“Calit2: A UC Experiment for Living in the Future"

Talk to UCSD Near You
Calit2@UCSD
La Jolla, CA
April 11, 2006

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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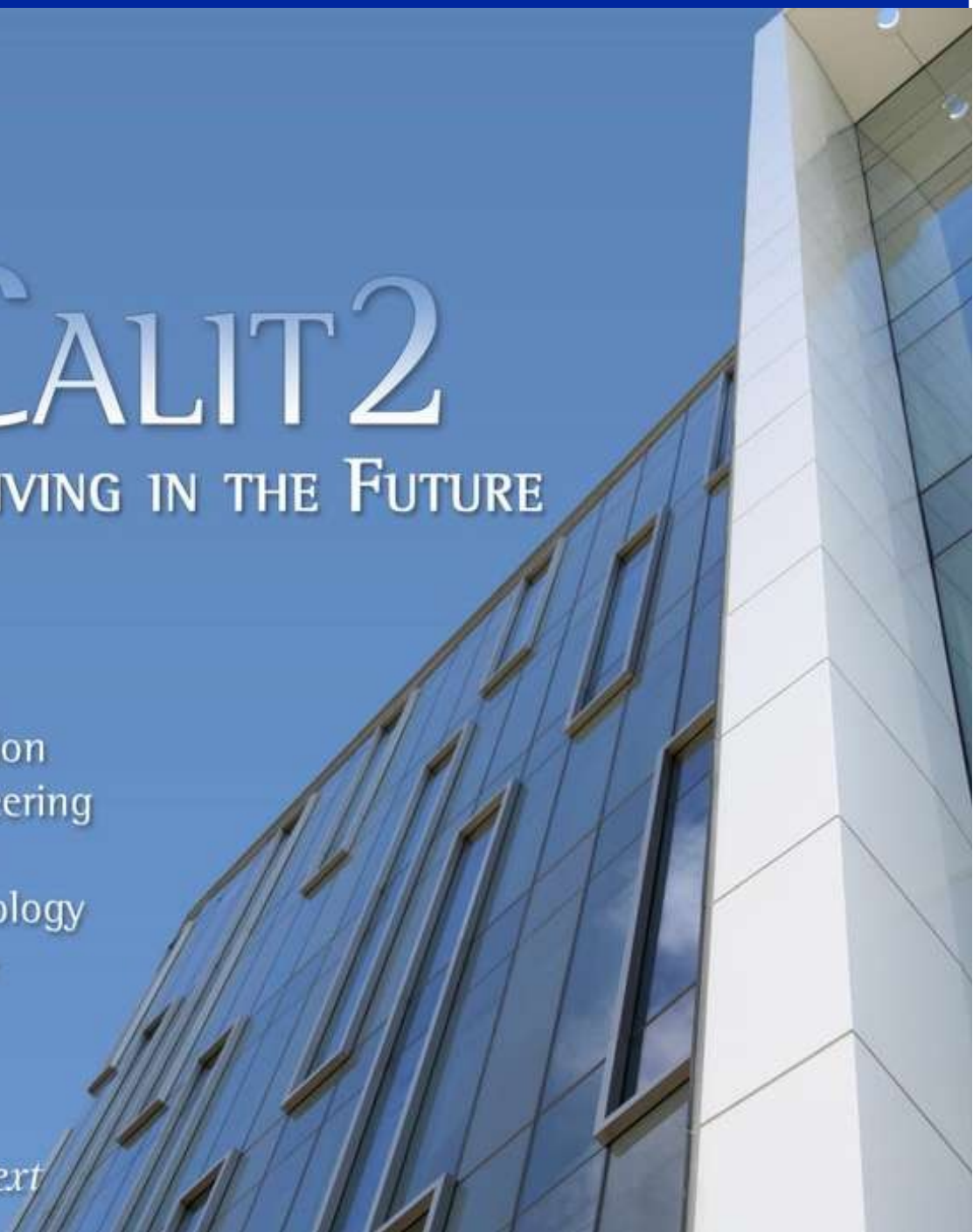
UCSD

Near You

PRESENTS

CALIT2

A UC EXPERIMENT FOR LIVING IN THE FUTURE



LARRY SMARR, PH.D.

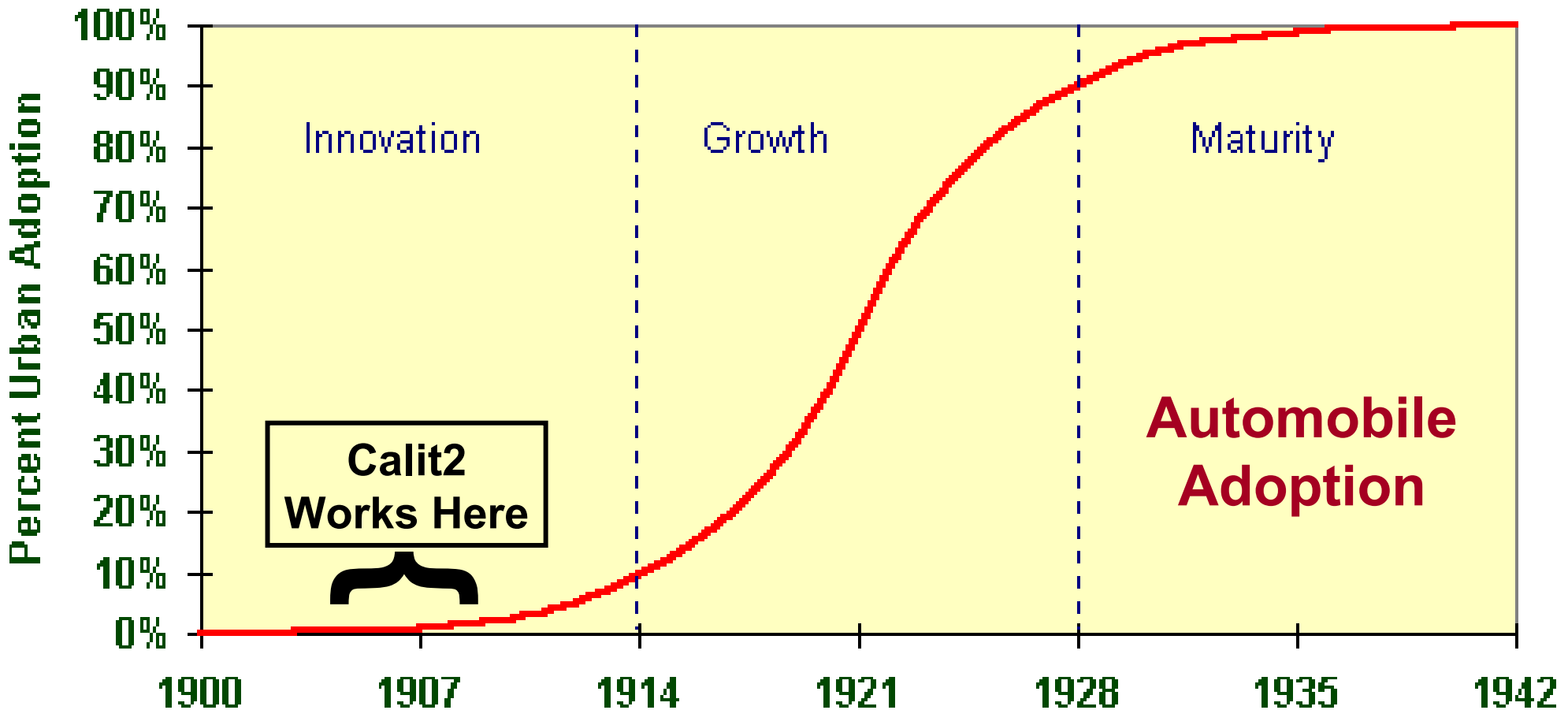
Professor of Computer Science and Information Technologies, UCSD Jacobs School of Engineering

