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Research Computing Services

OptIPortal Collaboration

Bernard Meade

THE UNIVERSITY OF MELBOURNE | OptIPortal Collaboration

- Introduction
- What is an OptIPortal?
- Optiplanet Collaboratory
- Scalable Adaptive Graphics Environment (SAGE)
- Connecting display walls to share content
- Distributed OpenGL application
- Limitations

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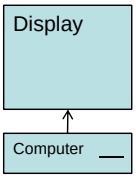
What is an OptIPortal?

Basic computer and display layout



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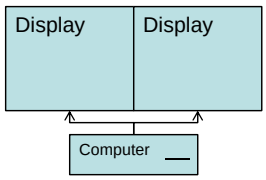
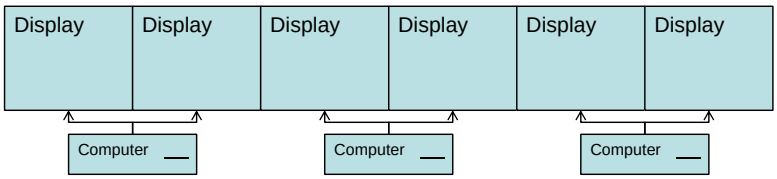
What is an OptIPortal?

Basic computer and two displays



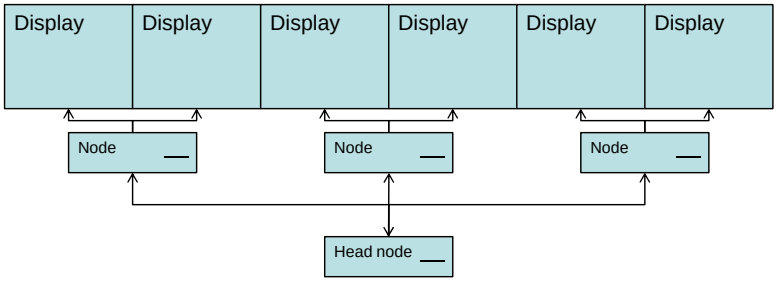
What is an OptIPortal?

Tiled displays



What is an OptIPortal?

Managed tiled displays



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What is an OptIPortal?

Visualization cluster

Display	Display	Display	Display	Display	Display
Display	Display	Display	Display	Display	Display
Display	Display	Display	Display	Display	Display
Display	Display	Display	Display	Display	Display

Node

Node

Node

Node

Node

Node

Head node

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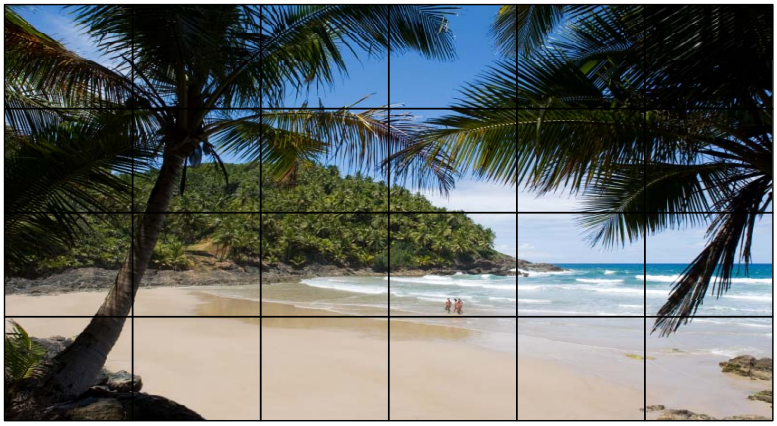
What is an OptIPortal?

Visualization cluster



Node

Node

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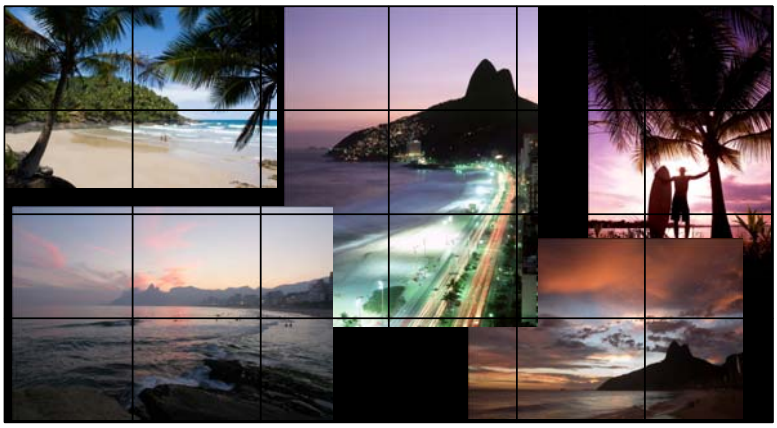
Head node

What is an OptIPortal?

