



U.S. DEPARTMENT OF
ENERGY

WELCOME BACK!



Workshop – August 1 – 2, 2012
Reston, VA



Today We Start the “Work” Part of the Workshop

Colloquiums
(Inform)

Tuesday

Plenary Panel Sessions
(Learn)

Breakout Groups
(Work)

Wednesday

Breakout Groups
(Work)

Plenary Wrap Up

Thursday



Forbes



Josh Wolfe, Contributor



TECH | 5/08/2012 @ 6:26PM | 1,182 views

Why the DOE Thinks Supercomputing Will Change Our Energy Future


We sat down for an exclusive interview with U.S. [Energy](#) Secretary Steven Chu, who shared his thoughts on the current state of supercomputing. The Nobel Prize-winning scientist is betting that these super machines will play a key role in designing new products and solving longstanding energy challenges: from better engines to advanced nuclear reactors. He's backing his bet with significant resources, offering some of the Department's world-leading supercomputers for use by industry leaders.

We Are Building on Previous Workshops

Simulation Summit
 Wednesday, October 13, 2010, 8:30 AM - 3:00 PM
 Capital Room A and B, Hyatt Regency Washington on Capitol Hill, Washington, DC

7:45 - 8:00	Continental Breakfast and Registration	
8:30 - 9:00	Welcome	Steven Kawaik, Chief Secretary for Science of the Department of Energy
9:00 - 9:30	Keynote	Ernest Moniz, Chief and the Green Design and Production of Reactors, Manufacturing, Systems of Technology, and Institute of the President's Council of Advisors on Science and Technology
9:30 - 10:00	Introduction	Steven Chu, Secretary of the Department of Energy
10:00 - 10:15	Break	
10:15 - 10:45	Current Issues of High-Performance Computing in the United States	Marty Shinn, DOE Laboratory
10:45 - 12:45	Panel 1: An Effective Industrial High-Performance Computing Ecosystem Moderator: Charles Brannan, Senior Policy Advisor to the Director, OSTP	Tommy Larson, Director, EDC, Princeton Bertie Moberg, Director, IT Systems, ITIL, Oracle, Lockheed Siti Khandak, Vice President, IT Support, The Boeing Co.
12:45 - 12:48	Working Lunch: Made to Order. Served Mainly by Design through SDCAS	Sharon Glaser, SDCAS
12:48 - 1:00	Panel 2: Education Strategies in High-Performance Computing Moderator: Alan Bishop, Assistant Director of Energy Simulation and Computation, Los Alamos National Laboratory	Michael D. Swartz, Director, DOE Donald L. Long, Director, IT Systems, ITIL, Oracle, Lockheed Thom Penning, Applications Research, Intel Ulrich Chang, IT Systems, ITIL, Oracle, Lockheed
1:00 - 2:15	Panel 3: Industry, Government, Academic, and Consumer Collaboration Opportunities in Simulation Moderator: Steve Crawford, Assistant Director of Computation, Lawrence Livermore National Laboratory	Ernest Moniz, Chief of the National Science Foundation William Stein, U.S.A.C. Director Dennis Kozminski, Defense Program Secretary Advisor Peter Engner, CH2M Hill
2:30 - 3:00	Summit Summary	Nicholas Desrosiers, Vice President

Simulation Summit Oct 13, 2010

National Summit on Advancing Clean Energy Technologies
 May 16 - 17, 2011

Report on
A NATIONAL SUMMIT ON ADVANCING CLEAN ENERGY TECHNOLOGIES
 Entrepreneurship and Innovation through High Performance Computing

EXPLORE AND COLLABORATE
 ★★★★★★
 AMERICAN INDUSTRY AND AMERICA'S NATIONAL LABS



MODELING AND SIMULATION

Industry-National Laboratory Workshop on Modeling and Simulation March 7 - 8, 2012

This Time Our Focus is on Grand Challenges

Goal Statement:

Leverage the United States' leadership in advanced computing, modeling and simulation to deploy affordable, user-friendly, accessible platforms for broad use across America's energy sector.

■ Workshop Discussions Will:

- **Identify Grand Challenges**
- **Develop Recommendations**





Actions

Build

Advanced Computing
Capabilities

Deploy and Employ
Capabilities

Use the Results
to Find Better Ways to
Produce, Move, Store and
Use Energy

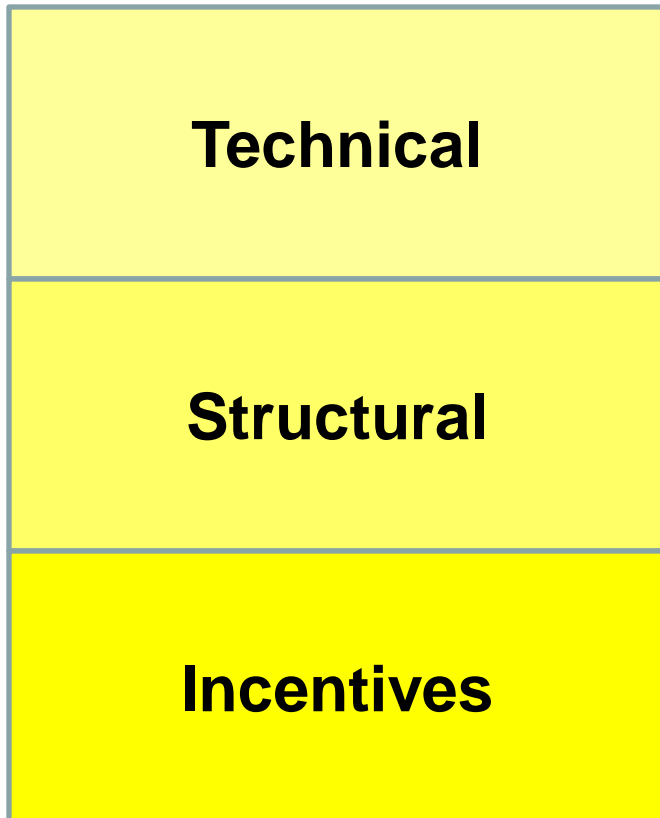
May Include

- **Build Challenges**
 - Developers environment
 - Hardware, Middleware, Applications Software
- **Deploy and Employ Challenges**
 - Tech transfer
 - User environment
 - Ongoing support and maintenance
 - May include the use of capabilities on behalf of end users
- **Use the Results Challenges**
 - Energy innovation for the design, operation and maintenance of energy systems



Grand Challenges

Eco System



May Include

- **Technical Challenges**
 - Evolving programming models (exascale)
 - Broadening the usability of advanced computing
- **Structural Challenges**
 - Business models
 - Legal (including IP issues)
 - Regulatory
- **Incentive Challenges**
 - Financial
 - Creation of demand
 - Communication of return on investment



- **These are Perhaps the Most Important Potential Outcome of the Workshop**
- **Identifying Challenges Can be Relatively Easy**
- **Coming Up with Solutions is Sometimes Very Hard**
- **Be Innovative, Think Outside of the Box**
- **Attribute of Good Recommendations**
 - Actionable (ideally by DOE)
 - Specific
 - Quantifiable (if possible)
 - Timeframe (if possible)
 - Identify Ownership



Three Discussion Tracks

Proven Impact	DOE Applied Programs	Potential Impact
<ul style="list-style-type: none">■ Current Users of Advanced Computing■ Focus<ul style="list-style-type: none">● What did it take to get the proven impact of advanced computing	<ul style="list-style-type: none">■ DOE Developers and Users of Advanced Computing■ Focus<ul style="list-style-type: none">● What has worked for DOE programs and what has not	<ul style="list-style-type: none">■ Potential Users of Advanced Computing■ Focus<ul style="list-style-type: none">● What is holding potential users back



■ Industry

- Energy Companies (both current users and potential users)
- Advanced Computing Developers
- Independent Software Vendors (ISVs)
- Engineering Service Companies

■ Universities

- Advanced Computing Research and Developers
- Energy Innovators

■ Department of Energy

- DOE Applied Programs (both current users and potential users)
- Office of Science
- NNSA
- National Laboratories
 - Advanced Computing Researchers and Developers
 - Current Applied Program Advanced Computing Users
 - Potential Applied Program Advanced Computing Users



■ Outline

- Introduction and Context
- DOE Applied Programs
 - Opportunities
 - Challenges
 - Recommendations
- Current Advanced Computing Users
 - Opportunities
 - Challenges
 - Recommendations
- Potential Advanced Computing Users
 - Opportunities
 - Challenges
 - Recommendations
- Summary of Recommendations

■ Done by

- DOE Feds
- With help from Workshop Chairs and Breakout Leads and Scribes

■ Expected Publication

- October 2012

■ To be used to

- Guide DOE R&D
- Guide DOE Investments
- Hopefully inform and guide the way the energy industry and energy innovators think about the role of advanced computing

DOE Advanced Computing Tech Team

- Formed in June 2012 at the request of Secretary Chu
- Built on the informal DOE Advanced Modeling and Simulation Working Group
- Intended to foster communications and sharing among DOE's advanced computing developers and users.
 - NNSA ASC
 - SC ASCR
 - Applied Programs





■ FYI:

- Emergency evacuation
- Chimes signal start of day and end of breaks
- Wireless Internet
- Wednesday no host lunch tickets
- Plenary room monitored (Wed. lunch)
- Restaurant list at registration desk

■ For Everyone:

- Complete evaluation form
- Turn phones, other electronic equipment to quiet mode

■ For Chairs and Breakout Leads

- Report preparation meeting on Friday



It's a Great Vision - What is Holding Us Back and What Can be Done About It?

Forbes



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