“Introduction to the UCSD Division of Calit2"

Calit2 Tour

NextMed / MMVR20

Calit2 @ UC San Diego

February 20, 2013

Dr. Larry Smarr

Director, California Institute for Telecommunications and Information Technology

Harry E. Gruber Professor,

Dept. of Computer Science and Engineering

Jacobs School of Engineering, UCSD

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In 2005, the Two Calit2 Buildings Were Occupied-- Creating Laboratories for "Living in the Future"



- Over 1000 Researchers in Two Buildings
  - Linked via Dedicated Optical Networks
  - International Conferences and Testbeds
- New Laboratories
  - Nanotechnology
  - Virtual Reality, Digital Cinema



www.calit2.net

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Preparing for a World in Which Distance is Eliminated…

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The Ten Year
Calit2 Path Forward

Application Thrusts

- Culture
- Energy
- Environment
- Health

Enabling Technologies

- Cyberinfrastructure
- Nano-MEMS
- Photonics
- Wireless



- **A Ten-Year Vision of Digital Transformation**
  - **Affiliated Academic Units**
  - **Calit2 News and Videos**
- **This Talk Focuses in on:**
  - **The Digital Transformation of Health**

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www.calit2.net/research/index.php

Exercise and Physical Activity Center (EPARC)



www.technologyreview.com/biomedicine/39636

SMART:
Social Mobile Approach to Reduce Weight

- **Leveraging social networks, social media, mobile phones, and the web for weight loss among 18-35 year old young adults**
  - **Funded with a 5-year grant from NHLBI/NIH**





CW PHS
CENTER FOR WIRELESS & POPULATION HEALTH SYSTEMS

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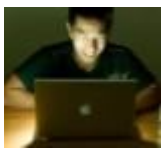
Source: Kevin Patrick, UCSD SOM & Calit2

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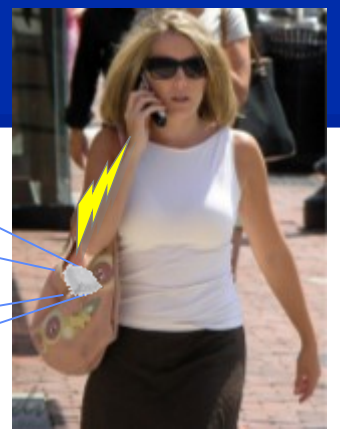
CitiSense –UCSD NSF Grant for Fine-Grained Environmental Sensing Using Cell Phones



4oz
30 compounds













CitiSense Team
PI: Bill Griswold
Ingolf Krueger
Tajana Simunic Rosing
Sanjoy Dasgupta
Hovav Shacham
Kevin Patrick

Robots Learning Expressions of One-Year Old Child



Body Built by Japanese Animatronic Company Kokoro

and its Head Created by U.S. Firm Hanson Robotics

UCSD's Machine Perception Laboratory,
Led by Professor Javier Movellan

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Materials and Devices Laboratory - Organization

- 6 Member Faculty Committee
- Facility Operations:
  - Faculty Director (Prof. Yuhwa Lo)
  - Staff Manager (Bernd Fruhberger, Ph.D.)
  - 8 Technical Staff Members, including 4 Ph.D.
  - 4 Part-time Student Assistants
  - 1/2 Administrative Support



