



# SCIENTIFIC INFORMATION AT THE DESKTOP: New Tools Enable Research



**RL Scott, Director, Project and Program Development**

**Office of Scientific and Technical Information  
U.S. Department of Energy**

**Oak Ridge National Laboratory**

**August 9, 2000**





Office of Scientific and Technical Information  
U.S. Department of Energy

*“For science to rapidly advance  
at the frontiers, it must be open.  
And shared knowledge is the  
enabler of scientific progress.”*



U. S. Secretary of Energy Bill Richardson  
Fermi Awards Presentation  
Washington, D.C.  
April 16, 1999





# Office of Scientific and Technical Information U.S. Department of Energy

- Setting the stage
- OSTI Portfolio and Future Attractions
- Future Information Infrastructure for the Physical Sciences...towards a national library







# The Oak Ridger

7404

OAK RIDGE, TENNESSEE, THURSDAY, JANUARY 14, 1960

PRICE FIVE CENTS

## AEC's Information Plant In Oak Ridge Is 'Associated Press Of Atom World'

☆☆☆

☆☆☆

☆☆☆



MILE OF FILE — Above, B. F. Brumfield, Jr., checks a reference in the more than a mile of film at the AEC's Technical Information Services division here. Below, the TISG plant, a converted warehouse along the Tarpole near the entrance. Photo by J. E. Westrod, official AEC photographer.

00-39-29-07-00



# OSTI Resource Portfolio

**EnergyFiles**  
Virtual Library of Energy Science and Technology  
EnergyPortal Search  
Distributed searching across 500 heterogeneous databases and Web sites

**SCIENCE**  
Journal access

**DOE Information Bridge**  
Full-text reports

**Preprint Network**  
Preprint Literature

**Federal R&D Project Summaries**

**GrayLIT Network**  
A Science Portal of Technical Reports

**DOE R&D Accomplishments**  
Outcomes of past research

**OPEN NET**  
Declassified Information

**Research Development Project Summaries**  
R&D projects

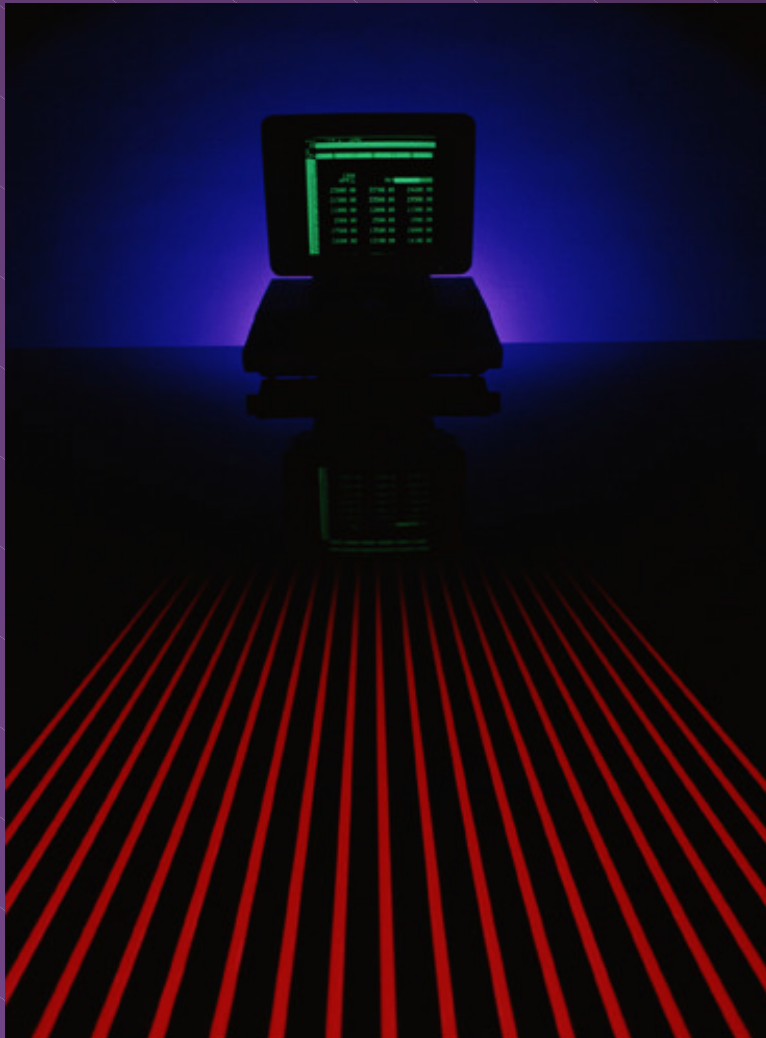
**DOE Reports**  
Bibliographic Database  
Report citations

