PARTNERSHIPS FOR INNOVATION

From START-UP to SUCCESS to SUSTAINABILITY

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Introduction:

It is a great pleasure to be with such an active and distinguished audience.

The National Science Foundation was the product of Vannevar Bush's vision of an endless frontier. They are being true to that tradition by continuing to foster new ideas and new approaches to today's challenges. Partnerships for Innovation is a programmatic innovation that will help foster new technologies and build national support for the whole innovation enterprise.

An outstanding set of speakers have already touched on a number of aspects of a successful partnership.

Developing an approach to launching and sustaining a partnership is a daunting assignment – particularly for economists who are often described as academics who attempt to see if what works in practice actually works in theory.

Summary:

In approaching the question of partnerships, I will:

a) Briefly explore the history that has brought partnerships to the fore;
b) Describe the Silicon Valley Model;
c) Draw lessons from the experience of Europe, Japan and the United States in terms of adopting and adapting the Silicon Valley Model as a way of building and sustaining partnerships.
d) Suggest three broad lessons for creating sustainable partnerships.

The Economy Turns to Partnerships: 1970 – 2001:

The 1970s was characterized by economic and intellectual turmoil. The stagflation that characterized the decade also challenged economic orthodoxy and stimulated the search for a new set of public policies and private practices.

By the 1980s, three major ideas were contending for prominence in the world of economic policy:

a) Supply Side Economics – that emphasized marginal tax rates coupled with restrictive monetary policy and rational expectations;
b) Industrial policy – that advocated a national policy of supporting new industries while strengthening the existing industrial base; and
c) National Competitiveness – which developed a productivity growth strategy that was adapted to global competition and the growing importance of technology driven growth.

During the 1980s, international competition, the rising cost of innovation and the growing importance of skills forced more and more corporations to develop closer relations or partnerships with suppliers, competitors, and every level of government.

Government came to see partnerships with business, labor, universities or non-governmental organizations as an effective way of delivering government services, making government investments and, at times, achieving public purposes through private means.

We have now entered an era of pragmatic partnerships. Particularly in the fields of trade, technology, and training (including K-12 education) public-private partnerships have become a common place.

Whether from a federal, state or local perspective, partnerships have also become increasingly important in fostering regional economic development.

The Silicon Valley Model:

The ongoing ability of Silicon Valley to generate innovations, growth, good jobs and rising income have led much of the world to seek to define and replicate its key elements.

In looking at Silicon Valley's success, many analysts point to certain prominent factors:

a) Universities matter: They are a source of ideas, advice, new scientists and engineers and can be a source of life long learning.
b) Demand for new products matters: In the case of Silicon Valley DOD often provided early demand for leading edge products.
c) Being an early mover can help: Early innovations stimulated competitors, attracted suppliers, and lured scientists, engineers, and entrepreneurs.
d) Silicon Valley has developed a cluster of talent, suppliers, and competitors that creates an attractive base for further innovation.
e) Flexibility and Failure: Talent, capital and ideas are very fluid – moving from one venture to the next. Failure is accepted…only the

failure to take risks is criticized. Openness to ideas and people helps attract innovators from all over the country and the world.

f) Today, the Valley is often characterized as a "web of networks".

Lessons from Europe:

A number of countries in Europe have attempted to adopt and adapt the Silicon Valley model to their own national conditions. England, France, Germany and Sweden have all taken different approaches with mixed results.

England: England has deregulated, created a more flexible labor market and seen the creation of venture capital firms. Innovation is a national priority. They seem to have incorporated many aspects of the Silicon Valley model yet have met with incomplete success. Why?

a) They had venture capitalists but with a conservative bent. The bulk of the investment funds went into restructuring existing firms rather supporting new innovations.
b) In many cases, innovative firms were not part of a cluster of industries (or services) that can help turn innovations into commercial products.

France: The current government in France is seeking to reap the Silicon Valley like benefits that it associates with small, innovative firms. Their attempt to foster innovative start-ups are still young but have serious barriers to overcome.

a) According to the OECD, France has the highest Administrative Burden in the OECD and
b) The second highest burden on entrepreneurs
c) Industrial research has been concentrated in large companies with financial support from large, government controlled or influenced banks.

Germany: In Germany, the economic system does not fit the Anglo-American model that is found in England nor does it follow the dirigiste approach of France. In the late 1980s, the German government sought to foster innovation by offering to co-finance entrepreneurial projects, which could include the government taking an equity stack in the venture. There is also an emerging set of venture capitalists and a New Market as a kind of German NASDAQ. Still, success has been limited.

a) As a late industrializer, Germany focused on industries that had to be large to capture economies of scale – such as steel and chemicals.
b) Germany has a host of middle-sized firms that supply the giants and are active exporters themselves. They tend to focus on incremental

improvements of existing products rather than seeking to create whole new ventures.

c) The venture capitalists often lack technical training and as a result frequently invest in non-technical businesses.

