

# Government R&D Results: Ensuring Access to Advanced Science and Technology



## OSTI Contributions to Open Government DOE Technology Summit

January 25, 2012

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U.S. DEPARTMENT OF  
**ENERGY**

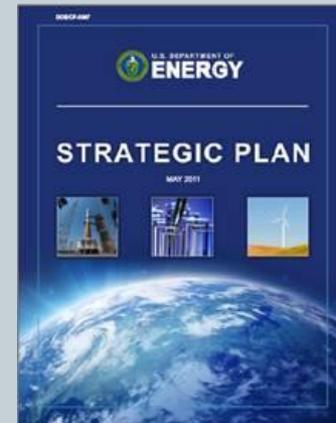
Office of  
Science



# OSTI Supports DOE Mission



- OSTI contributes to DOE's strategic goal "to maintain a vibrant U.S. effort in science and engineering as a cornerstone of our economic prosperity...."
- OSTI helps assure excellence in R&D management through the timely and broad dissemination of scientific and technical information.



“Our success should be measured not when a project is completed or an experiment concluded, but when scientific and technical information is disseminated....

— 2011 Department of Energy Strategic Plan,  
Assure Excellence in R&D Management

# What is OSTI?



OSTI ensures access to DOE (and predecessor) R&D

-- since 1947.

- Free, unlimited public access to unclassified
- Restricted access to classified and sensitive
- Roles/responsibilities defined in DOE O 241.1B, Scientific and Technical Information Management



**OSTI's role is anchored in law:**

**Energy Policy Act of 2005**



“The Secretary, ***through the Office of Scientific and Technical Information***, shall maintain within the Department publicly available collections of scientific and technical information resulting from research, development, demonstration, and commercial applications activities supported by the Department.”

# What Does OSTI Do?



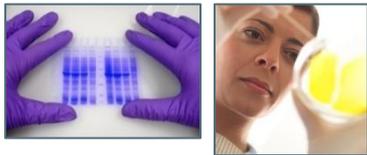
- We make DOE R&D results findable and accessible, not just within DOE, but globally
- We make other people's R&D results findable, bringing worldwide R&D to DOE and beyond
- Our Mission Statement is: "To advance science and sustain technological creativity by making R&D findings available and useful to Department of Energy researchers and the public."
- OSTI advances open government for scientific and technical information.

Premise: Science advances only if knowledge is shared

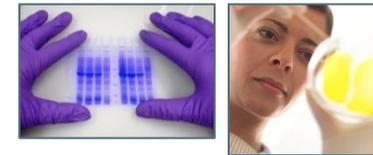
Corollary: Accelerating the sharing of scientific knowledge accelerates the advancement of science

- Accelerating the spread of knowledge inspires everything we do at OSTI  
*"If I have seen further, it is only by standing on the shoulders of giants."*

—Isaac Newton, 1676



# How Do We Do It?



- **We produce search tools that make DOE R&D results available and searchable.**
  - The DOE research community produces many types of STI: reports, journal articles, eprints, datasets, patents, videos and more...



- These tools were developed to uniquely address each type of STI and the manner in which they were published.
- **We maintain DOE STI for long-term use and make it freely and easily searchable online.**

# What is special about OSTI?



- We Integrate or Aggregate Multiple Government R&D-related Databases into Single-Search Portals
- Innovative technology drills down to selected databases and websites in parallel, then presents ranked search results



## Integrates key DOE databases

Covers a range of R&D results (reports, patents, citations, project summaries, eprints, etc.)



