Towards GigaPixel Displays

Panel on Issues, Challenges, and
Future Directions of Multimedia Research
IEEE International Symposium on Multimedia (ISM 2006)
La Jolla, CA
December 13, 2006

Dr. Larry Smarr
Director, California Institute for Telecommunications and Information Technology
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Jacobs School of Engineering, UCSD

UCSD
UCIrvine

"The future is already here, it's just not evenly distributed"
William Gibson, Author of Neuromancer







- **Mobile Broadband**
  - **0.05 to 0.5 Mbps**
- **Home Broadband**
  - **1-5 Mbps**
- **Calit2 Global Broadband**
  - **1,000-10,000 Mbps**

Calit2 is Connected to Global University Research Centers at 10Gbps

Maxine Brown, Tom DeFanti, Co-Chairs

iGrid 2005

THE GLOBAL LAMBDA INTEGRATED FACILITY

www.igrid2005.org

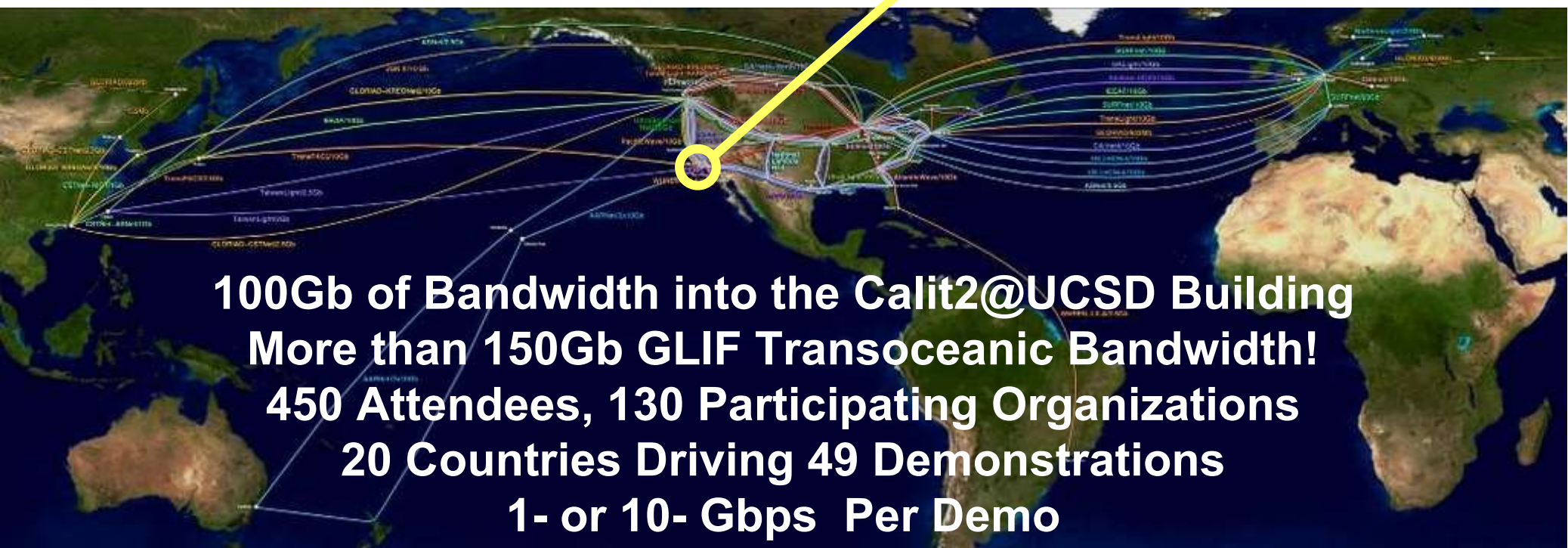


