Introduction to Calit2

Visit by NASA Ames
February 29, 2008

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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Today's Agenda

11:15am -11:30am	Introductions--get lunches
11:30am - 11:45am	Overview by Director Smarr of Calit2 Programs
11:45am - 12:00pm	Discussion of Days Objectives
12:00pm - 12:15pm	Microbial Metagenomics Server Complex and Sunlight
12:15pm - 12:30pm	Environmental monitoring on tiled walls
12:30pm- 12:45pm	Live HD Link to UW
12:45pm - 1:10pm	CAVE and Varrier – VR of Earth and Mars
1:10pm - 1:40pm	Digital Cinema Streaming
1:40pm - 2:00pm	Shared Collaborative Workspace HIPerSpace 220Mpixels
2:00pm - 3:00pm	Closing Discussions to Identify Collaborations

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Calit2 Continues to Pursue Its Initial Mission:

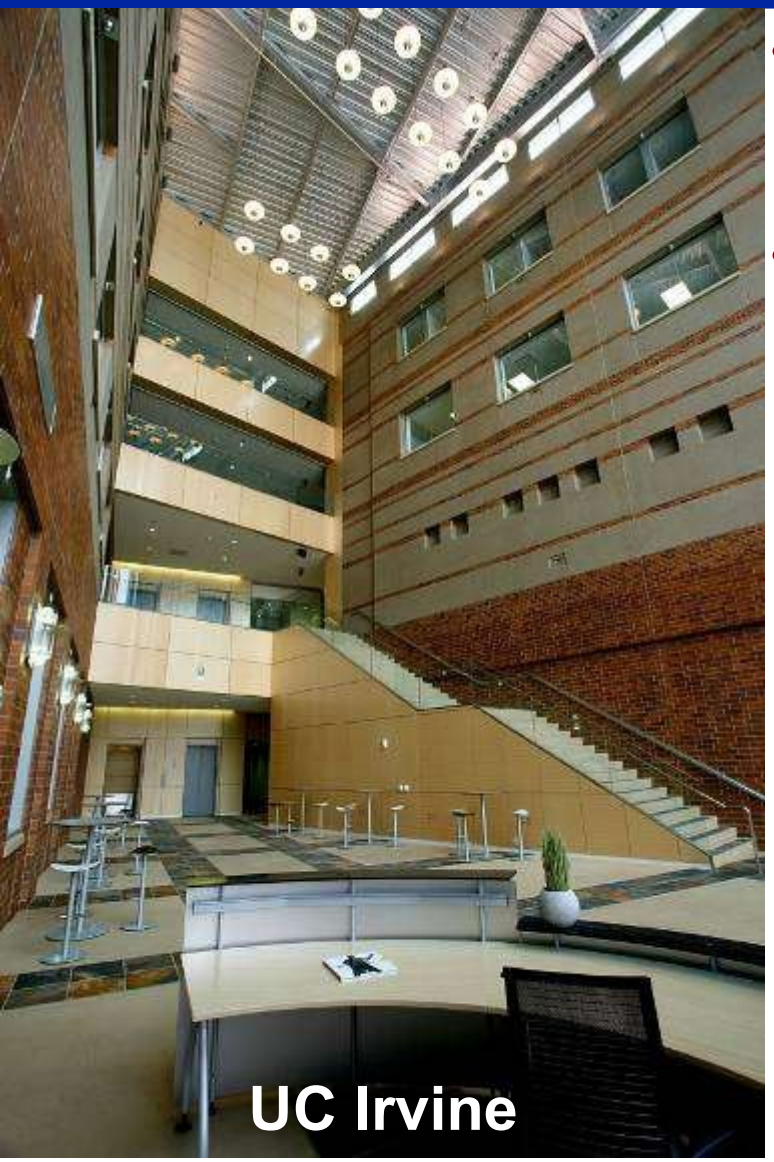
Envisioning How the Extension of Innovative Telecommunications and Information Technologies Throughout the Physical World will Transform Critical Applications Important to the California Economy and its Citizens' Quality Of Life.

Calit2 is a University of California "Institutional Innovation" Experiment on How to Invent a Persistent Collaborative Research and Education Environment that Provides Insight into How the UC, a Major Research University, Might Evolve in the Future.

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Two New Calit2 Buildings Provide New Laboratories for "Living in the Future"



- "Convergence" Laboratory Facilities
  - Nanotech, BioMEMS, Chips, Radio, Photonics
  - Virtual Reality, Digital Cinema, HDTV, Gaming
- Over 1000 Researchers in Two Buildings
  - Linked via Dedicated Optical Networks

