

# THE INNOVATION DRIVEN ECONOMIC DEVELOPMENT MODEL

## A PRACTICAL GUIDE FOR THE REGIONAL INNOVATION BROKER



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By  
Collaborative Economics

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**PART I:**

**THE CHANGING NATURE OF INNOVATION AND ITS  
IMPLICATIONS FOR ECONOMIC DEVELOPMENT**



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## THERE IS A NEW GLOBAL CHALLENGE FACING AMERICA'S COMMUNITIES

Many American communities are experiencing growing pressure from a new wave of globalization and technological change. Many are uncertain how to respond. Many communities have seen large employers move some or all of their operations overseas, forcing them to refocus workforce development strategies and even to reinvent their economic base. Meanwhile, other regions, from Beijing to Bangalore are rapidly increasing their capabilities to perform value-added activities and compete in the global market place.

“The United States now has to compete for every job going forward. That has not been on the table before. It has been assumed we had a lock on white-collar jobs and high-tech jobs. This is no longer the case.”

*Craig Barrett, CEO Intel (2003)*

What is emerging is a *global innovation economy* that both opens up new opportunities for prosperity and raises the stakes for participation. As some regions of China and India will attest, this kind of globalization is bringing a burst of prosperity to regions that can add value to the innovation process. It is also creating both growth and disruption in regions in advanced economies like the United States—rewarding those that are strong innovators and causing hardship in regions that are, for a variety of reasons, more bystanders than contributors to global innovation.

The global innovation economy is primarily driven by ideas, and is different than the industrial economy of the past. As Seth Goldin has written in the magazine *Fast Company*: “The first 100 years of our country’s history were about who could build the biggest, most efficient farm. The second 100 years were about the race to build efficient factories. The third 100 years are about ideas.” This means the stakes are higher in the sense that, to compete, regions must be wellsprings of ideas that drive innovation in the global marketplace (see chart below).



	<b>INDUSTRIAL ECONOMY</b>	<b>IDEA ECONOMY</b>
<b>RAW MATERIALS</b>	Natural Resources, Labor: Capital	Ideas
<b>CUSTOMER FOCUS</b>	Mass Production	Mass customization based on information technology and product design
<b>ORGANIZATION</b>	Large Corporations, Economies of Scale	Entrepreneurs, Small Scale, Free Agents, Networks
<b>SUCCESS FACTOR</b>	Labor; Quality; Low Cost Stability; Control	Talent Speed, Innovation Flexibility; Customization

Source: Collaborative Economics, Joint Venture: Silicon Valley's 2006 Index of Silicon Valley.

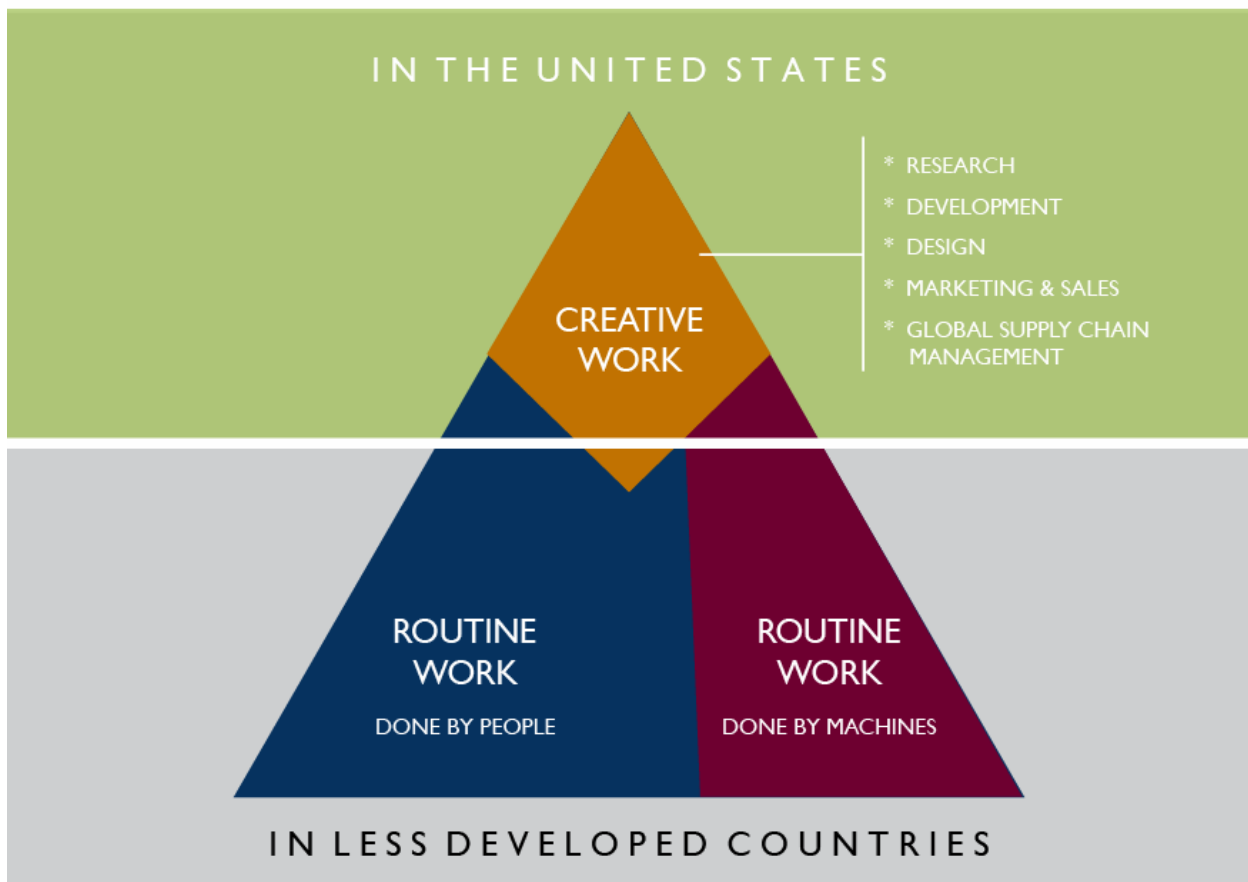
What does this mean for American communities and people? The National Center on Education and the Economy in its report "Tough Choices or Tough Times" has observed that:

