

Using IT in Formal Education

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NATIONAL PARTNERSHIP FOR ADVANCED COMPUTATIONAL INFRASTRUCTURE

PITAC Transforming Learning Workshop - SDSC - July 17, 2000

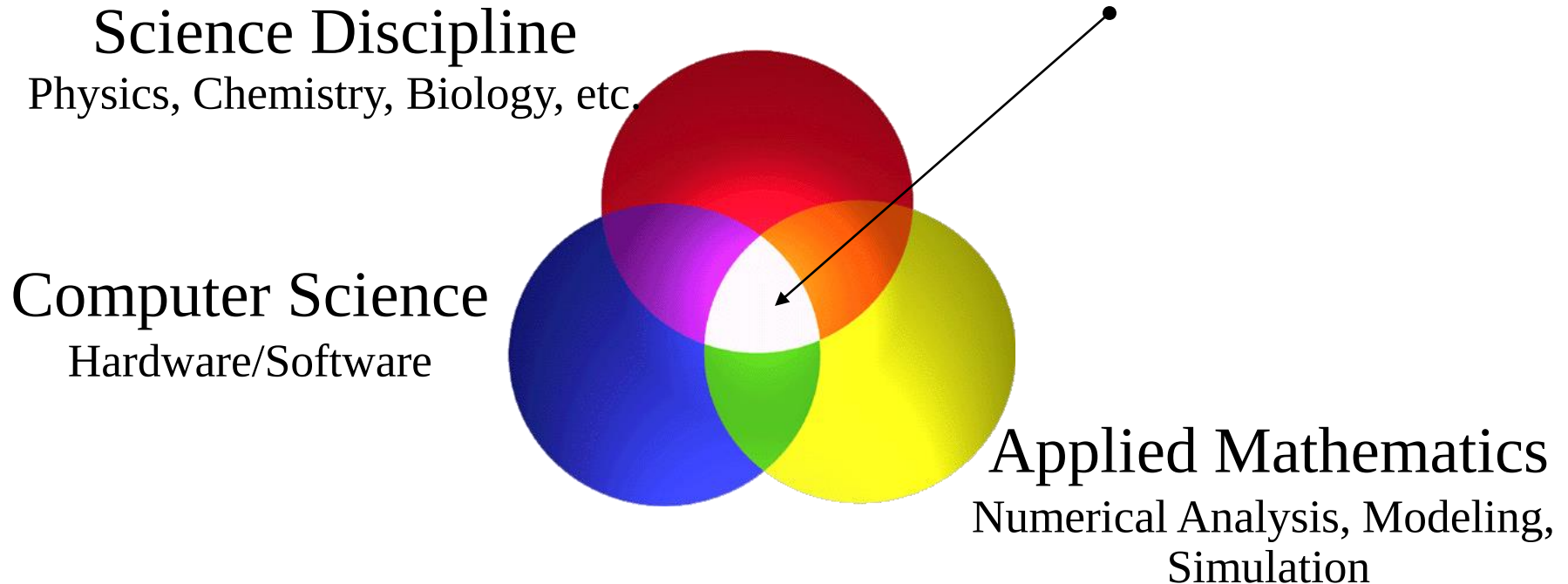


