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Visualization Tools to Bridge Gaps for Distributed Knowledge and Distance Collaboration

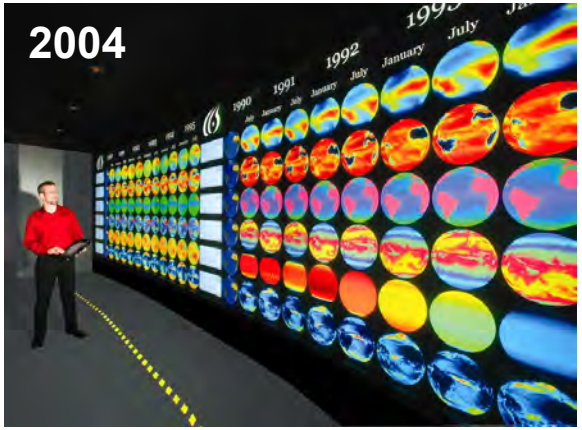
Our (2005) Vision for the Next Decade--Multiple Rooms for Shared Visualization and Virtual Reality

Includes High-Quality Directional Audio with Echo Cancellation and Session Archiving over multiple 10G Networks

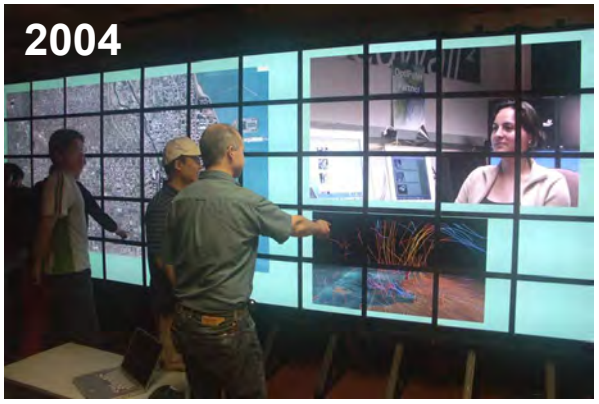
Bringing Scalable Visualization to the Users

NCSA 4 MPixel
NSF Alliance PowerWall

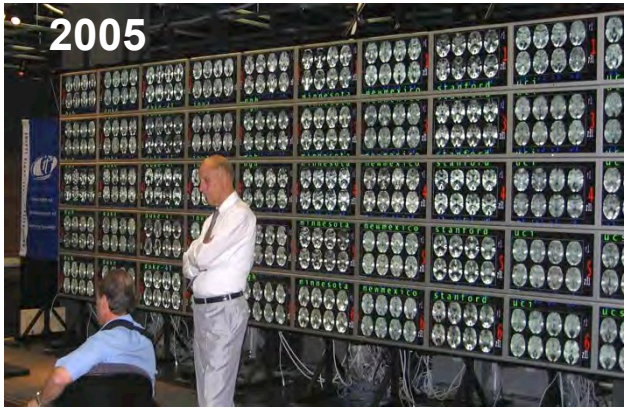
LLNL 20 Mpixel Wall



ORNL 35Mpixel EVEREST



EVL 100 Mpixel LambdaVision
NSF MRI



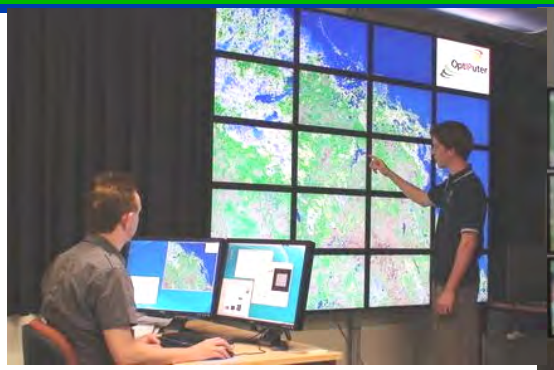
Calit2@UCI 200 Mpixel HiPerWall
NSF MRI

TACC 307 Mpixel Stallion
NSF TeraGrid

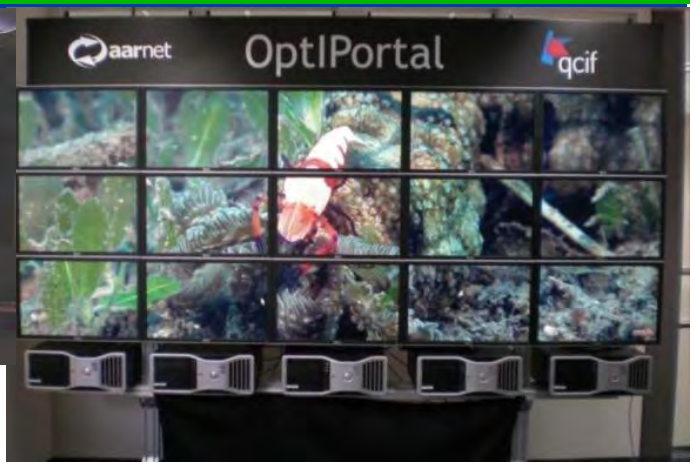
Two Orders of Magnitude Growth
(Same as 100mb/s-->10Gb/s!

