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**Testimony before the House Science and Technology Committee**

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2318 Rayburn House Office Building**

Good afternoon, I'm Deborah Wince-Smith, the President of the Council on Competitiveness. Thank you, Chairman Gordon, Congressman Hall, and the members of the committee, for this opportunity to present testimony on the importance of implementing a national competitiveness agenda, and, in particular, increasing funding for long term basic research, supporting America's high performance computing capability, and enhancing science, technology, engineering and mathematics (STEM) education.

The Council on Competitiveness is the only group of corporate CEOs, university presidents and labor leaders committed to the future prosperity of all Americans and enhanced U.S. competitiveness in the global economy through the creation of high-value economic activity in the United States. Starting at the top with our Chairman, Chad Holliday, the CEO of DuPont, our members recognize that the world has changed and America's current place as an economic superpower is not guaranteed. In this new conceptual economy, ideas and technological development will not be enough to ensure our continued success. We must find innovative ways to apply new knowledge, work across disciplines and add high value jobs. We cannot and should not seek to compete for low wage, low cost opportunities – that time has passed us by. An underpinning of strong STEM education will be critical across a myriad of occupations if Americans are going to thrive in this new economy. Yet despite spending more per student than almost any other country, American students perform poorly in relation to their international peers in math and science.

Since the Council on Competitiveness issued its private sector call for action, *Innovate America*, in December 2004, there has been a steady drumbeat for action on U.S. competitiveness, punctuated by similar proposals from the National Academies, congressional leadership, the Administration and the nation's governors. All of these efforts have benefited from broad support by the private sector, including the personal involvement of many of the country's top CEOs and university presidents, as evidenced by the panel here today. At a similar hearing last year, I commented that I believed there was a critical confluence of support for action on competitiveness, if only policymakers would take advantage and act. Some important progress has been made, but there

remains much to be done. We are at a critical juncture as a nation and as a people. A scattershot approach to innovation and competitiveness risks accomplishing little, while a comprehensive innovation agenda can set the country on a foundation for long term success that will help ensure the next generation looks back with pride – as we do to the men and women on whose backs and minds our current prosperity rests.

## THE CONCEPTUAL ECONOMY

At the beginning of the 21<sup>st</sup> century, America stands at the dawn of a conceptual economy in which insight, imagination and ingenuity determine competitive advantage and value creation. To succeed in this hyper-competitive, fast-paced global economy, we cannot, nor should we want to, compete on low wages, commodity products, standard services, and routine science and technology development. As other nations build sophisticated technical capabilities, excellence in science and technology alone will not ensure success.

The United States must focus on its strengths – on what it means to be American. We must innovate and embrace the opportunities of the rapidly emerging, high-value conceptual economy. It is increasingly clear that the most important competition is being fought in the arena of ideas, learning, and delivering new kinds of value to the marketplace. Looking back at the tremendous growth of America's gross domestic product over the past half century, information and ideas have been equally, if not more, important than materials and manpower to sustaining America's economy.

In the conceptual economy, our success will be measured by our ability to transform industries, reshape markets old and new, stay on the leading-edge of technology creation, and fuse diverse knowledge, information and technology. This new global economy will be much different than the industrial economy of the 20<sup>th</sup> century, or even the information economy of the past two decades. The conceptual economy will favor nations that reach globally for markets, and those who embrace different cultures and absorb their diversity of ideas into the innovation process. It will be fueled by the fusion of different technical and creative fields, and thrive on scholarship, creativity, artistry, and leading edge thinking. The investments, infrastructure and talent necessary for Americans to succeed in this new global paradigm require public and private sector action. We cannot assume our past success will guarantee future prosperity.

As my colleagues with me at the table know well, the private sector can and will continue to look inward to how it can best compete in today's global economy. We also can sound the alarm – and we have tried to do that to the best of our ability – but it is Congress and the Administration that must act if Americans are going to continue to see a rising standard of living in the 21<sup>st</sup> century.