Outline of PITAC Transforming Learning Workshop Panel

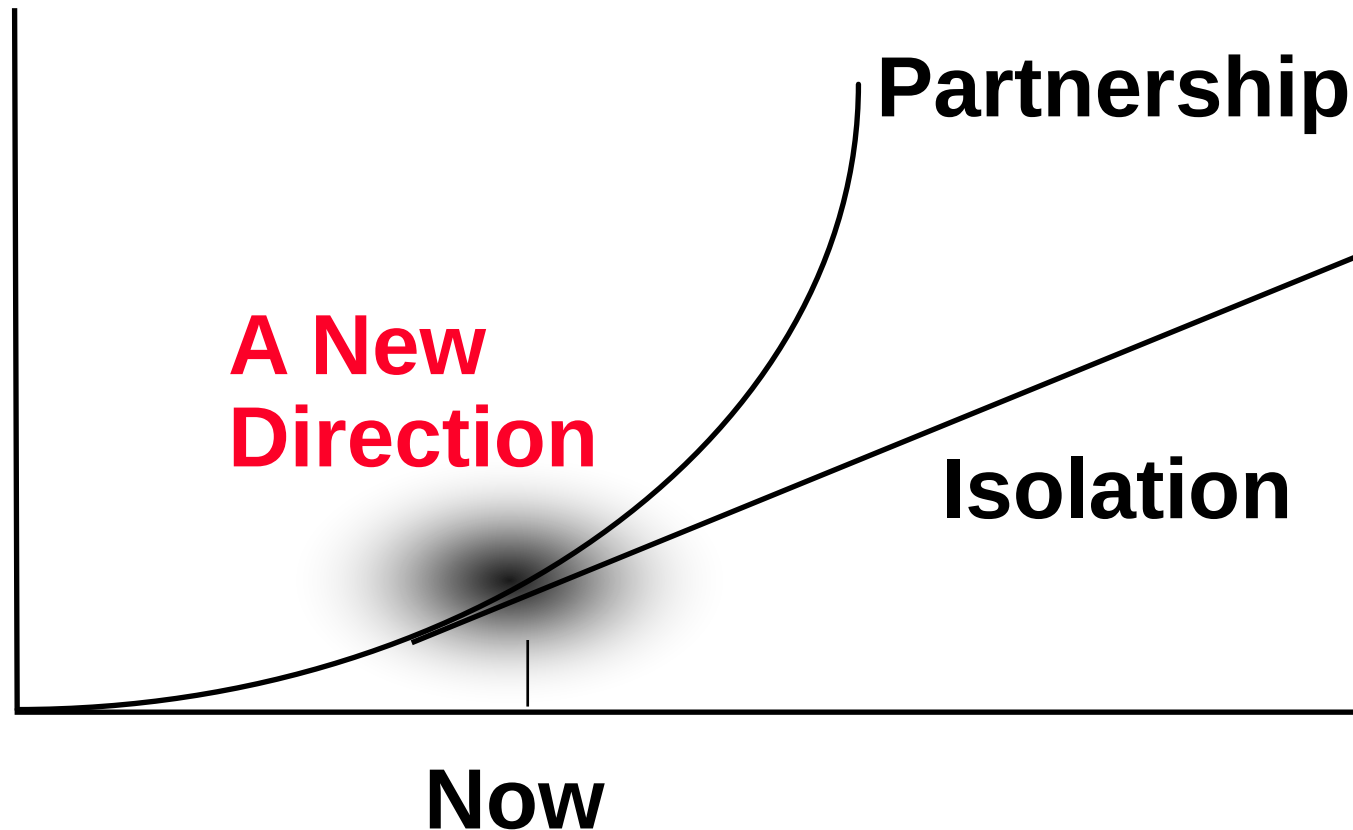
- **What does the Internet meaning in Higher Ed?**
- **Are Instruction Technology (IT) or Information Technology (IT) synonyms?**
- **How is Computational Science used as a driving force?**