Australian / New Zealand OptIPortals

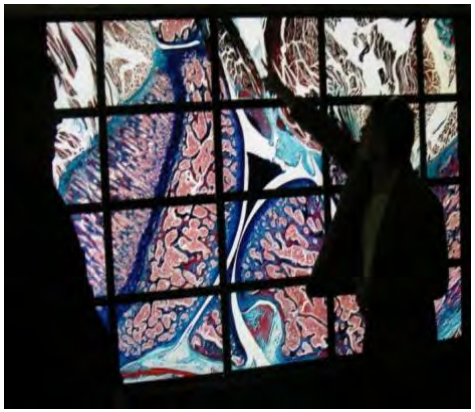
ANU



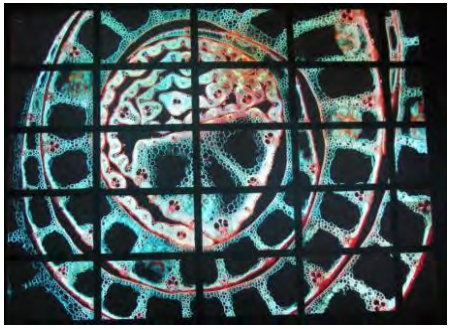
U Queensland



AARNet



Monash U



CSIRO

U Melbourne

U Wellington, NZ

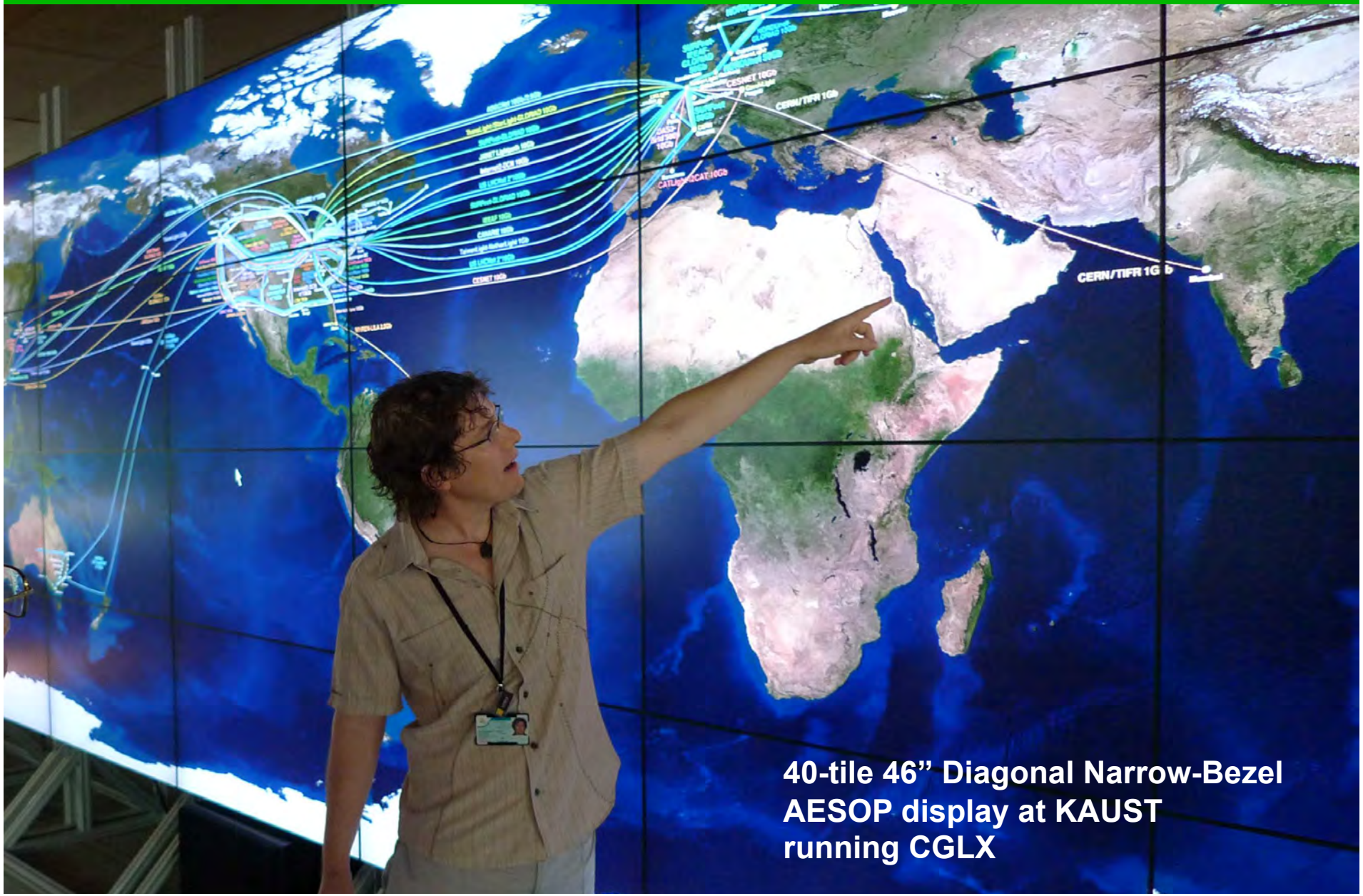
evl electronic visualization laboratory

it²

In 2009, Tiled Displays got Really Good!