the UC Discovery Grant

September 26-30, 2005

Calit2 @ University of California, San Diego

California Institute for Telecommunications and Information Technology



100Gb of Bandwidth into the Calit2@UCSD Building

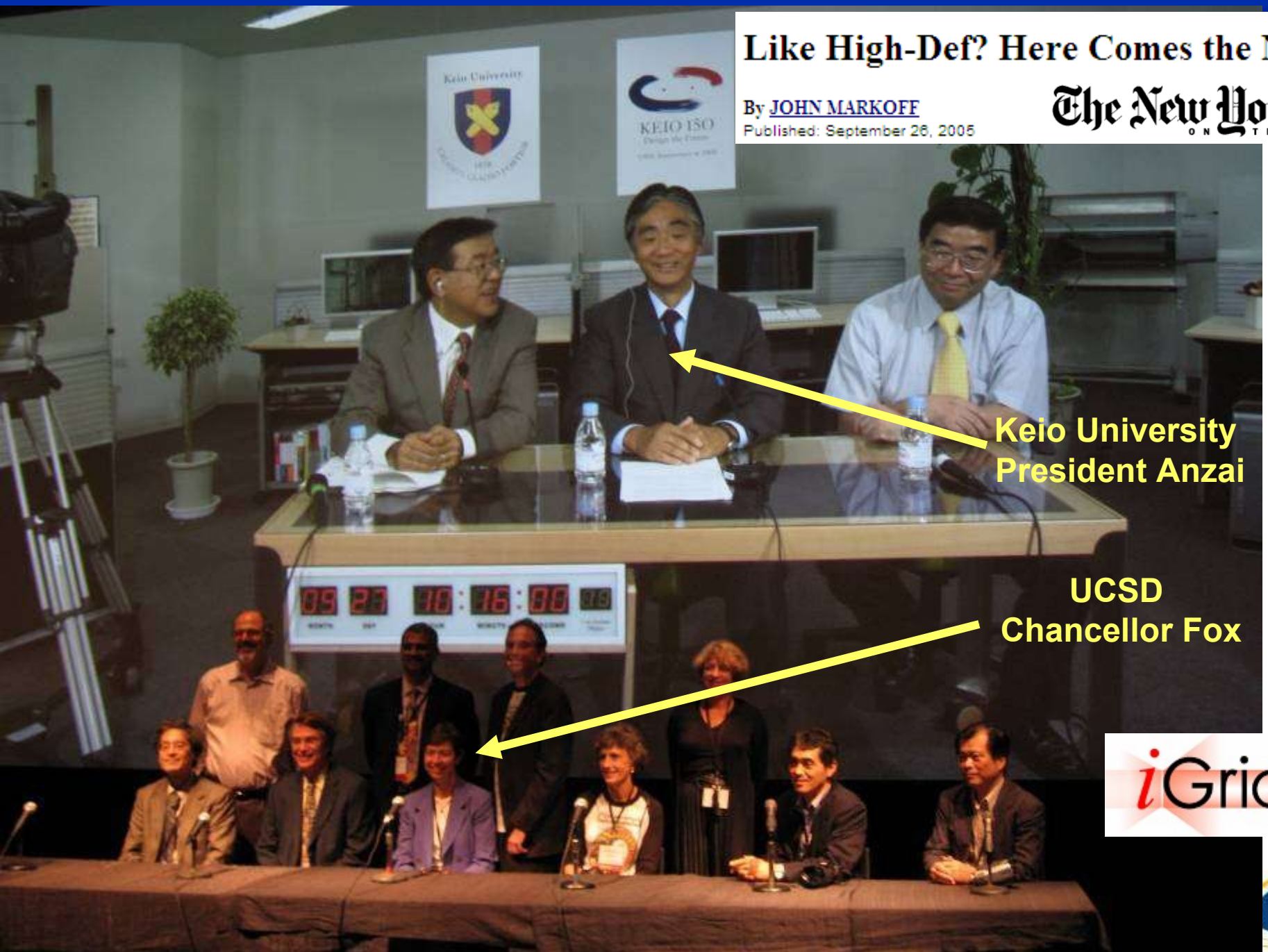
More than 150Gb GLIF Transoceanic Bandwidth!

450 Attendees, 130 Participating Organizations

20 Countries Driving 49 Demonstrations

1- or 10- Gbps Per Demo

First Trans-Pacific Super High Definition Telepresence Meeting in New Calit2 Digital Cinema Auditorium



Like High-Def? Here Comes the Next Level

By JOHN MARKOFF
Published: September 26, 2005

The New York Times ON THE WEB

Keio University President Anzai

UCSD Chancellor Fox

Lays Technical Basis for Global Digital Cinema

Sony
NTT
SGI

iGrid 2005

it²

High Resolution Aerial Photography Generates Images With 10,000 Times More Data than Landsat7