Visualization cluster



Node

Node

Node

Node

Node

Node

Head node

What is an OptIPortal?

- Tiled visualization cluster
  - Many displays driven in unison by one or more computers, able to be scaled easily.
- Collaborative workspace
  - Display environment should be able to be shared with remote OptIPortals for sharing full resolution images and other digital content.
- HD Video Conferencing
  - Researchers should be able to communicate easily with multiple sites using HD video and echo-free audio.

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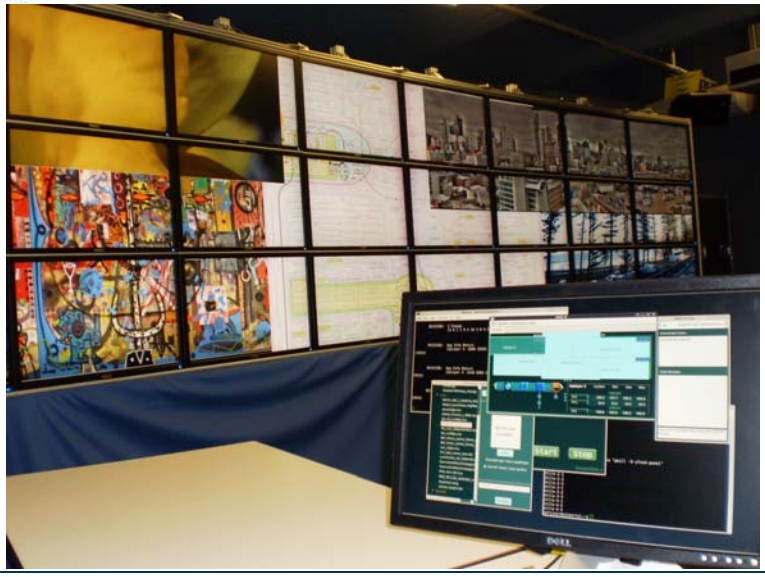

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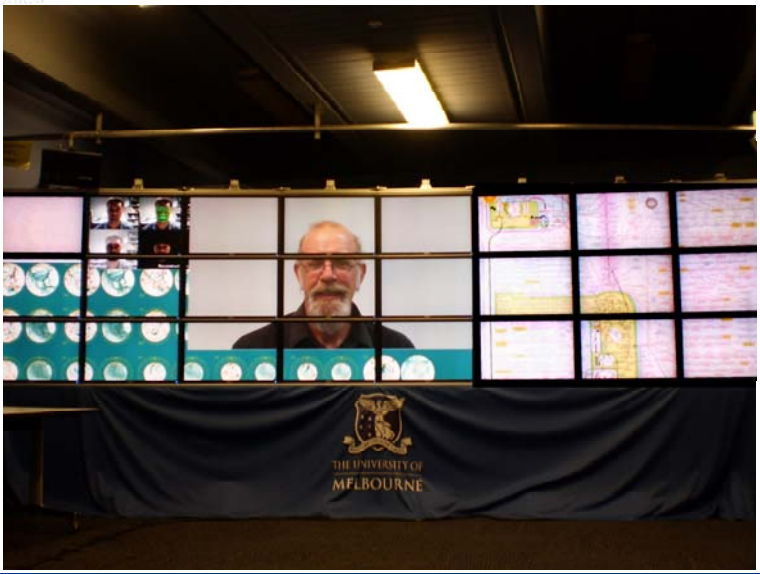
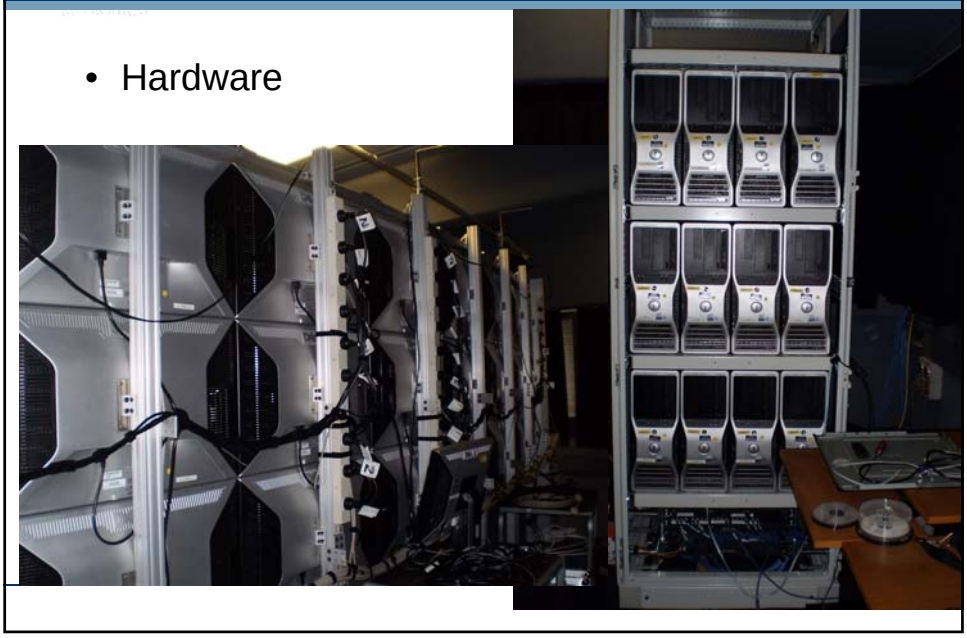