Electronic Visualization Laboratory, University of Illinois at Chicago
18-tile NEC 46” Ultra Narrow Bezel SAGE display
Summer 2009 ~$100,000
Bright, Smart, Nearly Seamless, CaliFragilistic

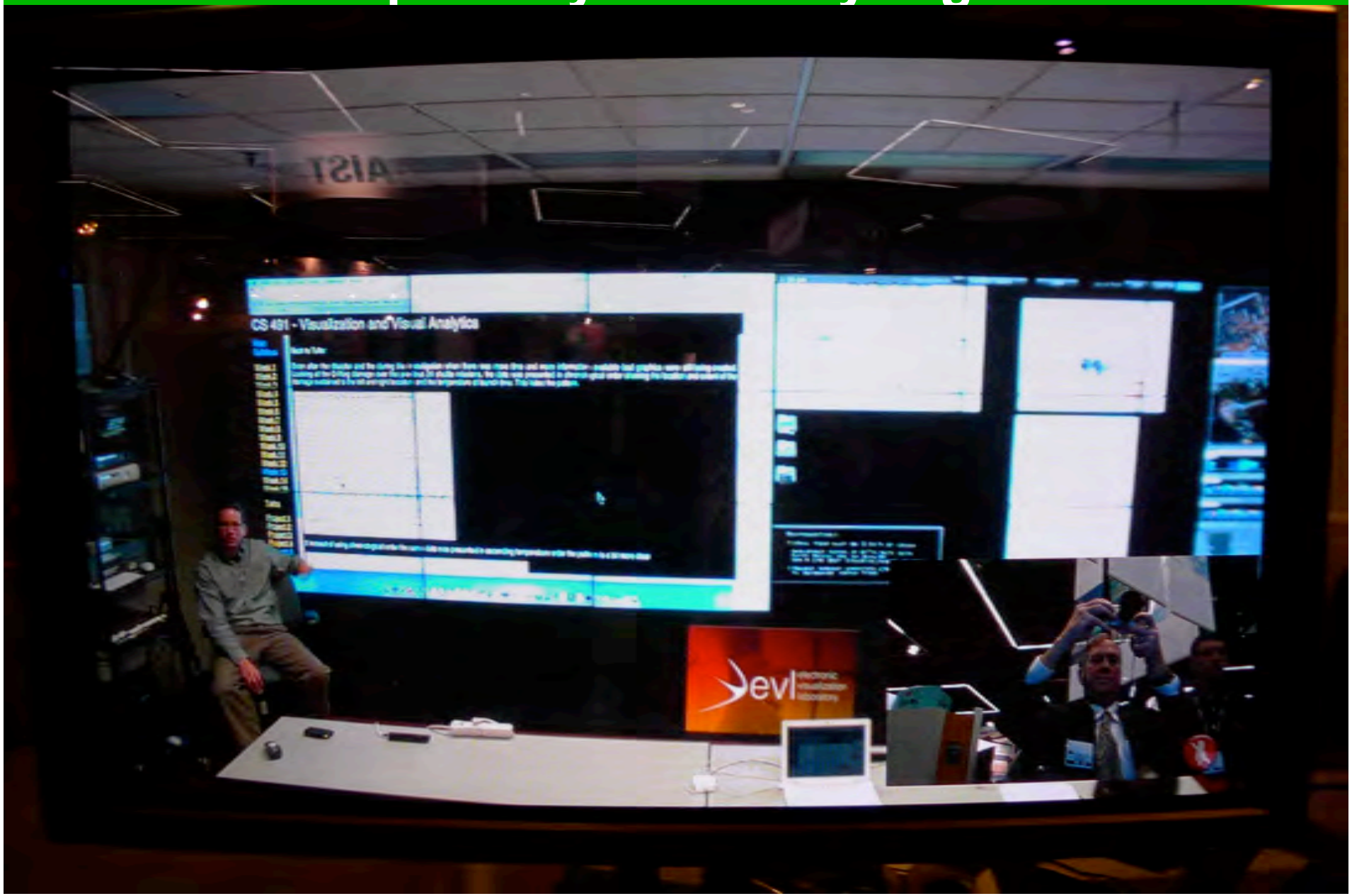
AESOP Display built by Calit2 for The King Abdullah University of Science and Technology (KAUST)