Landsat7 Imagery
100 Foot Resolution
Draped on elevation data





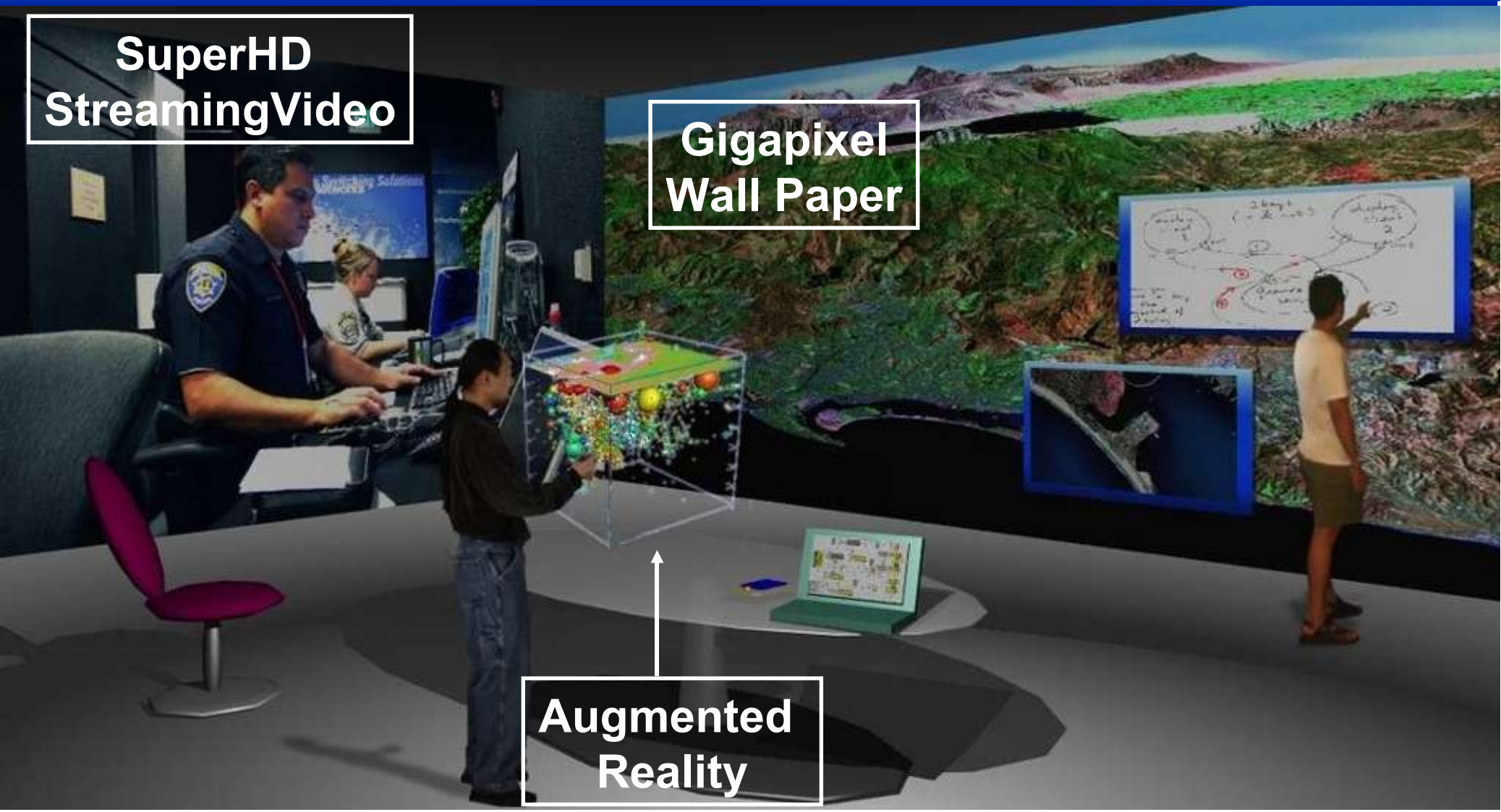
New USGS Aerial Imagery
At 1-Foot Resolution

~10x10 square miles of 350 US Cities
2.5 Billion Pixel Images Per City!