Computational Science is Teamwork

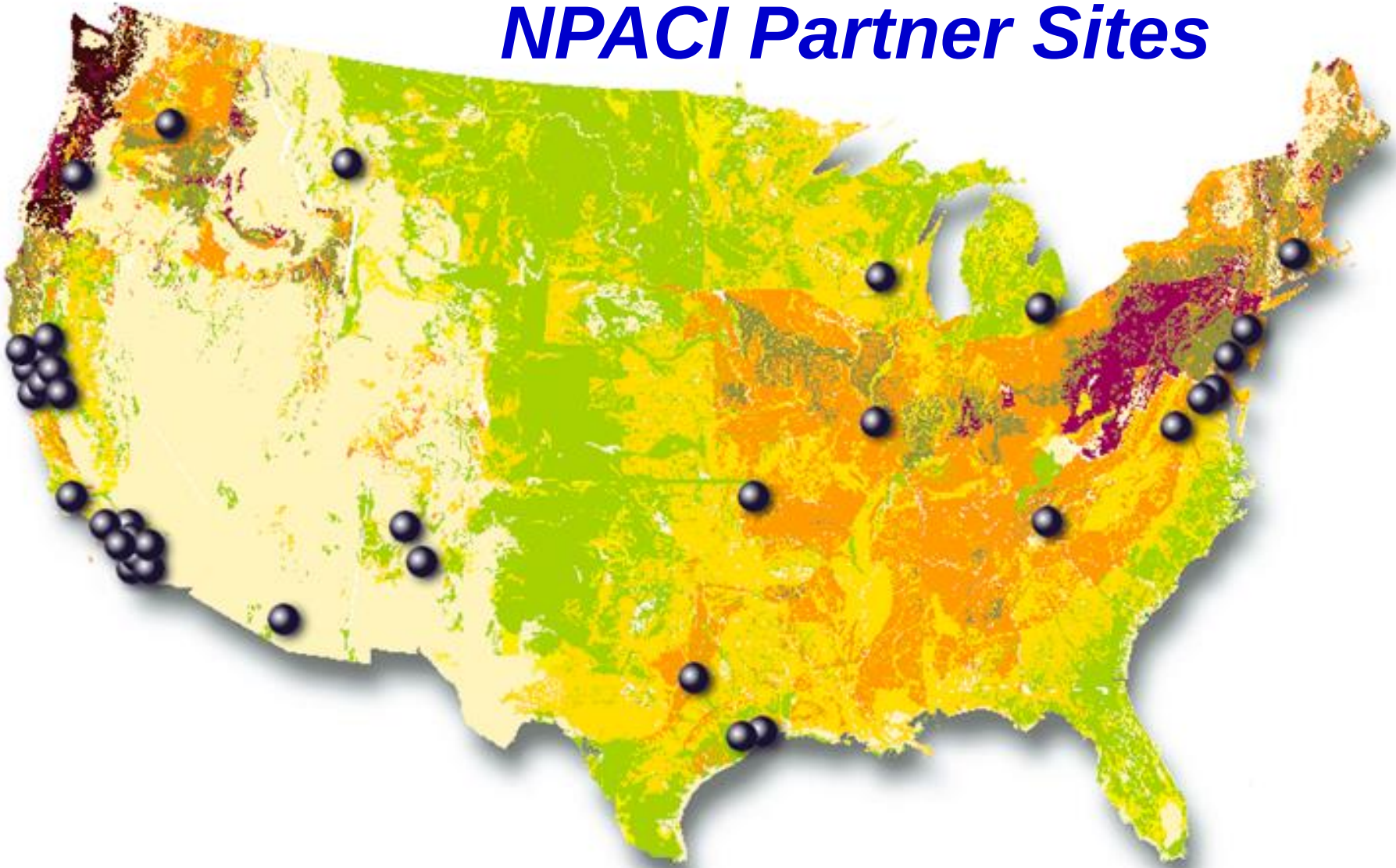
Teamwork and Collaboration



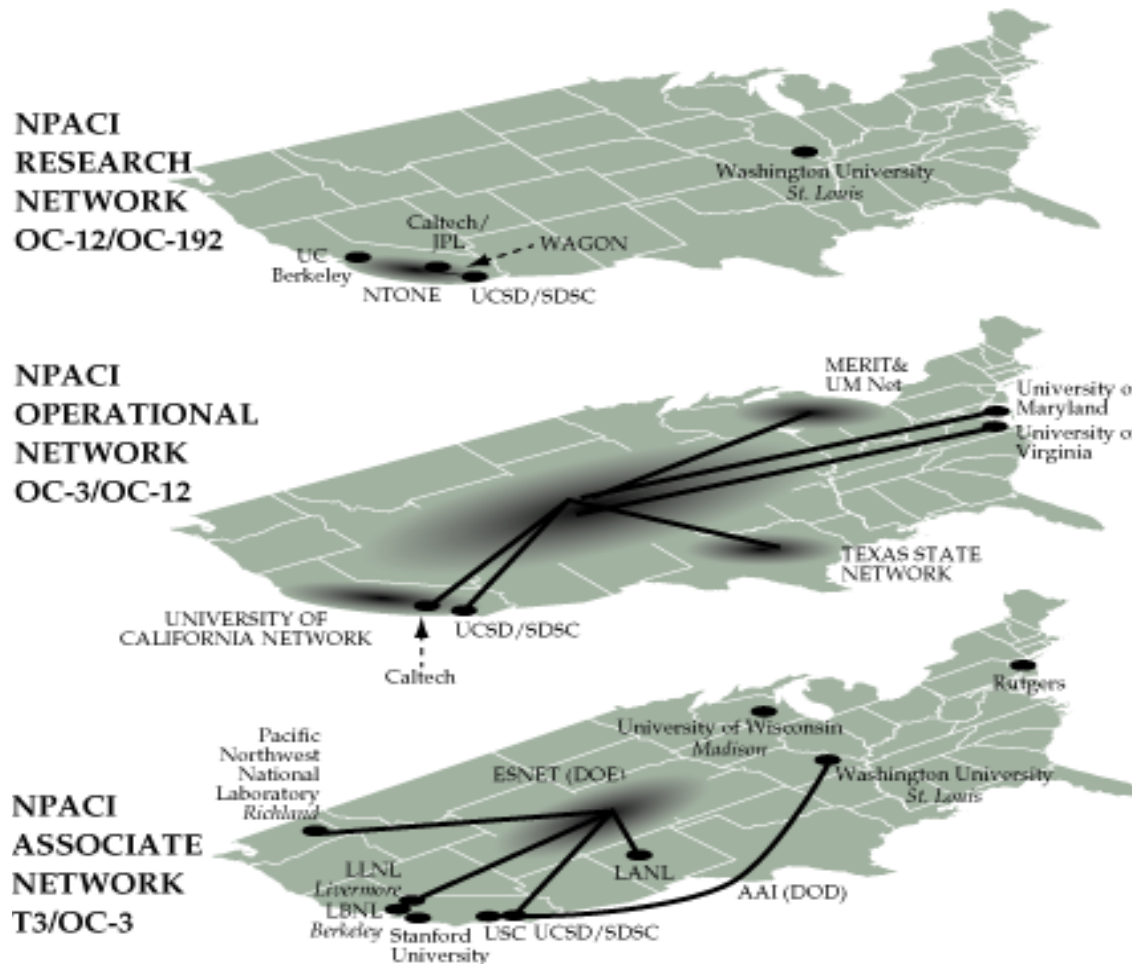
Exciting Time of Transition



NPACI Partner Sites



Network Architecture



... includes CalREN -2...



3/98

Grand Challenges

(Stewart & Zaslavsky, SC98)

1. Faculty system of rewards does not encourage teaching innovations
2. Lack of awareness of HPC technologies already used in research or teaching for different fields
3. Faculty & students unaware of benefits and accomplishments of HPC
4. HPC technologies considered too complex/inaccessible for undergraduate instruction
5. Sequential HPC-related curricula is absent
6. Curricula using very large data sets not widely available
7. Adjust to different learning styles when material is complex
8. Variety of platforms/software leads to fragmented curricula
9. School administration/support staff not ready for HPC
10. Specs of computers and networks below user expectations

Building the Community of Faculty

These challenges are people-centric, not technology-centric and of interest to the PITAC community

Systemic Change requires understanding the system and working within it

Empower teachers (find the time), recognition (from chair/dean), support (student assistants)