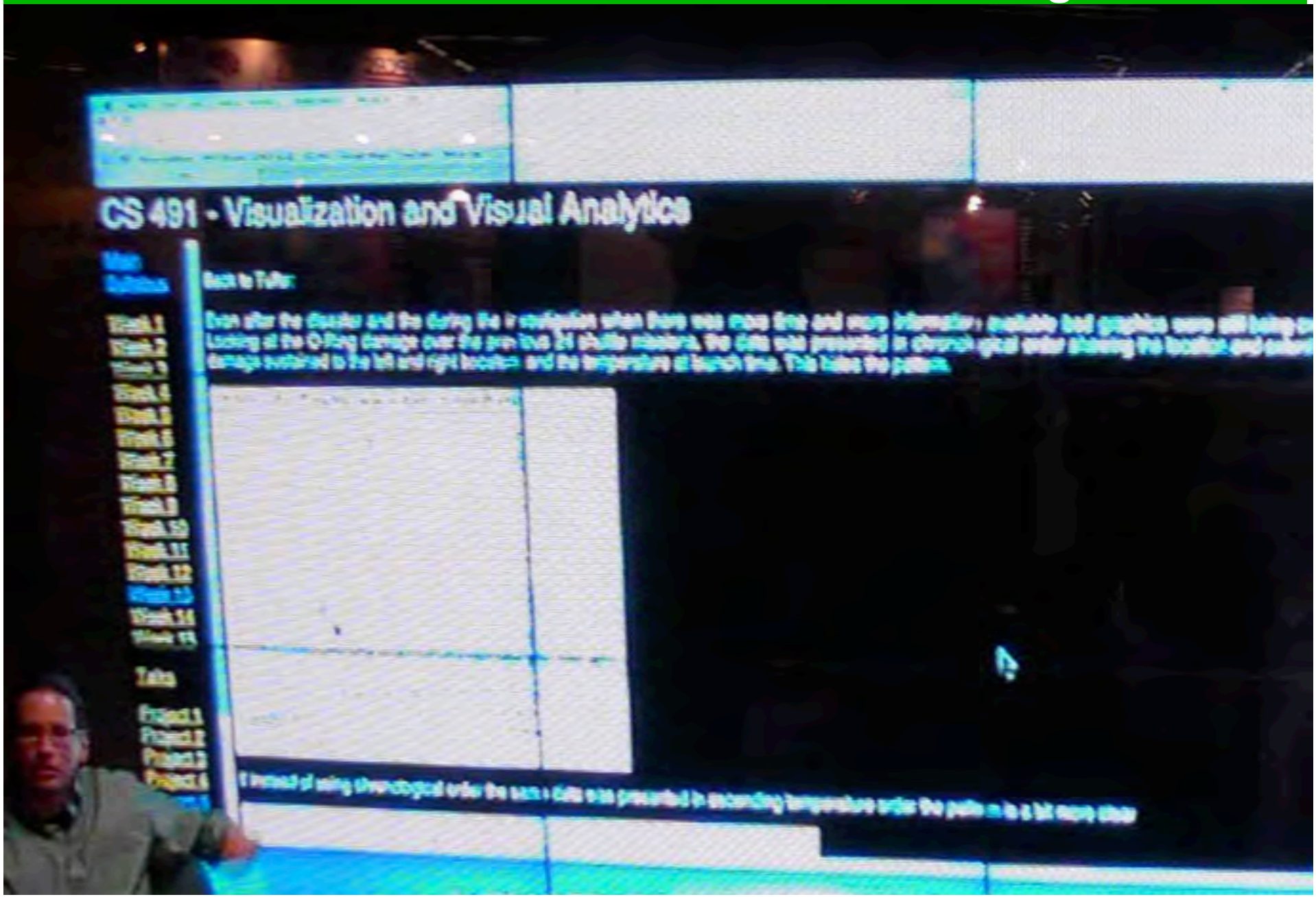
40-tile 46” Diagonal Narrow-Bezel AESOP display at KAUST running CGLX

