

After the Global Downturn

Promoting Innovation-Based
Entrepreneurial Opportunities



UN Economic Commission for Europe
Geneva, Switzerland
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The National Academies

Welcome to the High-level panel on Innovation-based Entrepreneurship

- **Frederik Paulsen**
 - Chairman of the Board of Directors and Chief Executive Officer of Ferring Group.
- **Bakhyt Sultanov**
 - Minister of Economy and Budget Planning of the Republic of Kazakhstan.
- **Andrey Svinarenko**
 - Deputy Director General, Russian Corporation of Nanotechnologies.
- **Salvatore Zecchini**
 - Chairman, IPI - Institute for Industrial Promotion, Italy.

Current Global Mega-Challenges

- Fostering Economic Growth
 - Driving domestic Growth and Employment through Innovation
- Developing New Sources of Energy
 - Commercializing renewable alternatives to oil
 - Increasing the capacity to fuel growing global demand for electricity
- Addressing Global Warming
 - Growing a Green Economy; A major Growth opportunity
- Delivering Global Health
 - Transforming large investments in research to affordable and personalized treatment and care
- Improving Security
 - Through all of the above



Global Challenges Require Global Innovation

4 Key Points

- **Innovation** is Widely Recognized as Key to Addressing Global Challenges
- **Collaboration** is Essential for Innovation as Small Businesses and Universities Play a Growing Role in the Innovation Process
- **Institutional Change** is Necessary to Cooperate and Compete Successfully
- **New Incentives** are needed to drive change

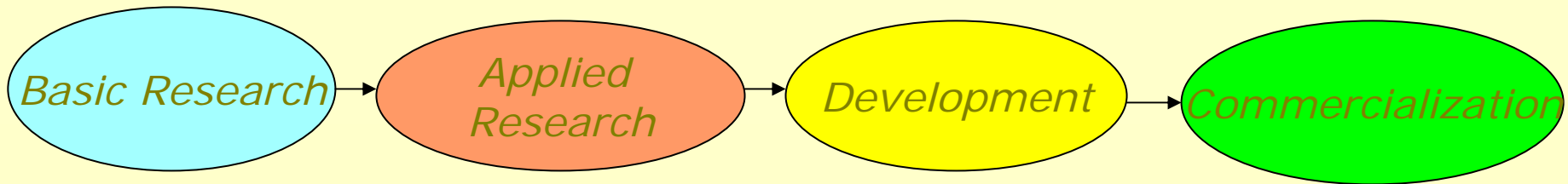
Small Companies are an Effective Means to Commercialize New Ideas

- Small Firms are One of the Most Effective Mechanisms for Capitalizing on New Ideas and Bringing Them to the Market
 - Audretsch and Acs
- Key Policy Goal: Encourage New Equity based Hi-tech Firms with Innovation, Jobs, and Growth
 - US Strengths: Firm Creation & Growth—Microsoft, Intel, AMD, FedEx, QUALCOMM, Adobe, and Google have transformed the U.S. Economy
 - Case of Finland: Huge Gains from Nokia

Innovation Requires Incentives for Universities and Small Businesses that are often Blocked by Popular Myths

Myth of Linear Innovation
Myth of the Perfect Market
Myth of the Venture Solution