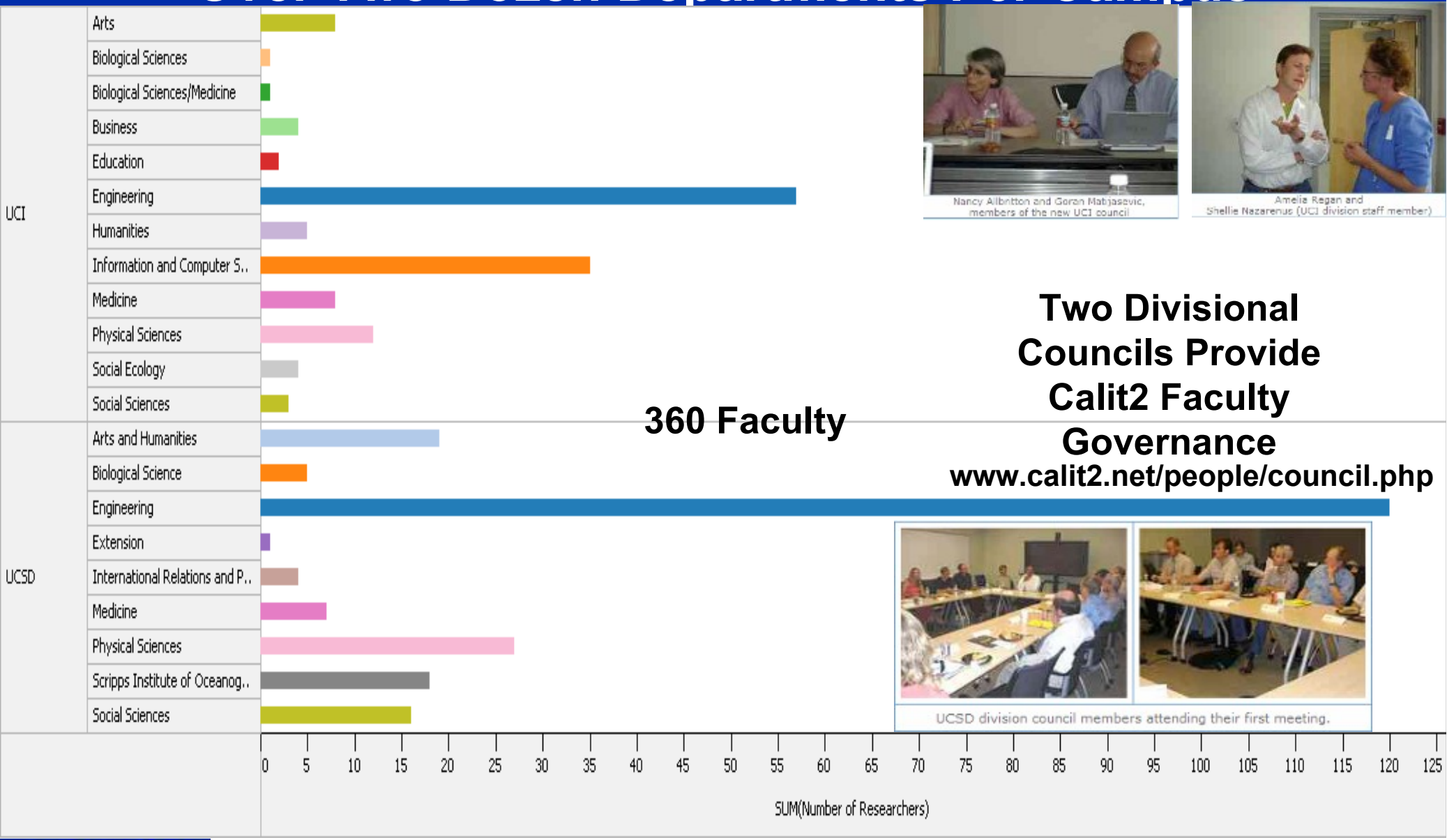


www.calit2.net

Preparing for a World in Which Distance is Eliminated…

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Calit2 Has Attracted a Very Broad Range of Faculty From Over Two Dozen Departments Per Campus



Nancy Allbritton and Goran Mabjasevic, members of the new UCI council

Amelia Regan and Shellie Nazarenus (UCI division staff member)

360 Faculty

Two Divisional Councils Provide Calit2 Faculty Governance

www.calit2.net/people/council.php

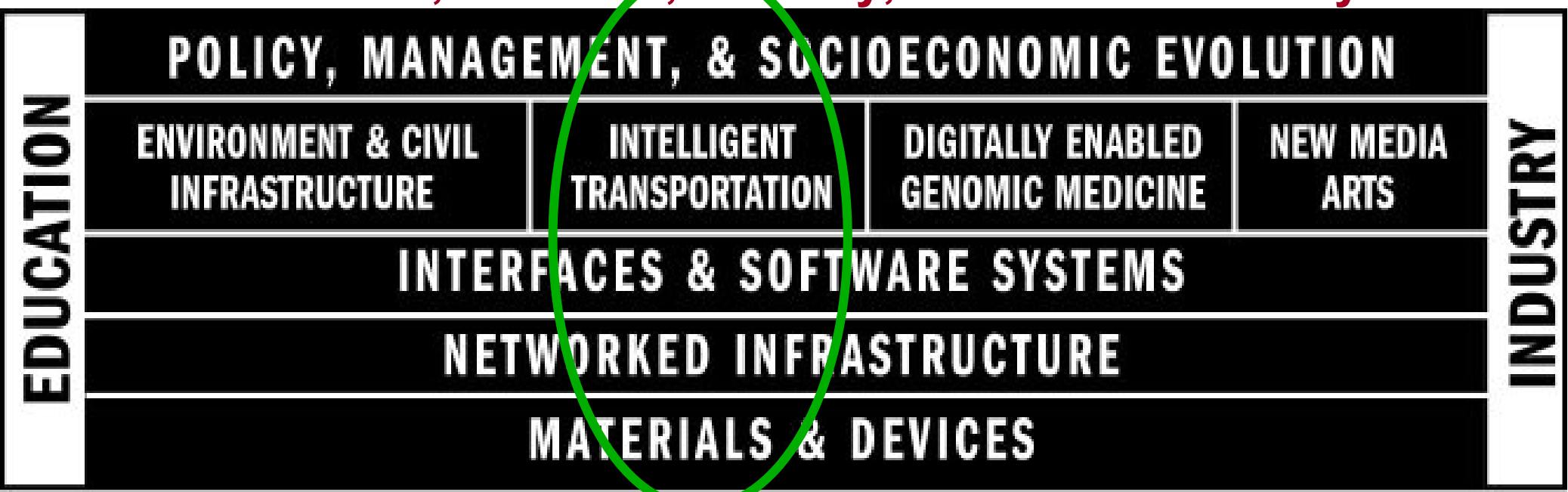
UCSD division council members attending their first meeting.

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Calit2 Review Report: p.50

Calit2--A Systems Approach to the Future of the Internet and its Transformation of Our Society

Calit2 Has Assembled a Complex Social Network
of Over 350 UC San Diego & UC Irvine Faculty
From Two Dozen Departments
Working in Multidisciplinary Teams
With Staff, Students, Industry, and the Community



Integrating Technology Consumers and Producers
Into "Living Laboratories"

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Calit2 Has Developed Undergrad Research Summer Research Programs on Both Campuses

