Discovery”

- Turn-key visualization solutions including: hardware, software, technical services, design/build
- AV/IT & 3D experience since 1988
- Worldwide presence
- Over 1,000 installed solutions
- AV/IT Help-Desk and support Services
By Show of Hands…

Large Big Data Visualization ?
Immersive/Sim Visualization ?
Both ?
Compute Location?

Local/Open to Display  IT Unmanaged?
Training and Simulation

The Wide Area Virtual Environment (WAVE)

US Army medical response training where all members of the team are in physical proximity and training in VE as a group.
## Compute Location?

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Hybrid Solutions are Common

Combine HMDs with a large screen immersive display for effective collaboration and review of VR activities.
3D Immersive “Over the Shoulder” CAVE viewers are in the same VE as HMD worker/avatars watching procedure.
- Natural Presence observing task simulation.
Compute Location?

- Local/Open to Display
- IT Room near display
- HPC Data Center

IT Unmanaged?
Managed? Restricted
IT Managed?
## Compute Location?

- **Local/Open to Display**
- **IT Room near display**
- **HPC Data Center**

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Is IT part of your team?
**Visualization Compute Considerations and Dilemma**

Di·lem·ma - a usually undesirable or unpleasant choice.

Similar words: quandary, puzzle, conundrum
What Compute Solution is Best?
Display channel resolution

HD or 2K = 1920x1080 or 2048x1080

UHD or 4K \( (4 \times (\text{HD or 2K})) \) 1 or 4 ch.

8K \( (4 \times \text{UHD}) \) 4 or more ch.

Can 1 PC drive my display?
How many display channels?
MultiView Projector Example:

Digital Projection Insight 4K HFR 360

- Ultra High Frame Rate, 360 Hz
- Native 4K Resolution
- 27,000 Lumen peak brightness
- Laser/Phosphor light source
- 20,000 hour Illumination life
- 6 inputs displayed sequentially
- 3D capable

- Supports 1 to 3 stereoscopic perspectives
MultiView Projector Example:

Multi-View Server(s) (synchronised)

6 x DP1.2
4K @ 60fps

3D Sync Out

Glasses Sync Processor

Sync Emitter
RF(ISM), IR or other

Insight 4K HFR 360

User 1
120Hz 3D Stereo

User 2
120Hz 3D Stereo

User 3
120Hz 3D Stereo
Single Demo PC w/ 2 P5000 IGs

Left eye, Viewer 1, 2, & 3

Right eye, Viewer 1, 2, & 3

Slow render frame rate < 30 FPS
Tried usual performance tweaks: Anisotropic Filtering and Anti-Aliasing settings, little improvement
Single Demo PC w/ 2 P5000 + P4000 IGs

Viewer-1
Left/Right eye

Viewer-2
Left/Right eye

Viewer-3
Left/Right eye
Compute / Display Takeaways

• There is no one ideal xR or Data compute.

• Similar Compute challenges exist for a wide range of solutions: from single person to multi-participant and large group displays.

• Knowing number of channels is only a start.

• One size does not fit all!
Communicate & Collaborate:
Every more critical: Use large displays as an xR observation deck. Windowing options to bring together other 2D/3D data resources supporting a group collaborative activities.
Thank you!

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