Director of the UCSD California Institute for Telecommunications and Information Technology (Calit2), a partnership of UCSD and UC Irvine

Reception and lecture are presented by the UCSD Alumni Association and The Campaign for UCSD: *Imagine What's Next*

Calit2 "Lives in the Future" By Building Systems of Emerging Technologies

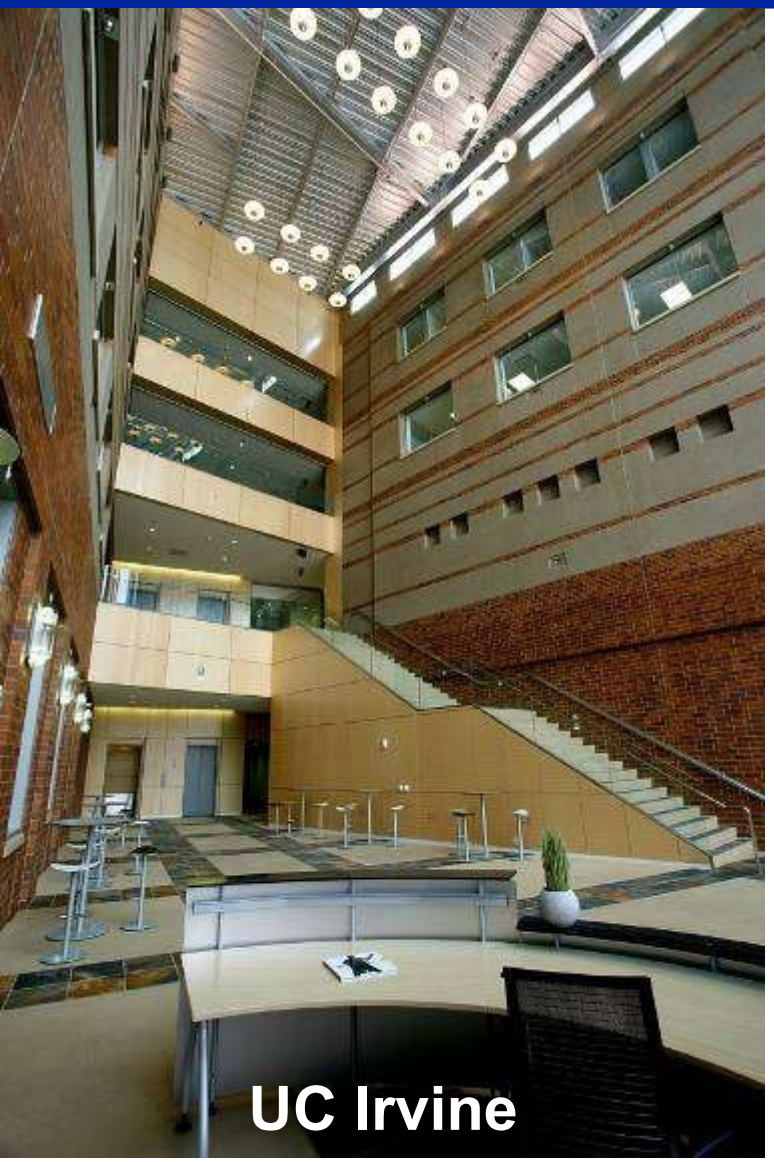
Technologies Diffuse Into Society Following an S-Curve



Source: Harry Dent, The Great Boom Ahead

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Two New Calit2 Buildings Will Provide Innovative New Laboratories to Their Campuses



- Over 1000 Researchers in Two Buildings
  - Drawn from Over Two Dozen Departments
  - Faculty, Staff, Students, Industry, Community
- New Laboratory Facilities
  - Digital Cinema, Virtual Reality
  - Wireless and Optical Communications

Richard C. Atkinson Hall Dedication Oct. 28, 2005



www.calit2.net

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Providing Support for Multi-Discipinary Research Teams

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Calit2 is Experimenting with Open Reconfigurable Work Spaces to Enhance Collaboration