I want to call your attention to four data points from the Council's recently released *Competitiveness Index: Where America Stands*, which is a comprehensive look at the state of the U.S. economy vis-à-vis our international competition.

### **[CHART 1 – Small/Medium-sized Business's Are the Job Creators]**

This first chart highlights the importance of small and medium-sized businesses as job creators in the United States. This is not to say that large corporations do not generate value to the U.S. economy – they unquestionably do – but job creation is coming from smaller enterprises and the power of entrepreneurship. Central to the

ongoing success of these smaller firms is to leverage and accelerate the entrepreneurial spirit that so defines the American way of life; and that has been so central to our country's history of discovery, creativity and transformational value. Clearly enhanced STEM education and increased investment in basic science research are key drivers of small business development and key assets for entrepreneurs, but they must be supported by an innovation infrastructure that enables value and job creation and market penetration. Access to capital, seamless technology transfer, mentoring and strategic business/academic collaboration are essential building blocks that must be constantly improved to take full advantage of our nation's investments in science and people this Committee is considering.

**[CHART 2 – Higher Order Skills More Important]**

And make no mistake; those investments are exactly what is needed, as this next chart demonstrates. Routine manual and cognitive skills have declined in importance since the late seventies, while complex communication and expert thinking have increased markedly. Again, the importance of STEM education as a grounding for so many jobs in the American economy is emphasized by this data. This chart is a visual representation of the challenges policymakers face in helping to prepare Americans for the jobs that employers are seeking to fill over the next 2, 5 or 10 years. The skills that are valued are not those of the 20<sup>th</sup> century assembly line or the commoditized textile factory and that is not where the comparative advantage or opportunity lies either.

**[CHART 3 – High Wage, High Growth Requires Higher Education]**

The blue circles in the upper right hand corner of this chart are the circles that matter, as they represent high wage, high growth jobs. Here is why what this committee is working on is so important and why I and my colleagues at the table are so committed to leading this imperative. High wage, high growth jobs require higher skills! That's STEM education. That's language skills and humanities and social sciences. That's entrepreneurship. The orange circles are yesterday's economy. Will those jobs disappear or become irrelevant to our day-to-day lives? No. But we do a disservice to the American people if we spend our time fighting for the orange circles, when a world of opportunity is within our grasp if we harness the potential of innovation to power our future.

Taken together, these three charts paint a very clear picture as to why this committee and the Congress in general must focus on U.S. competitiveness and the skills Americans will need to compete and prosper.

**[Chart 4 -- Job Churn]**

The job churn chart highlights that the U.S. economy destroys nearly as many jobs as it creates each year – about 30 million. Talk about creative destruction. Churn is a fact of life in the American economy. It is healthy. It is a testament to the incredible ability of our country to destroy and create jobs at an amazing pace as innovation permeates throughout the economy. Other countries are saddled with rigid, inflexible labor markets and high unemployment.

But, job churn also is the source of tremendous anxiety as each lost job represents an individual who is now faced with uncertainty for his or her future. Uncertainty regarding healthcare benefits, and retirement. The chart shows that the likelihood of this person getting another job is very high, but it does not say how long it might take and whether it will pay as well. This again should reinforce the committee's focus on STEM

education as critically important, because it recognizes that the American people will be better prepared to handle these transitions, if they have the foundation to engage in lifelong learning and higher order skills necessary for the jobs of the future.

## THE INNOVATION ECOSYSTEM

The Innovation Agenda outlined in the Council's *Innovate America* report and echoed by the *Rising Above the Gathering Storm* report, the President's *American Competitiveness Initiative*, the Democratic Innovation Agenda, and many other important initiatives, recognized that there are three foundational platforms or building blocks to innovation — Talent, Investment and Infrastructure. This comprehensive, or ecosystem, approach to innovation best ensures a return on investment for the American people in the form of jobs, social benefits and wealth creation.

Talent addresses our human capital needs including building the base of scientists and engineers by enhancing K-16 STEM education, pioneering an extensive portable graduate fellowship program and attracting the best and the brightest students and workers from around the world by reforming our immigration system. We also must empower workers to succeed in the global economy by reforming federal job training programs to enable them to have the flexibility to target the skills needed for the jobs of the 21<sup>st</sup> century.