Materials and Devices Laboratory – Current User Base

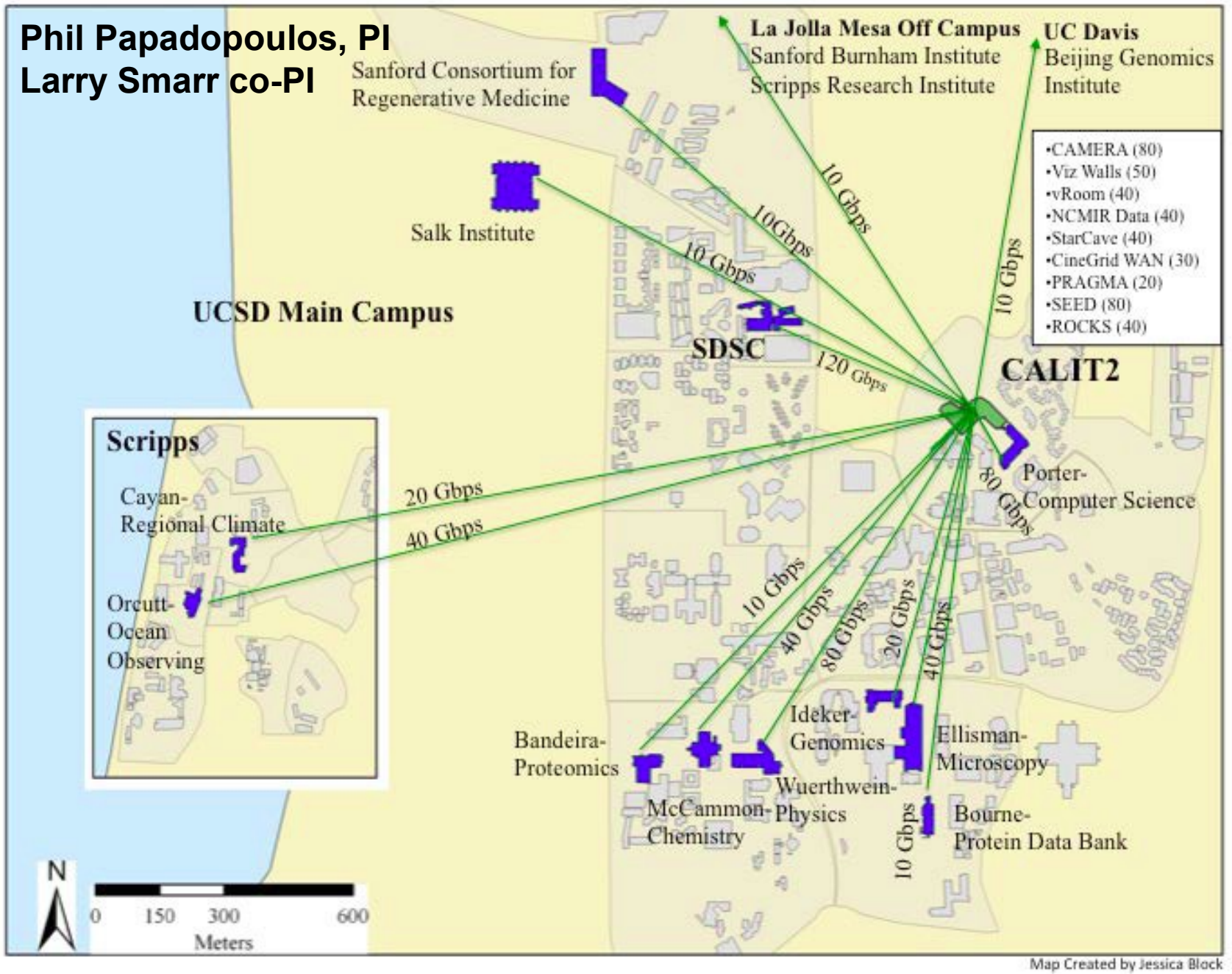
>130 UC Research Groups; in 6 yrs operation >1500 trained users

12 Departments:

Bioengineering; Biology; Calit2; Chemistry and Biochemistry; Electrical and Computer Engineering; Mechanical and Aerospace Engineering; Nanoengineering; Medicine; Physics, Scripps Institute of Oceanography; Structural Engineering; Visual Arts