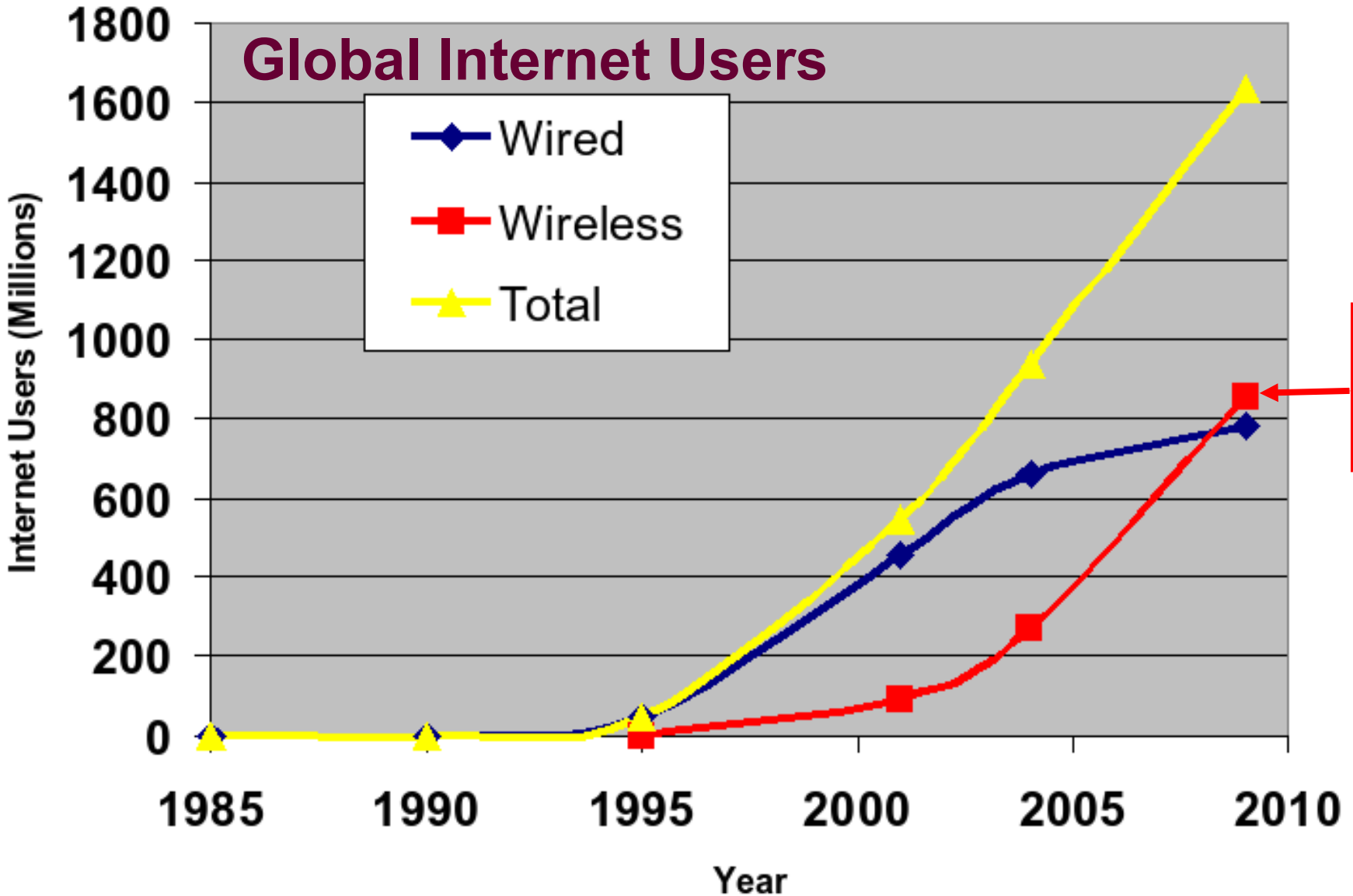




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Photos by John Durant; Barbara Haynor, Calit2

Calit2 is Living in the Future of the "Always-On" Mobile Internet



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http://www.etforecasts.com/products/ES_intusersv2.htm

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Two-Campus Calit2 Intelligent Transportation Team: Reducing Traffic Congestion and Increasing Safety



ITS University of California Irvine



zev Net

AUTOMOTIVE SOFTWARE WORKSHOP SAN DIEGO 2004

Computer Vision and Robotics Research Laboratory - UCSD





UCSD UCIrvine networkcar DAIMLERCHRYSLER NISSAN WirelessCar Ford it²

Calit2 Provides Real Time Personalized Commute Information



Over 1,000 Calls Per Day!

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http://traffic.calit2.net/index.jsp

Calit2@UCSD Has Established an Interdisciplinary Program on Automotive Software Engineering

- **Cars Have Separate Integrated Networks For:**
  - Power Train
  - Central locking system
  - Crash management
  - Multimedia
  - Body/Comfort Functions etc.
- **50-100 Electronic Control Units Supporting up to 1,000 Features**
- **Over 10 Million Lines of Code in Your Car!**
  - Increasing Interaction Between Different Sub-Systems
  - Increasing Interaction Also Beyond The Car's Boundaries
- **All This is About to Join the Internet!**

90 % of all Auto Innovations are Now Software-Driven

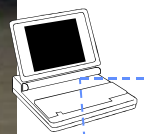


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Source: Ingolf Krueger, Calit2

Quickly Re-Establishing Communications: Calit2 Network R & D -- CalMesh Nodes





Disaster site

Ground Zero



Hospital



Incident command center

Deploy Portable Relay Nodes



responsphere

rescue

it²

Calit2 is Working Closely with the First Responder Community:
Wireless Internet Information System for Medical Response in Disasters