40-Tile KAUST AESOP Display at Night

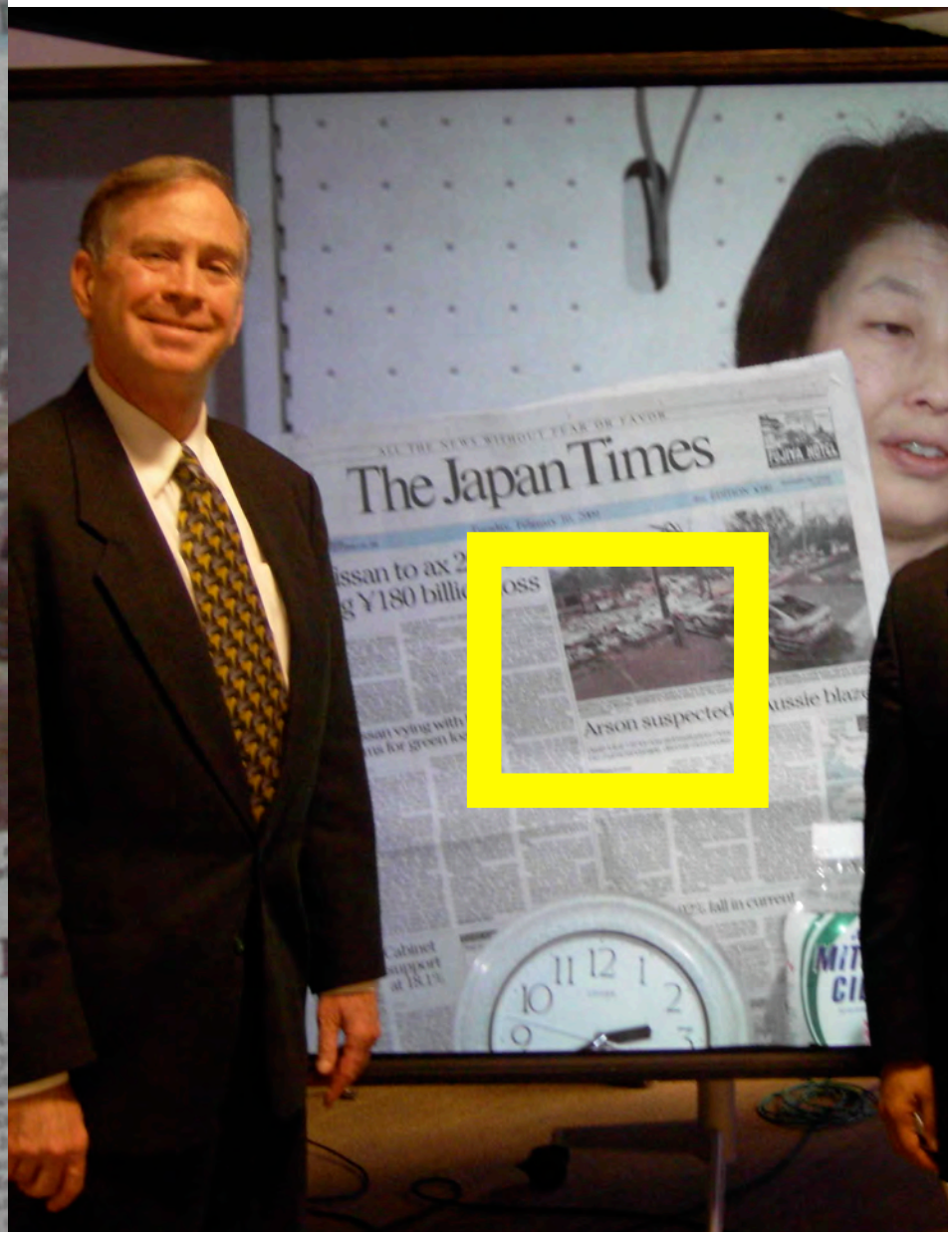
Collaboration Needs People Audio/Video and Data Sent Separately or at Very High Bandwidth