**ECAPS**  
Subject Specific Citations





# Office of Scientific and Technical Information U.S. Department of Energy



- Report Literature  
(Gray Literature)
- Journal Literature
- Preprints







# Office of Scientific and Technical Information U.S. Department of Energy

## DOE Information Bridge

*Welcome to the U.S. Department of Energy (DOE) Information Bridge.*

- September 1997
- Over 70,000 technical reports (over 5 million full-text pages) accessible and searchable
- Researchers downloading 14,000 reports monthly

**<http://www.osti.gov/doebridge>**







# Enhancements 2000/2001

<http://www.osti.gov/doebridge>



- Doubling content (legacy data)
- Persistent URL's
- Full text searching of remote sites
- Multiple downloading capabilities, date-range searching, reporting, search results by user-defined order.....and more!





# Office of Scientific and Technical Information U.S. Department of Energy

<http://www.osti.gov/pubscience>

- October 1999
- Compendium of journal literature in sciences related to DOE
- 33 publisher partners with over 1,400 journal titles
- 2.0 million searchable journal citations



Providing access to a growing collection of  
Scientific and Technical Publishers and Journal Literature

[Home](#) | [What's New](#) | [Search](#) | [Help](#) | [Comments](#) | [Collections](#) | [Related Links](#)

*PubSCIENCE* provides users the capability to search across a large compendium of peer reviewed journal literature with a focus on the physical sciences and other disciplines of concern to the Department of Energy (DOE).

American Association for the Advancement of Science  
American Association of Petroleum Geologists  
American Mathematical Society  
American Meteorological Society  
American Physical Society  
American Society for Microbiology  
American Society of Civil Engineers  
ASM International  
Blackwell Science, Ltd.  
Cambridge University Press  
EDP Sciences  
The Electrochemical Society  
Institute of Physics Publishing  
International Union of Crystallography  
Massachusetts Medical Society (New England Journal of  
Medicine)  
The MIT Press

National Academy of Sciences  
National Association of Corrosion Engineers International  
National Research Council of Canada Research Press  
Nature Publishing Group - Nature  
Nature Publishing Group - Nature Monthly Journals  
Nature Publishing Group - Nature Specialist Journals  
Oxford University Press  
Portland Press Ltd.  
Royal Society of Chemistry  
S. Karger AG  
Society for Industrial and Applied Mathematics  
Springer-Verlag New York, Inc.  
Sacks Publications  
Taylor & Francis Publishers, Ltd.  
University of Chicago Press  
Wolters Kluwer  
Ziff-Davis, Inc., ZDNet





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<http://www.osti.gov/preprint>

- January 31, 2000
- A searchable gateway to over 1,500 worldwide preprint sources and approximately 340,000 preprints

**PrePRINT  
Network**

- About
- What's New
- Search Selected Sites
- Subject Pathways
- Browse
- Scientific Societies
- Comments
- Help

The Department of Energy's PrePRINT Network is a searchable gateway to preprint servers that deal with scientific and technical disciplines of concern to DOE. Such disciplines include the great bulk of physics, materials, and chemistry, as well as portions of biology, environmental sciences and nuclear medicine.

With a single query, users can search one or a collection of existing preprint servers. The Network pulses the search engines of such servers, compiles the results, and returns them to the users.





# Federally Funded Research

**Federal R&D Project Summaries**  
Descriptions, Awards, and Summaries of Federally Funded Research

Find out how your research dollars are being spent

- About
- What's New
- Contacts/Comments
- Disclaimer
- Search R&D
- DOE Home
- OSTI Home

product of the DOE  
Office of Scientific and Technical Information

- July 2000
- Allows the researcher to search across the R&D records of the DOE (20,000), NIH (60,000), and NSF (145,000) with access to over 220,000 R&D items in a single search
- The significance rests in a focus on the truly interdisciplinary nature of science discoveries. It is hard enough to stay on top of your area of specialty let alone other disciplines.