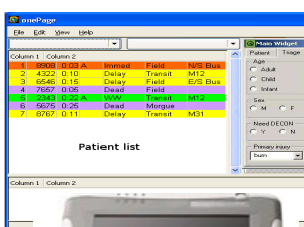




Triage

First Tier

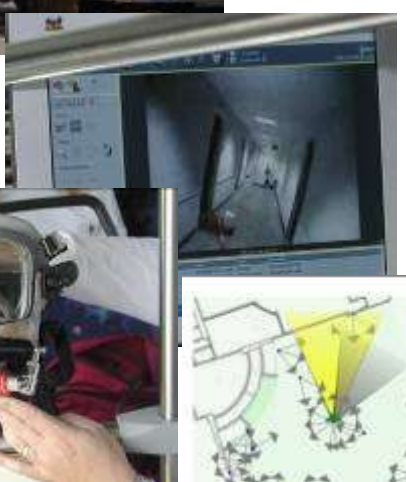




Mid Tier

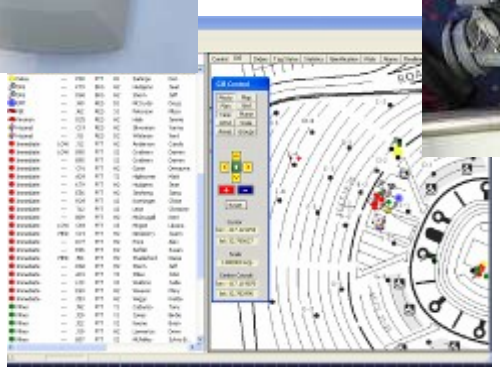


802.11 pulse ox





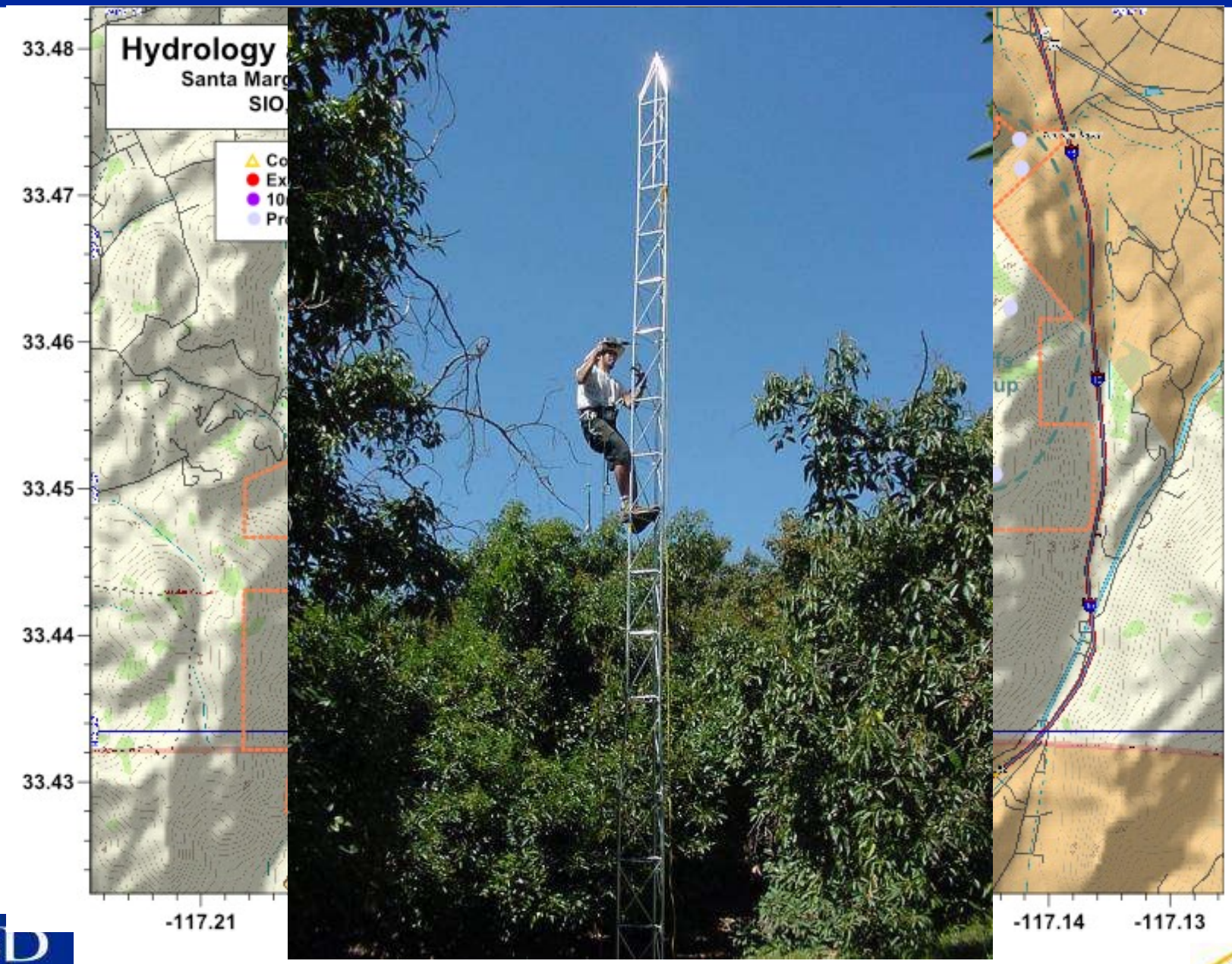
Wireless Networks



Command Center

Reality Flythrough
Mobile Video

Wireless Environmental SensorNets: Water, Climate, and Ecology Instruments



Source, Dan Cayan, UCSD SIO

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Calit2, SDSC, and SIO are Creating Environmental Observatory Control Rooms

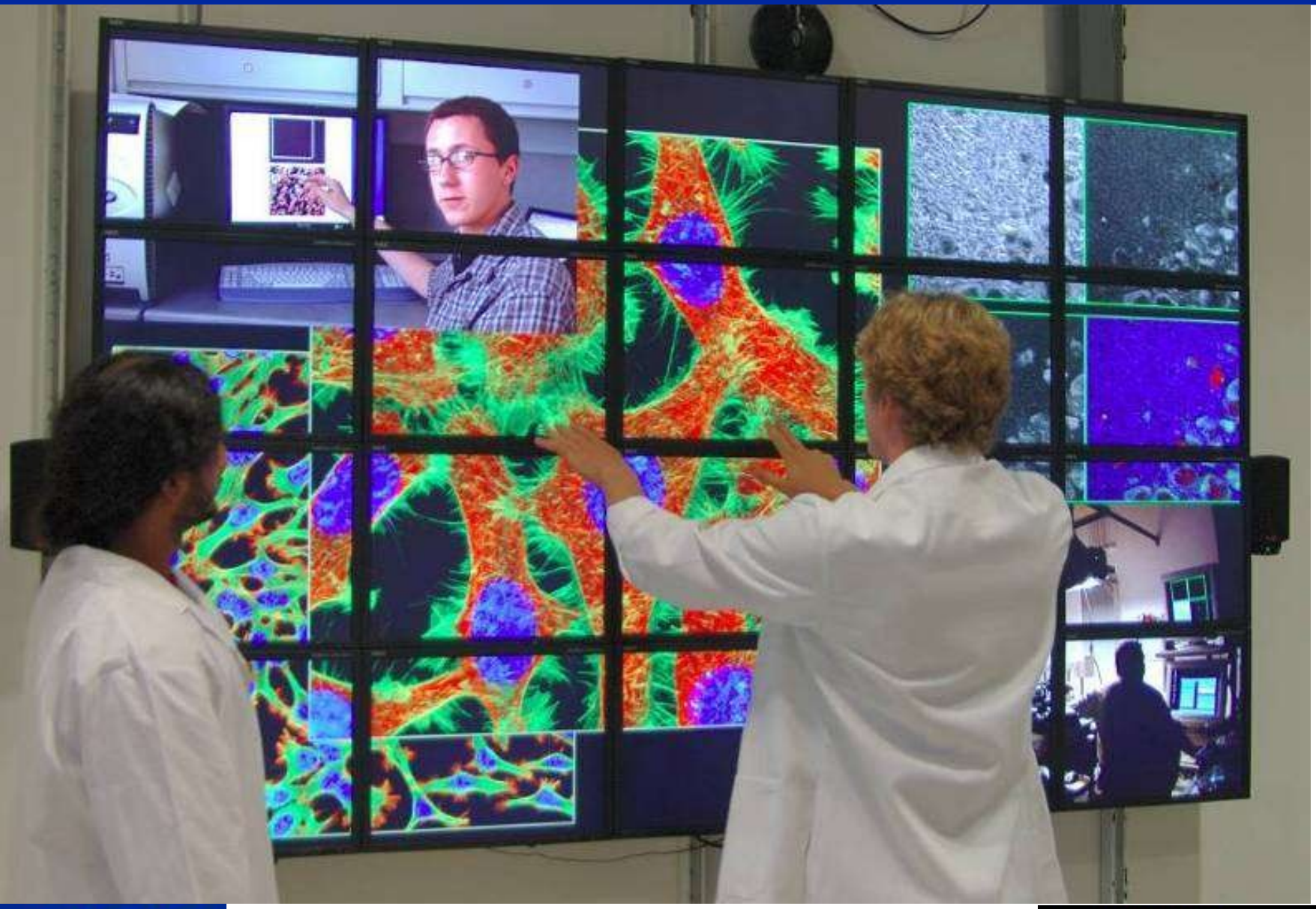


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Opportunity to Partner with Australia On-Line Coral Reef Monitoring

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Integration of High Definition Video Streams with Large Scale Image Display Walls