Over 150 Students In Six Years

Calit2@UCSD
UGRAD RESEARCH SCHOLARSHIP
FEB. 27th DEADLINE



SURF-IT
CALIT2 IRVINE



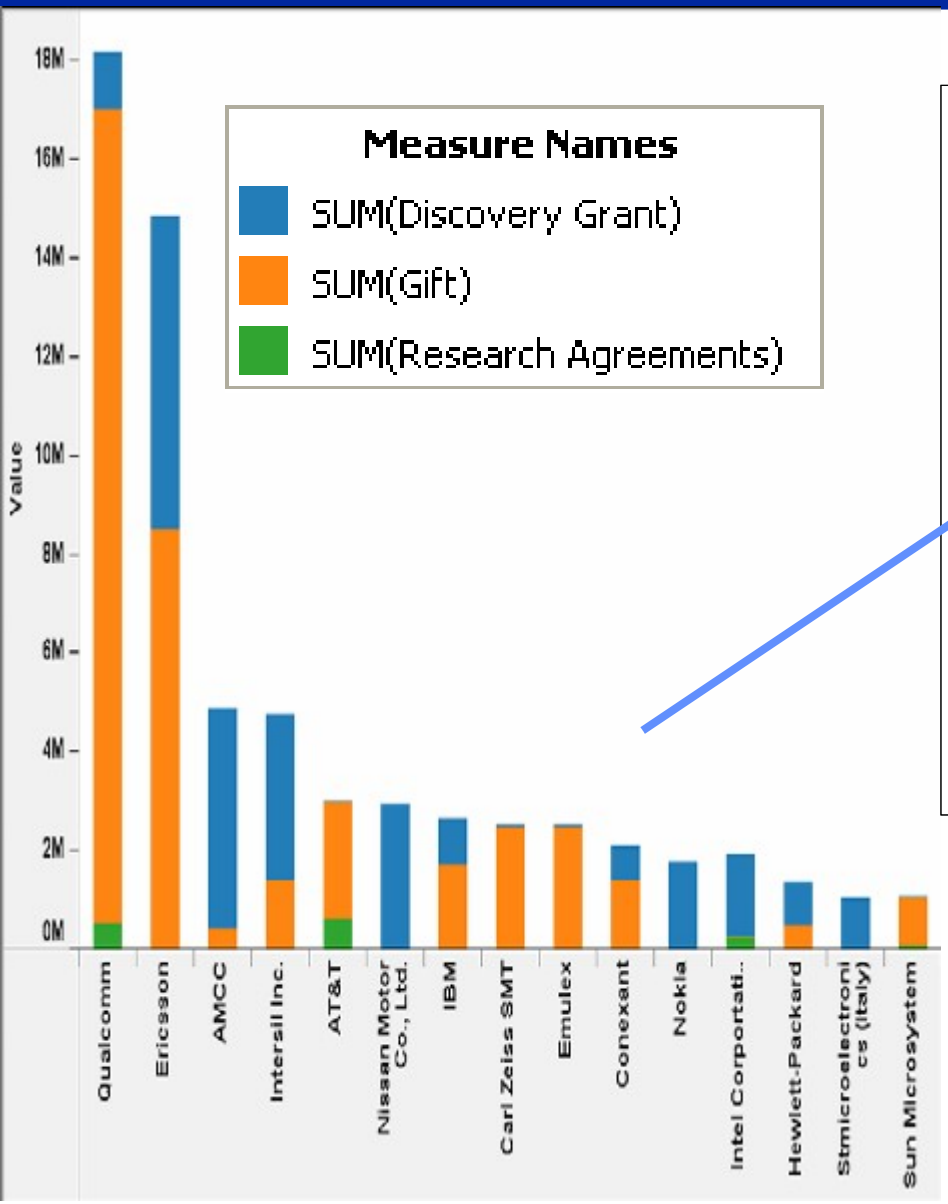


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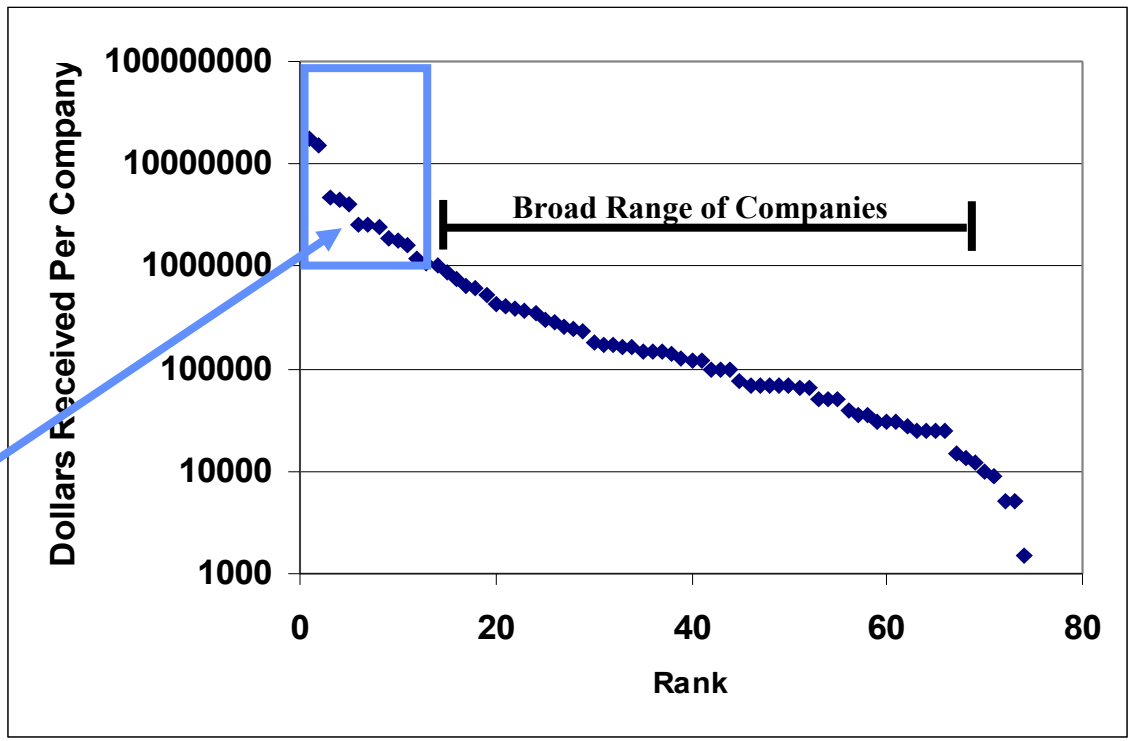
Bioengineering, Chemistry, Chemical Eng., Cog Sci, CSE, ECE, IR/PS, Music, Physics, SIO, Visual Arts

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In Spite of the Bubble Bursting, Calit2 Has Partnered with over 130 Companies