<http://www.osti.gov/fedrnd/>







# Technical Reports



## Security/Disclaimer Notices

Search the Literature

About this Site

What's New

Disclaimer

Contacts/Comments

DOE Home

OSTI Home

product of the DOE  
Office of Scientific  
and Technical  
Information

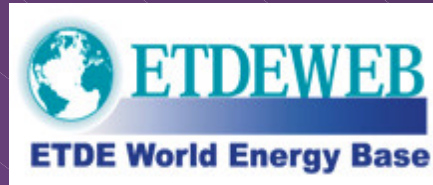
- July 2000
- The GrayLit Network makes the gray literature of U.S. federal agencies easily accessible over the Internet.
- Gray Literature is that literature which is vitally important yet not commercially available and often difficult to find.
- Enables convenient access by the public to government information

<http://www.osti.gov/graylit>





## Additional Products for Specific Interests



ETDE World Energy Base – a product of the Energy Technology Data Exchange (ETDE), includes worldwide information on the environmental impact of energy R&D; energy policy; nuclear, coal, hydrocarbon, and renewable energy technologies.  
<http://www.etde.org/etdeweb/>



EnergyFiles – Virtual Library Collection of Energy Science and Technology - an expanding collection of energy related scientific and technical information (STI) available through connected worldwide energy resources.  
<http://www.osti.gov/EnergyFiles/>



OpenNet – includes references to all documents declassified and made publicly available after October 1, 1994.  
<http://www.osti.gov/opennet/>

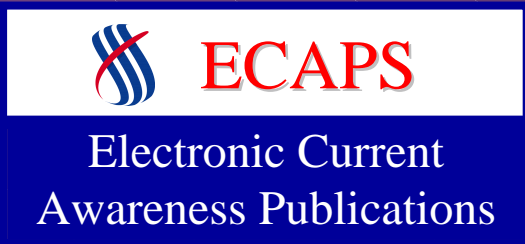




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DOE R&D Accomplishments – Outcomes of past DOE and DOE contractor R&D accomplishments which have had significant economic impact, have improved people’s lives, or have been widely recognized as a remarkable advance in science . <http://www.osti.gov/accomplishments>



Electronic Current Awareness Publications - Subject specific citations from the Energy Science and Technology Database. <http://www.osti.gov/ecaps/>





# Office of Scientific and Technical Information U.S. Department of Energy

## Tool Usage Statistics – May 1999 – April 2000

	TOTAL	edu	gov	mil	com	net	int'l	other
PubSCIENCE	1,000,000	241,200	115,000	15,300	180,500	91,000	233,000	124,000
PrePRINTS	200,000	20,300	33,400	3,600	22,700	11,600	60,000	48,400
DOE InfoBridge-Pub	221,965	14,989	32,505	2,300	36,664	18,099	19,607	97,801
R&D Accomplish	30,689	1,316	8,183	239	6,385	2,273	3,866	8,427
R&D Proj Summ	108,886	4,581	23,947	620	22,125	8,098	10,270	39,245
Energy Files	193,595	10,601	20,847	2,034	35,570	16,962	18,950	88,631
Energy Portal	57,500	4,547	9,853	897	11,149	7,324	11,370	12,360
ECAPS	184,257	8,237	5,026	467	25,562	14,232	23,691	107,042
TOTAL USAGE	1,996,892	305,771	248,761	25,457	340,655	169,588	380,754	525,906
Percentage of Total		15%	13%	1%	17%	9%	19%	26%

\* Other includes Unknown, Old Style Arpanet, Non-Profit Organizations and US





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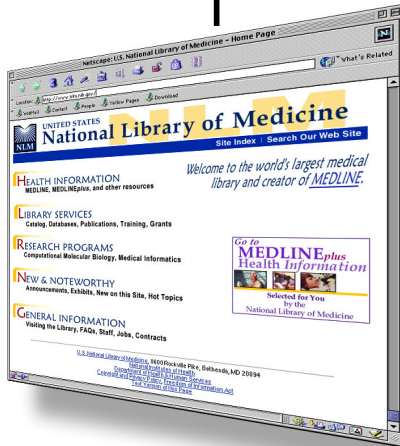
*Future*  
***Information Infrastructure***  
***for the Physical Sciences***

