Platform for Innovation: research and education networks

US and Mexico advanced R&E networking: collaborations and opportunities

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CUDI: Reunión Primavera
Torreón, Coahuila, Mexico
22 March 2007

February 8, 2005, in El Paso

SUPER-SPEEDY INTERNET

Link bridges gap among international universities

By Vic Kolenc

El Paso Times

Officials from both sides of the border met Tuesday to celebrate a super fast Internet connection that will open the door to new research and learning opportunities between the University of Texas at El Paso and universities in Mexico.

UTEP and the University of Juárez have made a fiber optic connection that links Mexico to the United States' Internet2, a high-performance information network that operates up to a thousand times faster than the regular Internet.

"UTEP has been connected to Internet2 for some time (since 1999) but there was not a reliable link to Mexico," UTEP President Diana Natalicio said. "This bridge will enable researchers (from UTEP and Mexico) to work more closely and, we hope, open other possibilities of linkages beyond the university."

The previous microwave connection was slower, less reliable, less secure and more expensive to use than the new fiber-optic link, which cost about $300,000 to install, officials said.

Carlos Casasús, director general of the Corporación Universitaria para el Desarrollo de Internet (University Corporation for Internet Development), which manages Internet2 in Mexico, said the new fiber connection means almost 80 Mexico universities and research centers will now be able to take full advantage of research and opportunities available through Internet2.

"This gives us unlimited bandwidth at a very low cost, he said.

Douglas Van Houweling, president and CEO of Internet2, said the new connection makes UTEP and the University of Juárez important information exchange points for Internet2.

Internet2, based in Ann Arbor, Mich., is a nonprofit consortium led by more than 200 universities in the United States in partnership with industry and government.

Besides allowing researchers to share huge amounts of data and remotely access high-tech equipment, Internet2 also is being used to develop network capabilities that can be duplicated on the regular Internet by companies, Internet2 information states.

Natalicio said the new Mexican connection also opens "new channels of communication" between students at UTEP and in Mexico.

But several UTEP students on campus Tuesday were not aware of Internet2.

"I've never heard of it. UTEP should make it better known to students," said David Sifuentes, 24, a UTEP business student.

Rudy Gutierrez / El Paso Times

Douglas E. Van Houweling, left, president and CEO of Internet2, symbolically connected the Internet2 cable with Carlos Casasus, director of Corporacion Universitaria para el Desarrollo de Internet.

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For more information: www.internet2.edu

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Overview

- State of R&E Networking in the US
  - Organization
  - Meeting the Cyberinfrastructure needs for science, engineering, arts & humanities
- Thoughts on implications and opportunities for Mexico
- How can we work together