The Myth of the Linear Model of Innovation

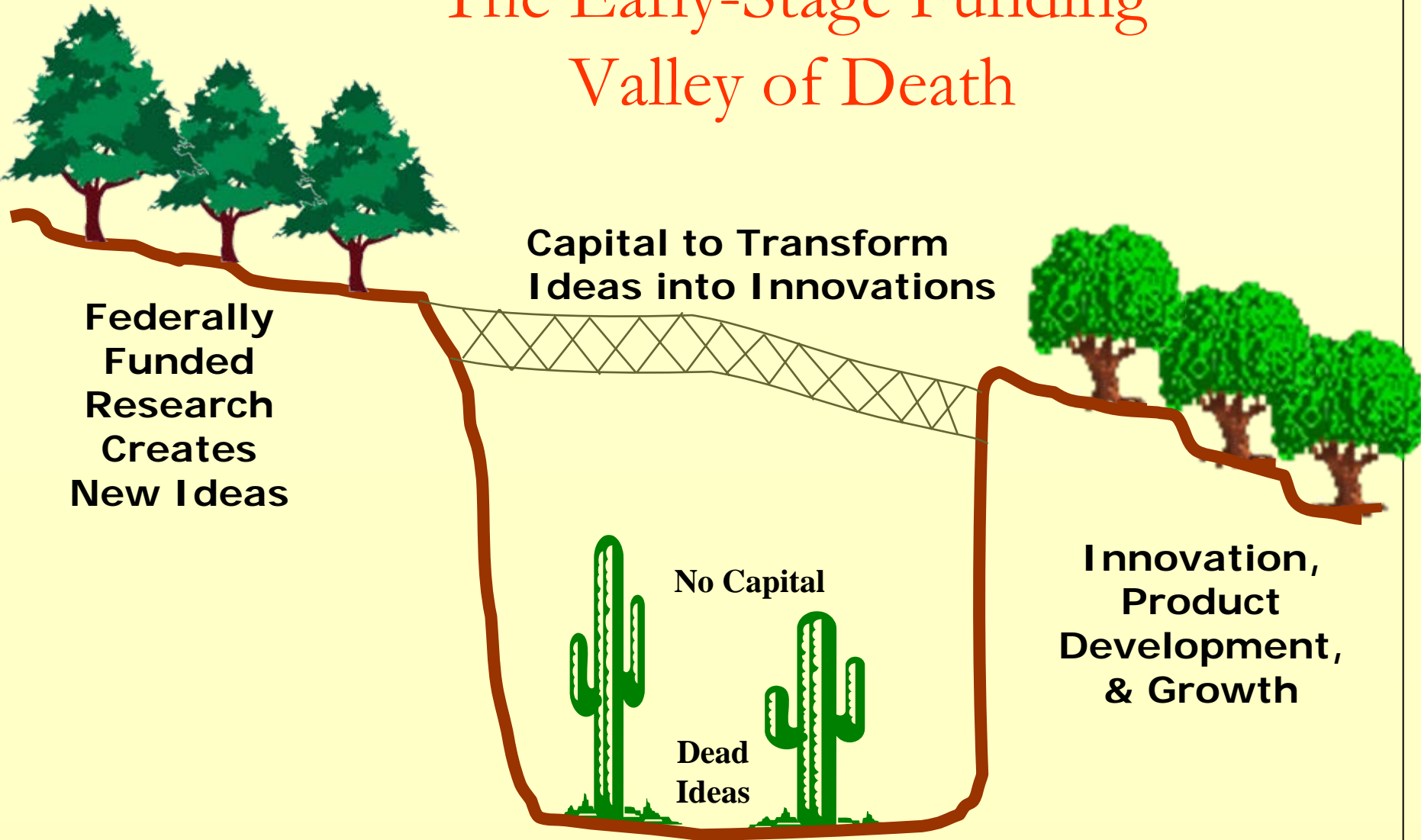


- **Reality: Innovation is a Complex Process**
 - Major overlap between Basic and Applied Research, as well as between Development and Commercialization
 - Principal Investigators and/or Patents and Processes are Mobile, i.e., not firm-dependent
 - Many Unexpected Outcomes
 - Technological breakthroughs may precede, as well as stem from, basic research
- **Many of our policies and institutions remain based on this linear model**