More Than 80 Have Provided Funds or In-kind



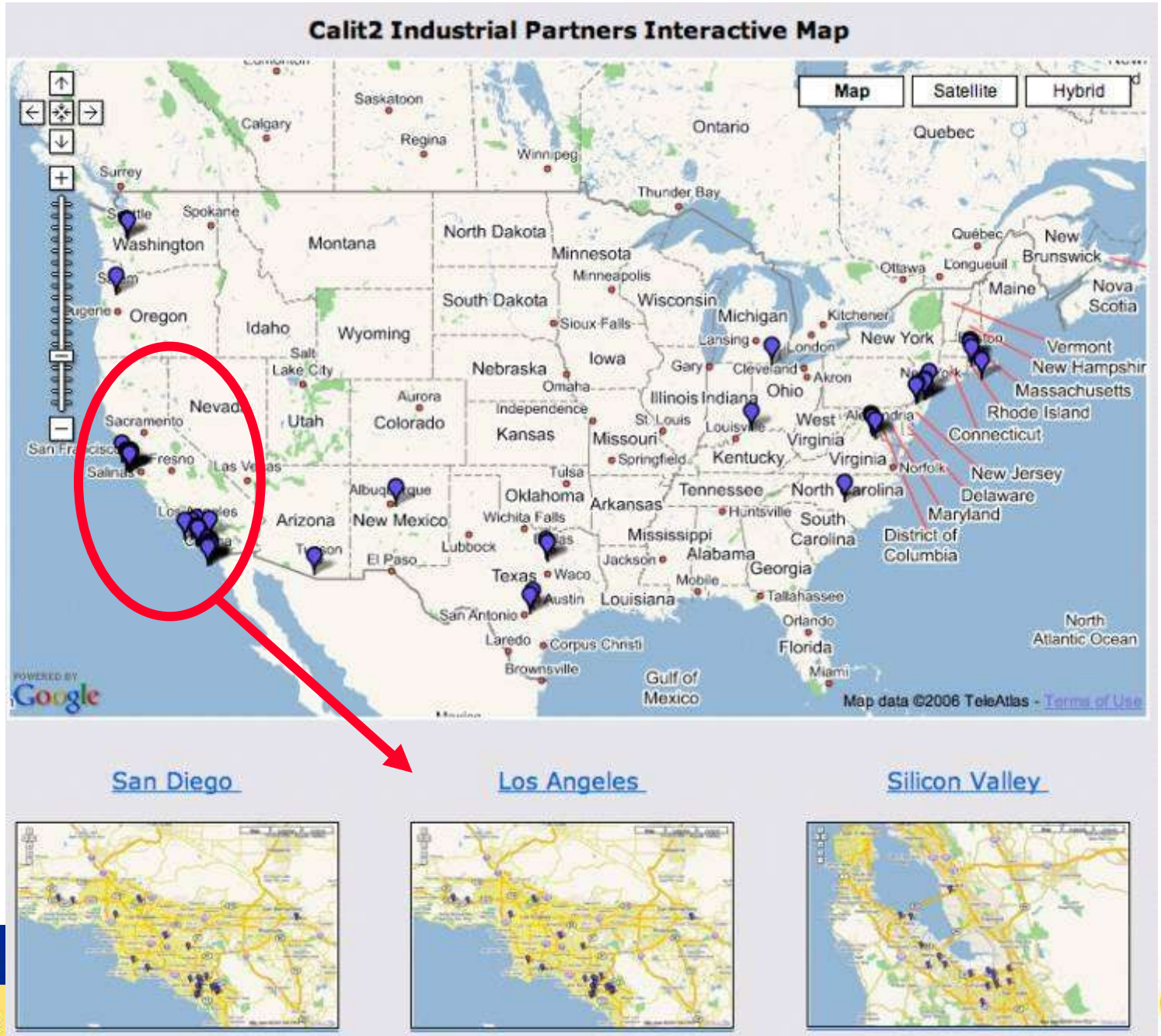
Over $80 Million From Industry So Far

Industrial Partners > $1 Million

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Calit2 Industry Partners: Driving Public-Private Innovation Throughout The U.S.

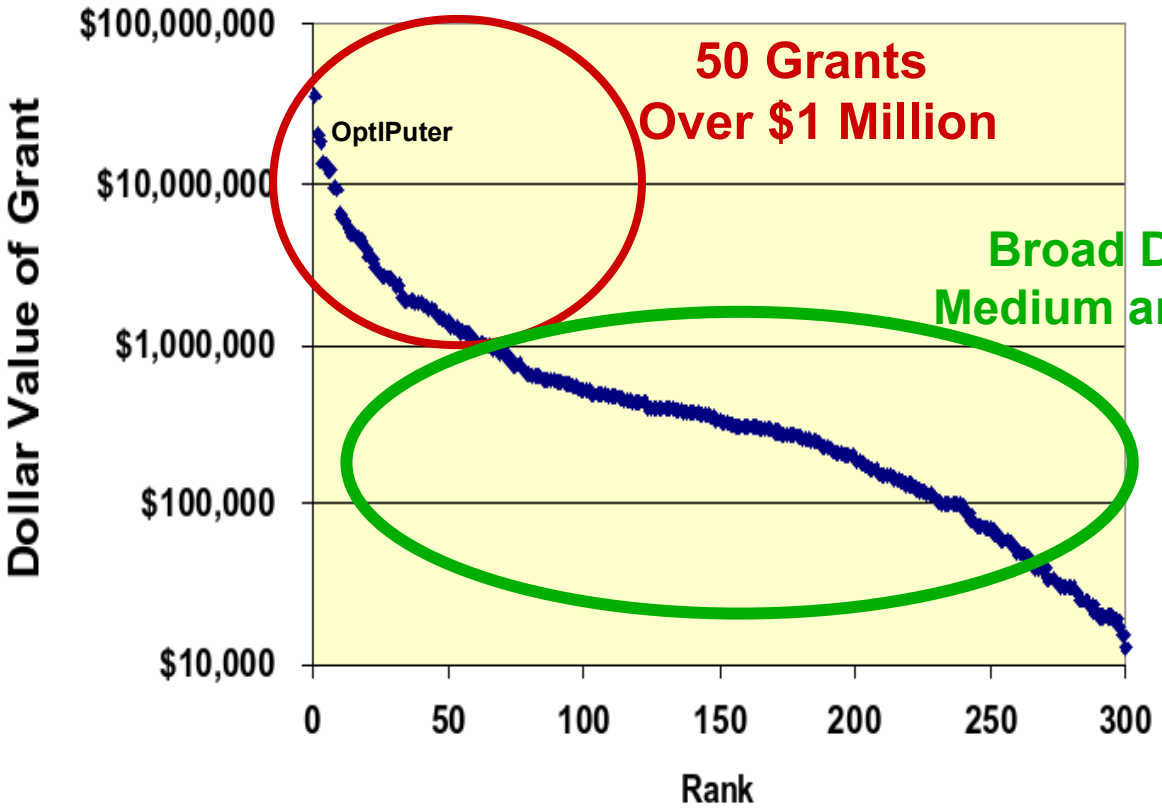
Our Focus is on California Based Companies



Calit2 Review Report: p.33

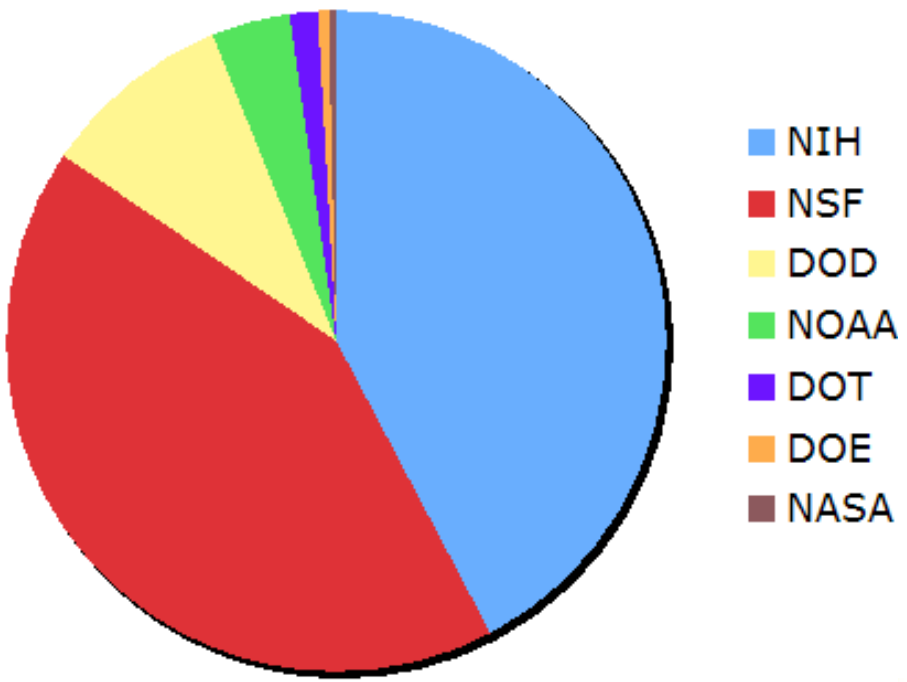
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Federal Agencies Have Funded $350 Million to Over 300 Calit2 Affiliated Grants