Investment in innovation addresses the balance between risk and reward and the incentives—or disincentives—for people and institutions to invest in innovation. Priorities here should be to revitalize frontier and multidisciplinary research by increasing federal funding of basic research, making the R&D Tax credit permanent and seeking to catalyze Innovation Hot Spots™ at regional locations across the United States through public-private partnerships explicitly focused on supporting regional innovation.

Investing in innovation also demands adherence to two fundamental principles: a willingness to accept risk and a willingness to wait for the return on investment. Although America's entrepreneurial economy understands and embraces these principles, the much larger financial mainstream may be now moving in the opposite direction. Investment time horizons are getting shorter. Long-term innovation strategies remain undervalued. And business executives in publicly held companies now face a regulatory climate that is blurring the line between business risk and legal risk. Intangible assets, which represent an increasingly large percentage of the value of corporations, still don't show up on the balance sheet, reducing incentives to invest in creating more value. How we measure innovation remains a challenge without a solution.

Innovation infrastructure covers not only the physical infrastructure that supports innovation but also the political, regulatory and legal infrastructure that facilitates innovative behavior. We must create a 21st century intellectual property regime, strengthen America's advanced manufacturing capacity and put in place a national, coordinated innovation policy with representatives from the public and private sector.

It is with great optimism that as I testify here today that a tremendous amount of progress has been made in the past two years, but we are still far from the finish line.

## A GOOD BEGINNING

The Council – under the leadership of its chairman, Chad Holliday, its vice chairmen, Wayne Clough, president of Georgia Tech and Doug McCarron, president of the United Brotherhood of Carpenters and Joiners; and with the support of Craig Barrett, Intel Chairman, and William Brody, President of Johns Hopkins, who head our National Innovation Leadership Council – have invested substantial time and energy to ensure that the recommendations of *Innovate America* and subsequent reports do not gather dust on the shelf. Thanks to the strong leadership of Members of Congress and many people in the Administration we can look back today at several encouraging steps that have been taken to better position the United States to compete in the 21<sup>st</sup> century global economy.

- With the passage of the FY2007 Continuing Resolution in February 2007, agencies including the National Science Foundation (NSF), the National Institutes of Standards and Technology (NIST) and the Department of Energy’s Office of Science received significant funding increases for long term basic research – a critical underpinning of an innovation economy. The FY2008 budget request continues this important trend, though attention must be paid to other key research agencies, including the National Institutes of Health and the Department of Defense. Research has become inherently multidisciplinary, so well an argument can be made that the physical sciences have been under funded over the past several years, any “catch-up” funding should not come at the expense of the life sciences.
- Late in 2006, the Congress passed and the President signed another extension of the R&D Tax credit that included various enhancements to the credit. This important step, particularly the enhancement, which updated the credit to better reflect marketplace realities, should be built upon in 2007 and the credit should be extended permanently.
- Both in the House and Senate, a number of bills have been introduced that would implement various pieces of the innovation/competitiveness agenda. Many of these bills have received strong bipartisan support and this committee has already acted on a number of them.
- Consistent with the call in *Innovate America* for better integration between workforce and economic development programs, in early 2006, the Department of Labor awarded \$195 million in grants to thirteen regions across the country through its Workforce Innovation in Regional Economic Development (WIRED) program. The WIRED program embraces the Council’s focus on innovation as the key to regional economic development and will foster much needed coordination among regional workforces and economic development programs. The WIRED program has already expanded beyond the original thirteen regions and is becoming a model for regional economic development and coordination. The Council serves as a technical advisor to the Department on this program.