The U.S. Myth of Perfect Markets

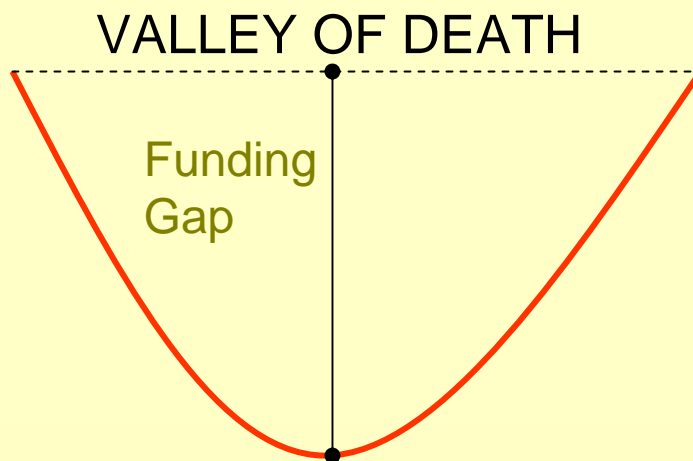
- Strong U.S. Myth: “If it is a good idea, the market will fund it.”
- Reality:
 - Potential Investors have less than perfect knowledge, especially about innovative new ideas
 - “Asymmetric Information” leads to suboptimal investments
 - George Akerlof, Michael Spence and Joseph Stiglitz received the Nobel Prize in 2001, “for their analyses of markets with asymmetric information”

The Early-Stage Funding Valley of Death



The Innovation Capital Valley of Death

Pre-Seed	Seed/Start-Up	Early	Later
Founders, Friends, Family & Fools	Federal SBIR Grants/Angel Investors/Angel Groups		Venture Funds*
\$25,000	\$100,000	\$2,000,000	\$5,000,000



Adapted from: Richard Bendis and Ethan Blyer, "Creating a National Innovation Framework," *Science Progress*, 2009

* Average Venture Investment is \$8.3 million

The Myth of U.S. Venture Capital Markets

- Myth: “U.S. VC Markets are broad & deep, thus there is no role for government awards”
- Reality: Venture Capitalists have
 - Limited information on new firms
 - Prone to herding tendencies
 - Focus on later stages of technology development
 - Most VC investors seek early exit

Venture Capital Markets have been in a 'Pause' Mode following the Financial Crisis

- **Some Signs of a Recovery**
 - “We continue to anticipate a gradual increase of investment through the remainder of the year.” [NVCA 2009 2nd Quarter Report]
- **Few IPOs, but some hopeful signs**
 - Sept 24, 2009: 5 new issues begin trading -- the most for a single session since Nov. 15, 2007,
 - The Standout: “**A123 Systems** Announces Pricing of Its Initial Public Offering” [Wall Street Journal, Sept 25, 2009]
- **Few Entries: Venture Capitalists are retrenching**
 - Venture-capital investing fell to \$3.7 billion in the second quarter, down more than 50% from \$7.6 billion in the year-ago period [MoneyTree-PWC 2009 2nd Quarter Report]
 - While the second-quarter sum represents a 15% jump over the prior quarter, the number of deals remained flat at 603

What do Entrepreneurs Need?

A Bottom-up Strategy, Supported by Good Policy

- Motivation:
 - Belief in self, reinforced by value society places in commercial success
- Opportunity
 - Ease of firm formation, entry, and exit
 - Flexibility to hire and fire
- Capital to Start
 - Tax support for Angels and Venture Capital
 - **Competitive Innovation Awards from Government to stimulate existing companies and start-ups**