## Integrates 14 U.S. science agencies

Databases and websites offer over 200 million pages of science information



## Integrates >70 nations

Provides over 400 million pages of science information from databases and portals worldwide

# Single-Query Search Discovery Tool



- Simplifies searching of key DOE STI databases into a single-query search
- Results are integrated and displayed in relevance-ranked order
- More than 290,000 full-text documents
- Over 5 million scientific e-prints
- More than 2 million publicly available citations
- More than 24,000 patents
- Approximately 20,000 DOE project summaries
- More than 500 websites & databases
- Conference papers & proceedings
- ...and more

# DOE STI Was Integrated With Other Federal Agency STI

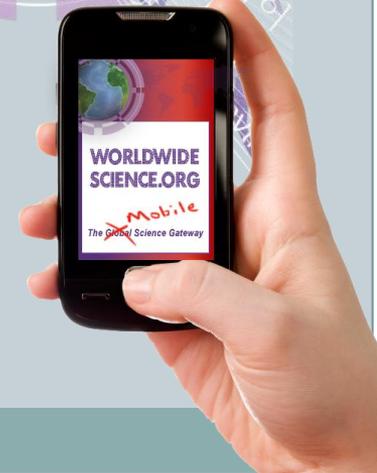
- OSTI developed and operates Science.gov, a single-search portal of STI from 14 federal science agencies
- Science.gov represents 97 percent of the federal research and development budget – 200 million pages of science information, over 42 databases and 2,000 select websites



**Science.gov is among 10 government websites “meeting and exceeding” the Obama Administration’s transparency goals, according to a special report by *Government Computer News*, released July 27, 2009.**

# DOE and Other U.S. STI Integrated Globally

- U.S. research results (Science.gov) plus research results from 70+ countries are searchable via single-query global science portal
- Multilingual WorldWideScience.org broke the language barrier
  - Translation of English content for non-English speakers and
  - Translation of non-English content for English speakers
  - 9 languages and counting
- > 400 million pages
  - From well-known sources: e.g., PubMed, CERN, KoreaScience
  - To more obscure sources: e.g., Bangladesh Journals Online



# OSTI Has Pioneered Open Gov for More than 65 Years



- Today the databases offer search simplicity, advanced search, customized alerts, results displayed in relevance ranked order, and downloadable search results.
- OSTI was pleased to play a role in drafting the initial DOE Open Government Plan in the spring of 2010.
- OSTI is proud that the current DOE Open Government Plan recognizes several of our ongoing and planned products and services as fulfilling the vision of the Administration's Open Government Directive.

# DOE Open Government Plan

The DOE plan includes a number of OSTI initiatives to enhance transparency of DOE R&D results.



## Highlights

### The Energy Department

Open Government Plan Highlights

#### Transparency Programs

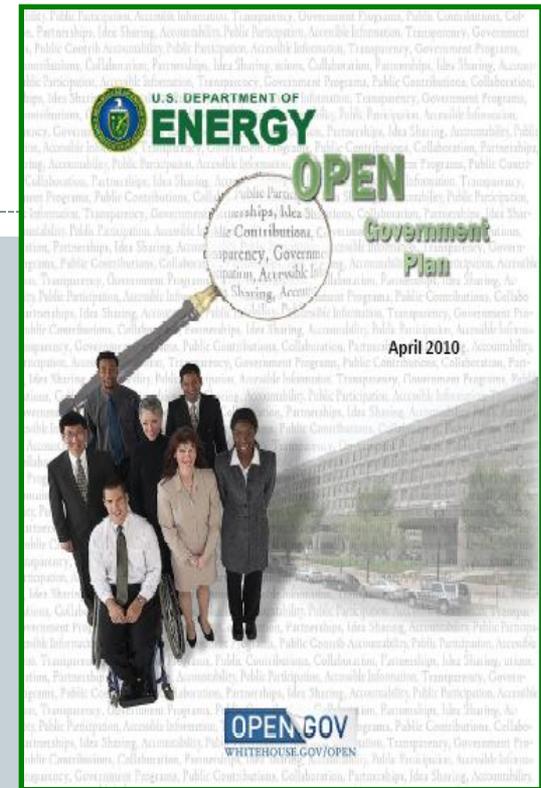
- High-Value Datasets
- Recovery Act Clearing House
- OpenGov Initiatives

#### Participation Programs

- New and Social Media Tools
- ARPA-E Research
- DOE Small Business Conference

#### Collaboration Programs

- State Energy Efficiency Action Network
- [www.WorldWideScience.org](http://www.WorldWideScience.org)
- National Lab Day



## Flagship Initiatives

### The Energy Department

### Open Government

### Flagship Initiatives

- Open Energy Information Web Site
- [Science Education Web Site](http://www.WorldWideScience.org)
- Energy Education Initiative Web Sites