80+ Companies

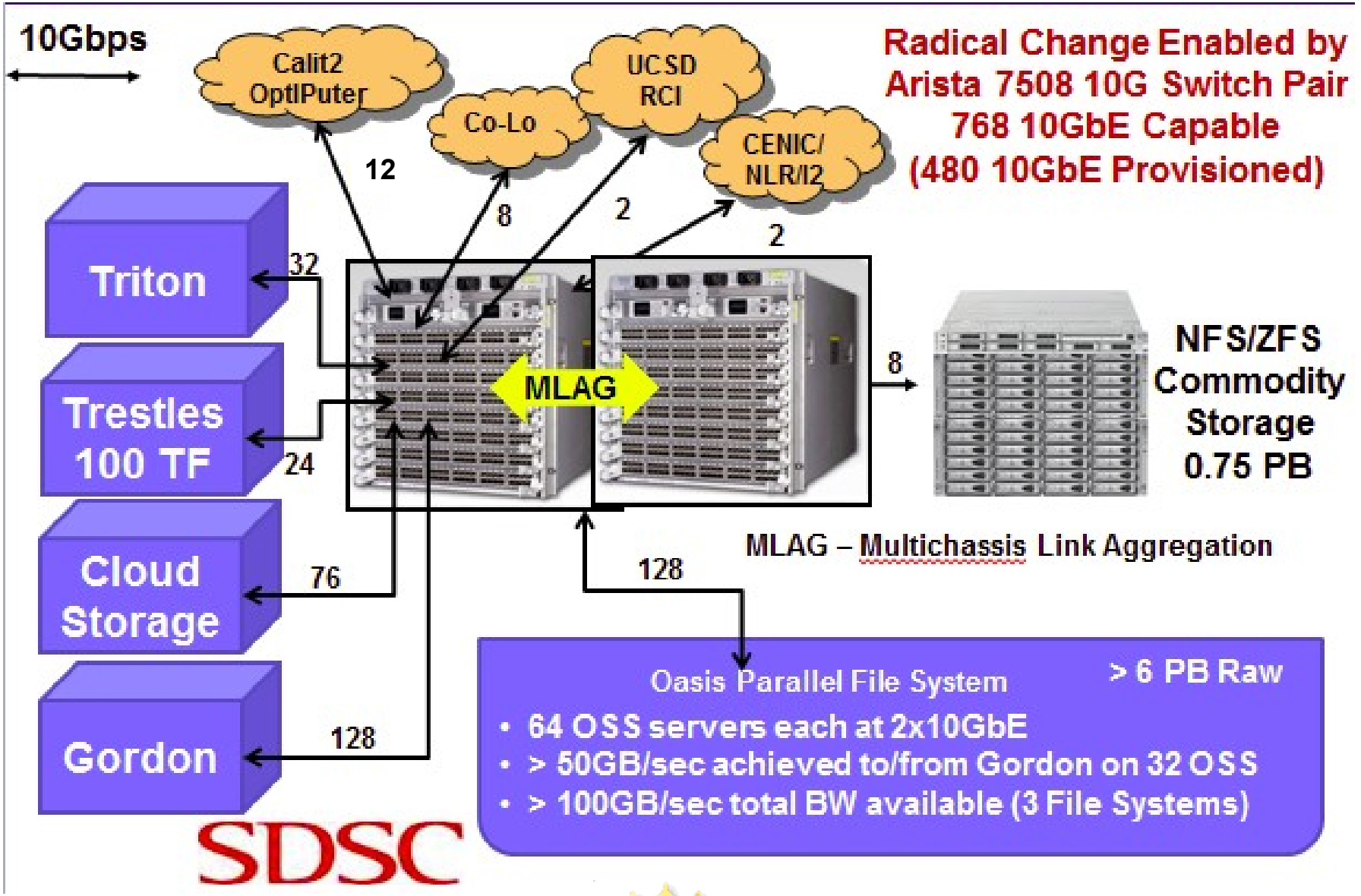
Creating a "Big Data Freeway" System Connecting Instruments, Computers, & Storage



PRISM @UCSD

Start Date 1/1/13

Arista Enables SDSC's Massive Parallel 10G Switched Data Analysis Resource



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NSF

The Latest OptIPuter Innovation: Quickly Deployable Nearly Seamless OptIPortables

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



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Image From the Calit2 KAUST Lab

The OctIPortable Being Checked Out Prior to Shipping to the Calit2/KAUST Booth at SIGGRAPH 2011