Large Scale Images of Cancer Cells

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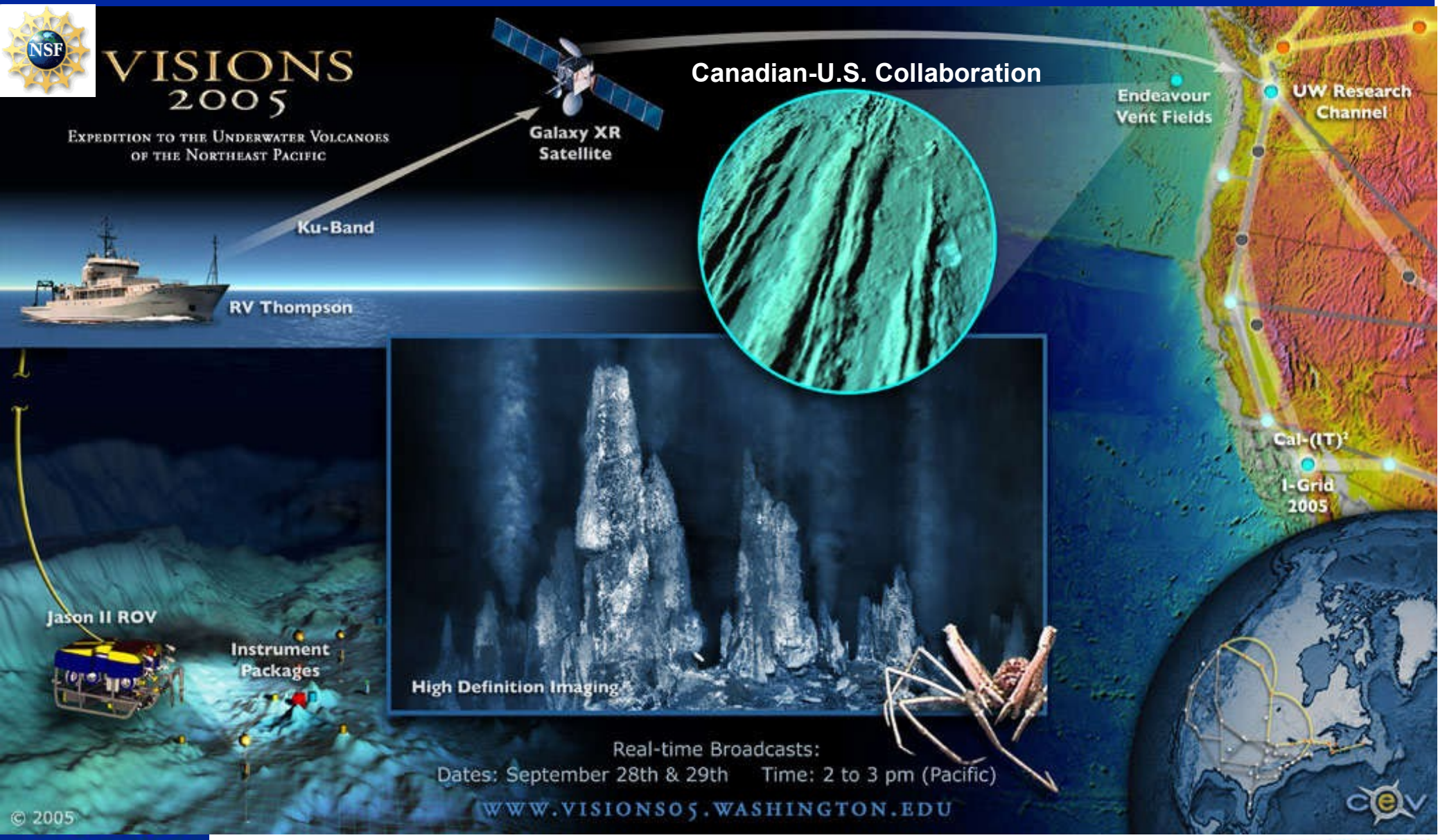
evl electronic visualization laboratory

Source: David Lee, NCMIR, UCSD

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

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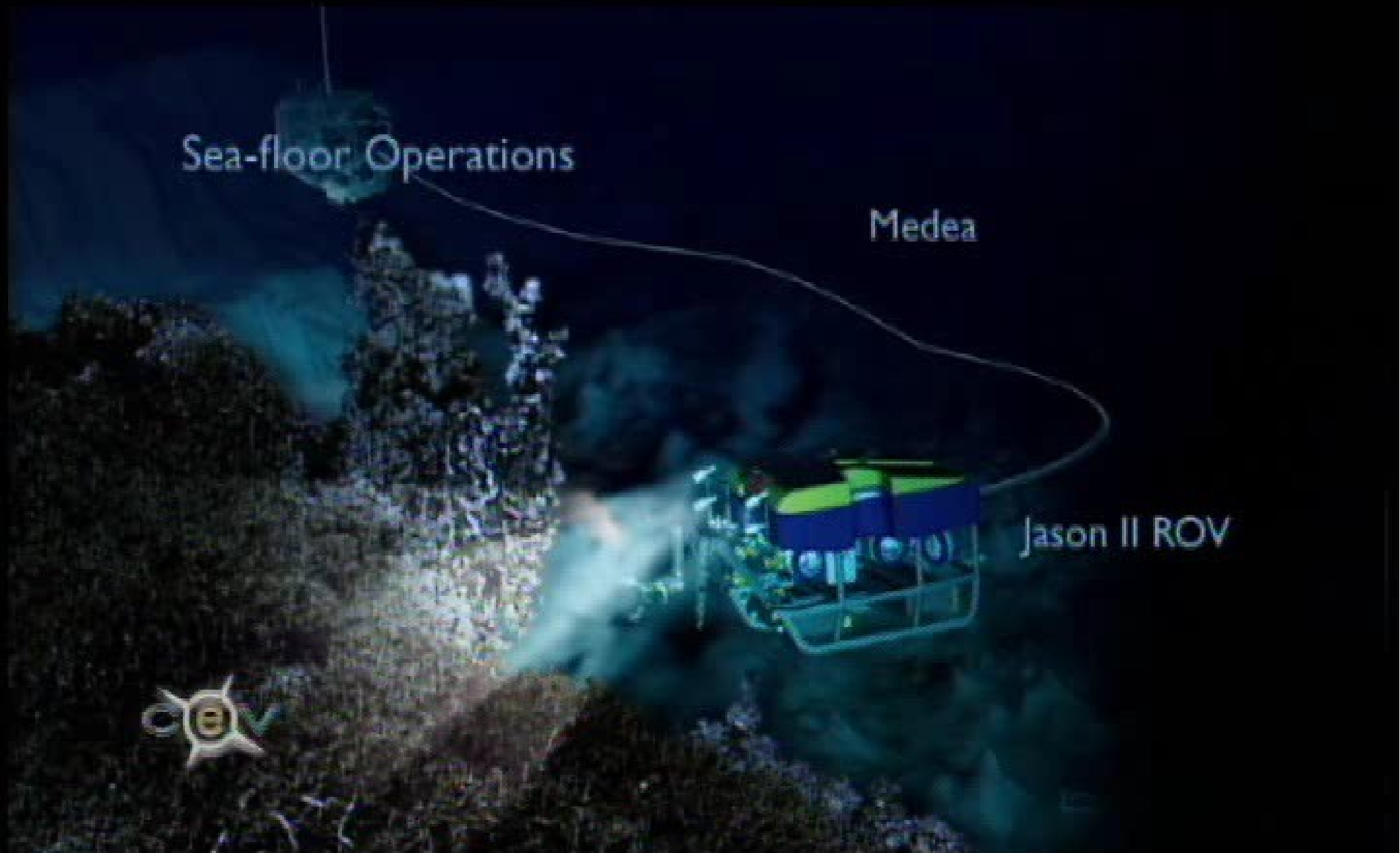
Remote Interactive High Definition Video of Deep Sea Hydrothermal Vents



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Source John Delaney & Deborah Kelley, UWash

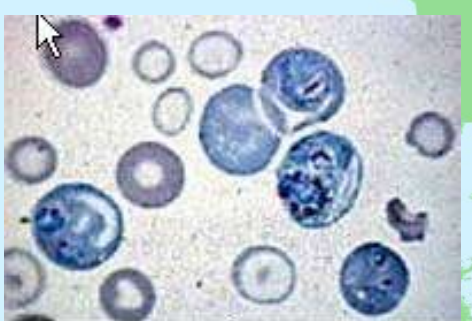
High Definition Video - 2.5 km Below the Ocean Surface