Faculty Fellows

Faculty Fellows Programs

Computational Science

Digital Libraries

High Performance Computing

CHANGING PARADIGMS

Online Visualization

Analysis and Simulation

Mac OS/Windows/UNIX

Web-based Collaboration

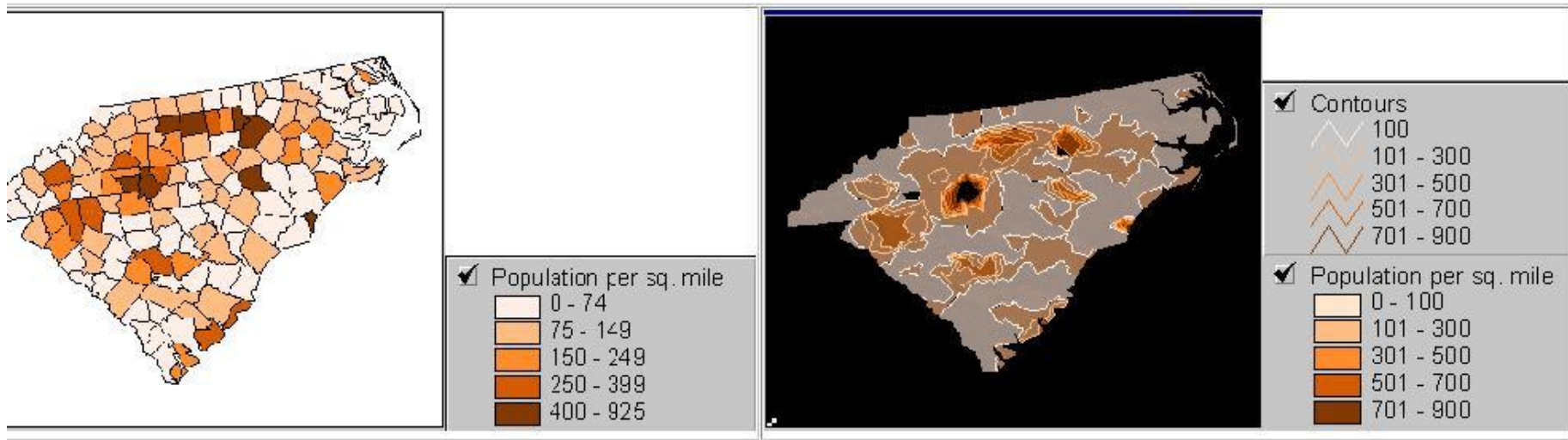
curriculum development

EdCenter
ON COMPUTATIONAL
SCIENCE & ENGINEERING

Faculty Fellows

Population Distribution in the Carolinas

Visualizing population distributions on the web with ArcView and CosmoPlayer



Faculty Fellows

Geological Sciences, Geography, Computer Engineering

U. Wisconsin LEAD for 1998/99 Ed Center evaluation

www.cae.wisc.edu/~lead/pages/products/eot-paci.pdf

Follow-on Activities (Susan Millar, LEAD)

CATS (Classroom Assessment Techniques)

FLAG (Field-tested Learning Assessment Guide)