INTERNET2®

An Asset for the Community

Universities

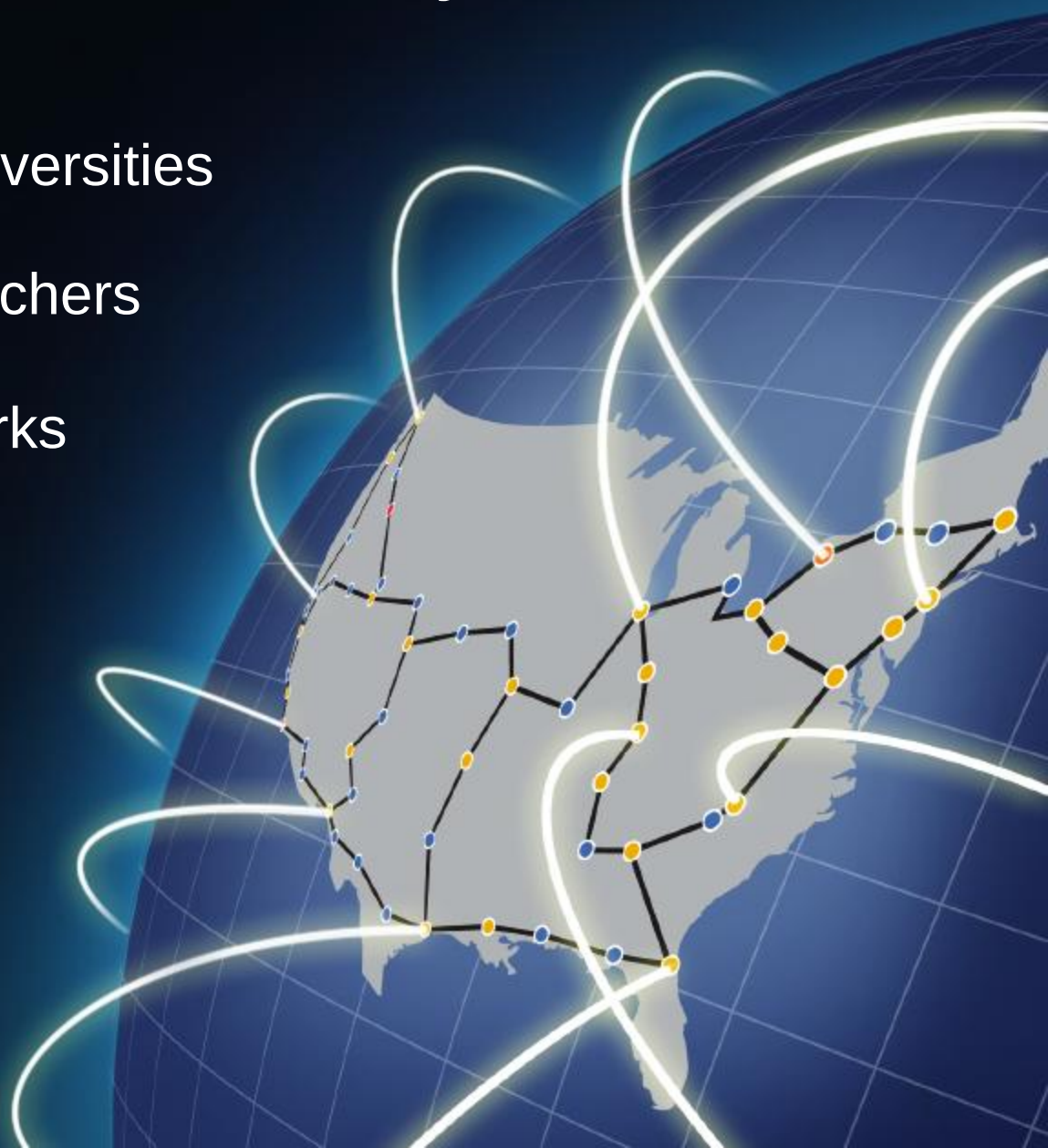
Researchers

Regional Networks

K-12

Industry

International



Cyberinfrastructure: More Than High-End Computing and Connectivity

- Focused on sharing and making greater capabilities available across the science and engineering research communities
- Allows applications to interoperate across institutions and disciplines
- Ensures that data and software acquired at great expense are preserved and easily available to all
- Empowers enhanced collaboration over distance and across disciplines.

Report of the National Science Foundation Blue-Ribbon Advisory Panel on Cyberinfrastructure