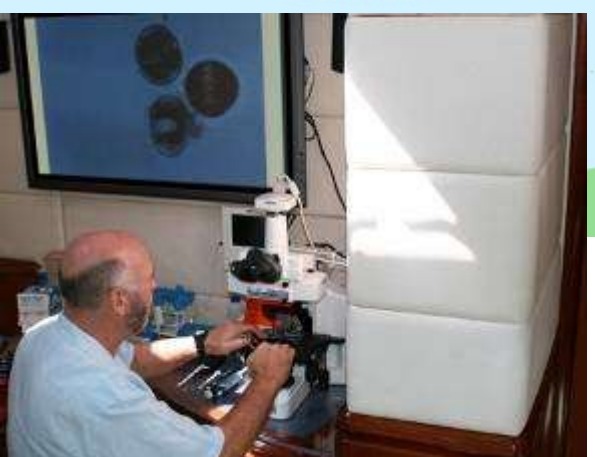
Global Ocean Sampling Project: Measuring the Genetic Diversity of Marine Microbes



Canada
United States
Mexico
Puerto Rico
Honduras
Costa Rica
Panama
Galapagos Islands
x 10 samples
Tanzania/
Zanzibar
x 7 samples
Seychelles
Madagascar
South Africa
Cocos-
Keeling Is.
Vanuatu
x 17 samples
Fiji
Tonga
French
Polynesia
Cook
Islands
New Caledonia
Australia
x 8 samples



Analyzed
Sampled, but not Analyzed



MARINE MICROBIOLOGY INITIATIVE

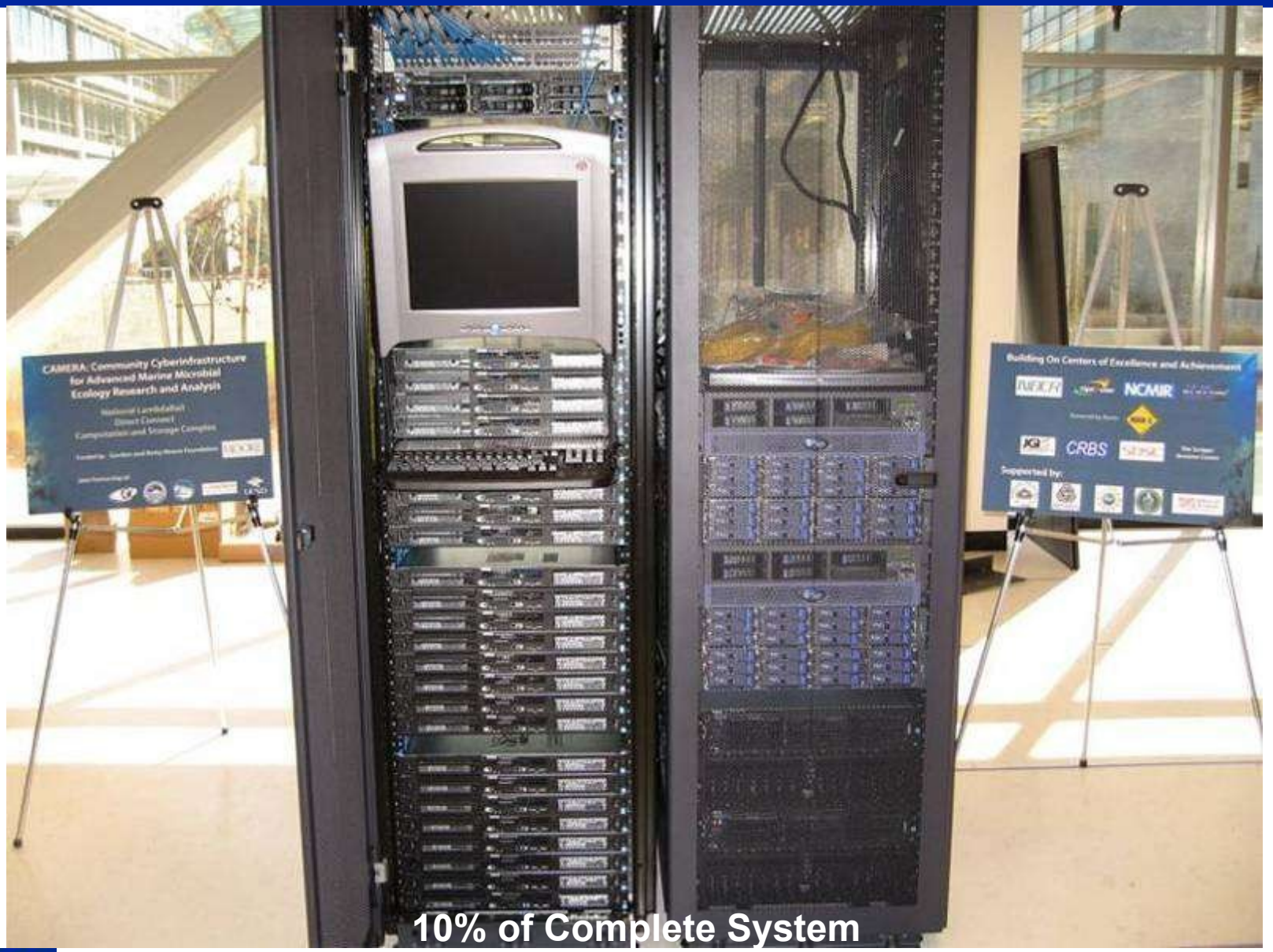
Gordon and Betty MOORE FOUNDATION

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Calit2, SDSC and SIO are Building the World's Most Powerful Environmental Genomics Data Complex