What is an OptIPortal?

- Hardware



OzIPortal

- Hardware
  - 1 x Headnode
  - 12 x tile nodes
  - 24 x 30” UltraHD displays (2560x1600)
  - 8 x 3 configuration
  - 1 x HD video streaming server
  - High bandwidth network
  - HD Video Conferencing

Example

60 x 10.1 megapixel frames
Stitched with Gigapan software
25069 x 10748 pixels ~ 270Mp (375MB)

Gigapan Epic 100 image from http://gigapansystems.com/gigapan-products/epic-100-product-page.html

Optiplanet Collaboratory

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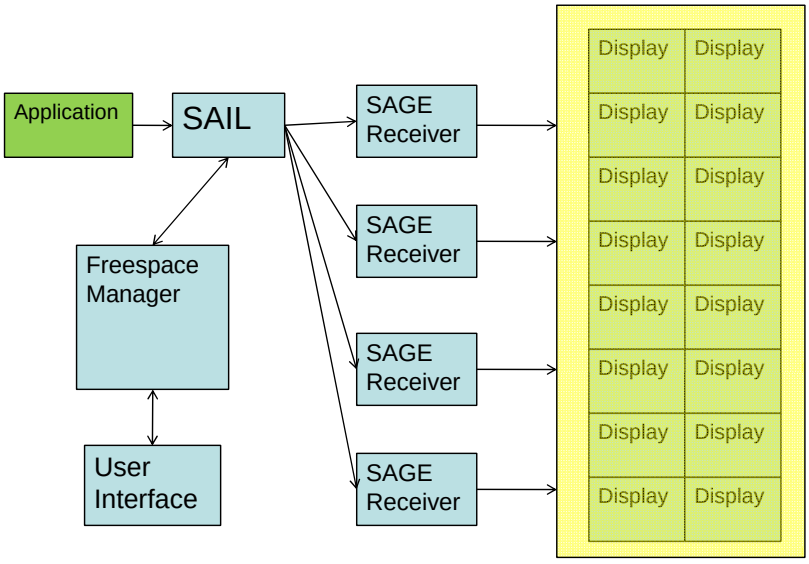
SAGE



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SAGE Content

- Images
  - JPGs, PNGs (and soon PDF)
- Movies
  - MOV, MPG, streamed video
- OpenGL application
  - Volume visualisations
  - GIS applications
  - 3D Models
- Shared desktops
  - VNC
- Real-time HD video capture (e.g. video conferencing)