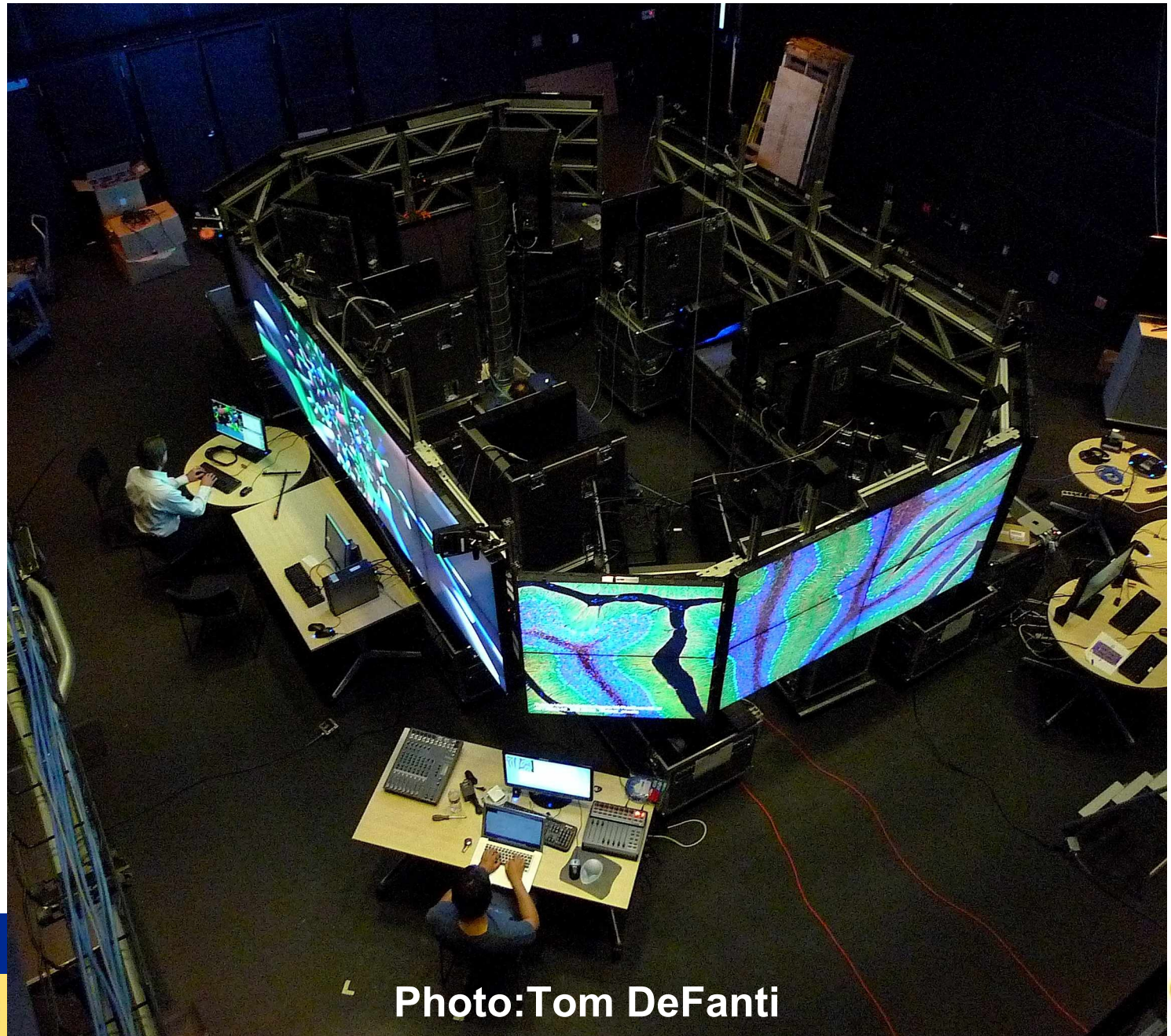


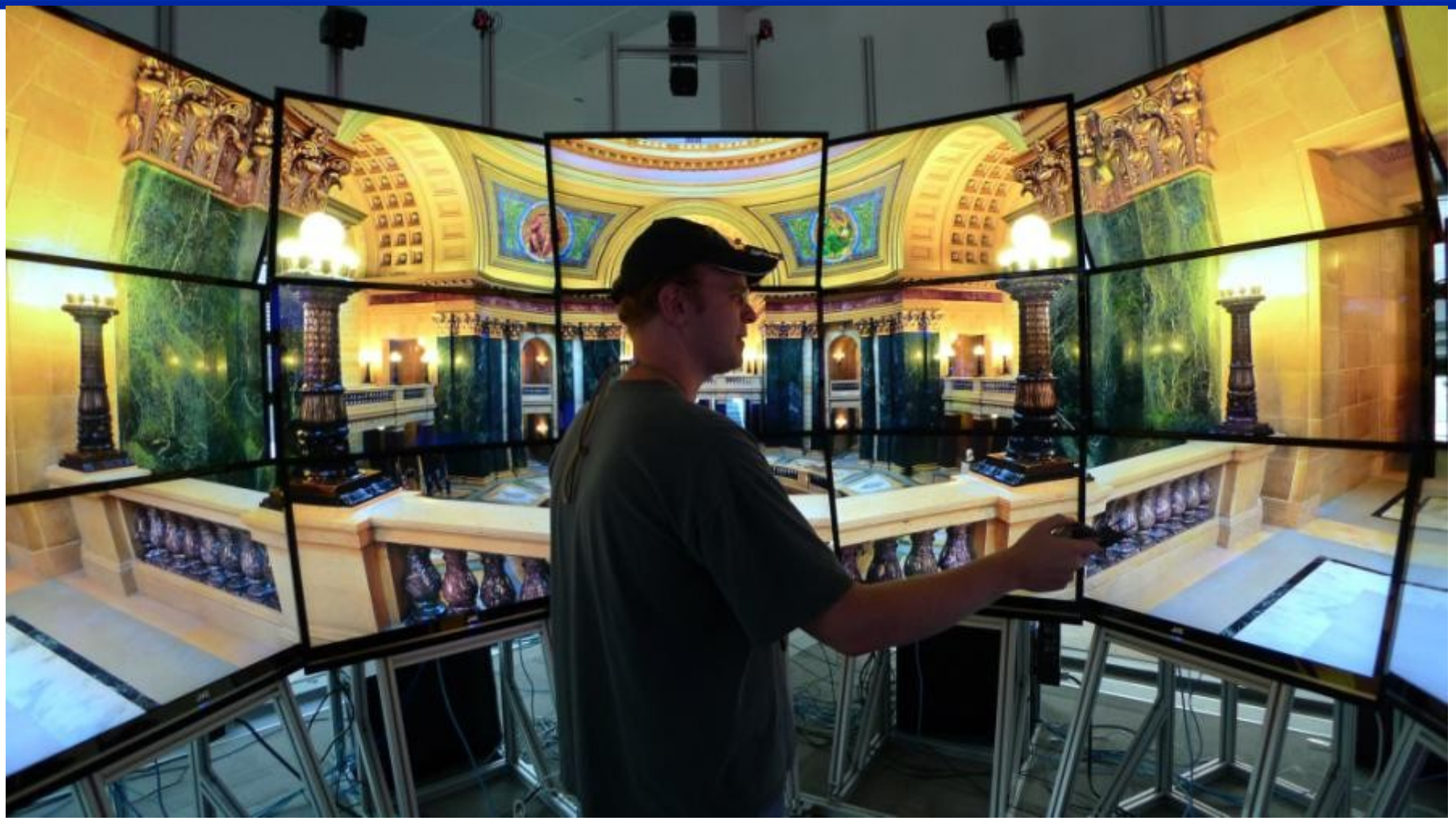
Photo:Tom DeFanti

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64 megapixel VROOM



3D Stereo Head Tracked OptIPortal: NexCAVE



Array of JVC HDTV 3D LCD Screens
KAUST NexCAVE = 22.5MPixels

www.calit2.net/newsroom/article.php?id=1584

Source: Tom DeFanti, Calit2@UCSD

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TourCAVE



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Five 65” LG 3D HDTVs, PC, Tracker--~$33,000