SALG (Student Assessment Learning Guide)



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Evaluation and Assessment of Classroom Practice

**User-Friendly Handbook for Project Evaluation:
Science, Mathematics, Engineering and Technology
Education, NSF 93-152**

www.ehr.nsf.gov/EHR/RED/EVAL/handbook/handbook.htm

**Student Surveys - Need a compatible tool for
instructor to examine results with**

**Sociology WorkBench (SWB) developed by team
of undergraduate computer science majors
employed by the EC/CSE**

Information Overload

How can teachers help out?

How can technology providers help out?

Ans: Try to personalize the linkage.

A Little History - May 10, 1869

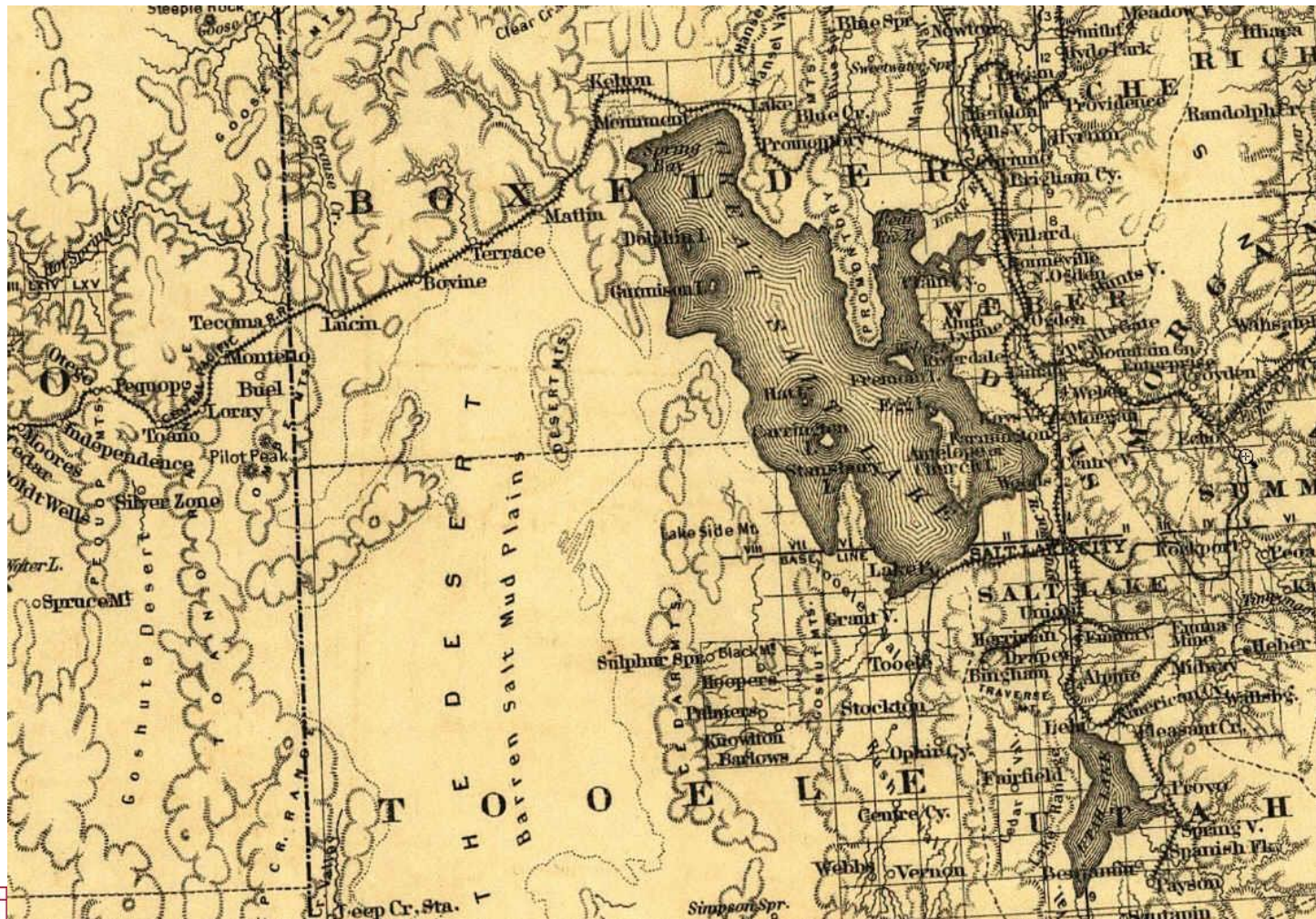
What was the major event?