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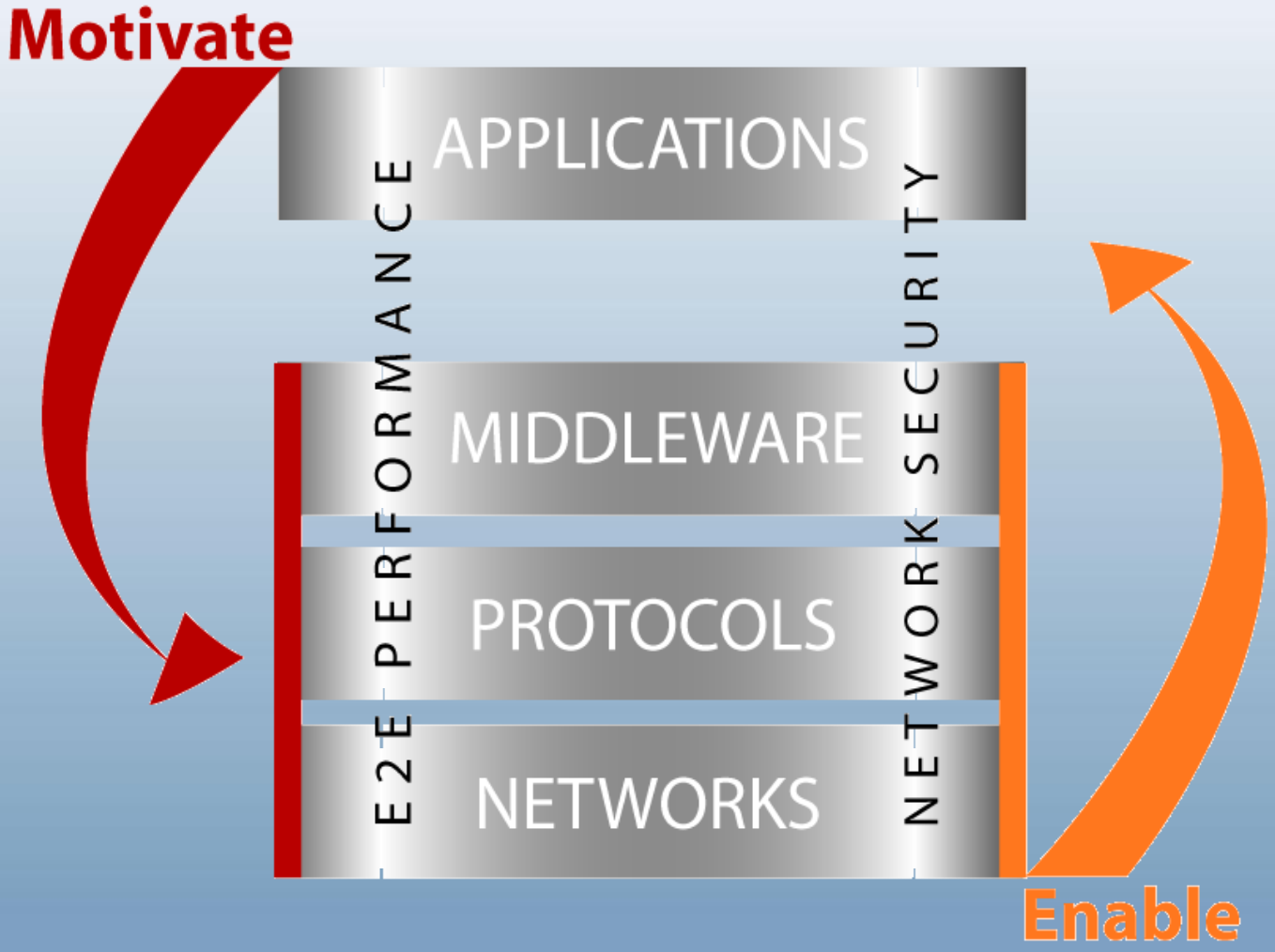
Internet2 Vision