Developing SW Tools to Manage Portfolio

Creating a Rich Ecology of Basic Research



Federal Agency Source of Funds

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Calit2 Review Report p.4,21

Calit2 Has Developed Research Partnerships with California's Major Trading Partners

- **International Commerce Drives 25% Of California's Economy**
- **Largest Export Market is Computers and Electronic Products**
- **Top Five Export Markets for California:**
  - Mexico
  - Japan
  - Canada
  - China
  - South Kc
- **India is a Critical Growth Market for California**
  - California is the Top State Exporting to India
  - Exports Between California and India Increased ~30% from 2004 and 2005
- **India and US Have an Action Plan to Double Bilateral Trade in 3 Years**

CICESE



Canada - California Strategic Innovation Partnership Summit



PRAGMA

U.S.-INDIA SUMMIT

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OSAKA UNIVERSITY

iGrid 2005

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The CWC Provides Calit2 With Deep Research in Many Component Areas



Center for Wireless Communications

Two Dozen ECE and CSE Faculty

LOW-POWERED CIRCUITRY	ANTENNAS AND PROPAGATION	COMMUNICATION THEORY	COMMUNICATION NETWORKS	MULTIMEDIA APPLICATIONS
RF Mixed A/D ASIC Materials	Smart Antennas Adaptive Arrays	Modulation Channel Coding Multiple Access Compression	Architecture Media Access Scheduling End-to-End QoS Hand-Off	Scalable Video Smart Spaces Speech Recognition

Source: UCSD CWC

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Calit2 Has Introduced Innovative Wireless Systems to Support SoCal First Responders









Aug. 22, 2006 MMST Disaster Drill at Calit2@UCSD Involved Over 200 First Responders







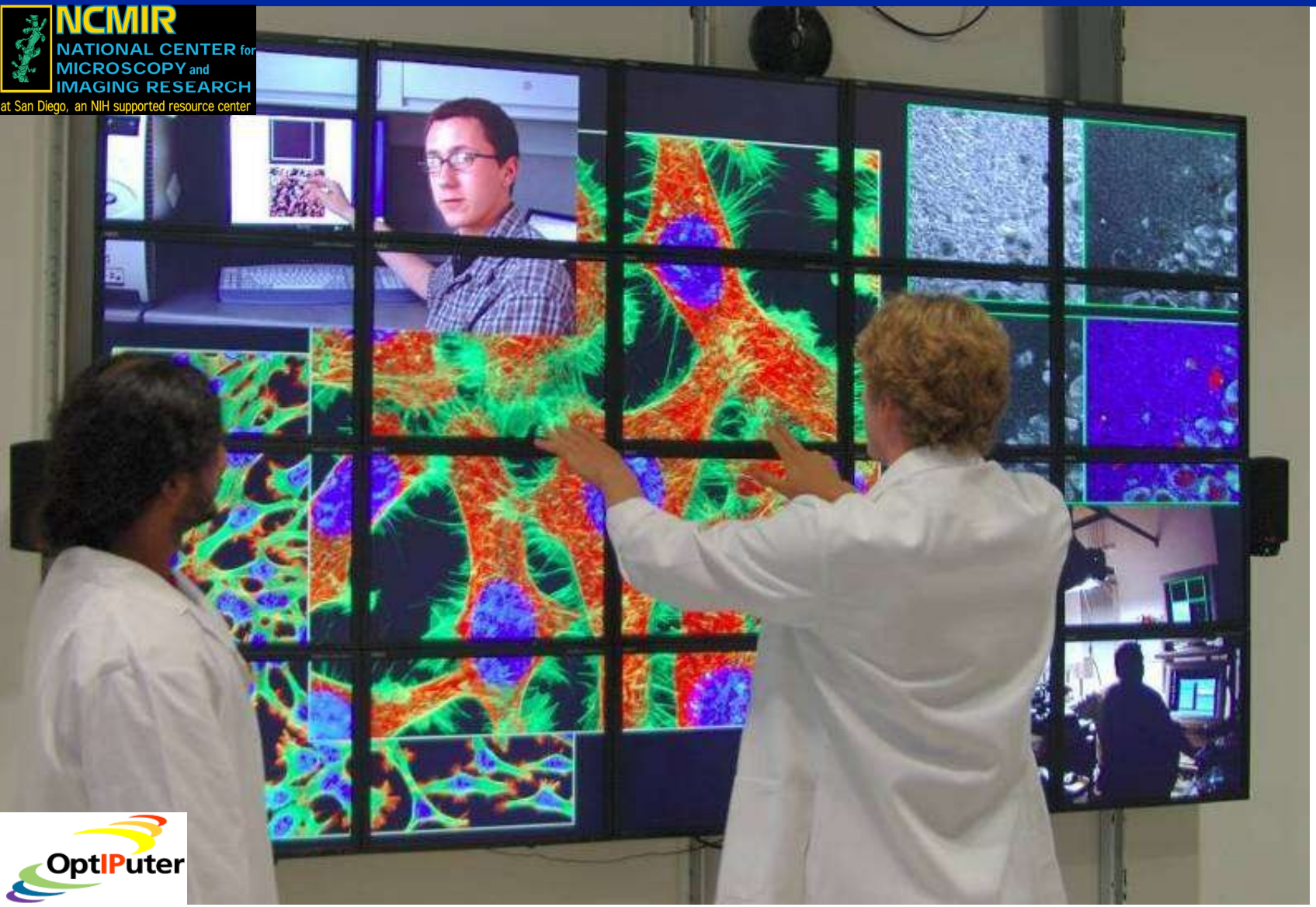






The OptIPuter Project: Creating High Resolution Portals Over Dedicated Optical Channels to Global Science Data

NCMIR
NATIONAL CENTER for MICROSCOPY and IMAGING RESEARCH
at San Diego, an NIH supported resource center