Strength Through Science

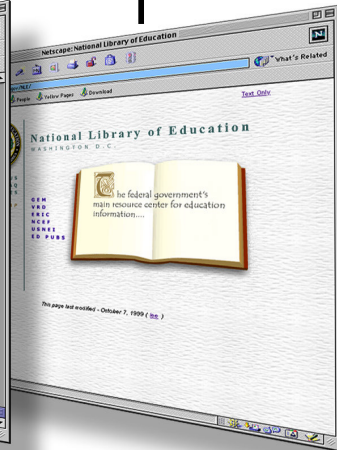


# Exec. Branch National Libraries

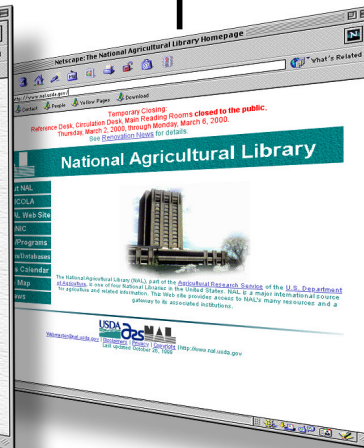
**NIH National Library of Medicine,  
1836 (Legislated 1956)**



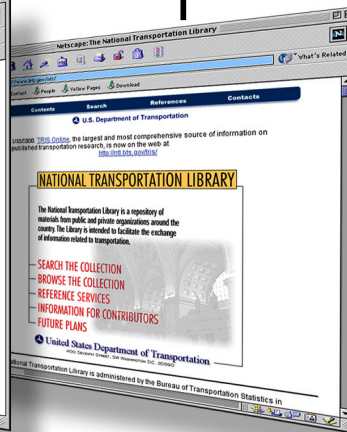
**National Library of Education,  
1994**



**National Agricultural Library,  
1862 (Legislated 1962)**



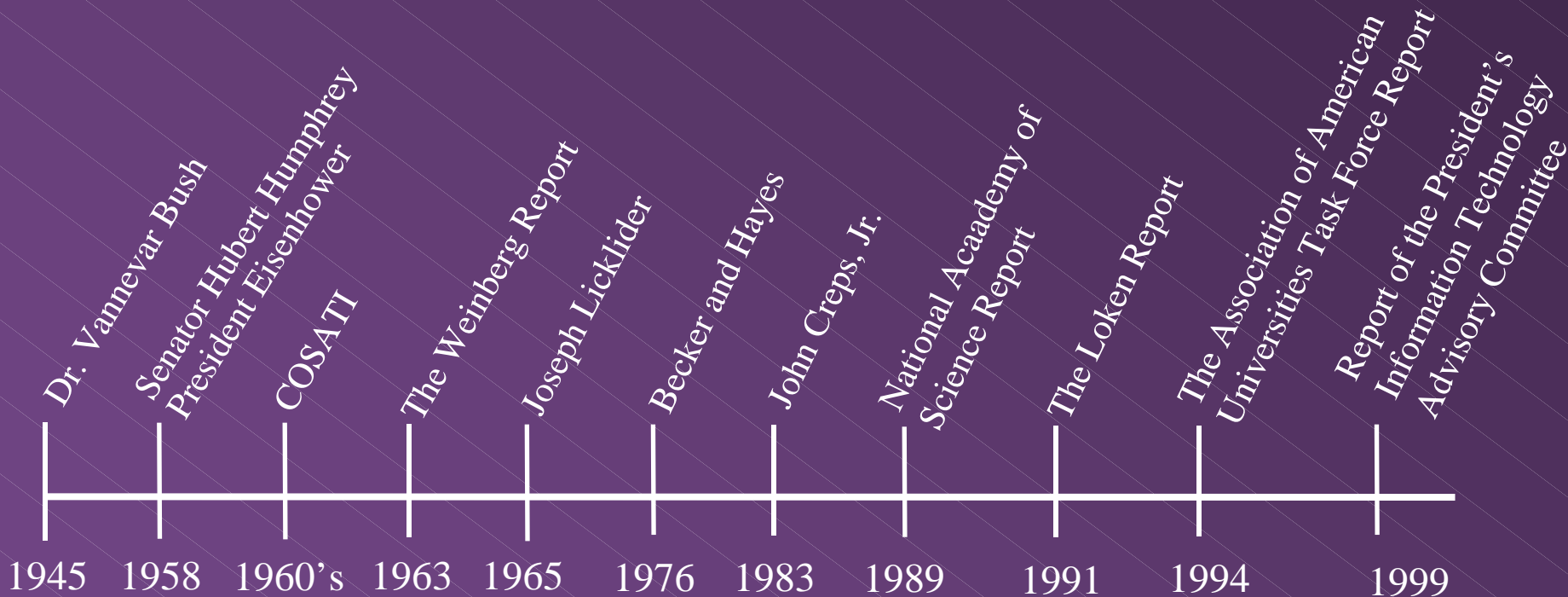
**National Transportation Library,  
1998**