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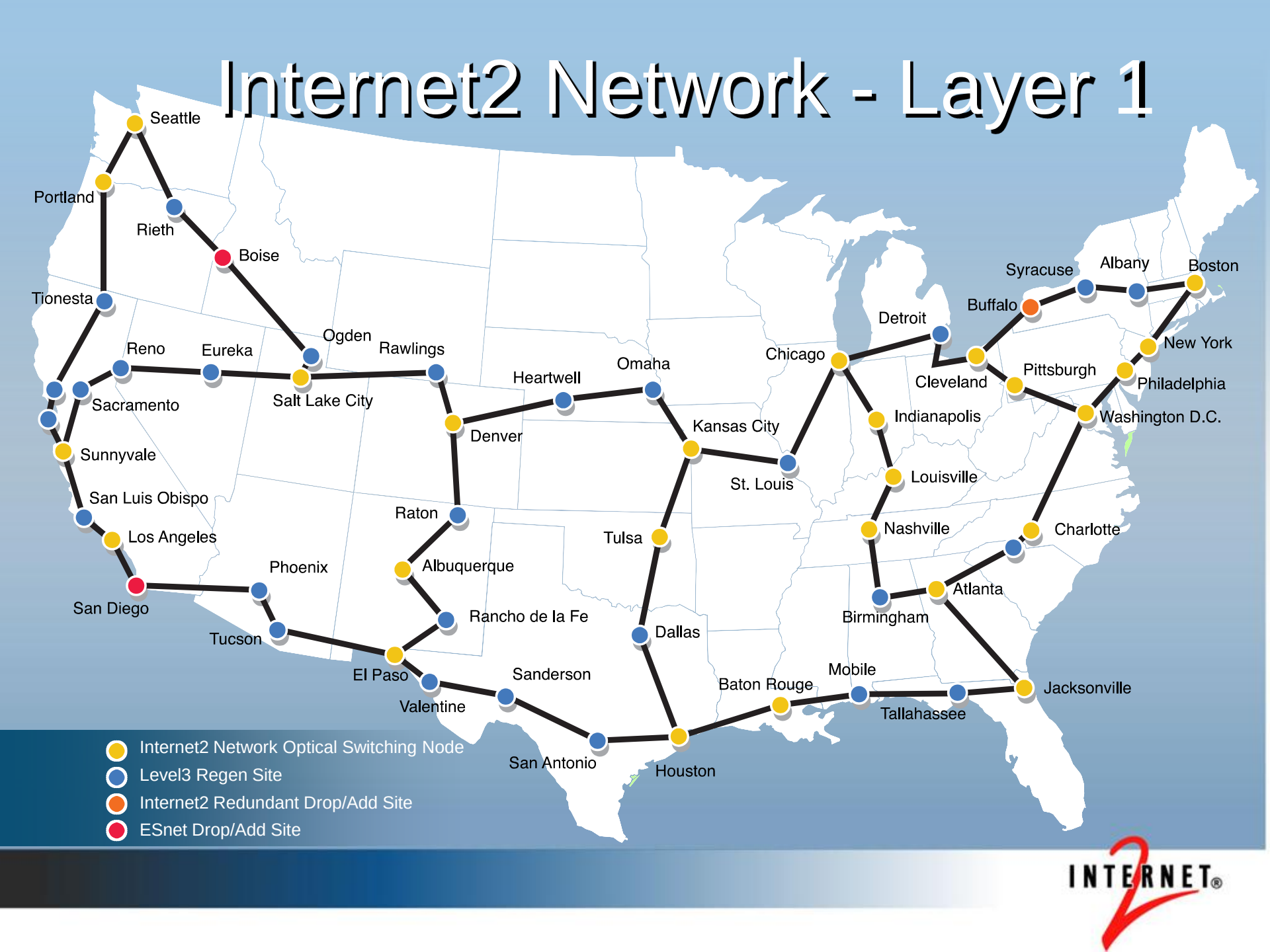
Internet2 Network

- Hybrid optical and IP network
- Dynamic and static wavelength services
- Fiber, equipment dedicated to Internet2; Level 3 Communications maintains network and service level
- Platform supports production services and experimental projects

Internet2 Network - Layer 1



Internet2 – National LambdaRail

- Planned merger
  - 3/9/2007 Memorandum of Agreement
  - 4/20/2007 Definitive Agreement
  - 6/29/2007 Merged operations
- Scope of the combined organizations
- Consolidated network infrastructure
- Brings regional and national organizations together

Middleware Infrastructure

- Focus:
  - Inter-institutional collaboration
  - Scalable authenticated/authorized access to remote resources
- Internet2 role:
  - Defining/creating architecture: Shibboleth
  - Tools to implement: Shibboleth, Grouper, Signet
  - Infrastructure/Services to scale: InCommon, USHER

Partnerships for Cyberinfrastructure

- Working closely with US government agencies
  - National Science Foundation (NSF)
  - Depart of Energy (DOE) Office of Science
  - National Institutes of Health (NIH)
  - National Endowment for the Humanities (NEH)
- TeraGrid, Open Science Grid, Internet2 and EDUCAUSE
  - to help better understand the CI picture
  - coordinate functions and roles