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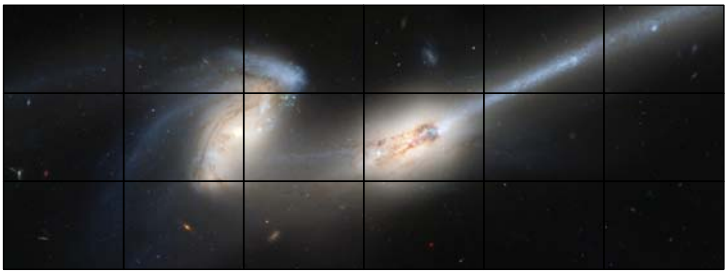
SAGE Library



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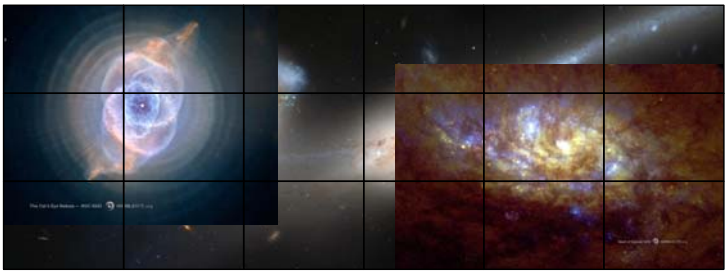
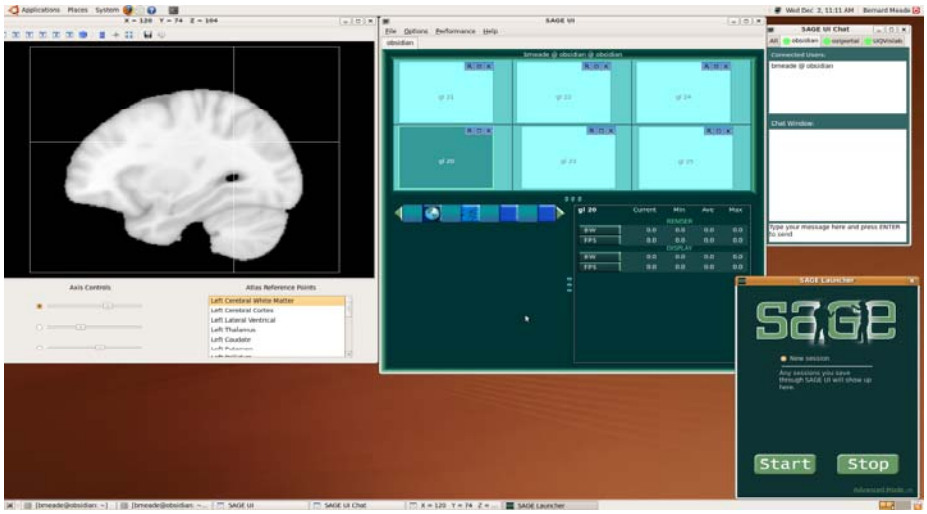
SAGE Library

SAGE Library



SAGE UI



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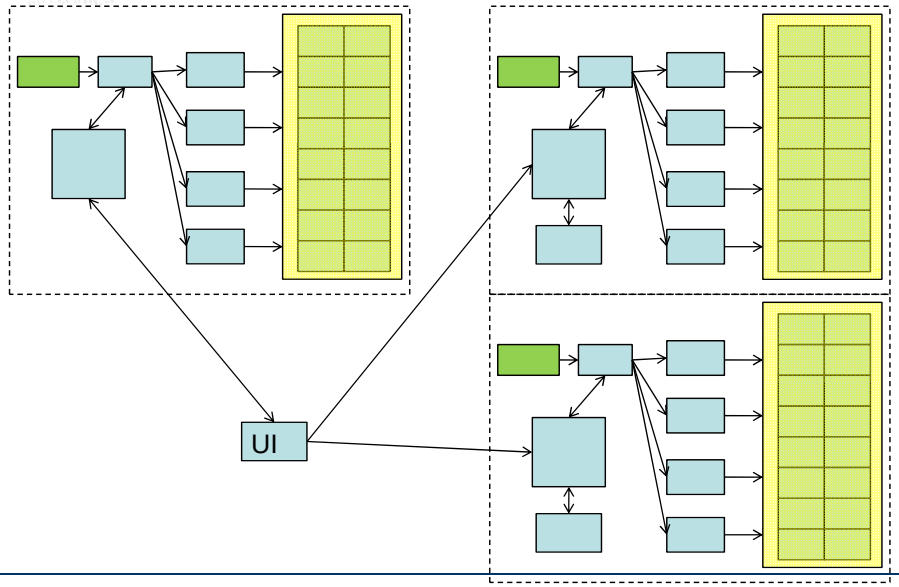