Scalable Adaptive Graphics Environment (SAGE)

evl electronic visualization laboratory

NSF

$13.5M Over Five Years

Picture Source: Mark Ellisman, David Lee, Jason Leigh

OptIPuter

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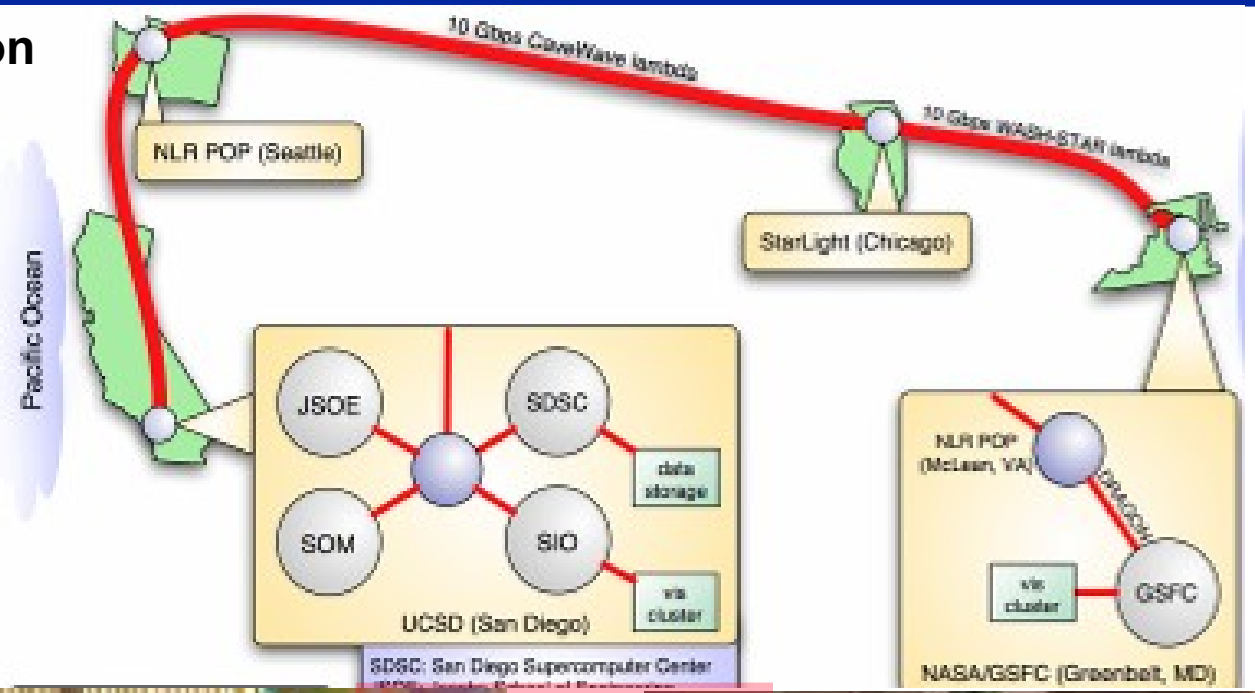
Calit2 (UCSD, UCI) and UIC Lead Campuses—Larry Smarr PI
Univ. Partners: SDSC, USC, SDSU, NW, TA&M, UvA, SARA, KISTI, AIST
Industry: IBM, Sun, Telcordia, Chiaro, Calient, Glimmerglass, Lucent

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OptIPuter Enables Telepresence Combined with Remote Interactive Analysis