- Just last week, the Patent Office announced that it is “starting a pilot project that will not only post patent applications on the Web and invite comments but also use a community rating system designed to push the most respected comments to the top of the file, for serious consideration by the agency's examiners. A first for the federal government, the system resembles the one used by Wikipedia, the popular user-created online encyclopedia.” The Council’s report called for the patent system to be a resource for innovation and while time will tell how successful it might be, this announcement is an important first step in opening up the process to greater transparency and collaboration.
- Enhancing U.S. competitiveness is not solely a federal issue and states play a pivotal role. They are better positioned to integrate strategies and respond to many of the challenges facing Americans. In July of 2006, Governor Janet Napolitano, the Chair of the National Governors Association (NGA), announced that the NGA would make innovation in the states its priority for her term as Chair. This recognition that states and regions are the cauldrons of creativity in the United States has laid the groundwork for important policy and regulatory changes to be put in place that will catalyze collaboration, enhance STEM education and better align workforce training with workforce opportunity. The Council is pleased to be a partner in this effort.

### **THE ROAD AHEAD**

Now is no time to rest on the laurels of past accomplishments – many of which require continued action or even the short term benefit could be lost. There is clearly broad private sector support for a comprehensive innovation package as evidenced by the Innovation Proclamation delivered to the Hill today with over 270 organizations represented. In addition to those actions detailed above that must be taken to maintain the progress made to date, Congress must address the following areas:

- A central focus of this hearing is the importance of enhancing STEM education in the United States and a cornucopia of proposals have been put forward to address this critical issue. Without delving into the details of any specific proposal, it is a top priority of the Council’s 180 private sector leaders that action be taken in this area by federal, state and local leaders. Enhancing STEM education is critical to the ability of our citizens to compete globally and to fuel the creativity that will drive American competitiveness in the future. Solutions must include improving teacher quality through better training and performance-based incentives.
- Entrepreneurship and risk taking are the bedrocks of American creativity and small business development. Policymakers must take into consideration the impact regulations, tax policy and liability concerns have on innovation and the creative process. Anecdotally, we are seeing foreign capital markets attracting interest for new IPOs. Liability, health care and exorbitant tort costs that now exceed our national investment in research and development continue to be a concern for many small and medium-sized businesses, as the costs to them are

disproportionably higher. And in parallel, we place significant costs burdens on U.S. global enterprises conducting high value commercial activity, thereby impacting decision-making regarding investing in next generation manufacturing facilities and operations in the U.S.

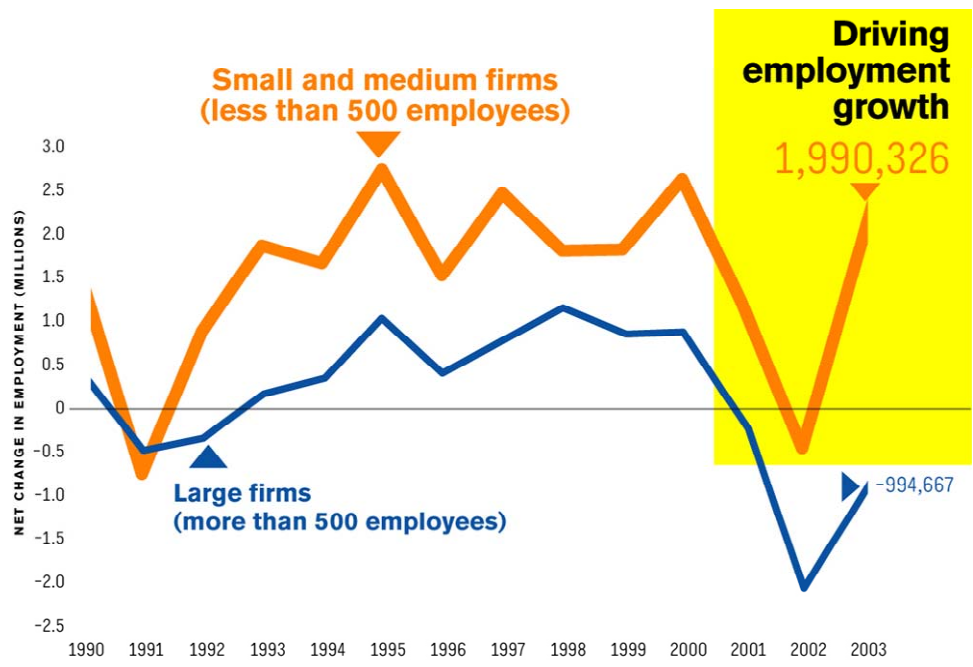
- While federal programs like WIRED are making strides in coordinating workforce and economic development priorities, much remains to be done in aligning federal and state resources with the 21<sup>st</sup> century needs of the American worker. Workforce resources are sub optimized and not addressing regional realities. Proposals to provide greater flexibility and focus in the various workforce programs have been put forward by the Administration, Members in the House and Senate and by the National Governors Association, but to date, no final action has been taken.
- While most of the attention on immigration reform has been placed on the issue of what to do with illegal immigrants, there are several critically important provisions under consideration that would encourage more legal immigrants with advanced degrees in science and engineering to stay and work in America. We often say that America attracts the best and brightest to study and work here, but that assumption is being tested around the world as research parks spring up in China and top-notch universities open in India. Once the appropriate background checks are completed, we should staple a green card to the diplomas of those immigrants who acquire advanced degrees in STEM disciplines and commit to work in America for a significant period of time.
- Lastly, the Committees continued support of high performance computing is critical to American competitiveness and I encourage you to ensure that our national labs have these critical tools. Supercomputing is an important ingredient in our nation's innovation infrastructure and a linchpin to the country's competitiveness. It reduces time to discovery and accelerates the innovation process, and has become essential to the business survival of many of our most competitive companies. Unfortunately, Council research has shown that we lack the talent we need to take full advantage of these innovation accelerating tools...both within our national labs and within the private sector. Advancing the math and science capabilities of today's students will be vital to ensuring that we, as a nation, are able to take full advantage of these national assets.