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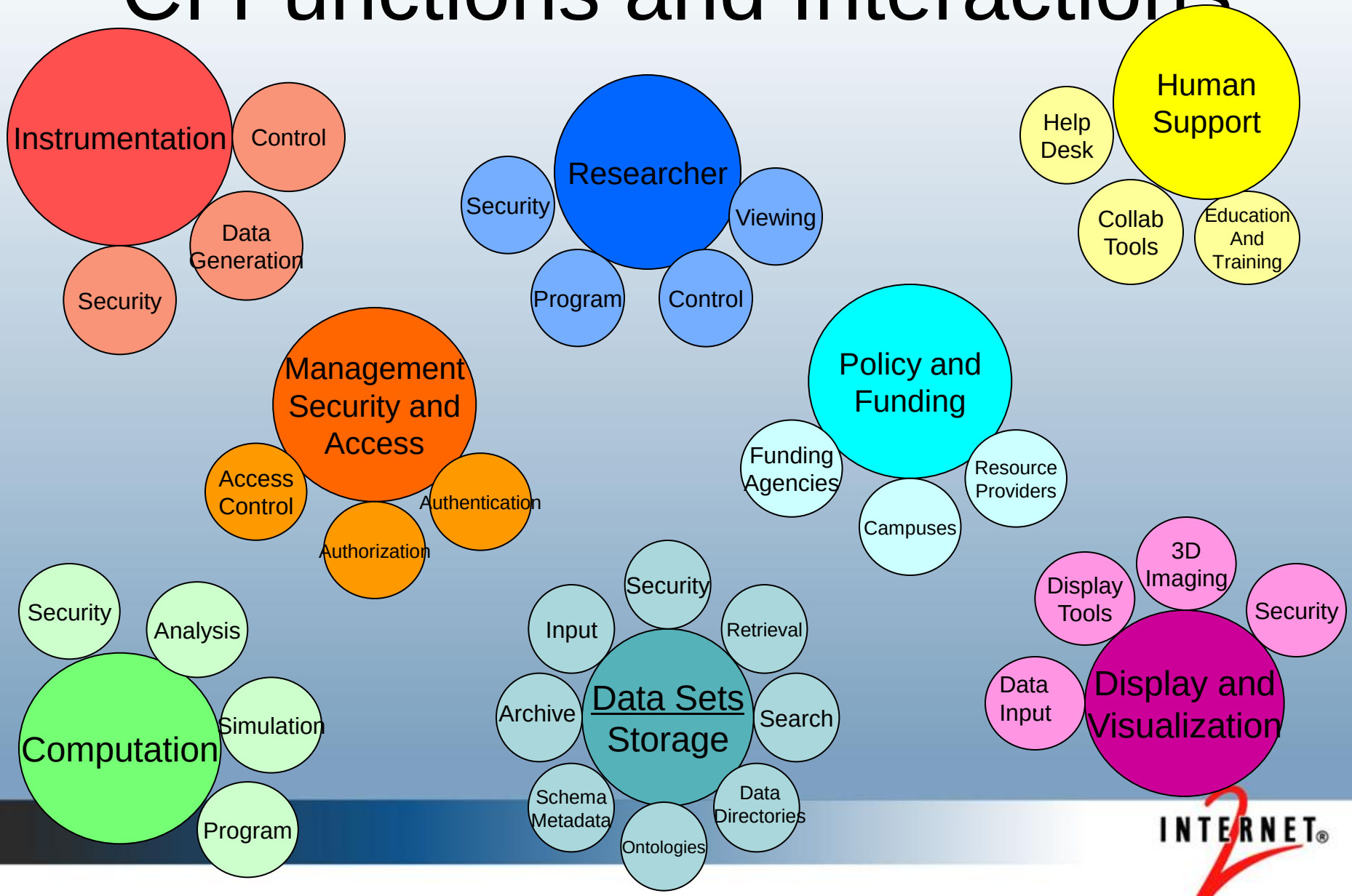
CI Functions and Interactions

