



Leveraging Science and Technology December 18, 2008

THE NATIONAL INNOVATION CHALLENGE

The challenges we face in the 21st century bare little resemblance to those of the last century. On the surface, they have a familiar ring: energy, environment, security, health. But it is the context of the world surrounding these issues that is so different today. In particular, it is the rate of change and scale of change that is so unprecedented. Solving these challenges will require we amplify and accelerate the contributions of our national research and technology network in whole new ways. The research enterprise of our nation, which includes all federal laboratories, universities, and industry, is indeed vast, world-leading, and a true intellectual treasure. But because of its sheer scale and diversity, being able to leverage that investment in people and laboratories for the greater national good is not easy. Yet in today's world, where the term "leverage" has become synonymous with co-investing, partnering, and getting-more-bang-for-the buck, it is imperative we do more, faster to get the results from our expansive research efforts. The need is, simply, to create the framework that allows us to move toward tomorrow together.

RECOMMENDED ACTIONS FOR THE NEW ADMINISTRATION

1. Focus on a few critical national issues

- a. *What*: Clearly state our national critical challenges in energy, environment, security and health. Describe *exactly* the outcomes desired, and by when.
- b. *Who*: The President
- c. *How*: Declare verbally to a national public audience.
- d. *Why*: Create a compelling cause around which the nation can rally.
- e. *When*: First 30 days

2. Adopt an "outcome-driven" technology leveraging model

- a. *What*: Launch the development of implementation roadmaps for each national critical challenge identified in #1 above, which, when fully executed, will result in the desired outcomes.
- b. *Who*: The Secretary of Energy (DOE)
- c. *How*: Make DOE's national laboratories central to the solutions – put them on point for the roadmaps and delivering the outcomes.
 - i. Assign primary responsibility to the Undersecretary of Science to serve in the role as integrator across all of the DOE.
 - ii. Use the national labs' project management and systems thinking skills to generate the roadmaps. These plans must span and integrate discovery



- research, use-inspired research, applied research, technology maturation, and deployment of solutions.
- iii. Identify and include federal, state, local, university, industrial, and non-governmental organization partners. Tap the entire country through a hub and spoke system of regional clusters.
 - d. *Why*: Return our great national laboratory system to its place of prominence by calling on it to do what it was originally put in place to do – solve large scale national problems.
 - e. *When*: First 60 days

3. Provide “leverage-enabling” policy, practices and procedures

- a. *What*: Enable public-private partnership on a grand scale.
- b. *Who*: The Department of Energy
- c. *How*: Revisit internal DOE organization, policies, and Management and Operations contracts to facilitate:
 - i. Seamless movement of staff among research partners. The starting point for this should be existing User Facility agreements. Rather than have such agreements for a particular scientific facility, extend the agreement across an entire laboratory for any research associated with the roadmaps developed in #2 above. In other words, move from facility based sharing, to program based. Create reciprocal agreements with partners at universities and in industry so national lab employees can operate at other off-site locations. The DOE General Council could help craft the new agreements.
 - ii. Co-investment in research by partners through easy flow and sharing of funds. When working in accordance with the national challenge roadmaps, the concept of pooling funds must be made allowable whenever multiple partners are working together on a project and contributing funds from a variety of sources. Drawing on these funds must be made easy to cover the researchers’ time, materials expense, equipment purchases, etc. The color or source of money should not matter to the research team. The DOE CFO could create the appropriate accounting methodology.
 - iii. Accelerate joint research agreements through simplified contracting mechanisms. As participants are identified (i), and funding secured (ii), the contractual requirements that specify scope of work, deliverables, timelines, etc. must be executed quickly and to the mutual benefit of all partners. To the extent master agreements can be put in place in advance that deal with “boiler plate”, then task orders can follow quickly, thus helping facilitate the process. In addition, new mechanisms may be required that reflect commercial-like terms associated with advance payments, liability/risk, pay-for-performance, etc. DOE Procurement could help design these kinds of agreements.
 - iv. Streamlining the management of intellectual property (IP). The first step DOE must take is making technology transfer more integral with the research missions. This will require creating IP capture and deployment plans in



conjunction with the roadmaps. The second step is to revisit all IP license clauses. Commonality between government, academia and industry will be necessary to enable the bundling of IP from multiple sources. Both steps would be greatly facilitated through EPO Act 2005 Title X's call for a "technology transfer coordinator", making that role more central, authoritative, and vested in an individual as a full time responsibility. Ideally, this would take the form of a Technology Transfer "Czar" reporting directly to the Secretary.

- d. *Why*: Establish the tone that it is not always about more money, but rather better utilization of the money we already have. Do this by aggregating and redirecting existing resources to the top priority problems of our nation. Create a multiplier effect by leveraging federal dollars with private dollars through a united effort incentivized by mutually beneficial returns.
- e. *When*: First 90 days

4. Call for broad societal and economic benefit

- a. *What*: Create jobs by encouraging spinoff ventures, utilization of existing industry, and/or emergence of whole new industries. Challenge the nation's economic development communities of practice to participate by creating a complete innovation ecosystem around a hub and spoke model.
- b. *Who*: Department of Commerce
- c. *How*: Align economic development agendas with the critical national challenge roadmaps discussed above.
 - i. Revisit the relevance and impact of federally funded technology-based economic development programs.
 - ii. Convene a task force to consider what a 21st century equivalent of the Stevenson-Wydler Act might look like.
 - iii. Enhance economic development coordination with the States.
 - iv. Partner with national and regional non-governmental organizations who are promoting a new innovation economy.
 - v. Encourage new concepts such as innovation-driven investment/tax incentives for new start-ups located within innovation zones surrounding national laboratories.
- d. *Why*: Add an army of grass roots support across the country; preserve and create jobs; maximize total return to the nation.
- e. *When*: First 90++ days