In conclusion, I want to urge the Committee and the Congress to take action this year on a comprehensive competitiveness agenda that at a minimum includes increased research funding, enhanced STEM education, high skilled immigration reform and permanent tax incentives for investment in research and development. State and local governments and leaders in the private sector must do their part as well, but setting the agenda for the nation lies with the Congress and the Administration. One path takes us down the road of opportunity and continued global economic leadership while the other is a path down which we follow rather than lead and opportunity passes us by.

Thank you.

### CHART 1

#### Small and Medium-Sized Firms Create Most New Jobs

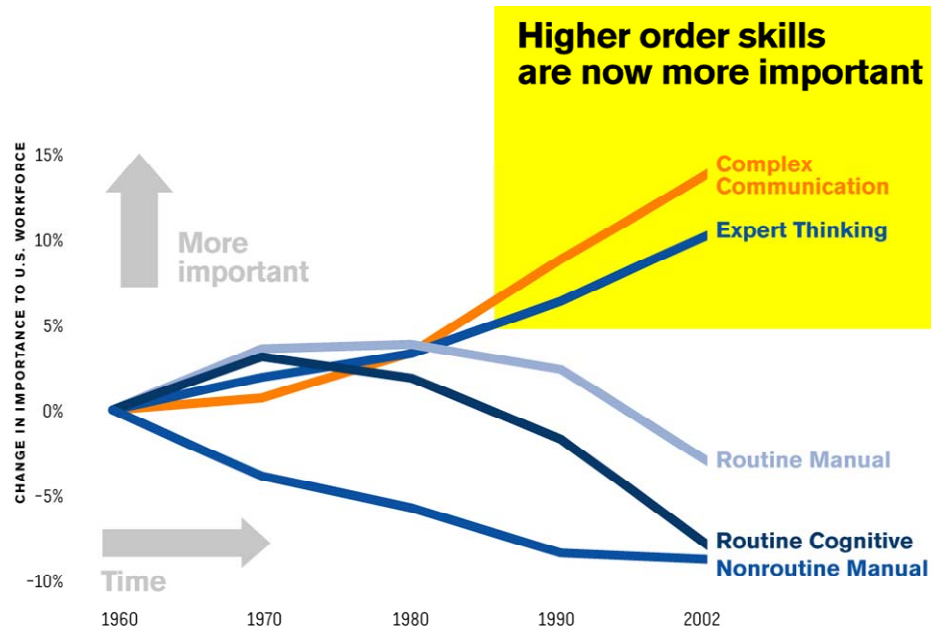


Source: Office of Advocacy, U.S. Small Business Administration



## CHART 2

Higher-Order Skills Have Grown in Importance, Driven by Technological Change and Globalization