# Future Information Infrastructure for the Physical Sciences

Strength Through Science



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**for the Physical Sciences**

Strength Through Science

- In 1999 OSTI and the broader technical information community began deliberating this concept.
- Focus on the infrastructure, the content, the technology and components
- Briefings held for senior level management
- Workshop recommended to seek input of key representatives external to the Department
- May 30-31, 2000, Workshop held at the National Academy of Sciences







## Workshop Panel

<u>Name</u>	<u>Title/Organization</u>	<u>Discipline/Community</u>
Alvin Trivelpiece	Emeritus Director, Oak Ridge National Laboratory	Physics Research Manager
R. Stephen Berry	James Franck Distinguished Service Professor, Department of Chemistry, The University of Chicago	Chemistry Scientist Data Manager
Derek Winstanley	Chief, Illinois State Water Survey	Geosciences Science Manager State Perspective





## Workshop Panel (cont.)

<u>Name</u>	<u>Title/Organization</u>	<u>Discipline/Community</u>
Krishna Rajan	Professor, Materials Engineering, Rensselaer Polytechnic Institute (RPI)	Materials Science Scientist Materials Informatics
Martin Blume	Editor-in-Chief, American Physical Society	Physics Science Editor
Jose-Marie Griffiths	CIO and Professor, University of Michigan	Library/Information Science Information Manager

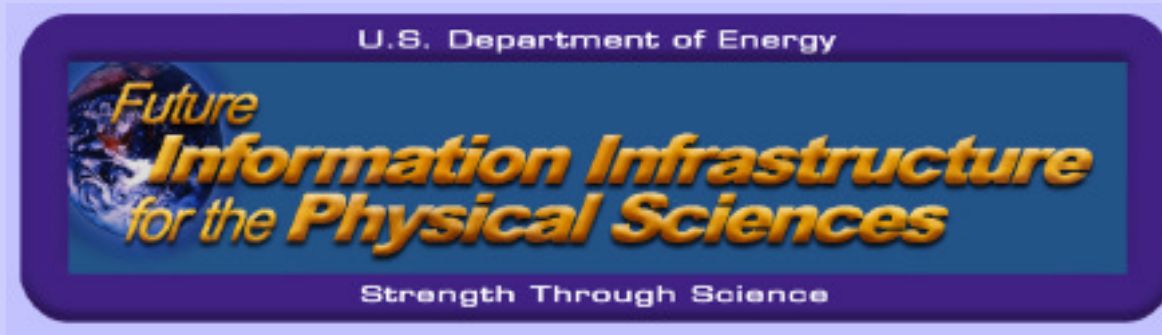




## Workshop Panel (cont.)

<u>Name</u>	<u>Title/Organization</u>	<u>Discipline/Community</u>
Kirk McDonald	Professor, Princeton University	Physics Scientist
Lee Holcomb	Chief Information Officer, NASA	Engineering Information Technology
Kent Smith	Deputy Director, National Library of Medicine, NIH	Information Management National Library