[Http://memory.loc.gov](http://memory.loc.gov)

**Thank you to the US Library of Congress for the
on-line exhibit preserving our “Memory”**



Promontory Point, UTAH



How does this relate to us today?

[Network Maps:](#)

Qwest North American Fiber Network

[Press Release](#)

Click on any US or Mexico region to zoom in...

— Lit Fiber

— Under Construction



Technologies to Motivate Learning

Mr. Sid uses Wavelets for compression of Railroad Maps

Sense of History must be tied to personal, student-based, “stories”

University Faculty need encouragement this will “count” for professional recognition by their peers and administrators (Deans...)

Which schools need network access?

All of them - colleague has contracting for his own IPS to provide instruction for his high-school students

**Thank you Phill Vanderschaegen, webmaster for
<http://step.sdsc.edu>**

Internet 101



ONLINE Resources for Undergrads

The Education, Outreach and Training (EOT) of the PACIs

<http://www.eot.org>

feature several

Shodor

Ed Center on CSE

Minority Institutions, a Directory

Student Biology Workbench (Bioinformatics)

Underrepresentation in Computer Science (CDC)



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Learning Technologies from the PACIs

Data Intensive Computing Environment

Digital Video/eTEACH

Interaction Environments: Bays to Brains

Neuroscience: Telescience/Tomography

NISE College Level One Institute on

Learning Technology

Remote Collaborative Learning

www.eot.org

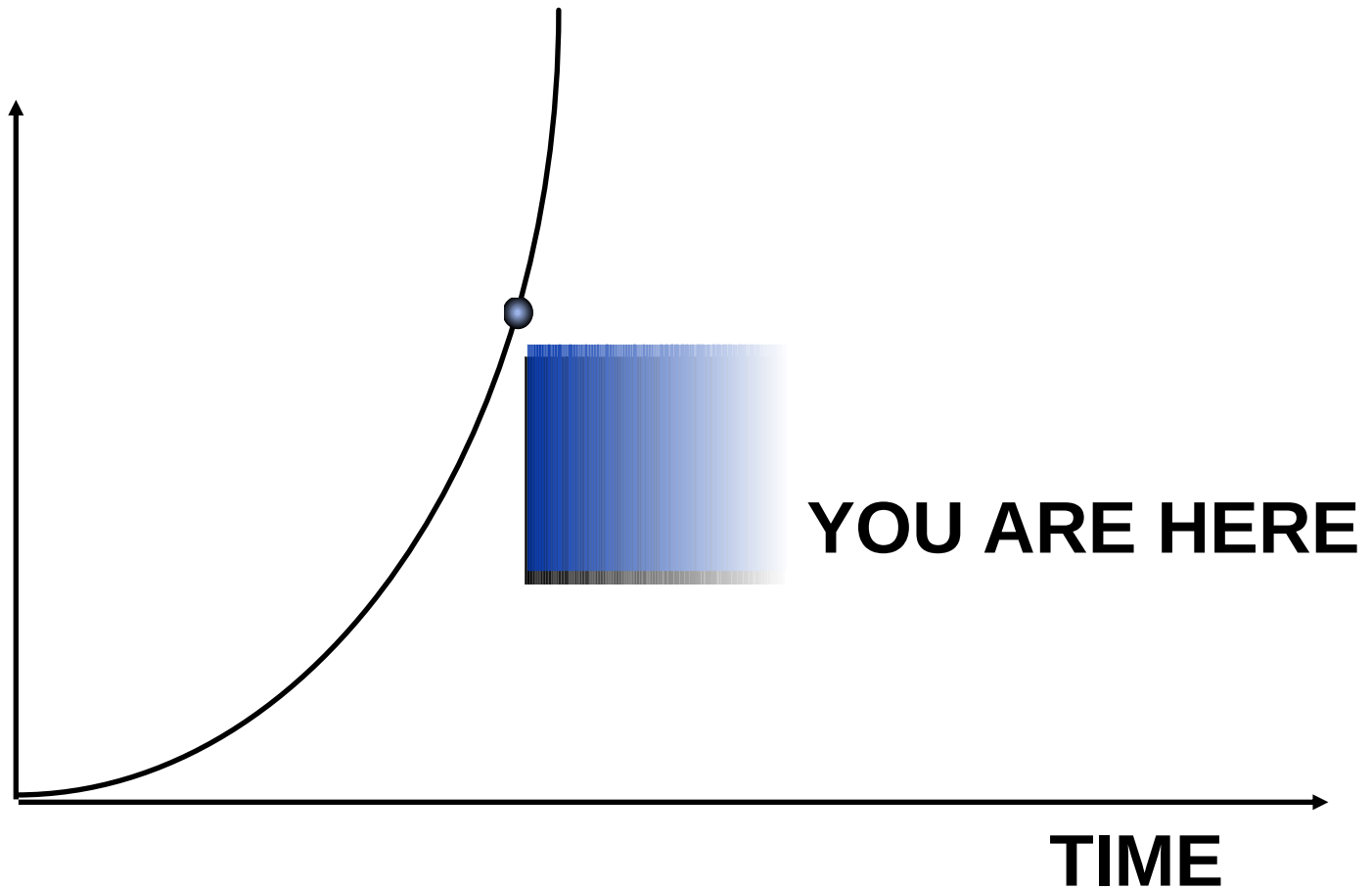


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This is Only the Beginning...