Live Demonstration

of 21st Century National-Scale Team Science





OptIPuter Visualized Data

HDTV Over Lambda



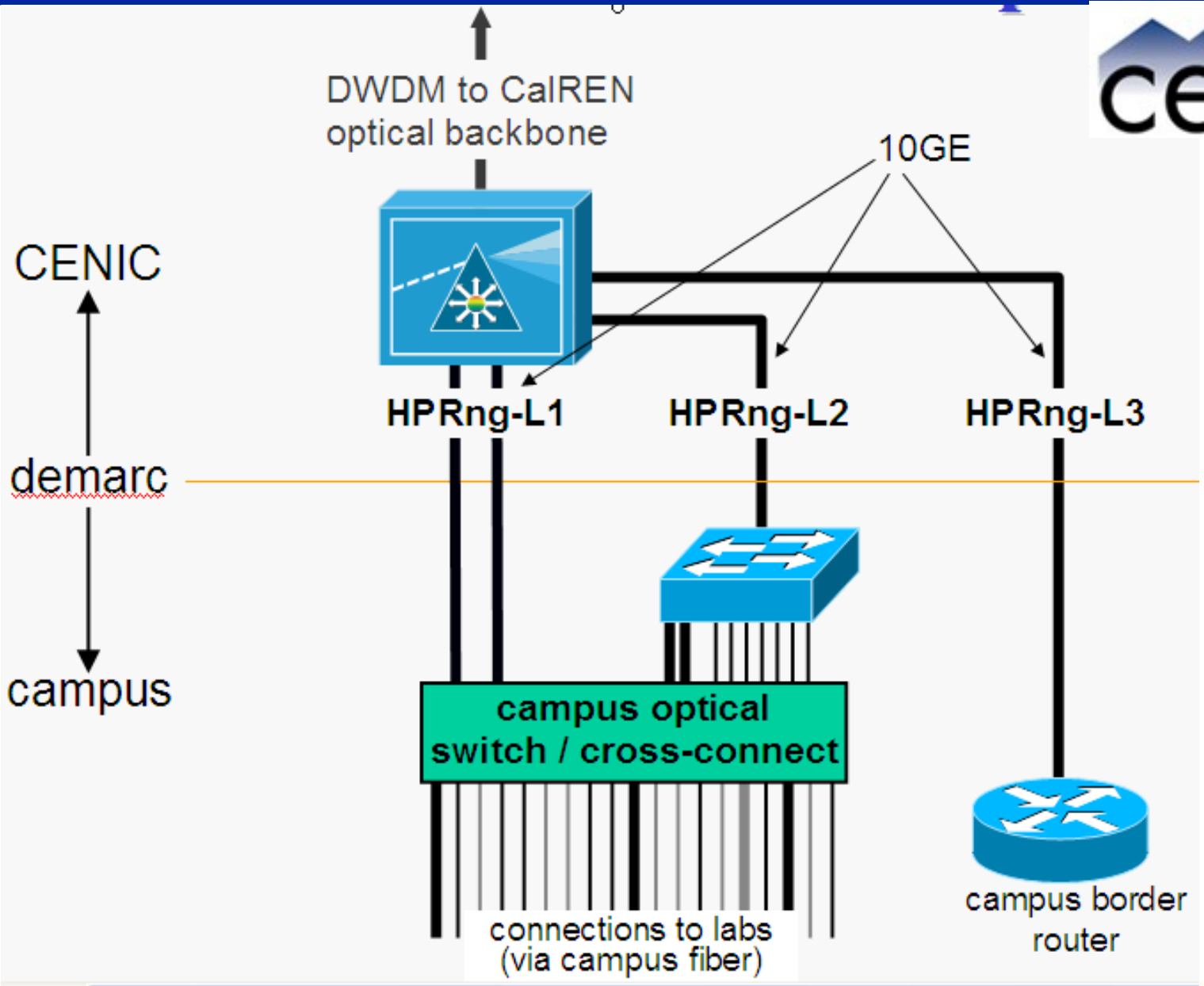
SIO/UCSD

NASA Goddard

August 12, 2005

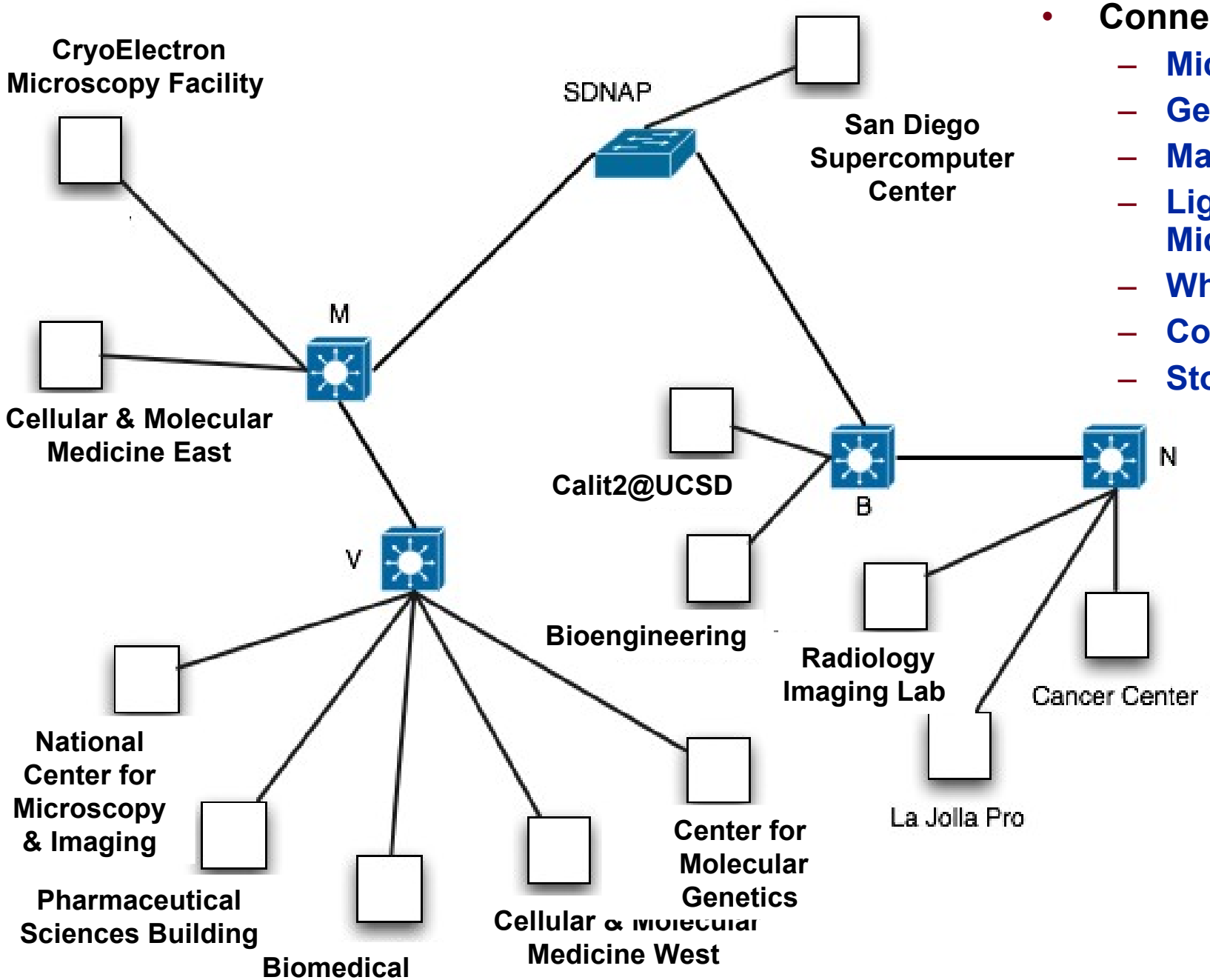
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Campus Preparations Needed to Accept CENIC CalREN Handoff to Campus



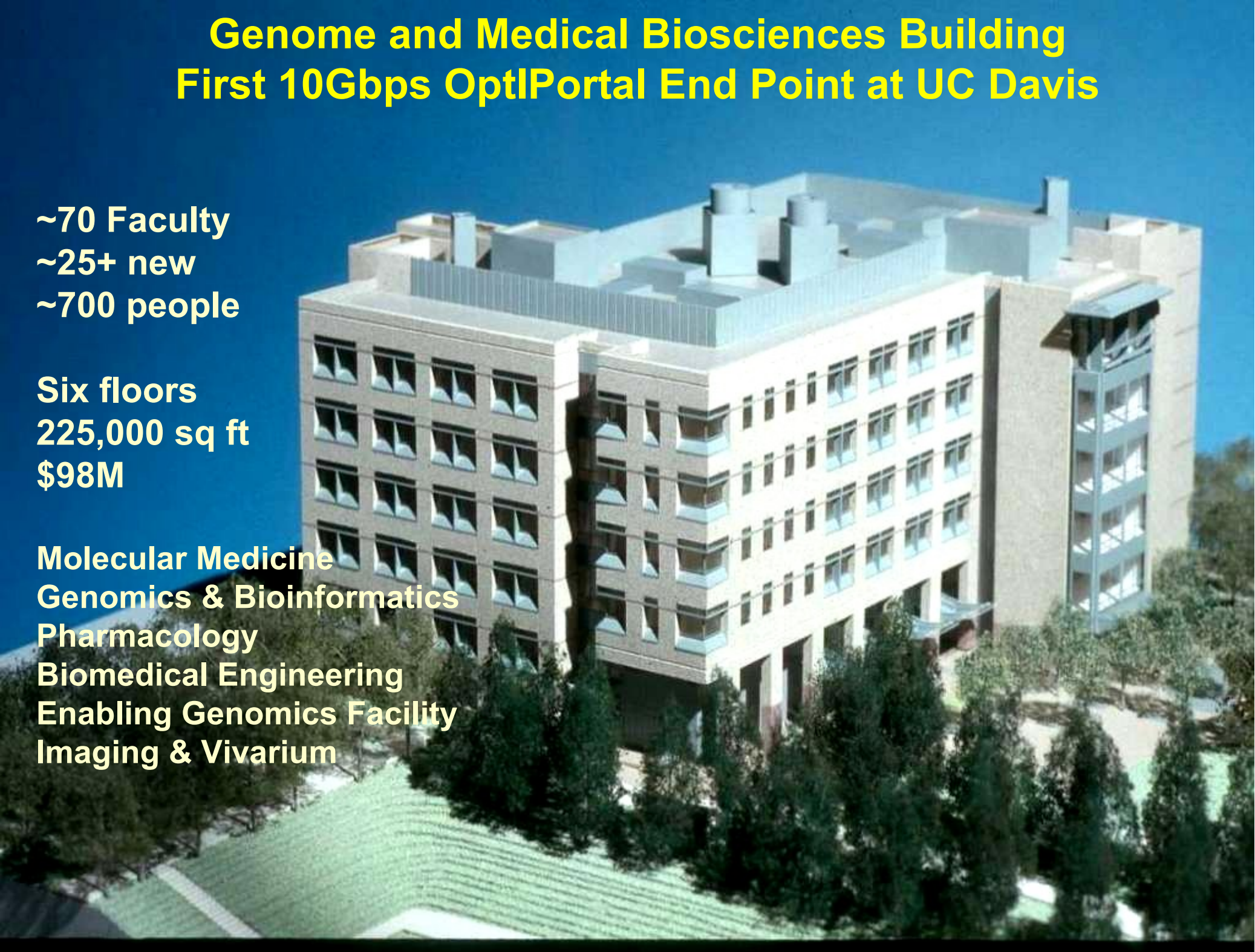
Source: Jim Dolgonas, CENIC

UCSD Planned Optical Networked Biomedical Researchers and Instruments



- **Connects at 10 Gbps :**
  - **Microarrays**
  - **Genome Sequencers**
  - **Mass Spectrometry**
  - **Light and Electron Microscopes**
  - **Whole Body Imagers**
  - **Computing**
  - **Storage**