## Participants of the Workshop

Archive.org

Corporation for National  
Research Initiatives

DOE Energy Library

Digital Library Federation

Internet2

National Agricultural Library

National Science Foundation

Special Libraries Association

American Association for  
the Advancement of Science

Defense Technical Information Center

Department of Justice

Government Printing Office

Library of Congress

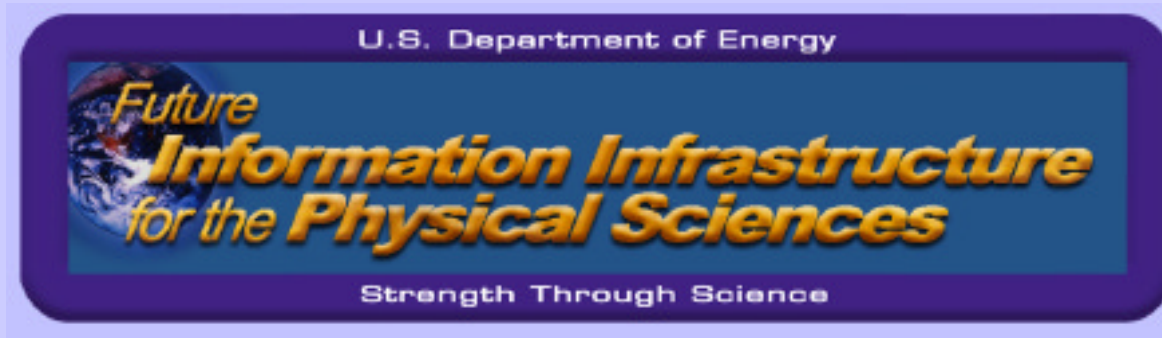
National Research Council

Nature Magazine

University of Maryland







## Major Themes

- Scope of the Initiative
- Information Types
- Information Products and Services
- Archiving, Preservation and Access to Information
- Research, Education, and The Public Interest
- Quality
- Participation of Sectors of the Economy
- Leadership



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**for the Physical Sciences**

Strength Through Science

<http://www.osti.gov/physicalsciences/>

*Workshop Report on a Future*  
**Information Infrastructure**  
**for the Physical Sciences**



The Facts  
of the Matter:  
*Better finding,  
understanding  
and using  
information  
about our  
physical world.*

May 30–31, 2000

Hosted by the Department of Energy at the National Academy of Sciences



*Future*  
**Information Infrastructure**  
**for the Physical Sciences**

Strength Through Science



A Common Knowledge Base  
that seeks in an integrated  
approach to provide  
comprehensive access and  
facilitate the reuse of  
worldwide sources of physical  
sciences information, regardless  
of where they reside, what  
platform(s) they reside on, or  
what format or data structure  
they employ.





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**Information Infrastructure  
for the Physical Sciences**

Strength Through Science

A Point of Convergence for ensuring the awareness, availability, use, and development of information technologies and tools to facilitate information assimilation, data analyses, peer communication and collaboration, sharing of preliminary research results, remote experimentation, validation of experimental results, etc...



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**Information Infrastructure**  
*for the Physical Sciences*

Strength Through Science



A Freely Available Source of information to serve all users, from students to scientists to concerned citizens, in a highly efficient electronic environment, with tools to assist users in their quest for information and ultimately knowledge.