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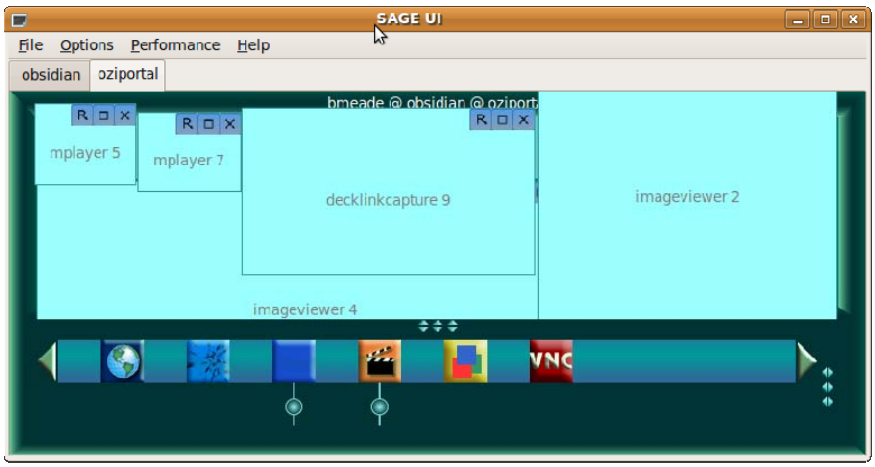

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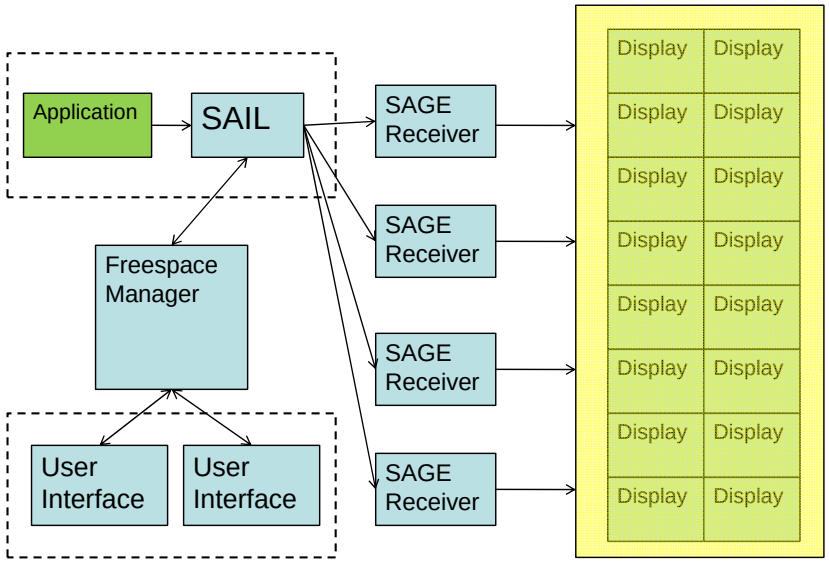

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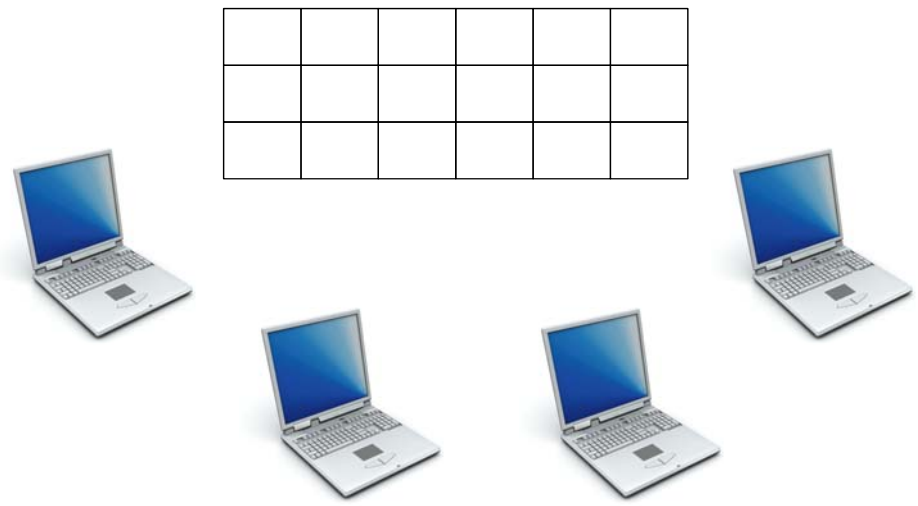