# OSTI Provides DOE “High Value” Data Sets

- Five “high value” data sets initially identified by DOE include DOE R&D results that OSTI makes accessible, searchable, findable, and usable.
  - Information Bridge
  - DOepatents
  - DOE R&D Project Summaries
  - Conference Papers & Proceedings
  - Energy Citations Database

<http://energy.gov/open>

## Open Government Initiative

Transparency ◊ Participation ◊ Collaboration

**OPEN GOV**  
WHITEHOUSE.GOV/OPEN

### Your Government

From his first day in office, President Obama has pushed to make the federal government more open and more accessible to the American people. The Department of Energy is proud to be doing our part. In the past year, we have significantly expanded the amount of information available online about our programs, our funding awards, and our progress, as well as valuable data about energy production and consumption and trends within the energy industry. We have also used social media outlets such as [YouTube](#) and [my personal Facebook page](#) to engage the public directly and expand the national conversation on energy.

In December, the Administration directed federal agencies to take several additional steps to implement the principles of transparency, participation, and collaboration:

- **Transparency** promotes accountability by providing the public with information about what the government is doing.
- **Participation** allows members of the public to contribute ideas and expertise so that their government can make policies with the benefit of that information.
- **Collaboration** improves the effectiveness of government by encouraging partnerships and cooperation within the federal government, across levels of government, and between the government and private institutions.

You can find all of the steps we're taking in the full [Open Government Directive](#).

I encourage you to review the information on these pages and [share your ideas with us](#). I look forward to reading your thoughts and to incorporating them into our effort moving forward. As always, we will keep you posted on our progress.

Secretary Steven Chu

### High Value Data Sets

One way we are trying to encourage collaboration and increase transparency is through the release of high value data sets. This is information that the Department of Energy has amassed over the years that we think could be of great use to the general public. We will continue to expand this collection over the coming months and hope to utilize your feedback to help us select the most useful data sets moving forward.

Data	Description	Available Formats
<a href="#">DOE Research and Development Project Summaries</a>	Contains bibliographic data for summaries of energy-related scientific projects performed since 1995 by DOE laboratories and other research facilities.	
	Contains bibliographic data for The Energy Citations Database (ECD) providing	

### DOE Open Government Plan

## Read the PLAN

Read the Department of Energy's Open Government Plan:  
[PDF Format](#)  
[MobiPocket eBook Format](#)

## SHARE your thoughts

### Data Sets

## Department of Energy DATA

### Evaluating Our Progress

Read our [Open Government Self-Evaluation](#) (.pdf) for a comprehensive overview of where the Department of Energy stands in its efforts to meet the goals set forth by the Open Government Directive.

To review the progress of agencies across government, visit the [Open Government Dashboard](#).

### Contact Us

**TheAnne Gordon**  
 Open Government Representative  
 Email: [open@hq.doe.gov](mailto:open@hq.doe.gov)

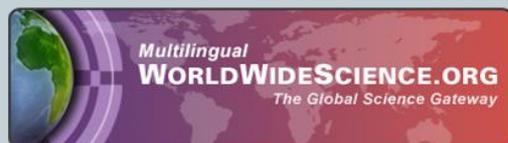
# DOE Open Government Plan (cont.)



The DOE Open Government Plan features four other OSTI products:



“Poster child” for **transparency in government** allowing citizens to search the full range of federal science without needing to know which agency or database(s) contain the information they’re seeking.



An international **public-private partnership** between the WorldWideScience.org Alliance and Microsoft Research offering real-time searching and translation of globally-dispersed collections of scientific literature.



> 30,000 technical reports, > 2,000 patents from green energy-related R&D projects, data collection developed for researchers to accelerate scientific discovery for business and industry related to renewable energy and energy efficiency.



One of the three Flagship Initiatives in the DOE Open Government Plan. In beta, an interagency search tool for STEM sources across the federal government— **is listed on the White House Innovations Gallery**

# DOE Open Government Plan (cont.)



- The DOE Open Government Plan highlights OSTI's vision for improving transparency through the creation of a National Library of Energy.
- Concept: a virtual library containing the vital accomplishments and plans of the DOE and its program offices, national laboratories and other facilities.