Genome and Medical Biosciences Building
First 10Gbps OptIPortal End Point at UC Davis

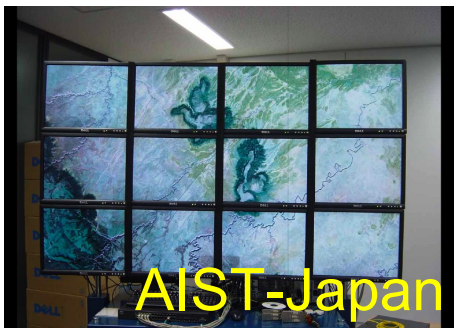


~70 Faculty
~25+ new
~700 people

Six floors
225,000 sq ft
$98M

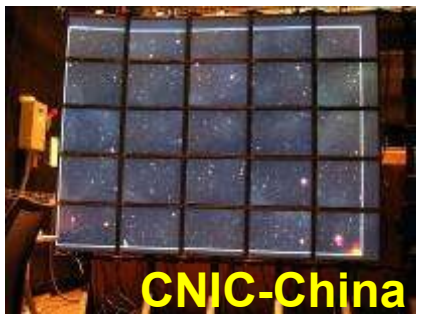
Molecular Medicine
Genomics & Bioinformatics
Pharmacology
Biomedical Engineering
Enabling Genomics Facility
Imaging & Vivarium

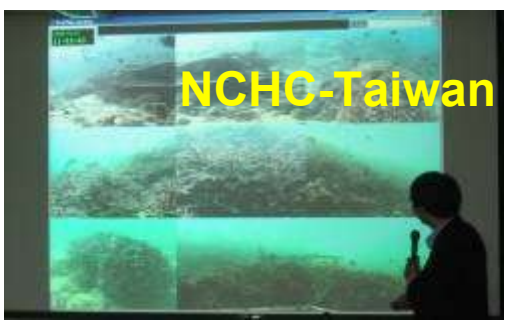
OptIPortals
Are Being Adopted Globally























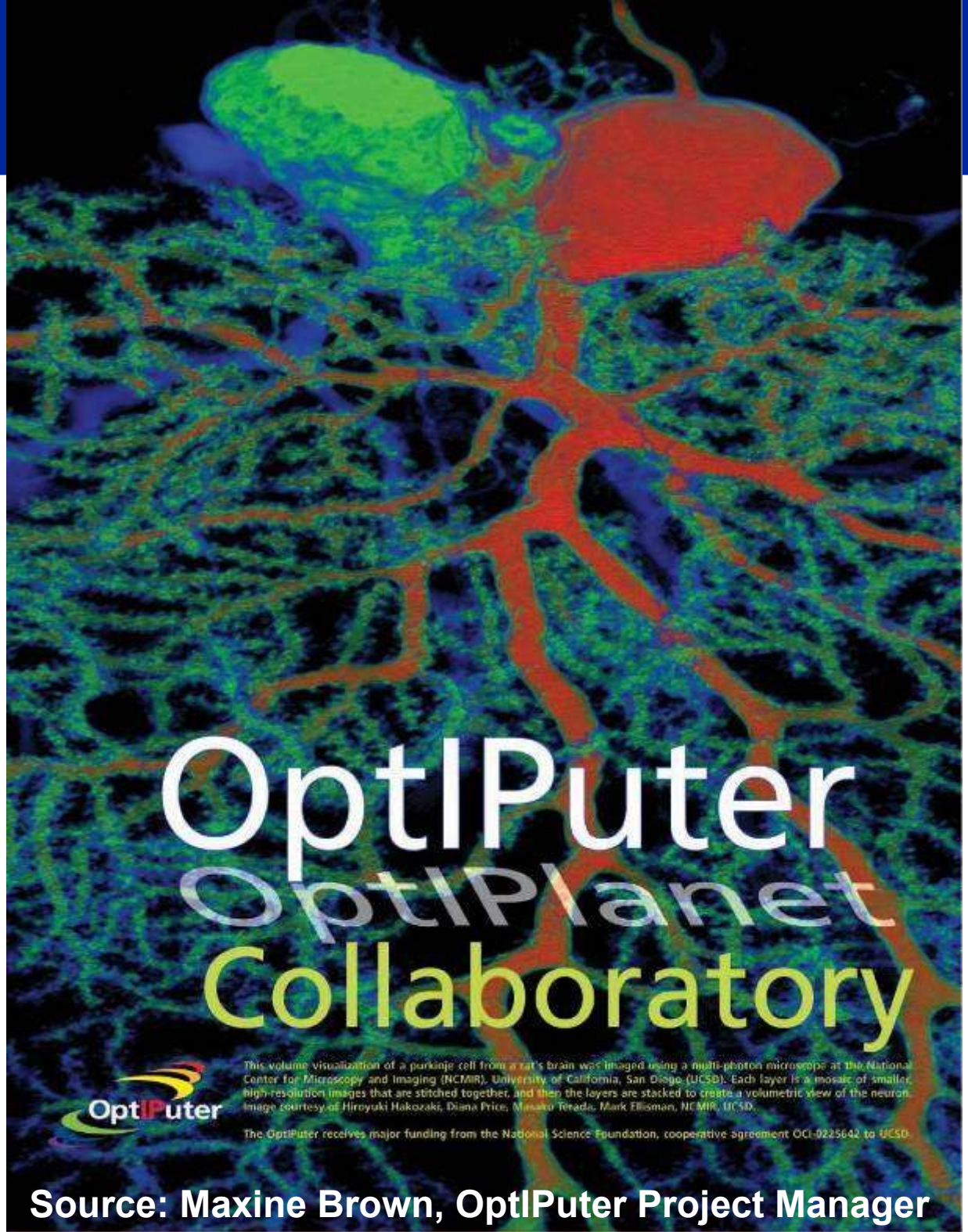


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Powered by Rocks ROCKS

evl electronic visualization laboratory

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Source: Maxine Brown, OptIPuter Project Manager

Green Initiative:

Can Optical Fiber Replace Airline Travel for Continuing Collaborations ?

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