

Nanotechnology And The Power Of Innovation

Friday, Jan 25, 2008 --- Without doubt, the emerging field of nanotechnology – relating to the design and engineering of material, structures and devices at the atomic and molecular level – is one holding great strategic, commercial and social promise for all manner of scientific, technological, engineering and quality-of-life innovation.

At the same time, nanotechnology raises a number of yet to be answered questions concerning the possible variety of human health and environmental risks that might follow the commercial exploitation of this technology.

Predictably, the more extreme voices in the current debate over the future of this critically important emerging technology have seized upon the risks and challenges of nanotechnology as reason for banning its commercialization pending further study, which is neither wise nor practical.

Lately, by contrast, more moderate corporate and public interest voices have urged the federal government to develop a more comprehensive approach to the study of nanotechnology's potential health and safety risks, in the interest of gaining a more independent assessment of nanotechnology's risk profile.

There have also been rumblings in Congress for hearings on the safety of nanotechnology.

In part to address these concerns, just last month President Bush signed an appropriations bill that included a measure encouraging the EPA to cooperate with the National Academy of Sciences in the development of "a comprehensive, prioritized research roadmap for all Federal agencies on environmental, health and safety issues for nanotechnology" to better inform eventual policy-making and regulation.

While this development is a good start, unless the making of this map involves multi-stakeholder cooperation and collaboration, the odds of striking the right balance between the promotion and regulation of nanotechnology innovation are long. In this regard, the New York model for funding and advancing nanotechnology research and development may be instructive.

Staggered by the exodus of old manufacturing jobs that had sustained and enlivened the northern and western parts of the state's economy (along the old Erie Canal corridor) through so many generations, and against the backdrop of the federal National Nanotechnology Initiative, New York took stock of the situation earlier this decade and spied in its research-driven public university system an engine for retooling, reinvigorating and growing

an anemic upstate economy.

In a nutshell, the idea – the model – was to transform this region into a scientific and engineering magnet for the incubation and development of emerging technologies into commercially viable products through research partnerships between the state, its universities and industry generally.

In nanotechnology, and high-tech innovation generally, New York saw an opportunity to position itself as a worldwide leader in high-tech, university-based research and economic partnership with commercial interests of all sizes.

It (a) targeted an emerging technology for investment, (b) invested hundreds of millions of dollars in capital investment growing its state universities into a dynamic, state-of-the-art research and development, (c) provided high-tech industry with tax incentives, grants, loans, shovel ready sites, a highly trained workforce and infrastructure improvements necessary to lure this commerce to New York, and then (d) empowered university researchers (state employees) to function on a business innovation model by actively and entrepreneurially partnering with industry scientists to overcome the unique and high-cost challenges of researching, developing and prototyping nanotechnology-based products for commercialization.

To further support and insure the future of this investment, New York also created the first (and now leading) college of nanotechnology in the nation, at the University at Albany – part of the SUNY system.

On this high-tech platform, New York has revitalized a large part of the upstate economy by leveraging the assets of its university system to create one of the most comprehensive educational, research and corporate outreach efforts of its kind in the emerging interdisciplinary fields of nanotechnology, nanosciences, nanoengineering and nanoeconomics in the world.

The joint development agreements and economic partnerships being forged on the anvil of this tremendous public asset are paying dividends, and bringing new economic life and business to upstate New York.

Through significant public investment in state of the art, high-tech, university-based scientific facilities, equipment and expertise, companies of all sizes (from start-ups to AMD) are coming to New York or like IBM expanding in New York for the type of level playing-field support needed to bridge the costly divide between innovation and the marketplace in regard to the commercialization of nanotechnology. Since just 2001 this initiative has leveraged almost \$5 billion in private sector investment.

The bet is that the type of cutting-edge research and development support now available to global business in upstate New York, in dynamic partnership with its state university system, will help to lower the technological barriers to the promise of nanotechnology and the promise of another industrial

revolution.

At the same time, and in a manner of speaking, of all things, nanotechnology has brought farming (of a sort) back to upstate New York – along the old Erie Canal corridor – in the form of innovative ideas, related high-tech industrial applications, jobs and a growing economy powered by state-of-the-art research and development facilities and expertise, basic and applied, harvesting emerging technology generally.

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