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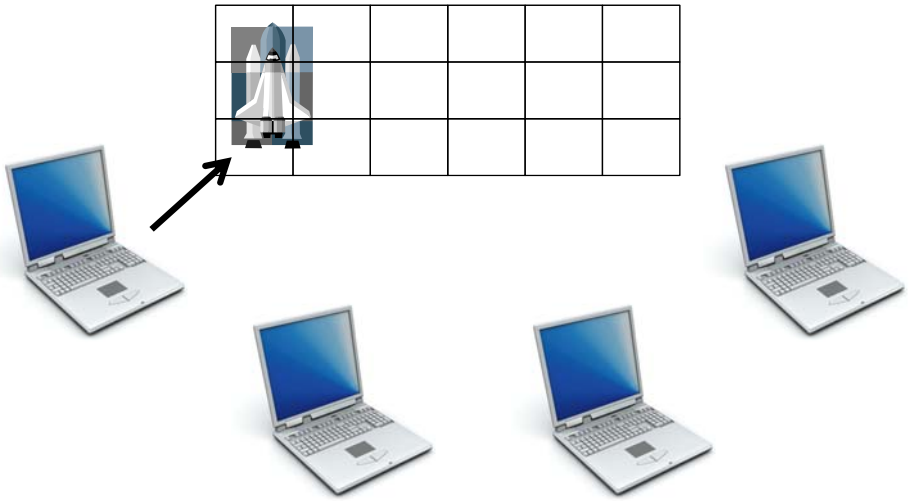

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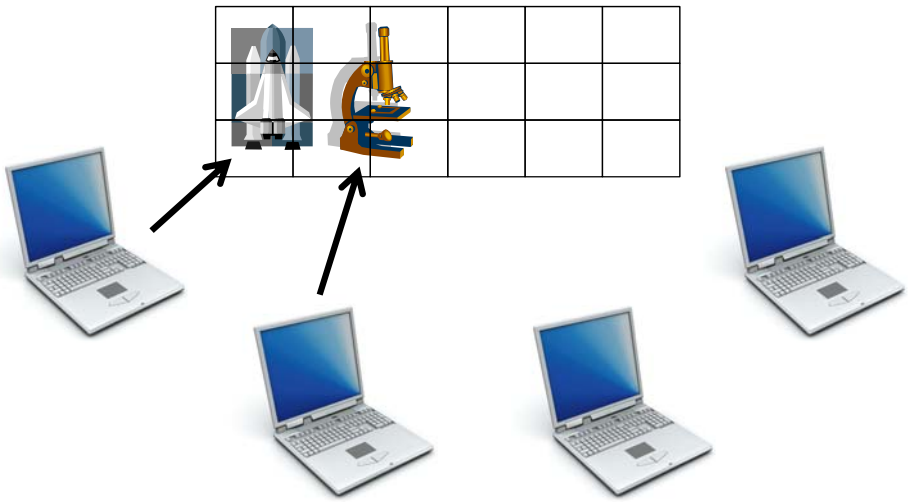

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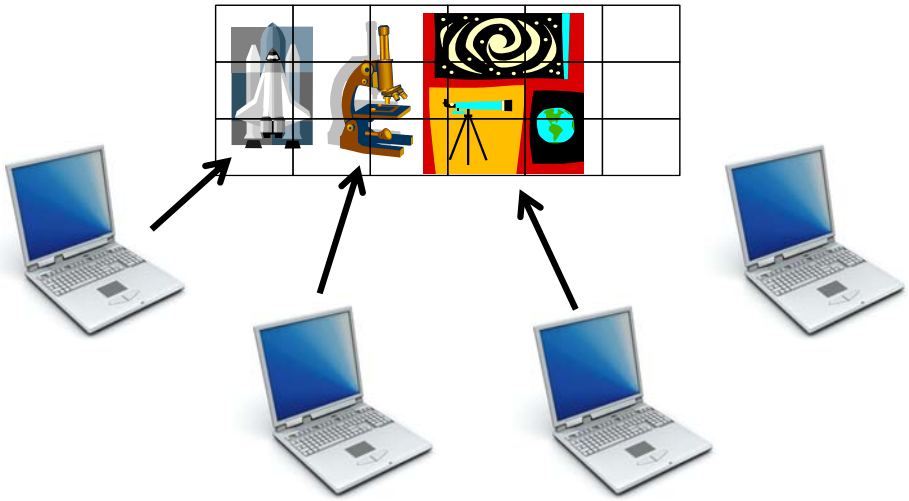