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A Vision for the Future: Towards Gigapixel Displays



1 GigaPixel x 3 Bytes/pixel x 8 bits/byte x 30 frames/sec ~ 1 Terabit/sec!

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Source: Jason Leigh, EVL, UIC

it2

OptIPortal–
Termination Device for the OptIPuter Global Backplane

- 20 Dual CPU Nodes, 20 24” Monitors, ~$50,000
- 1/4 Teraflop, 5 Terabyte Storage, 45 Mega Pixels--Nice PC!
- Scalable Adaptive Graphics Environment (SAGE) Jason Leigh, EVL-UIC





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Powered by Rocks

ROCKS

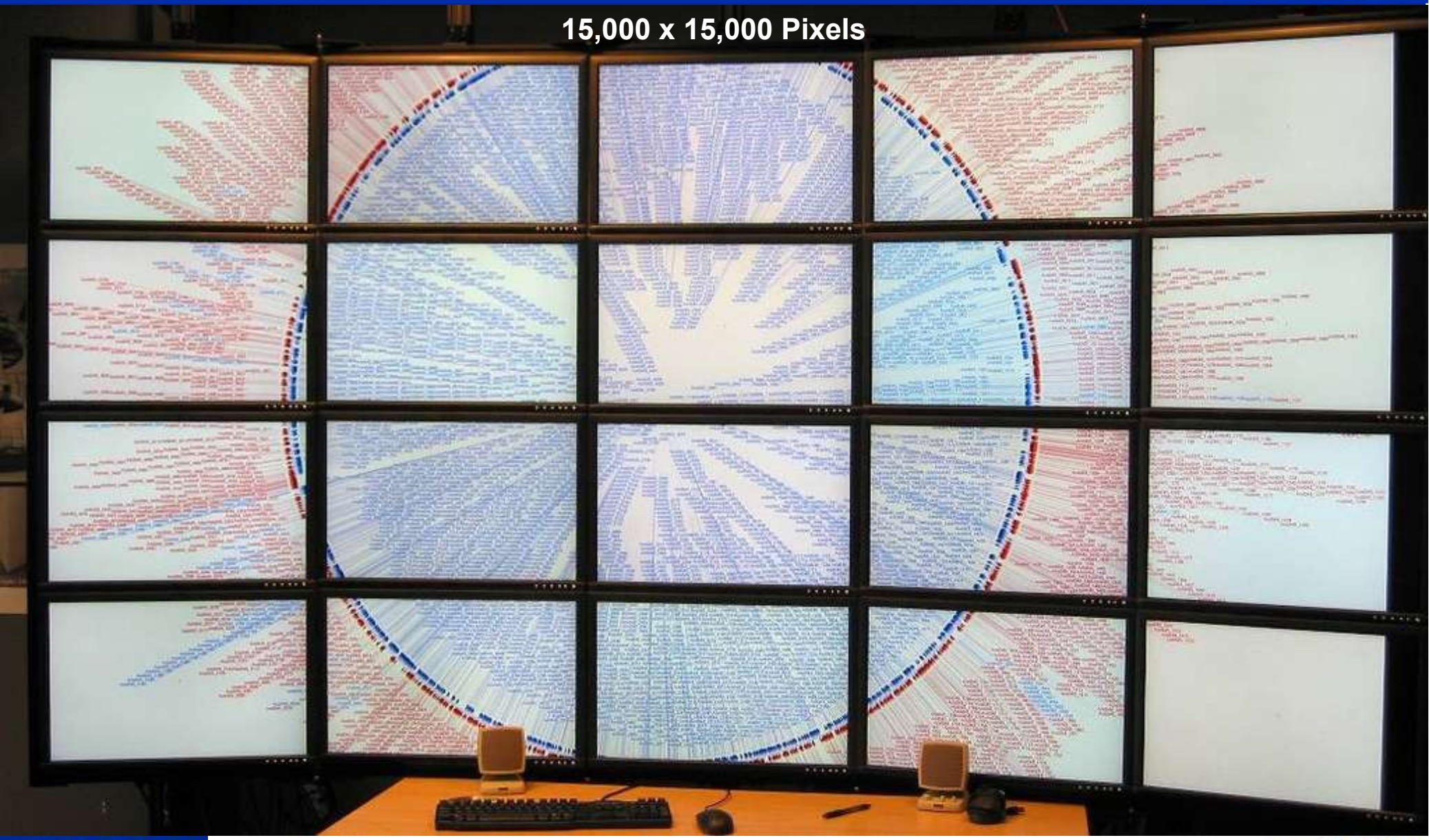