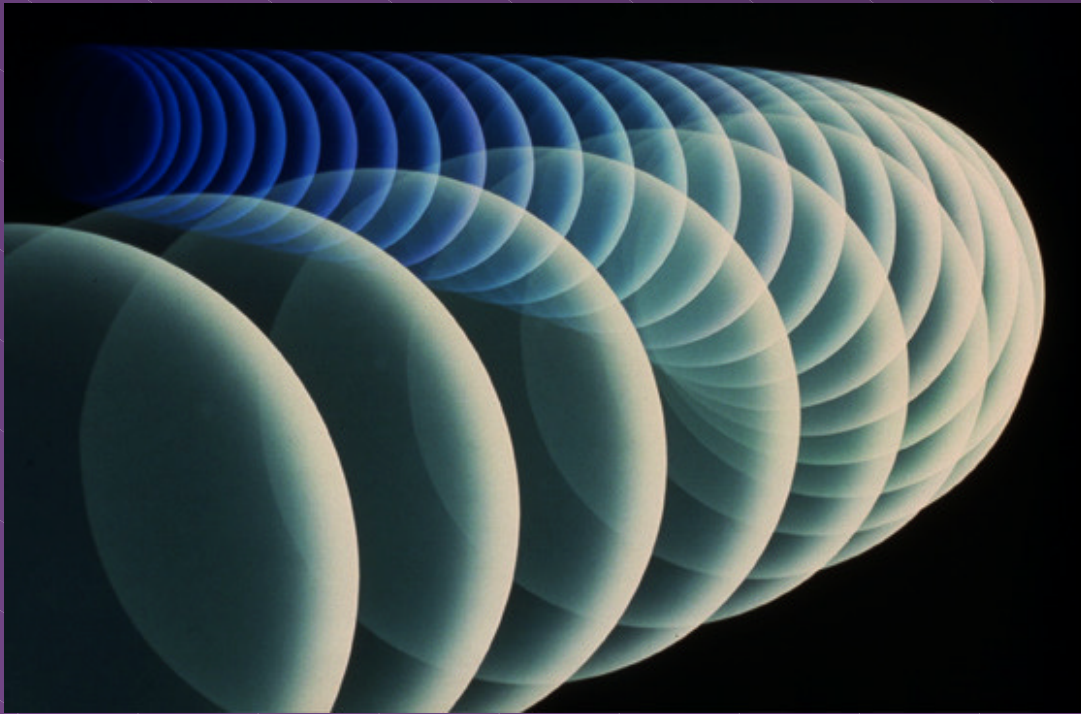




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**for the Physical Sciences**

Strength Through Science

## Three Time Horizons



- Doing Better at What We're Doing Now
- Mobilizing for What is Possible Tomorrow
- Realizing the Future Potential

- <http://www.osti.gov/physicalsciences>



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for the Physical Sciences**

Strength Through Science

## Why this is important to the nation?

- Our future scientists and engineers are being trained today.
- Significant increase in scientist and engineer employment
- We may not have the talent to fill those positions.
- U.S. science and math achievement falls substantially below the world average.
- A source of physical science information and resources is needed to prepare for an educated research community.

## Education



*Future*  
**Information Infrastructure  
for the Physical Sciences**

Strength Through Science

## Why this is important to the nation?

- Taxpayers have an investment in science and technology
- Public's awareness and expectations have been raised
- Research base is often overwhelmed with a mass of information
- Difficult to stay abreast of work done in other arenas
- Opportunities may be missed or resources wasted
- Simplified and improved interdisciplinary opportunities
- Expedited transfer of information from bench to application



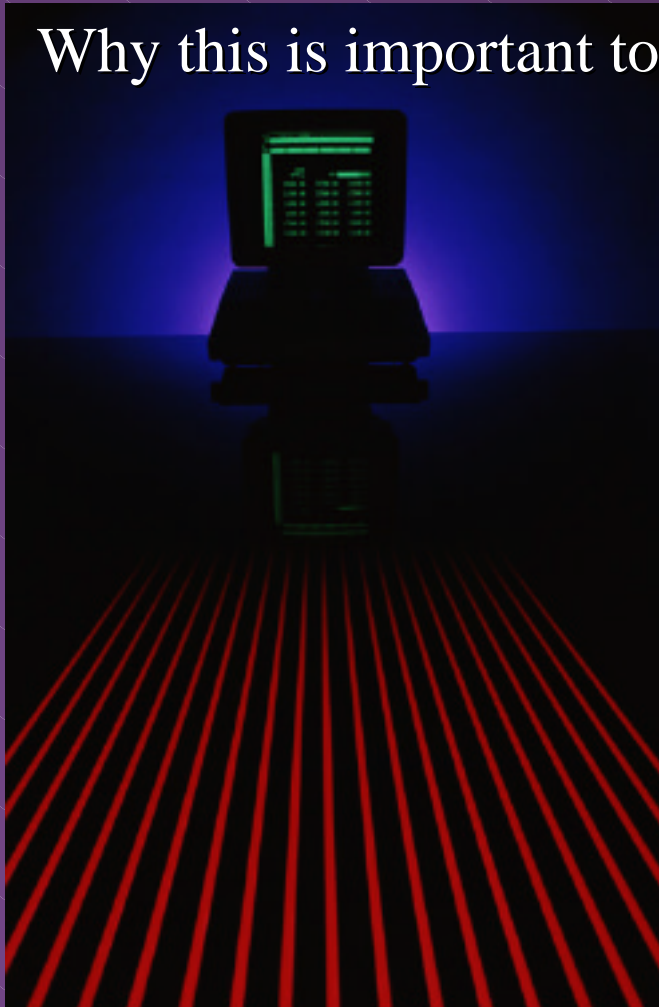


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**for the Physical Sciences**

Strength Through Science

Why this is important to the nation?

Global Competitiveness



- The U.S. is not keeping pace with world competitors
- The number of patents issued to U.S. citizens has risen 220% versus 790% for patents issued to foreign citizens
- There is a pronounced need to keep pace with the global communication processes that are evolving through the use of the Internet



U.S. Department of Energy

*Future*  
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Strength Through Science

<http://www.osti.gov/>