Public-Private Partnerships are a Proven Tool to Encourage Innovation

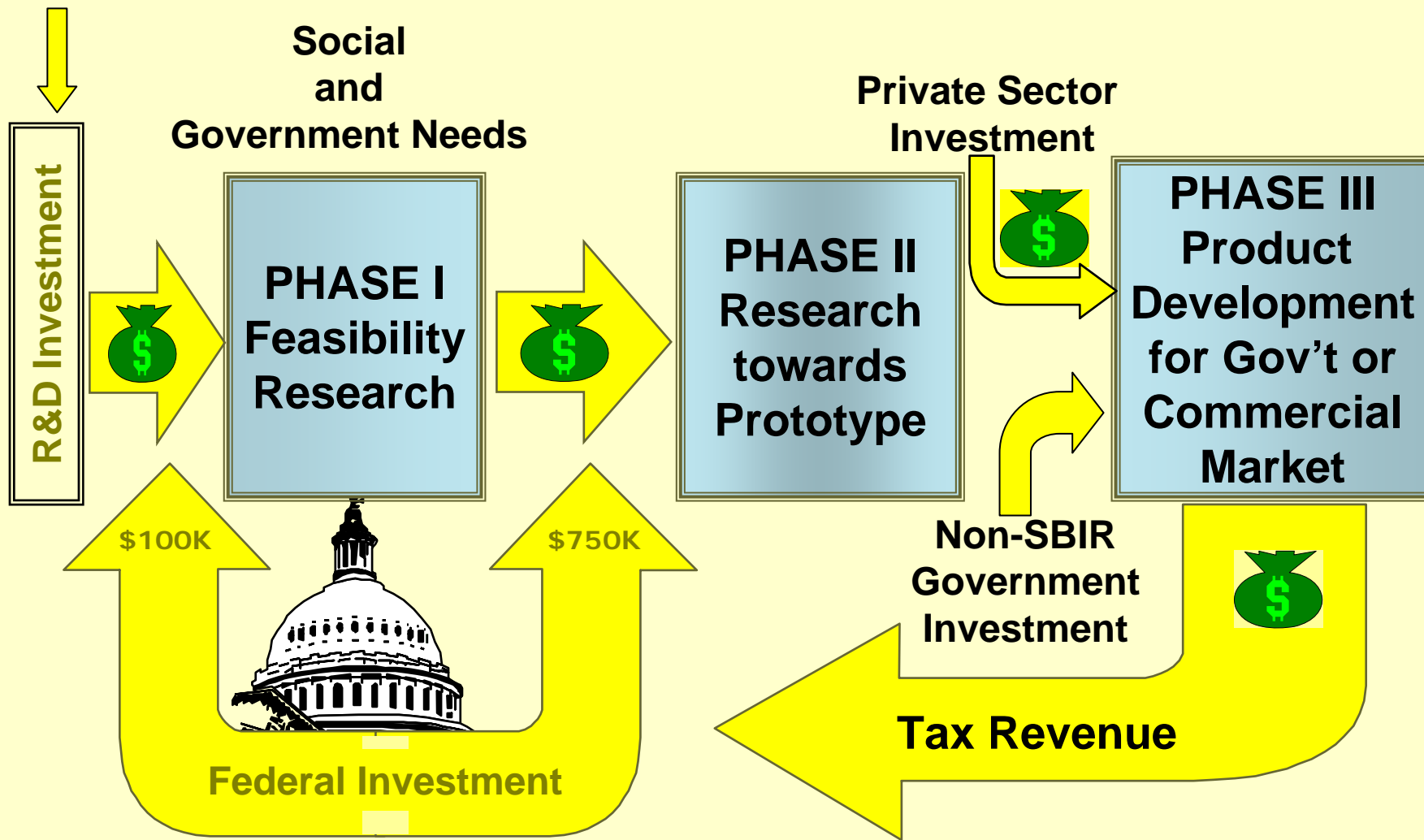
- Government Awards Create Incentives to Develop and Market New Ideas
 - Award programs motivate entrepreneurs, signal opportunities for private investors, and solve problems for government agencies
- Proven Partnership Mechanisms Include:
 - Innovation Awards
 - Industry-University Cooperation
 - Cooperation S&T Parks
 - Research Consortia
- These mechanisms work best when they work together

Crossing the Valley of Death:
SBIR provides Competitively
Awarded Early Stage Funding

Double-Gated Innovation Awards
fund Feasibility Research and
Prototype Development

\$143 billion

The SBIR “Open Innovation” Model



SBIR and Bottom-Up Innovation

- Government agencies post challenges on the Web
 - Needs driven solicitations describe challenges faced by agency
- Small Businesses across the country are invited to provide Solutions. They:
 - Answer questions
 - Provide technical solutions
 - Create new products and services
- SBIR brings the ingenuity of small businesses to address the mission challenges of government agencies

Academies Research Reveals SBIR Impact on Firm Formation and Growth

- **Company Creation:** 20% of responding companies said they were founded as a result of a prospective SBIR award (25% at Defense)
- **Research Initiation:** SBIR awards played a key role in the decision to pursue a research project (70% claimed as cause)
- **Company Growth:** Significant part of firm growth resulted from award
- **Partnering:** SBIR funding is often used to bring in Academic Consultants & to partner with other firms

In the U.S., a New Focus on Innovation at the White House



President Obama at the National Academies—April 27, 2009

Science and innovation is "more essential for our prosperity, our security, our health, and our environment than it has ever been."