Source: Phil Papadopoulos SDSC, Calit2

it²

Calit2 is Now OptIPuter Connecting Remote Moore-Funded Microbial Researchers



Use of OptIPortal to Interactively View Microbial Genome



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Source: Raj Singh, UCSD

Acidobacteria bacterium Ellin345 (NCBI)
Soil Bacterium 5.6 Mb

it²

Use of OptIPortal to Interactively View Microbial Genome



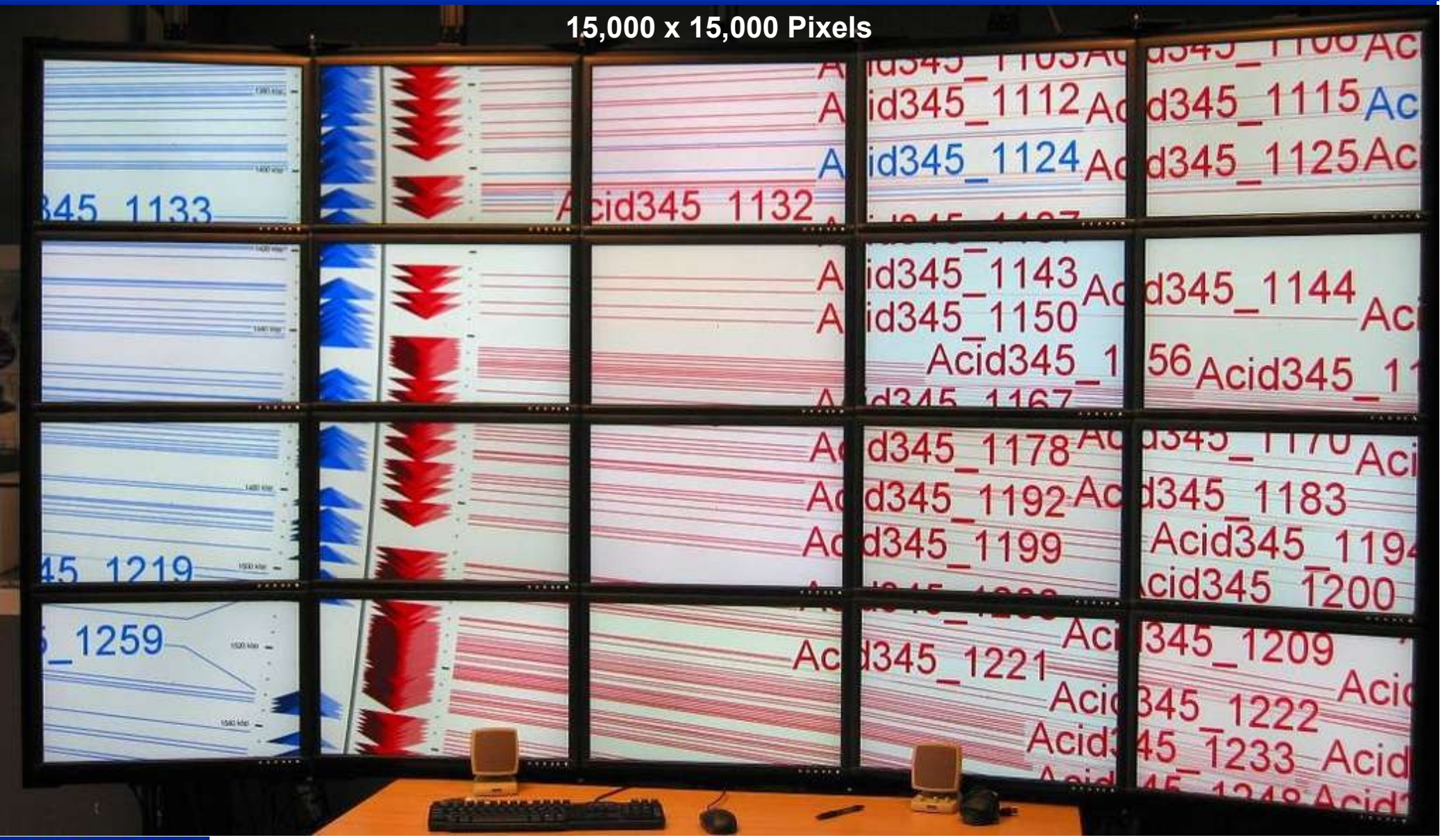
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Source: Raj Singh, UCSD

Acidobacteria bacterium Ellin345 (NCBI)
Soil Bacterium 5.6 Mb

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