Source: Updated version of Figure 1 in David H. Autor, Frank Levy, and Richard J. Murnane, "The Skill Content Of Recent Technological Change: An Empirical Exploration," Quarterly Journal of Economics, 118(4), November 2003. See also Frank Levy and Richard J. Murnane, "How Computerized Work and Globalization Shape Human Skill Demands," (May 31, 2006)

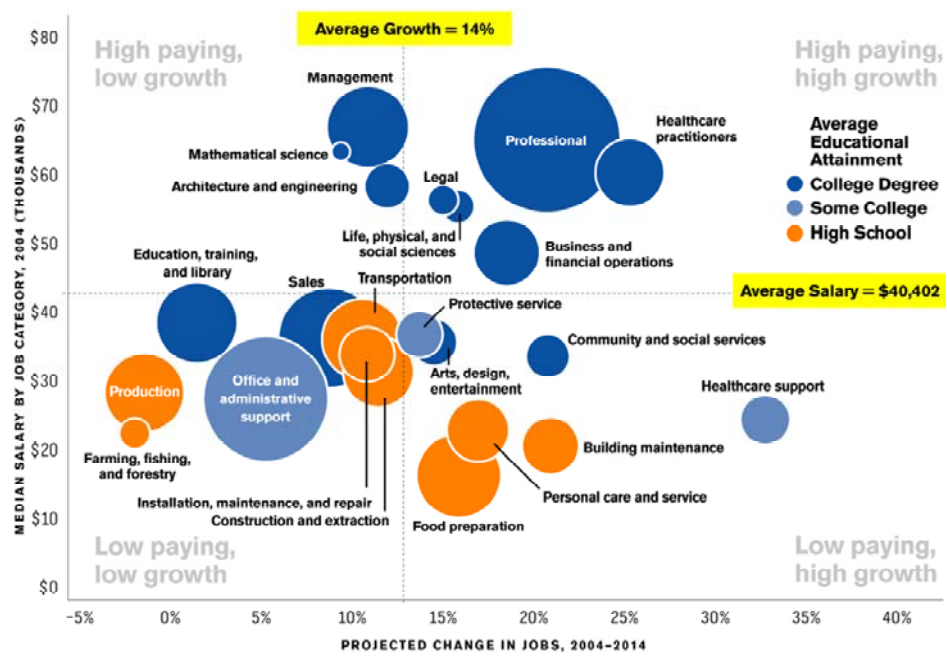
THE COMPETITIVENESS INDEX: **WHERE AMERICA STANDS**

Council on Competitiveness

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### CHART 3

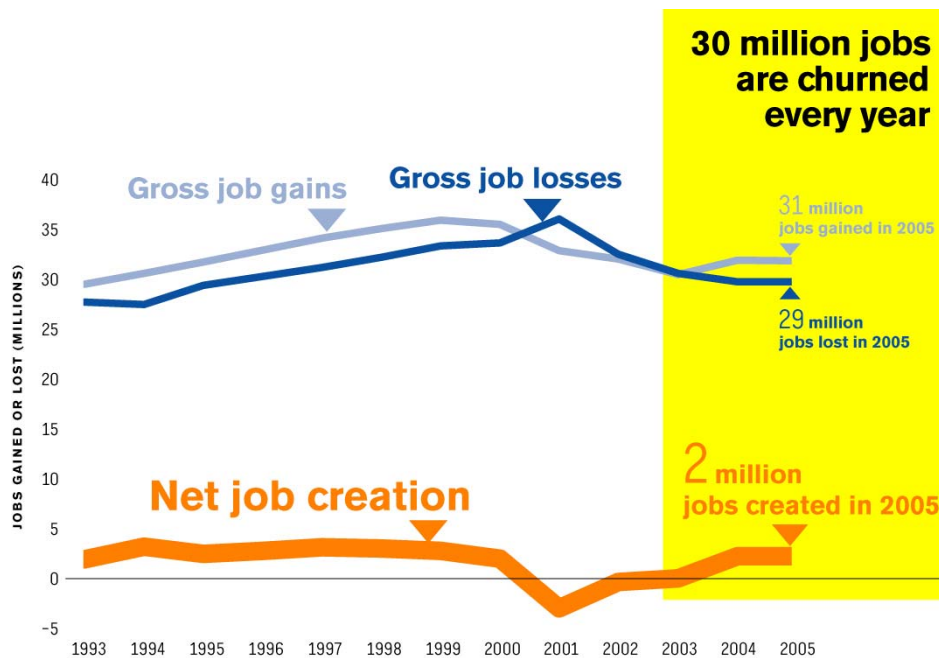
## High-Wage, Fast-Growth Occupations Require Higher Levels of Education



Source: U.S. Bureau of Labor Statistics

**CHART 4**

The United States Has High Levels of Job Churn



Source: U.S. Bureau of Labor Statistics

**Deborah L. Wince-Smith**  
**President, Council on Competitiveness**

Deborah L. Wince-Smith is the innovative force behind a premiere group of CEOs, university presidents and labor leaders committed to driving U.S. competitiveness. Most notably, she has spearheaded a national campaign that made innovation a top-tier national policy issue. She is recognized in the global business community as a “go to” person for strategic counsel, as exemplified by her recent appointment to the Board of Directors of the NASDAQ Stock Market.

As president of the Council on Competitiveness, Wince-Smith’s expertise in technology policy, economic development and global competition is frequently sought after by government, industry and news media.

She has more than 20 years of experience as a senior government official, including as Assistant Secretary for Technology Policy in the Department of Commerce during the first Bush administration. Most recently, she was appointed by President George W. Bush and confirmed by the U.S. Senate to serve as a member of the Oversight Board of the Internal Revenue Service. During the course of her career, she has testified before several committees of the U.S. House and Senate. She also serves on or chairs four Cabinet-level advisory groups, including a task force on nuclear energy for the Secretary of Energy.