New Commitments to Support Innovation

- ✓ Doubling of federal funding for basic research over 10 years at NSF, NIST, DOE (Office of Science)
- ✓ New Investments in S&T Infrastructure
- ✓ New Financing for S&T and Innovation
- ✓ Making the research and experimentation tax credit permanent

National Economic Council:

“A Strategy for American Innovation”

September 21, 2009

- Invest in the Building Blocks of American Innovation
 - Investments in human, physical, and technological capital
- Promote Competitive Markets that Spur Productive Entrepreneurship
 - Create a national environment ripe for entrepreneurship and risk taking that allows U.S. companies to be internationally competitive
- Catalyze Breakthroughs for National Priorities
 - This includes developing alternative energy sources, reducing costs and improving lives with health IT, and manufacturing advanced vehicles.

New Stimulus Funds New Technologies and Research

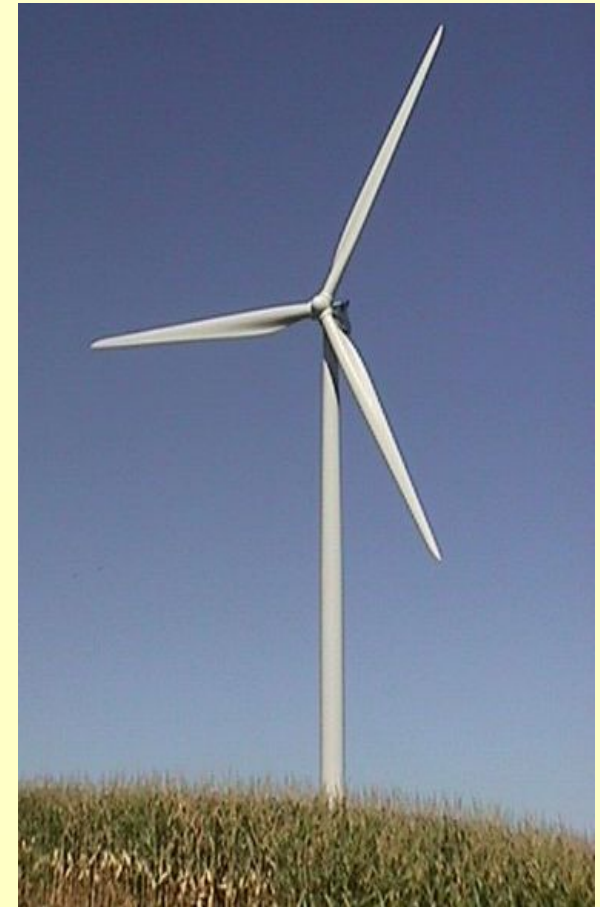
Solar, Wind, Batteries

Stimulus Funds Push on Solar

- The Stimulus Bill allocates \$117 million to expand the development, deployment and use of solar energy throughout the United States.
 - \$51.5 million for solar technology development
 - \$25.6 million of this is for concentrated solar energy technology research and development
 - \$40.5 million for deployment
 - Projects to address non-technical barriers to solar energy deployment, including grid connection, market barriers and incentives for solar energy adoption in cities, and the shortage of trained solar panel installers.
- Our Innovation Program is Advising DOE

Stimulus Plan Boosts Wind Energy

- Extends the **tax credit** for producing electricity from wind for three years through 2012
- Provides **\$6 billion in loan guarantees** for renewable energy projects and electricity transmission projects
- Provides **grants** of up to 30 percent of the cost of building a renewable energy facility.
- Provides \$11 billion in **spending and loan guarantees** to build a "smart grid"