10% of Complete System

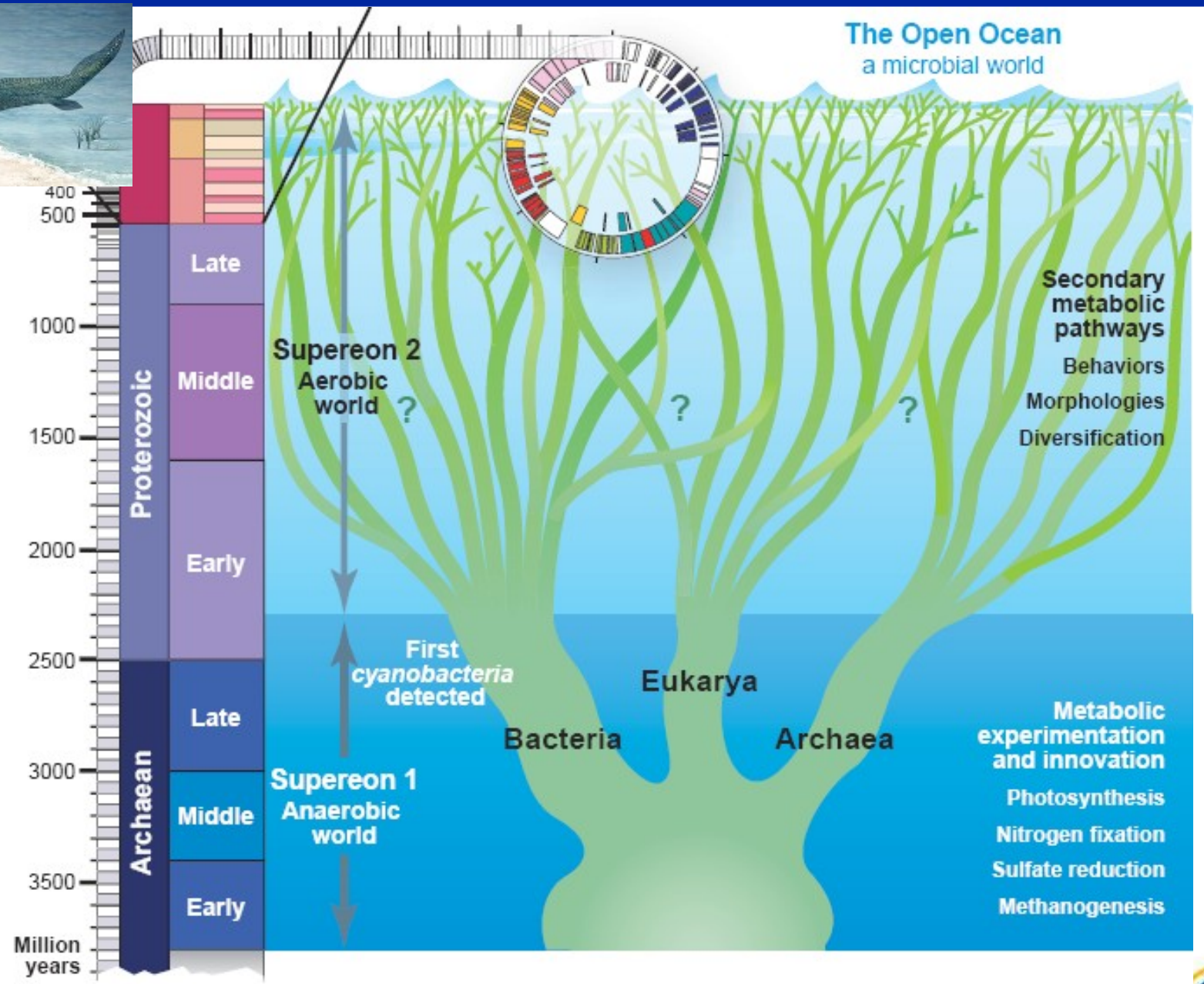
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$24.5 M Grant from the Moore Foundation

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Microbial Genomics Let's Us Look Back Nearly 4 Billion Years In the Evolution of Life





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Science Falkowski and Vargas 304 (5667): 58

CalViz--
HD Streaming Internationally



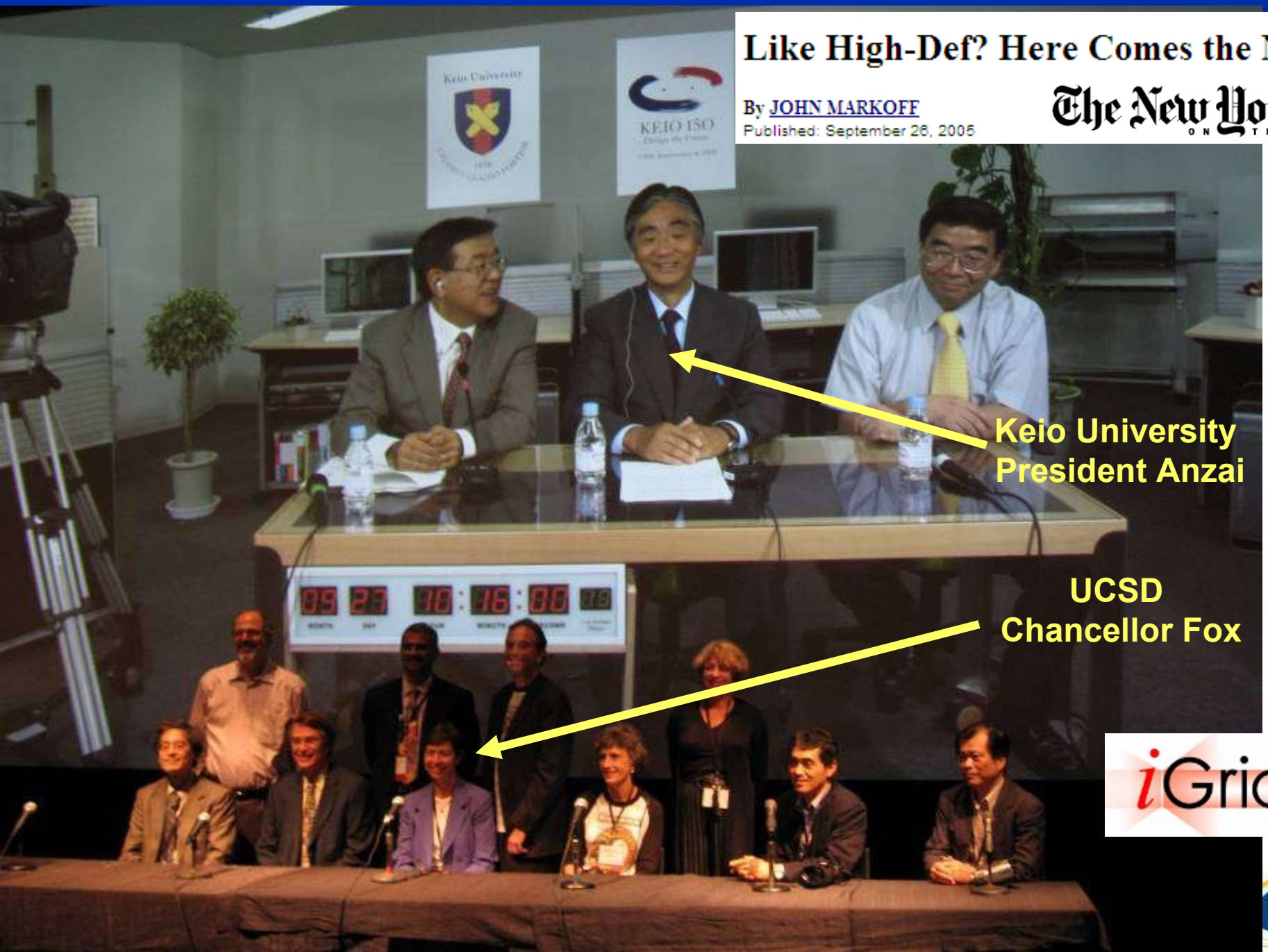
Photo: Courtesy of Harry Ammons

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Studio on 4th Floor of Calit2@UCSD Building
Two Talks to Australia in March 2006

