

Written Statement of Testimony

by

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for the

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Subcommittee on Trade, Tourism and Economic Development
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Chairman Smith, Ranking Member Dorgan, and members of the Subcommittee,

Thank you for the opportunity to speak with you today. My name is Skip Rung and I am the President and Executive Director of Oregon Nanoscience and Microtechnologies Institute, the State of Oregon’s first signature research center and a deep collaboration among industry, investors, government agencies and research institutions. Our theme – nanoscience combined with microtechnologies – was selected because it was the optimum overlap of research excellence, high-wage job creation potential, and existing industry strength. Indeed, though Oregon is a small state, we have the 3rd largest semiconductor workforce and – even more important – the world’s top industrial research and development assets in these fields. Intel Corporation and the Hewlett-Packard have their most advanced operations in Oregon, and FEI Company is one of our home-grown successes. Oregon is both a high-tech and manufacturing leader, and our future prosperity and supply of high-wage jobs requires that we remain so.

Prior to ONAMI, I worked for 25 years at Hewlett-Packard, most recently as R&D director for HP’s world-leading Thermal Inkjet technology, which ranks among the most successful nanoscience and microtechnology innovations of all time. Overcoming many daunting challenges, this breakthrough technology took back the PC printer business from the Far East and created thousands of high-wage jobs in the United States. HP’s Corvallis, Oregon site grew from 3 buildings to 11 in the space of 8 years, and we were always hard-pressed to keep up with customer demand and to stay ahead of the competition. The only downside to this story is that no innovation keeps giving forever. We knew that the inkjet business would mature approximately in 2005, and worried that our site and community were both at risk without a robust diversification plan. So it was in 1997 that we began to take a much greater interest in new business creation using both internal efforts and university relationships. I now wish we had started sooner, because it may be that no single local opportunity will be as large as inkjet, and indeed there is lower employment in Corvallis now than at the peak of inkjet development.

In the news recently, we have read that the personal computer market is also maturing and that this is driving reinvention discussions in other technology powerhouse companies such as Intel. The common theme, again, is that innovation – by its very definition – means reinvention, and that success or failure at this reinvention is going to have dramatic impact on employment levels, wage levels, and community health.

My reason for going through all of this is to introduce five conclusions I have reached after many years of thought regarding innovation, nanotechnology and economic development:

The first is that traded sector competitiveness is the key to high relative productivity, which in turn is the only dependable basis for the high-wage jobs and prosperity Americans have come to expect.

The second is that innovation – in the form of trained people and protected intellectual property - is the key to competitiveness. Head-to-head global competition in traded goods manufacture simply cannot deliver the wage differentials we want. Being 20% more efficient will not enable us to pay 20x higher wages.

The third is that continued leadership in prosperity based on innovation carries a price tag of constant change, sacrificial investment, hard work, and – frankly – a fair amount of stress. If emerging global competitors embrace future opportunities with greater focus, defer more gratification to prepare their citizens, and simply work harder, I fear it could go very hard with us and our children.

The fourth is that nanotechnology – which in somewhat over-simple terms means the current state of progress in the physical sciences – is the frontier, the battlefield, in the global innovation competition. We will keep or lose our prosperity - and all that comes with it – based on the outcome of this one global competition.

The fifth is that we must find a way to get the most out of our fabulous national assets – the world’s best universities, the world’s best system of entrepreneurship and new venture financing, superior industrial research and manufacturing sites, and outstanding federal laboratory and science agency capabilities. Specifically, I mean that we need not only to invest in research and education as if they were our future – which they are, but also to accelerate the commercialization of innovation by funding and measuring this specific outcome, and removing the barriers to more powerful and effective collaboration between businesses and research institutions.

With these concerns always in mind, I have been encouraged of late by both the President’s American Competitiveness Initiative and Senate Bill 1908 under consideration by this committee. By taking a hard look at where growth in high-wage jobs is most likely to be found, and ensuring intimate involvement by industry and investment professionals in all aspects, the probability of success will be maximized. ONAMI is itself a bold experiment for the State of Oregon in this direction, and we look forward to working with you on this vitally important mission.

One-Page Summary of Testimony

Robert D. “Skip” Rung
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Oregon has selected nanoscience combined with microtechnologies as the subject of its first “Signature Research Center”, because this represents the optimum overlap of future high-wage job opportunities, existing industrial strengths, and competitive research.

Oregon in fact has the world’s leading “small tech” industrial R&D and advanced manufacturing assets: Intel’s lead facility (world leader in semiconductors), Hewlett-Packard’s most technologically advanced site (world leader in microtechnologies), and FEI Company (world leader in nanotechnology tools) are examples. These assets are responsible for the largest number of high-wage jobs in Oregon, and have brought enormous prosperity and community benefit with them.

Experience and concentrated thought over the last ten years have led to five conclusions related to innovation, nanotechnology and economic development:

1. Traded sector competitiveness is the key to high relative productivity, which is the only dependable basis for high-wage jobs and prosperity.
2. Innovation – in the form of trained people and intellectual property – is the key to traded sector competitiveness. Even the best possible performance in head-head manufacturing competition isn’t going to be enough.
3. Innovation leadership means acceptance of constant change, sacrificial investment and hard work. If emerging global competitors outdo us in these things, they can and will take away our leadership and relative prosperity. This change will be much more painful in the long run than the challenges of innovation today.
4. Nanotechnology essentially boils down to progress in the physical sciences, and is going to be the main frontier of competition in innovation for the next decade or more. This is a must-win battle if the U.S. is to keep its prosperity.
5. The U.S. still has the best innovation and nanotechnology assets – universities, entrepreneurs and venture finance, industry sites (at most immediate risk), national laboratories, and federal science agencies. Key to success will be collaboration among these assets to achieve greater speed and success at commercialization.

The American Competitiveness Initiative and S.1908 Nanoscience to Commercialization Institutes Act of 2005 are encouraging and vitally important developments, and should be pursued with urgency and vigor.