Stimulus Dollars for Battery Makers

- \$2.4 billion available in grant money under a Department of Energy program
 - Grant divided among seven project areas
 - Largest portion — \$1.2 billion — going toward battery pack and cell manufacturing facilities.
 - \$1.2 billion is being distributed in grants of \$100 million to \$150 million for 7-8 projects, with each of them required to share at least half of the project cost
 - Goal is to raise production capacity of some 20,000 to 100,000 plug-in car batteries per year.
- Our Innovation Program is Advising DOE

New Advanced Research Projects Agency at the Department of Energy

- New organization with a new mandate
 - Focus on “transformational energy-related technologies” with broad impact on challenges posed by climate change and energy security
 - ARPA-E will fund R&D entities to take an immature technology and develop it beyond the “Valley of Death”
 - ARPA-E seeks to be a nimble, flat organization to accelerate high risk projects to meet its ambitious goals
- \$400 million in stimulus funds

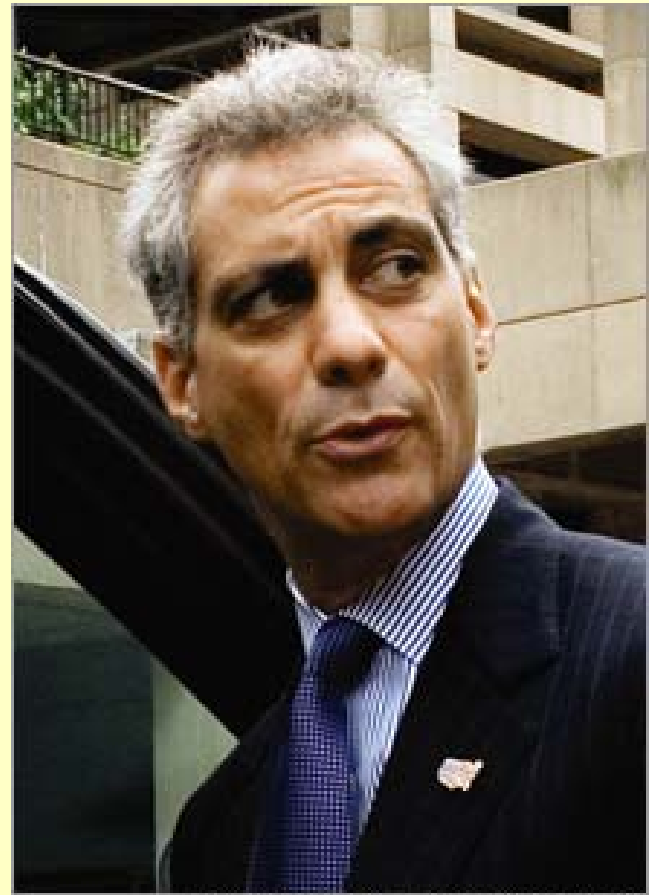
To Conclude...

In the Twenty-first Century, Innovation Policy is no longer a “Hobby”

- It is a central function of good government
 - Innovation is key to a nation’s wellbeing and competitiveness
 - The dynamic development of the economy is in the interest of the current and succeeding generations
- It requires sustained attention & regular review
 - Sustained, high level policy involvement
 - Requires an understanding of the innovation ecosystem
 - Need to monitor how well the country is doing
- Learning from each other is a must

Seeing the Crisis as an Opportunity

- “You never want a serious crisis to go to waste. ...”
 - Rahm Emanuel, chief of staff for President Barack Obama
- The need for action opens opportunities for new initiatives



NINA BERMAN - REDUX PICTURES

Some Issues for the Panel

- How has the financial crisis affected the current environment for innovation?
 - Should the role of the public sector in this new environment be enhanced? How can it best be done?
 - What are the main risks/opportunities for private sector stakeholders? How can policy mitigate risks?
- What are the main implications of the crisis for innovation policies:
 - What new opportunities does the financial crisis provide for innovation policies?

Thank You



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