It's not an Optiportal

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Motivation

- Viewing geometric datasets that require high resolution to resolve the structure.
- Exploring image data by being able to see detail and the context simultaneously.

High resolution display options - Part 1

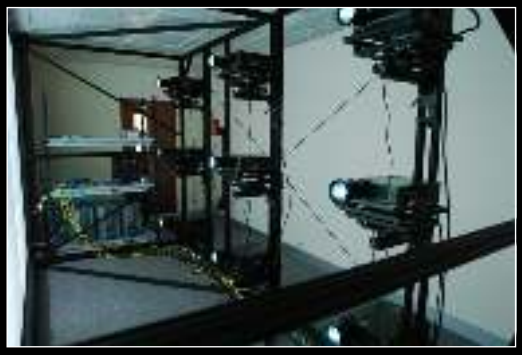
- High resolution projector(s).
- Issue: High price tag, $150,000 - $250,000.
- Requires four 4K projectors to achieve 32MPixels.
- Occupy significant space and have noise/heat issues.

JVC DLA-SH4K
4096 x 2400

Sony SRX-T420
4096 x 2160

High resolution display options - Part 2

- Array of more commodity projectors.
- Can create an edge blended seamless display.
- Problems:
  - High space requirements.
  - High cost of ownership and maintenance.
    Especially for edge blending and colour calibration.
  - High resolution requires a large numbers of projectors.
    16 HD projectors required for 32MPixels.



3 x 3 array of HD projectors from VisBox
(18 MPixels)

Centre for Comparative Genomics,
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High resolution display options - Part 3

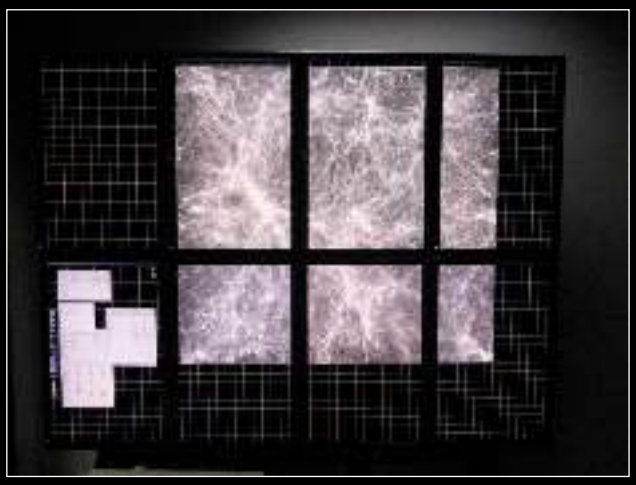
- Tiled LCD panels with small bezels.
- Currently small bezels (millimeter or so) are only available in relatively low resolution panels.
- For example the Mitsubishi VS-L46XM70 has a 3mm Bezel but only 1366 x 768 pixels.
  Would require 30 panels to achieve 32MPixels.

Limitations and design goals

- Insufficient funds for a 4 x 4K projector approach.
- There is insufficient space in the UWA visualisation laboratory for a tiled rear projector solution.
- Strong desire to be able to run "any" software.
  Not limited to cluster aware of locally developed solutions only.
- First application was group viewing of recently released (at the time) Hubble images in the 6K pixel range.
- Claim: To get raw pixel count, the 2560x1600 pixels of 30 inch DELL displays is the most cost effective solution. 8 panels results in 32MPixels.

First attempt

- First approach was a Mac Pro and 4 x dual link graphics cards.
- Discovered: huge performance penalty when a display context spanned multiple cards.
- Result: Usable but only just.
- The majority of Apple software did not support large enough windows.



15 million point cosmological simulation

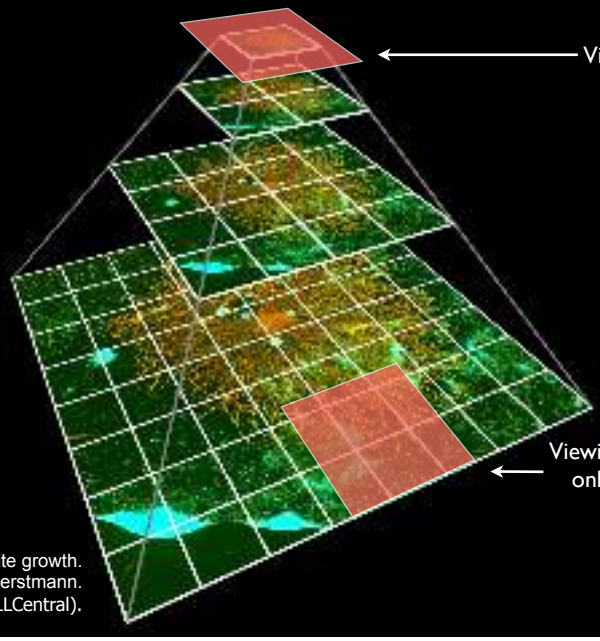
Hubble

Current solution

- Hardware: Single workstation and two nVidia QuadraPlex units.
- QuadraPlex units result in 8 dual link DVI ports, SLI and genlocked if desired.
  Based upon the Quadro FX5800 cards.
- Driver support for MSWindows7 and a couple of Linux distributions.
- Result has been high performance and wide software compatibility.

Most commonly used image viewer is iiPviewer

- Based up pyramidal tiff formatted images.
- Read only as much data as can be displayed.



Fluorescent micrograph of DRG neurite growth.
Courtesy Derek Gerstmann.
Alysia Buckley, Stuart Hodgetts (CELLCentral).

Application examples

- Teaching in Geology.
- Live exploration in GoogleEarth while discussing geological processes.

Digital terrain maps

- 50,000 pixel square aerial photography at 30FPS.
- Good colour calibration can be achieved across the displays.

ASKAP site at Boolardy
50,000 x 50,000 pixels

Remaining issues / disadvantages

- nVidia support for rotated displays is not what it could be.
- Doesn't scale to higher resolution without reverting to cluster aware software.
- MSWindows 7 likes to place small dialog boxes here.

Courtesy Peter Morse

Comments / Questions

Which do you think would be the more "engaging"?