Following her government tenure, Wince-Smith became active in governance of various national scientific labs. She sits on the Board of Governors for Argonne National Laboratory and the University of California President’s Council for Los Alamos and Lawrence Livermore National Laboratories. Wince-Smith was also a consultant for several Fortune 100 companies. Her practice focused on global competitiveness, R&D partnerships and international development agreements.

She has appeared on several international broadcast networks, including CNN, MSNBC, C-SPAN, and Canada’s Report on Business Television. She is regularly interviewed by major newspapers like The Washington Post and Wall Street Journal as an expert on economic, science and technology policy. Her opinion pieces have appeared in publications such as The Hill, a leading newspaper that covers Congress, and she is a regular contributor to Innovation Magazine.

Throughout her career she has been in the vanguard of the global competitiveness debate. During the Reagan Administration, Wince-Smith served as the Assistant Director for International Affairs and Competitiveness in the White House Office of Science and Technology Policy. She designed and negotiated the landmark 1988 Head of Government Science Technology Agreement with Japan and developed President Reagan’s 1988 Competitiveness Initiative. She later directed President George H.W. Bush’s National Technology Initiative. She began her career as a program director for the National Science Foundation from 1976-1984 where she managed U.S. research programs with Eastern European countries and U.S. universities.

Wince-Smith earned a degree in classical archaeology and graduated Magna cum Laude and Phi Beta Kappa from Vassar College. She earned her Master’s degree from King’s College, Cambridge University. In December 2006 she received an honorary Doctor of Humanities degree from Michigan State University. She volunteers her time on the Board of Directors of the University of Pennsylvania Museum of Archaeology and Anthropology and is a trustee of the National Inventors Hall of Fame.