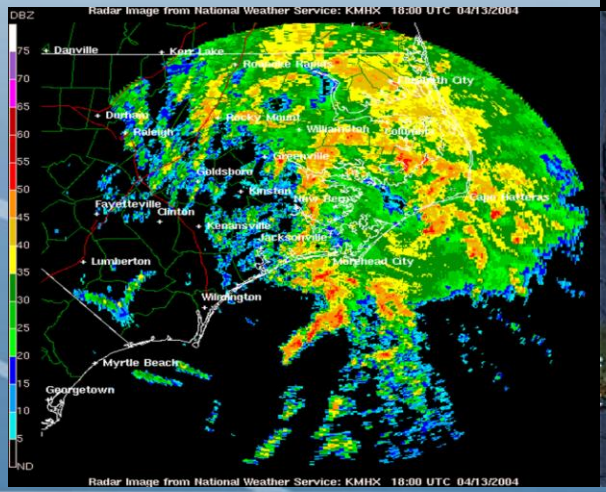


Cyberinfrastructure Days

- TeraGrid, Open Science Grid, Internet2 and EDUCAUSE collaboration
- Assist campuses in their CI planning
- Reach out to early and later-adopting disciplines
- Gather feedback/insight on services the national organizations could provide to aid campuses and discipline communities

Supporting large-scale distributed sensor networks

- Ecology
- Seismology
- Meteorology



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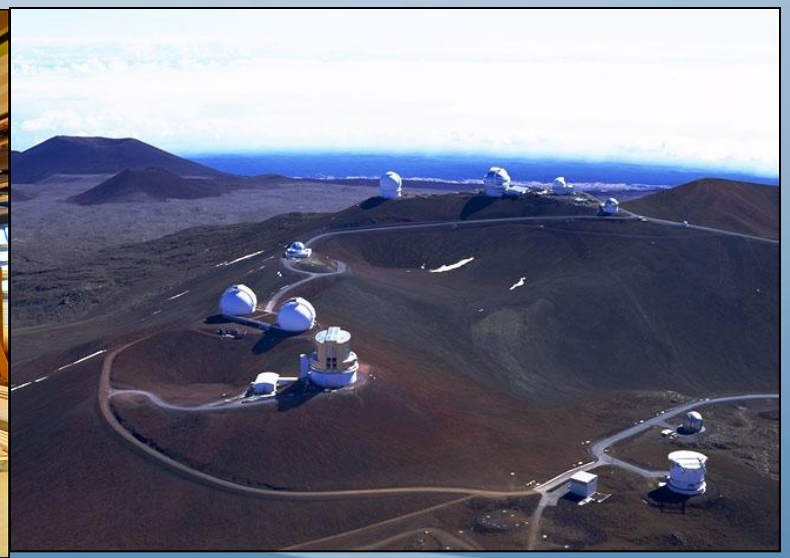
Access to Unique scientific instruments

- Astronomy (new Mexican telescope?)
- High-Energy and Nuclear Physics



Hi-fidelity collaboration

- HD-quality video
- CD-quality audio

Benefits of Robust Cyberinfrastructure Extend Beyond Research to Education, Operation & Economic Devdelopment

- Communications
  - VoIP → Converged telepresence
- Media
  - IPTV → Global access and cultural sharing
- Support for primary and secondary education
  - SEGP in US
- Support for industry applications of the future

Opportunities for Mexico and the US

- Mexico-US relationship is very strong
  - Partnership between CUDI and Internet2 since May 1999
  - Strong ties between respective communities
    - In US, California and Texas leadership has been important for cross border and international connectivity
    - Multiple collaborations and applications
  - Mexico-US: we need to work together to further promote the value of R&E advanced networking in our countries
- Connectivity
  - Tijuana-San Diego fiber thanks to NSF WHREN-LILA project and CUDI
  - Ciudad Juarez-El Paso fiber thanks to UTEP and UCJ
  - Importance and role of Mexico in international efforts (CLARA)

Opportunities, cont'd

- Network Infrastructure
  - Opportunities to leverage respective infrastructures, relationships to have control of underlying infrastructure across borders
    - CANARIE in Canada and provincial and state networks on both sides of the border are proceeding
- CI needs of our respective institutional members
  - Collaboration on campus outreach?
  - Disciplines that span the border? A cyberinfrastructure for advancing issues and challenges on our border states
    - Much larger implications and benefits
  - Federated identity needs among Mexican institutions? A national Federation for Mexico?
- Can our shared network infrastructure enable broader sharing across our nations?

Thanks!

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