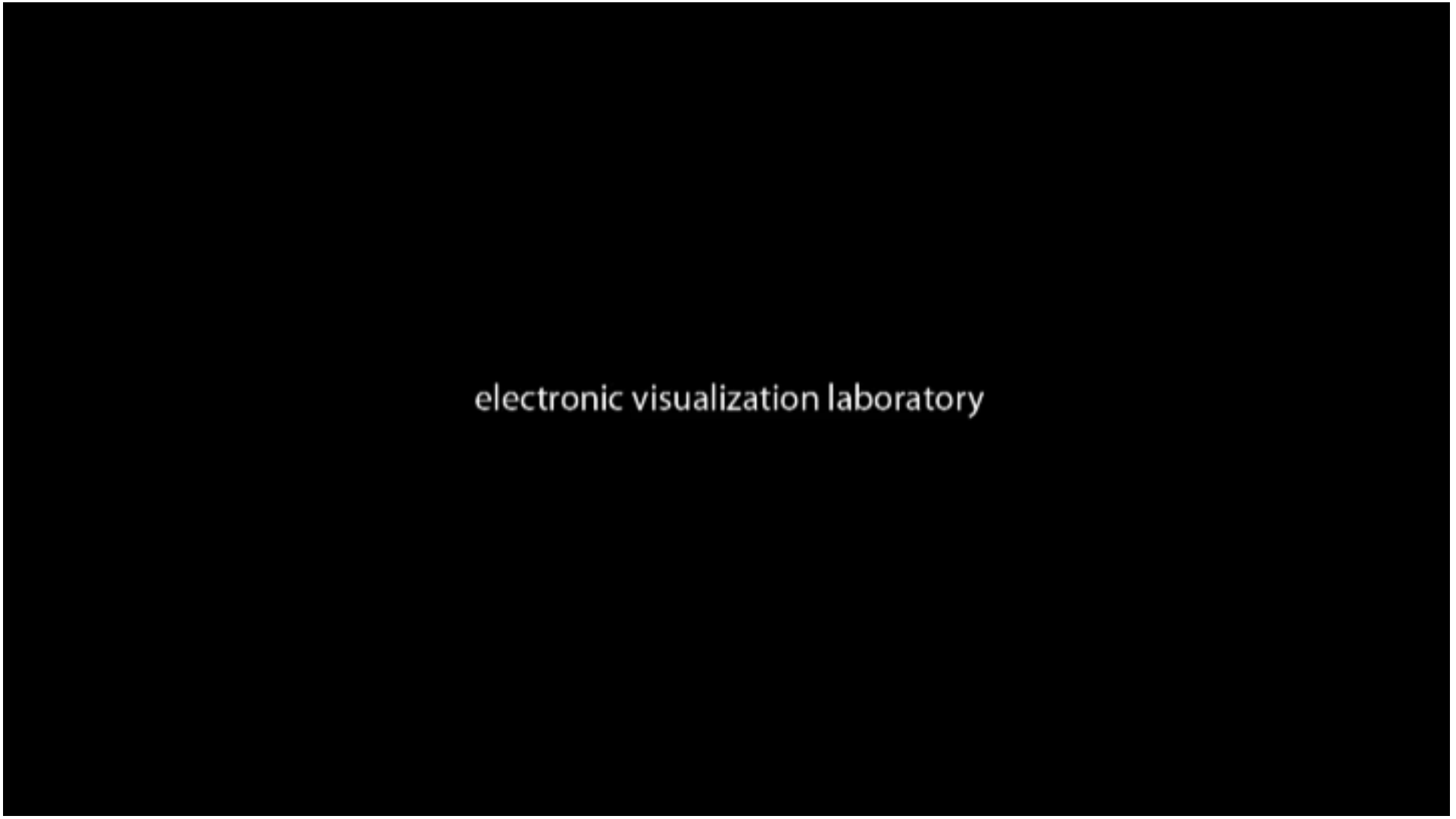
Low Bandwidth Codecs Can't Handle High Frequency Static Data--Even Worse when Moving!



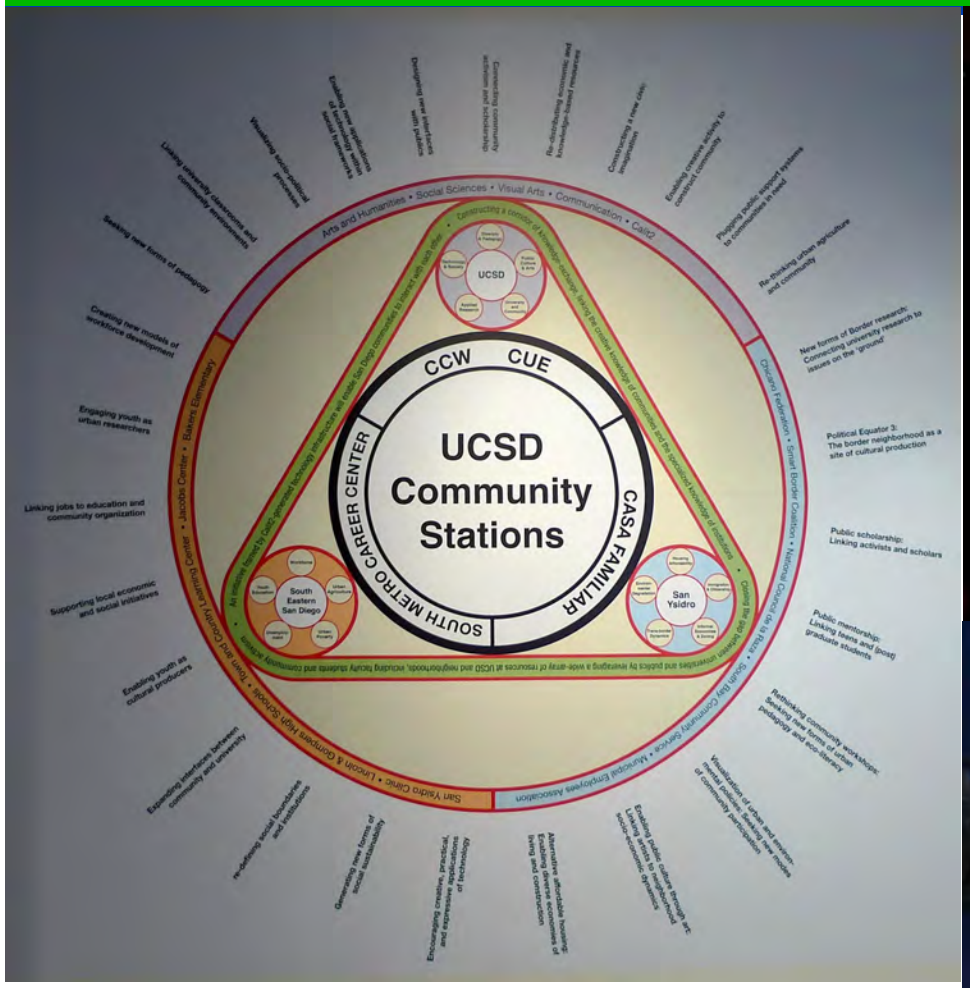
Collaboration Needs People and Data Sent Separately or at Very High Bandwidth (4K at 500Mb/s)