Sweden: Sweden is a particularly interesting case – the country appears to have succeeded despite rather than because of government policy. In general, Sweden did not have the kind of venture capital or flexible labor markets that are often associated with rapid innovation. Yet, in certain areas, Sweden has proven to be quite innovative.

a) Sweden does have an education system that produces very well trained engineers.
b) Ericcson, the Swedish telecommunications and electronic giant appears to be a key to Swedish success. As a global company in a highly innovative field, Ericcson found ways through the thicket of Swedish laws to create an innovative environment.

Japan: In Japan, innovation has generally been concentrated in large firms. There have not been extensive institutional links between industry and Japanese universities. The Keiretsu (or conglomerate) structure often made it difficult for new firms to break into the Japanese market. Kyocera, the major ceramics firm, is a classic example. It was Texas Instruments that provided Kyocera with early orders for its ceramic packages. It was only then that the individual Keiretsu began to make major purchases from Kyocera.

There were other reasons as well: After World War II, Japanese universities wanted to keep their distance from Japanese industries that they associated with the war effort. In any case, Japan was in a catch-up phase of development in which acquiring and adapting imported technologies worked very well.

As Japan has reached the technology frontier in a number of products, they are seeking to strengthen many elements of their domestic innovation chain including the creation of sustainable partnerships.

a) More public investment is going to universities;
b) The 1995 Basic Law for Science and Technology encourages partnerships between industry and universities;
c) Japan has created new, graduate facilities that avoid the hierarchical limitations of traditional universities
d) Japanese and foreign venture capitalists are helping create conditions for new, entrepreneurial firms.

All the Japanese experimentation is still burdened by a decade of economic stagnation and the need for regulatory and structural reform.

The American Experience: Europe and Japan are not alone is seeking to adopt or adapt the Silicon Valley model. For two decades, many state governments have sought to foster growth by borrowing elements of the Silicon Valley model. Increasingly, they are focused on the key role universities can play in developing ideas that can turn into regional growth and local employment. The effort has triggered some very practical research into different aspects of university-business partnerships that can help make them sustainable.

a) The Business Higher Education Forum has just completed "Working Together, Creating Knowledge", the product of a two year joint effort by leading research universities and major companies. The study looks at everything from negotiating agreements to potential conflicts of interest to overcoming cultural barriers to collaboration and innovation.
b) In their recent article "Why Older Regions Can't Generalize from Route 128 and Silicon Valley: University-Industry Relationships and Regional Innovation Systems" Michael S Fogerty and Amit K. Sinha looked at several technologies developed in Cleveland, Ohio. All struggled, some had little impact, and some ideas were quickly exported to other, knowledge intensive regions.

   They identified four key links – university basic research, university-applied research, industry R&D, and a local industrial base. With all four present, there was the greatest chance that an innovation would have a local and regional economic impact.

c) In its "MIT: The Impact of Innovation", Bank Boston found a major impact on economic development in Massachusetts but also found that MIT generated innovations adopted by many other parts of the country.

Three Lessons to Live By: In seeking to develop sustainable university-business partnerships, the experience of Europe, Japan and the United States suggest at least three useful rules of thumb:

1) DON'T GROW BANANAS IN BOSTON: It is always useful to take a look at local strengths and weaknesses in a national and even global context.

2) THE LEG BONE IS CONNECTED TO A NECK BONE:

   a) It is important to think about the whole system of local innovation;
   b) The Cleveland experience suggests the utility of looking at the regional industrial base as well as the innovative capacity of the local universities.

3) THE PAST NEED NOT BE PROLOGUE:

   a) Europe, Japan and the United States all offer lessons in how (or how not to) adapt the Silicon Valley model.
   b) If there is no local cluster, think about growing or attracting one:
      1) Work with the local business community to encourage cluster development;
      2) Attract an Ericcson – or a major business that could stimulate the development of new institutions or businesses.
      3) Think of all your strengths – some observers think that Chicago's creative down town was an important element in making Boeing chose Chicago as the site for their corporate headquarters.
      4) Pursue strategic funding – let a regional vision guide private investments and the allocation of public funds.

Conclusion:

We have entered a new era of pragmatic partnerships – partnerships that are critical to future growth and innovation. Partnerships, particularly Partnerships for Innovation can support an inclusive growth that improves the lives of all Americans and all regions of the country. By strengthening and broadening the American Dream, these partnerships will also help secure sustained political support for economically sustainable partnerships.

The National Science Foundation has always been a pioneer. Their commitment to the Partnerships for Innovation is very much in the NSF's tradition. It is fair to say that much of the nation's future depends on the NSF, that pioneering spirit, and on the many pioneers gathered here today.