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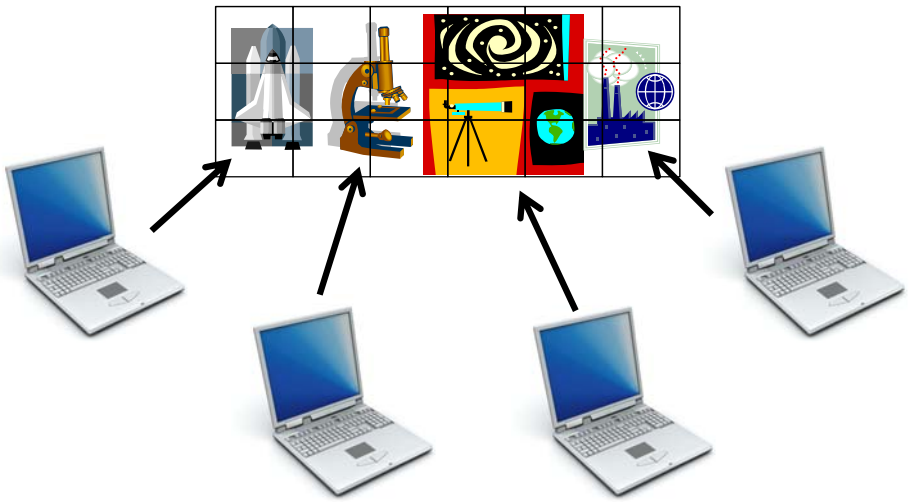
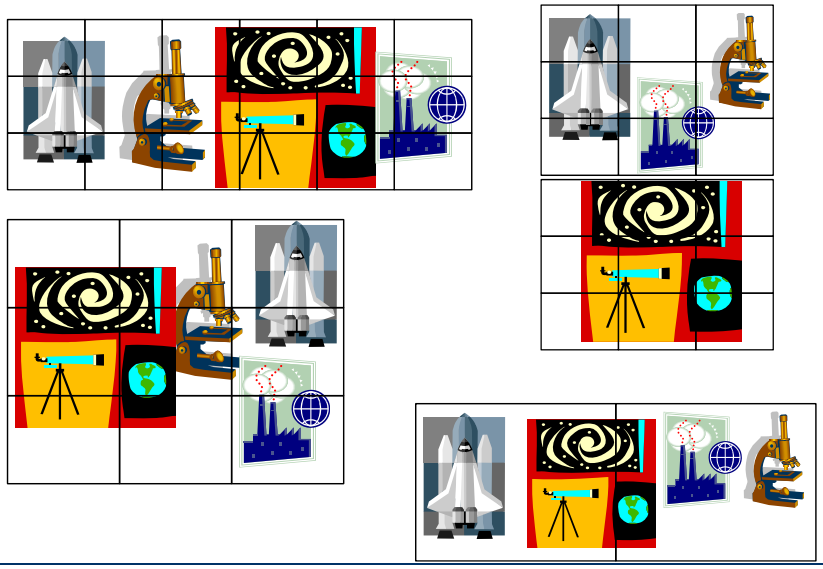


Example – Bushfire collaboration with CALIT2

Layout Variations



2009 OptIPortal Challenge

Dr Nathan Faggian

Distributed OpenGL application

OpenGL Volume Renderer

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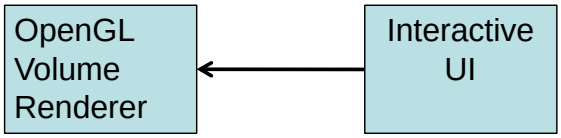
Distributed OpenGL application