EVL's SAGE

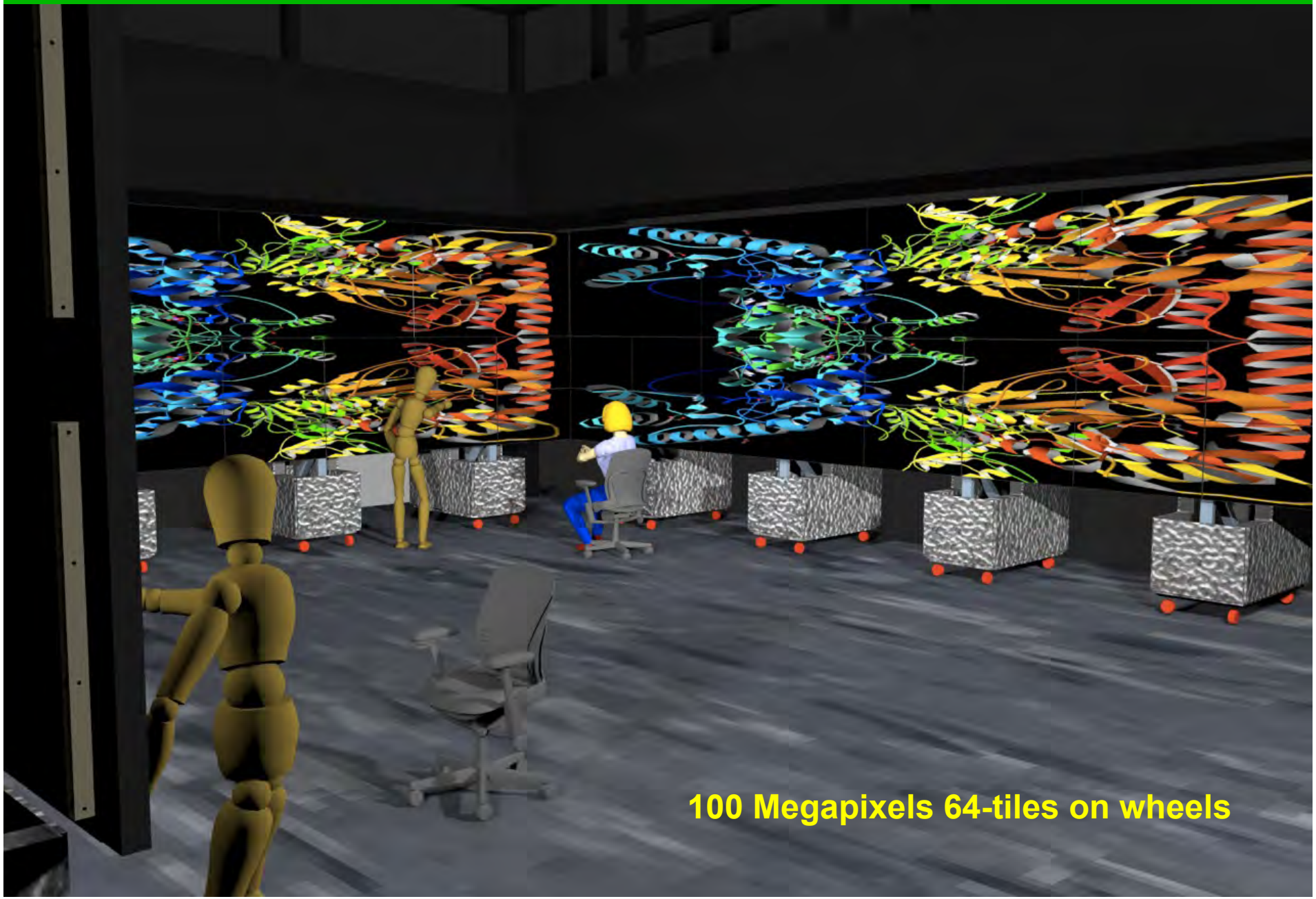


UCSD Community Stations



Community Collaboration between Casa Familiar, South Metro Career Center, and UCSD Calit2 Gallery

Vroom (here, under construction)



Quickly Deployable OptIPortables

Quickly Deployable OptIPortables

45 minute setup, 15 minute tear-down with two people (possible with one)