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StarCAVE



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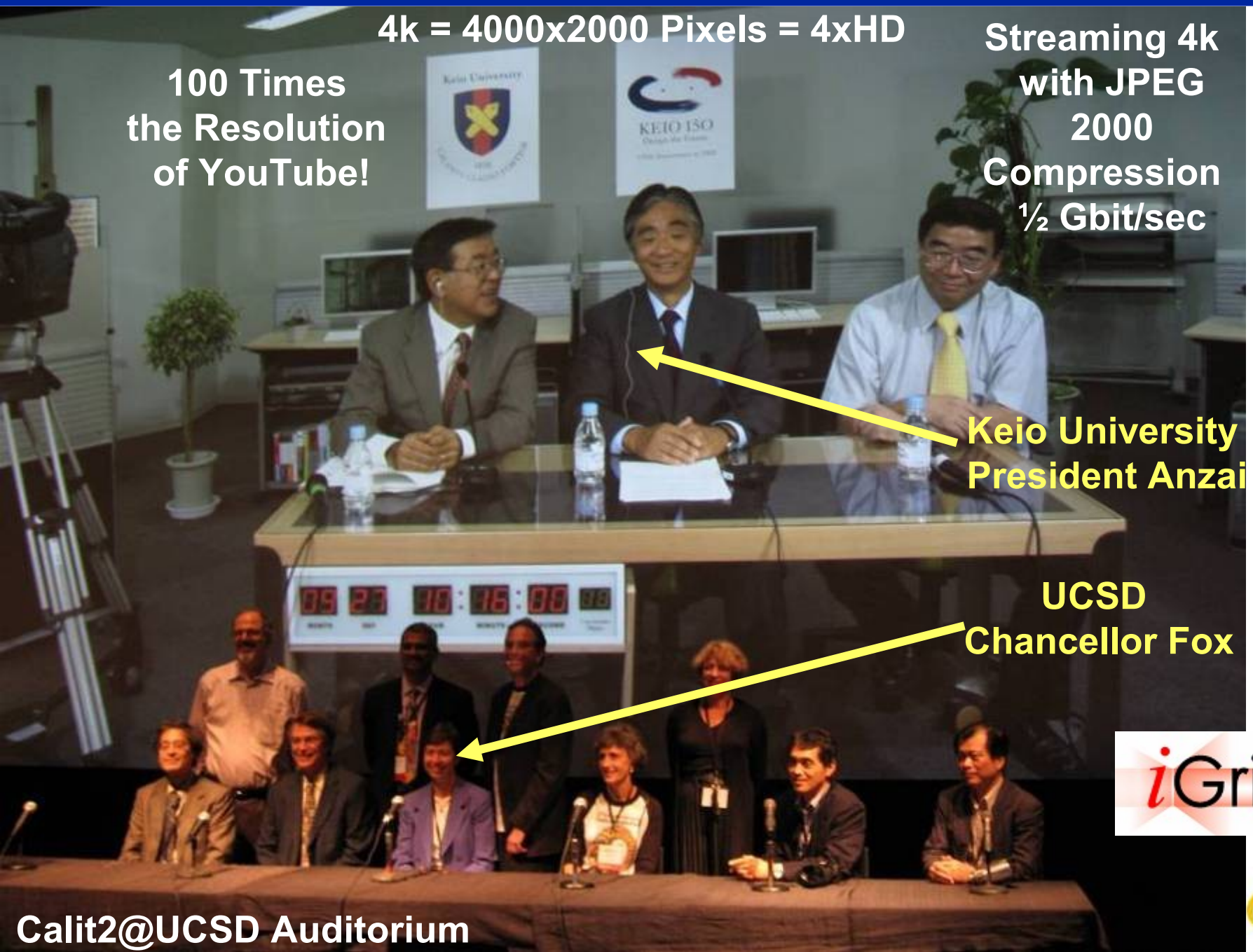
Director’s Colony



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Telepresence Meeting
Using Digital Cinema 4k Streams



CineGrid

Lays Technical Basis for Global Digital Cinema

Sony
NTT
SGI

iGrid 2005

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