it2

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

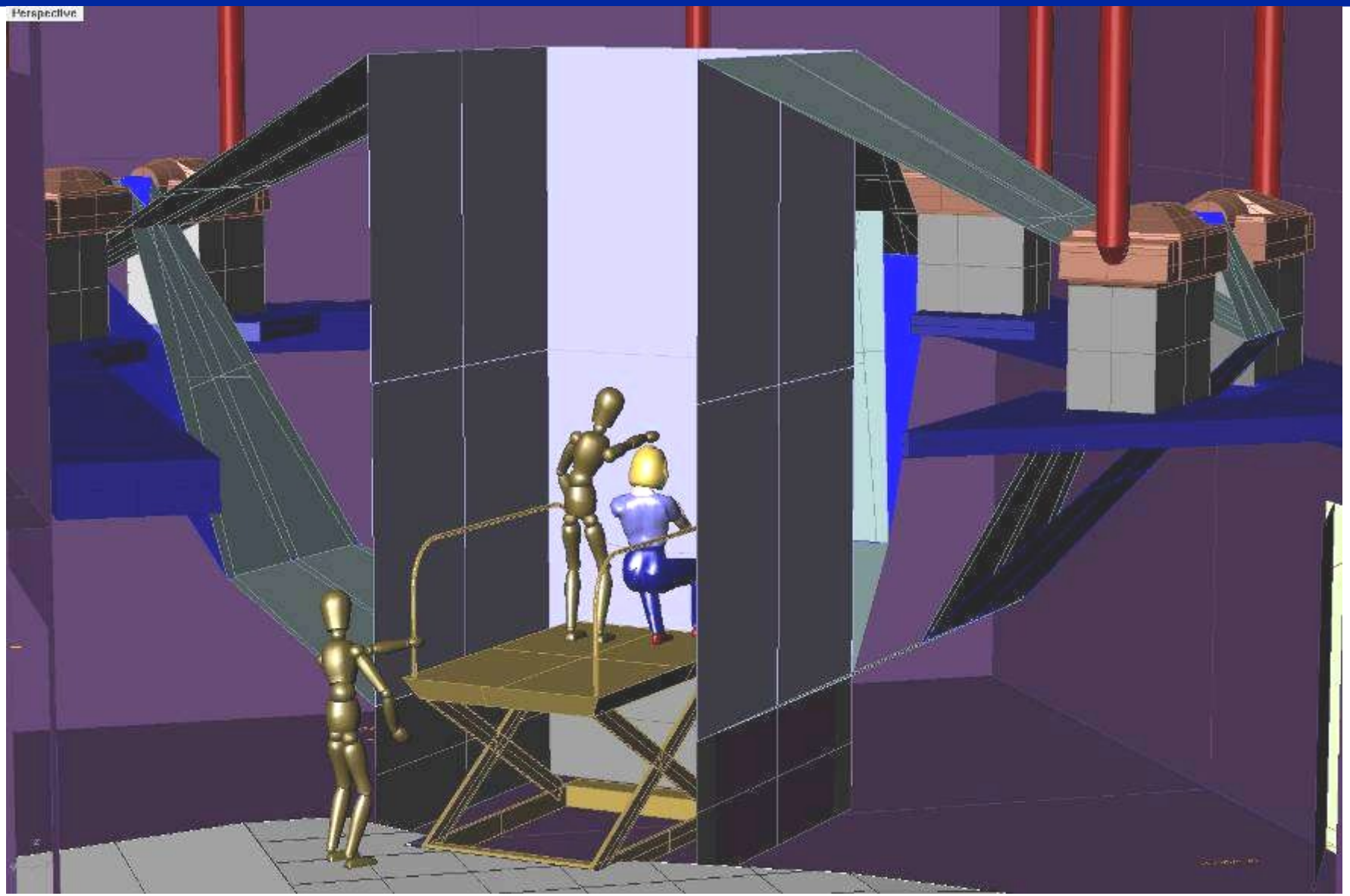
Lays Technical Basis for Global Digital Cinema

Sony
NTT
SGI

iGrid 2005

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Using Digital Cinema Projectors To Create the Next Generation of Virtual Reality



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4KAVE—24 Megapixel Virtual Reality
Design: Greg Dawe, Calit2

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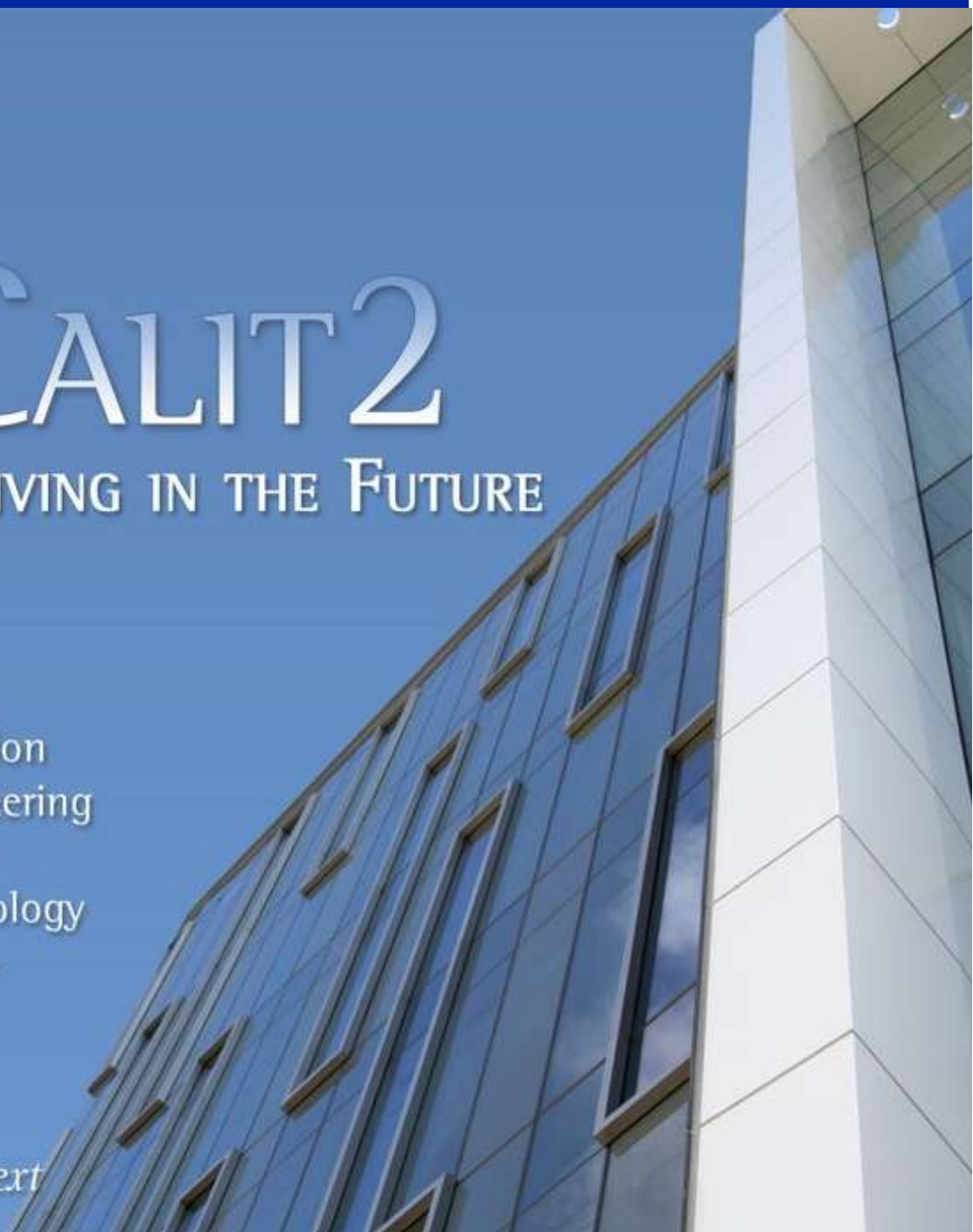
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