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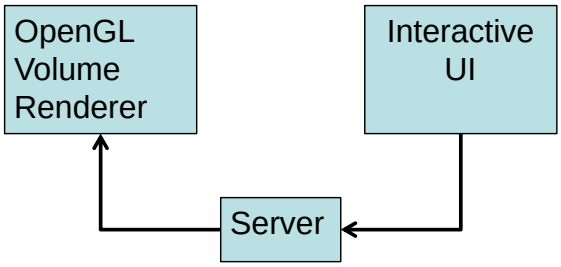
Distributed OpenGL application



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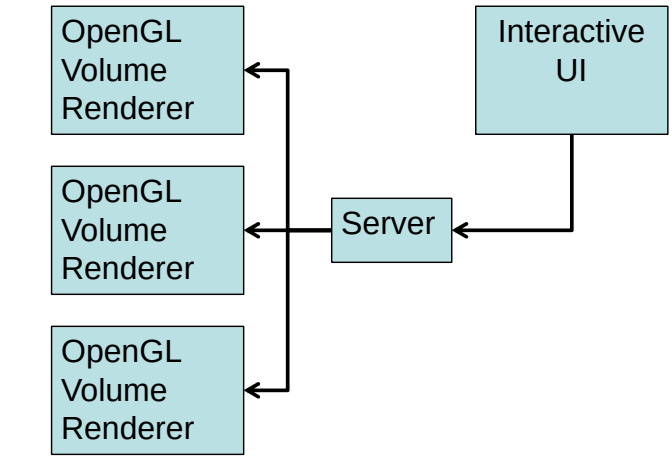

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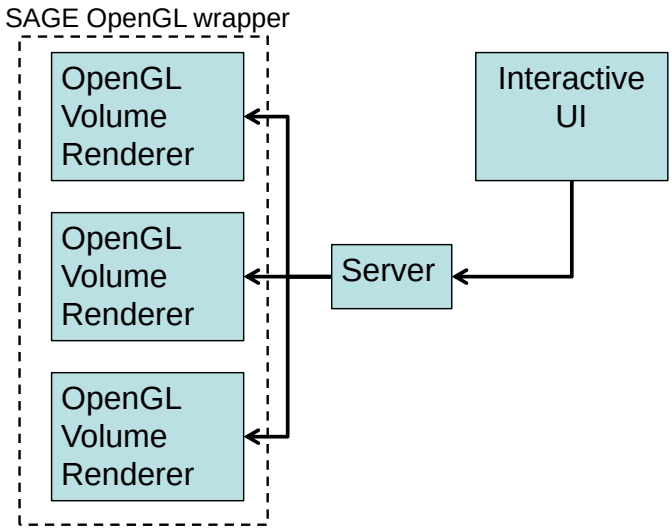

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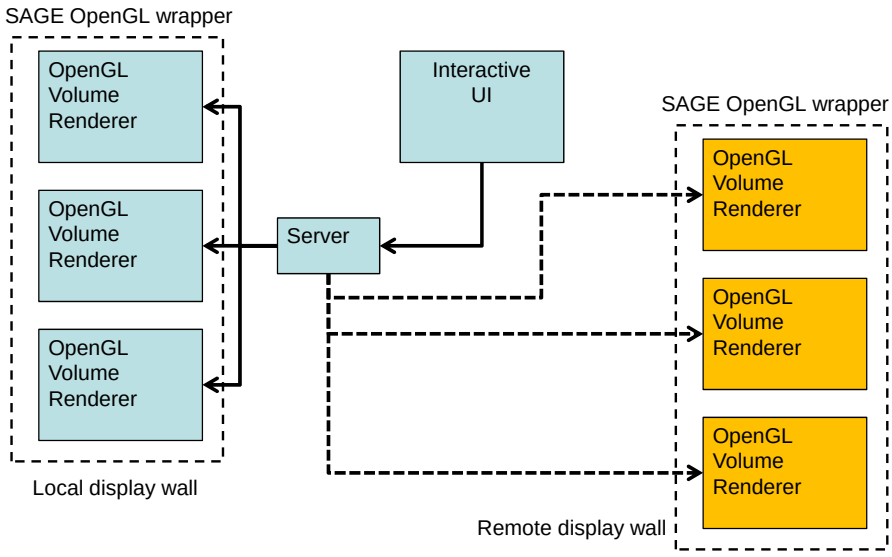

Distributed OpenGL application

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Limitations

- Lack of real-time content interaction
- Need to start the application on each display wall
- Asynchronous content
- Limited to the Brain Registration software

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