- The NLE's virtual integration (search and retrieval) of hundreds of DOE's databases and websites would be a monumental contribution to the Administration's goals for government transparency

# More Access: Science Cinema



- OSTI has been busy since mid-June 2010, working to make DOE scientific and technical information even more accessible.
- Example:
  - Science communication has expanded beyond the printed word: In 2011 OSTI launched **ScienceCinema**, which uses innovative state-of-the-art audio indexing and speech recognition technology from Microsoft research.
  - It allows users to quickly search and retrieve precise results from scientific videos produced by the DOE national laboratories and other DOE research facilities, as well as from CERN.

The screenshot displays the ScienceCinema website interface. At the top, there is a banner with the text "SCIENCECINEMA" and a graphic of a camera lens and a blue light beam. Below the banner, there is a navigation menu with links: Home, About ScienceCinema, Help, Audio Search, and Bibliographic Search. A search bar shows "52 results for 'nano'" and filters for "All", "DOE", and "CERN". The search results are displayed in a table with columns for "Occurs at" and "Result snippet".

Occurs at	Result snippet
0:07:31	... of nano ...
0:19:07	... quite a quite intriguing one nano has emerged as being a ...
0:20:17	... — first there was at the beginning of nano he popular vision that was created ...
0:22:40	... physical sciences and nano turned out to be

Below the search results, there is a video player for "Pegram Lectures" by George M. Whitesides - 2003 Sep 22. The video player shows a play button and a download link for "Download 'Pegram Lectures' (170 Mb)". The U.S. Department of Energy logo is also visible. Below the video player, there is another video player for "New Composite Thermoelectric Materials for Macro-size Applications" by Mildred Dresselhaus - 2008 Sep 03.

# And More Access: Numeric Data Sets



- **Numeric Data Sets:**
  - With the Department's leadership in data-intensive science involving simulation, modeling, and computer-driven experimentation, we are generating massive quantities of numeric data.
  - Open access to this raw data is needed and expected so that scientists can quickly build on each other's work without duplicating their work.
- **Service Established for DOE Datasets**
  - Including registration & announcement of datasets to the range of R&D results & STI we've made accessible for the past 65 years

## Scientific Research Data



# New STI Announcement Web Service for Datasets



- Provides easy-to-use mechanism to submit, edit, and retrieve metadata for DOE research dataset announcement notices.
- Allows users to manipulate records by performing HTTP operations on a web service URL and providing XML metadata
- OSTI is working with the following partners to test:
  - ORNL Atmospheric Radiation Measurement (ARM) Program
  - ORNL BioEnergy Knowledge Diffusion Framework (KDF)
- First live dataset minted with DataCite on 8/10/2011 from ORNL ARM <http://dx.doi.org/10.5439/1021460>
- Immediately available in the Energy Citations Database (ECD) <http://www.osti.gov/energycitations/>
- Available in the DOE Data Explorer (DDE) beginning 2012 <http://www.osti.gov/dataexplorer/>
- Datasets will appear in federated search portals that include ECD and DOE Data Explorer



# Opportunities On the Horizon



- **We are taking advantage of innovative web technologies to:**
  - Make video full-text searchable
  - Enable mobile applications
  - Create DOIs for numeric data sets
- **What is OSTI Missing?**
  - A gap exists in DOE STI – journal articles covering DOE-funded projects
  - We want to collaborate with publishers to make the total R&D record searchable, findable, and linkable, wherever the information resides



# Bottom line: OSTI is committed to science accessibility



- We at OSTI are doing everything possible to make use of the evolving Internet to diffuse knowledge related to our agency mission.
- Our dual core mission – getting DOE results out to the scientific community and beyond, and getting the community's results into DOE – has not changed.



- Simply put, we at OSTI intend to make more science accessible to more people more conveniently than has ever been done before.



*Speeding access to science information from DOE and beyond*

**Office of Scientific & Technical Information**



## **Questions and Answers**