All Electronic Signage Exhibits

SIGGRAPH KAUST Booth August 2011

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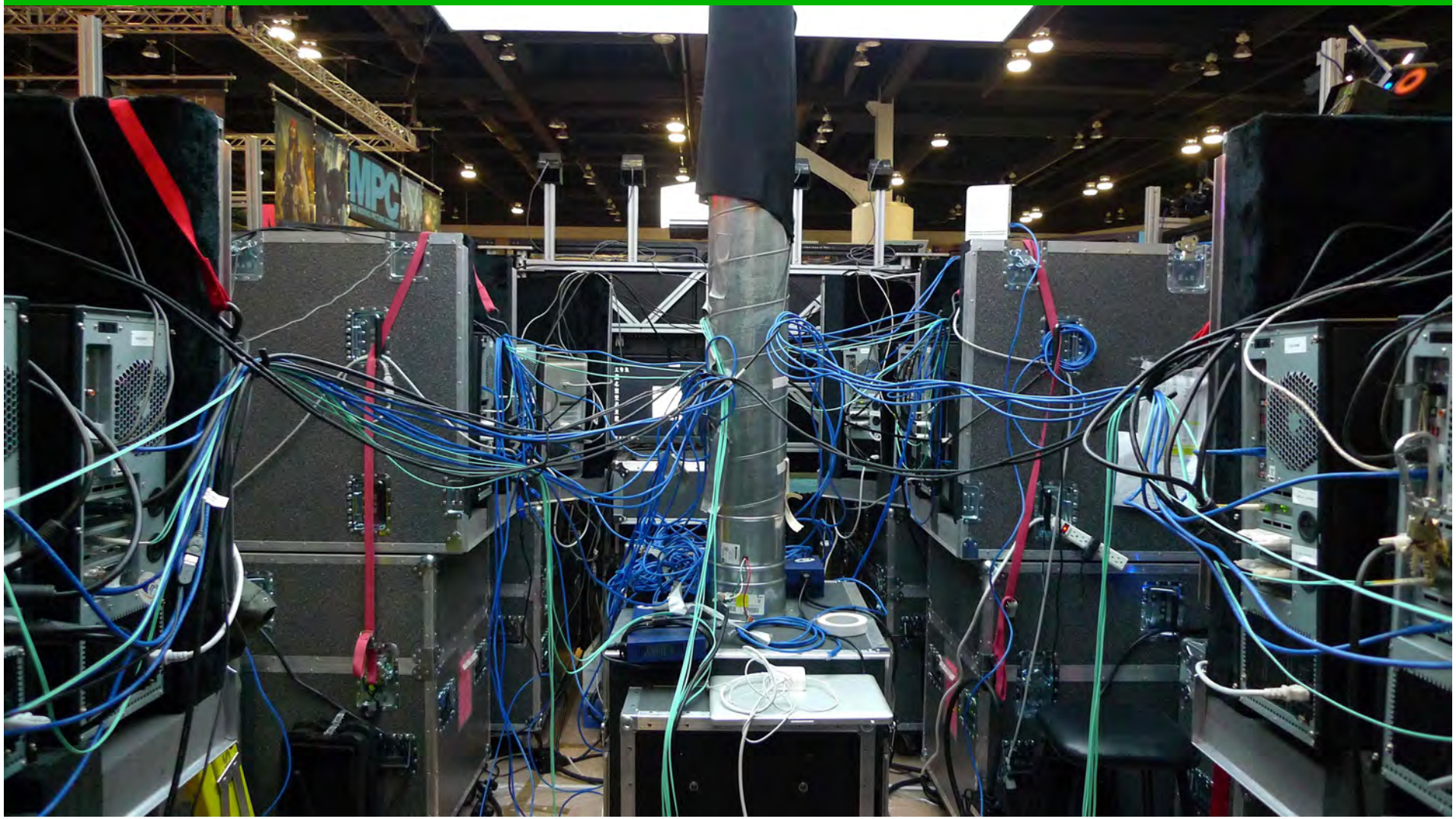

SIGGRAPH KAUST Booth August 2011

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SC'11 Plan

Summary--in the Past 15 years

- Network Engineers have made fast networks easy
  - Globally
  - Regionally
  - Locally
- Computer Engineers have made computing easy
  - At Universities and Companies
  - In Clouds
- Visualization Engineers have made graphics easy
  - 2D
  - 3D
  - HD and 4K
- But Collaboration is still Challenging!

Collaboration!

This is the Killer Application for Visualization

Thank You Very Much!

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  - KAUST-US
- **University of Illinois at Chicago, Argonne National Laboratory, and Northwestern University for StarLight networking and management**
- **National Lambda Rail, Pacific Wave and CENIC**
- **NTT Network Innovations Lab**
- **Cisco Systems, Inc.**
- **Pacific Interface, Inc.**
- **Darkstrand, Inc.**
- **Sharp Labs of America**