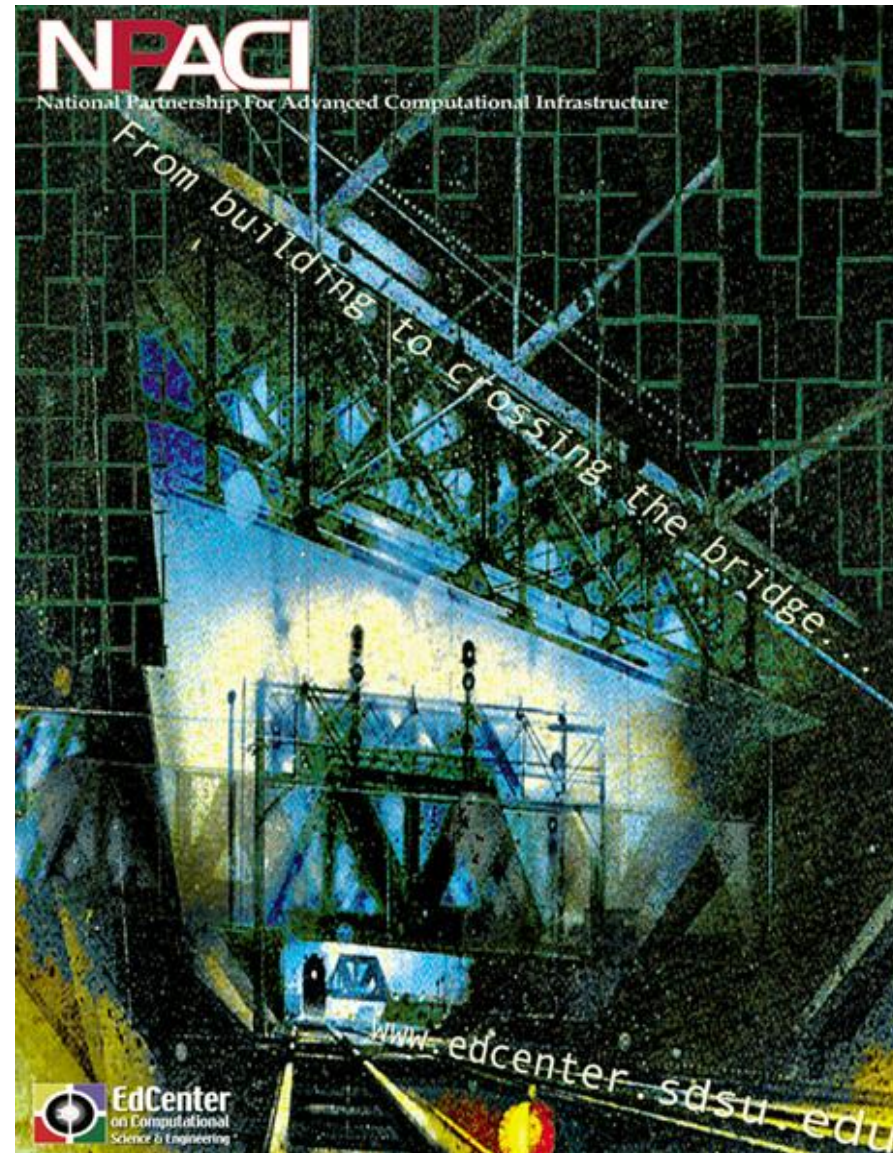


What's Next

Comments from the panel?

Comments from the audience?

Comments from the PITAC?



NPACI Sources of Information

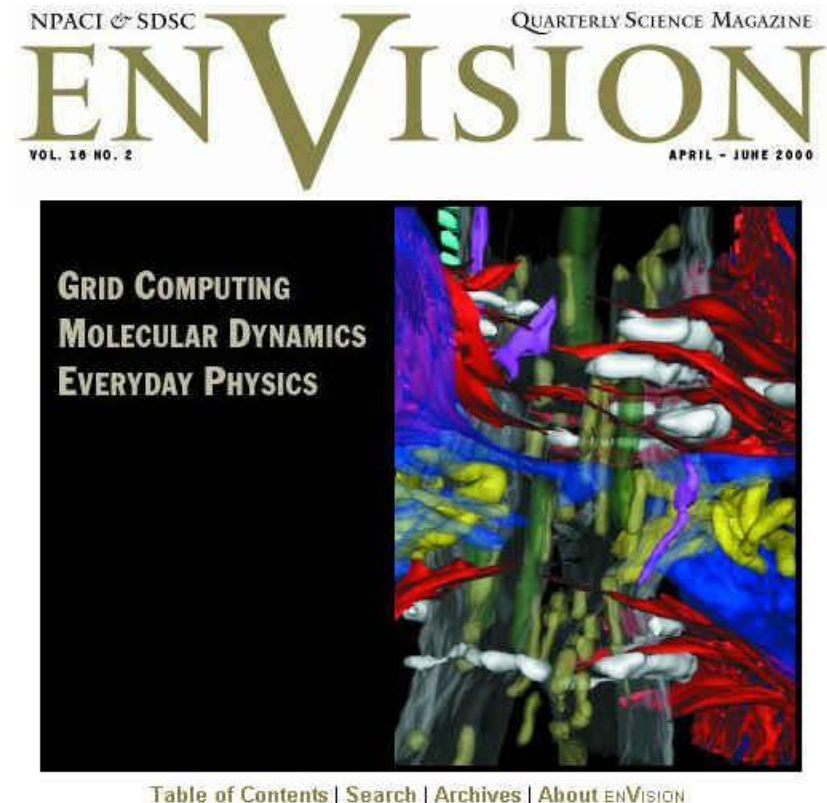
NPACI Partnership Report
***enVision* quarterly science**
magazine, especially
June2000
“Why the Future May Very Well Need
Us”

www.npaci.edu/enVision/director.html

“Online” biweekly
electronic publication,

www.npaci.edu/online/

www.npaci.edu



References - PITAC - July 2000

Ed Center on Computational Science & Engineering

<http://www.edcenter.sdsu.edu/>

Information Overload

<http://www.stewart.cs.sdsu.edu/infolab/index.html>

Timeline of Technology Development

http://www.stewart.cs.sdsu.edu/infolab/timeline_tech.html

Education, Outreach and Training

<http://www.eot.org>