Those countries that produce the most important new products and services can capture a premium in world markets that will enable them to pay high wages to their citizens. In many industries, producing the most important new products and services depend on maintaining the worldwide technological lead, year in and year out, in that industry and in the new industries that new technologies generate. But that kind of leadership does not depend on technology alone. It depends on a deep vein of creativity that is constantly renewing itself, and on a myriad of people who can imagine how people can use things that have never been available before, create ingenious marketing and sales campaigns, write books, build furniture, make movies, and imagine new kinds of software that will capture people's imagination and become indispensable to millions. (This) is a world in which comfort with ideas and abstractions is the passport to a good job, in which creativity and innovation are the key to the good life, in which high levels of education . . . are going to be the only security there is.

In this emerging global innovation economy, there will be a sorting out of creative work and routine work. With an advanced economy and a high standard of living to maintain, America must be a world leader in creative work. The chart below shows how the prototypical U.S. industry would look like in the next decade if America makes the investments and other changes necessary to prepare people for creative work. One could imagine a similar breakdown for communities.

# PROTOTYPICAL U.S. INDUSTRY

*in 10 years if all goes well*



Source: National Center on Education and the Economy, *Tough Choices or Tough Times*, 2007.

Dr. William F. Miller of Stanford University has outlined a new world business paradigm that began to emerge in the 1980s and 1990s. This new paradigm is characterized by global sourcing and distributing, extensive direct foreign investment, and the development of technology and industry clusters. Dr. Miller contrasts:

- **OLD GLOBALISM** based on the search for low factor costs where international businesses invested in regions with low-cost land and labor to serve as export platforms to produce high-volume commodity products
- **NEW GLOBALISM** based on the search for the best locations to host high-value, specialized, and innovation-related activities where businesses invest in regions to gain access to specialized workforces, research and development and commercialization capacity, innovation networks, and unique business infrastructure.

Regions participate in the New Globalism by creating specialized habitats that can grow high-value businesses and investing in people. It is possible to envision a worldwide network of regions, each playing a different role in the value chain and creating a “win/win” outcome for



regions. As local regions of a country become more the locus of economic development, economic authority is decentralized to the regions. These region-to-region relationships foster regional networks as part of a new globalism/new regionalism.

While globalization has impacted America's communities differently, all are grappling with how best to respond to the rapid and profound change of today's increasingly innovation-driven, interconnected and flat world. Communities, to maintain their quality of life and standard of living, now more than ever, have to become players in the global economy and to do so, must join in the race for talent, capital, and technology.

## WHY REGIONS ARE KEY TO MEETING THIS CHALLENGE

The world's top competitors and collaborators are not cities, states, or countries per se, but regions. Economic regions are defined not by political boundaries, but economic resources such as industry concentrations, labor markets, and common infrastructure. For example, the key competitor in India is not the country per se, but rather a growing high-tech region within the state of Bangalore. It is metropolitan areas including Shanghai and Guangzhou that are the key competitors, rather than the country of China or its provinces.

As columnist Tom Friedman has observed, the world is "flattening," with more countries able to participate in the global economy thanks to improvements in communications, advances in education, and other factors. While the metaphor is generally sound, it needs to be qualified. While the world is flattening, it is also becoming spiky:

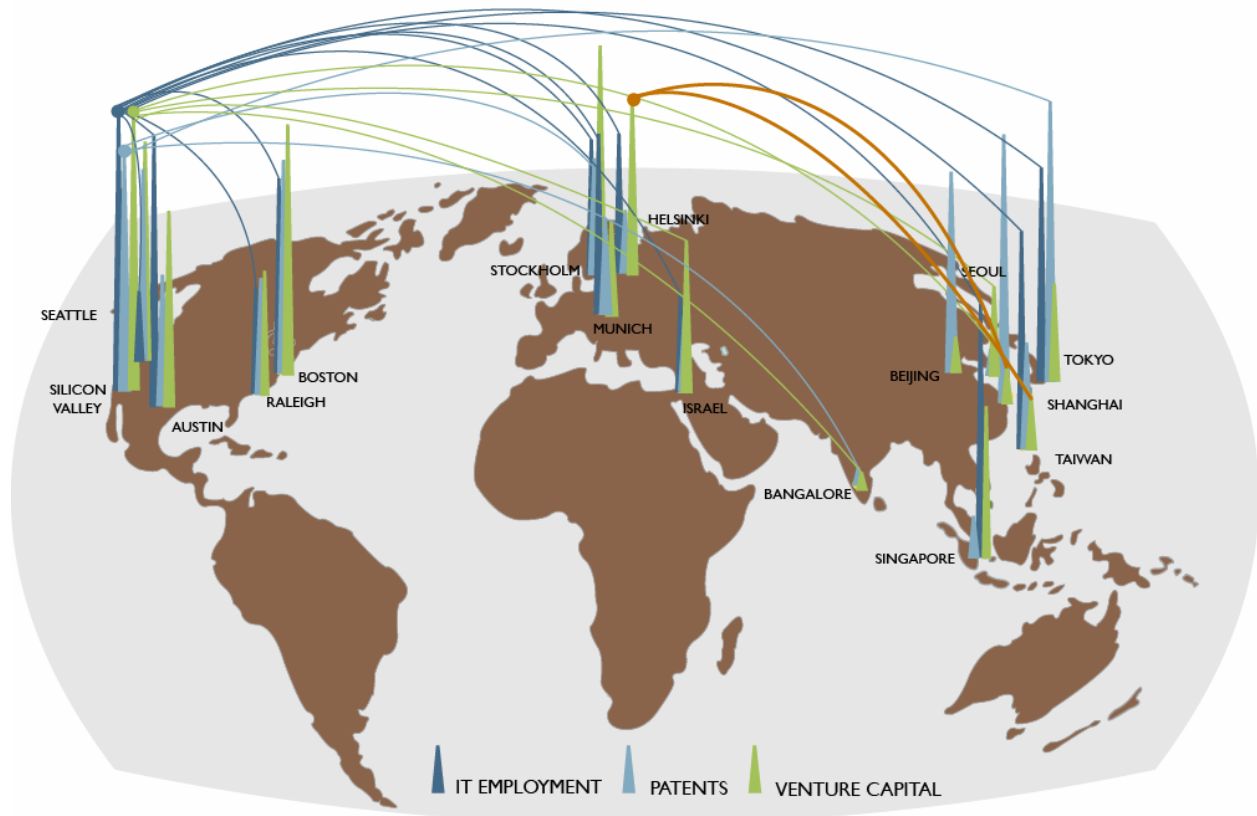
Regions still vary by their relative strengths and weaknesses from which regional specializations and comparative advantages emerge—creating spikes in a flat world. (A region's) challenge is to recognize its own strengths, identify other regional "spikes" based on their strengths, and then connect to those "spikes" for mutual benefit.

The perceived zero-sum game between regions vying to out-compete each other can be transformed into the pursuit of integration for the purpose of mutual gain. While competing for talent, technology, and capital, regions can also benefit from sharing these assets across national boundaries in order to grow the economy in each region. (2007 *Index of Silicon Valley*, pp. 5-6).

The new wave of globalization is really the emergence of many new innovation regions, which are increasingly inter-connected and driving one another's prosperity. As the chart below from the 2007 Index of Silicon Valley illustrates, these and other "spikes" comprise a global network of innovation regions.



## SILICON VALLEY'S PLACE IN THE GLOBAL NETWORK OF REGIONS



Source: Collaborative Economics, Joint Venture: Silicon Valley's 2007 Index of Silicon Valley.

Most American communities by themselves stand little chance of competing with the leading economic regions in the global economy. However, clusters of communities acting as regions are large enough to achieve a critical mass of companies, institutions, infrastructure, and talent—yet small enough to allow for the close interactions among people, firms, and organizations required to innovate and ultimately compete in the global economy. While important partners, federal and state governments are no substitute for regional economic resources, knowledge and networks. Regional innovation is the means, then, for American communities to meet the new global challenge.

Globalization has fundamentally transformed the American economy. Regions—defined by economic rather than political boundaries—are the new building blocks of prosperity.

In the 21<sup>st</sup> Century, America's communities will derive economic strength by acting regionally to compete globally. Innovation and entrepreneurship are the new engines of job creation, productivity, growth, economic prosperity and healthy communities.

*Report of the Strengthening America's Communities Advisory Committee, July 2005*



## WITHOUT AN INNOVATIVE ECONOMY, OTHER COMMUNITY OUTCOMES ARE DIFFICULT TO ACHIEVE

An innovative economy is at the core of regional vitality and quality of life. Without an innovative economy, any gains in social inclusion, livable community, and collaborative governance are short-lived. An innovative economy is the engine that produces economic opportunity and community revenues that make possible career mobility, investment in educational systems, development of community infrastructure and amenities, investments in environmental preservation, and other critical assets for regional vitality and quality of life.

An innovative economy alone cannot produce regional vitality and quality of life if other factors are not in place (e.g., if residents do not have the skills to participate in the growth of higher-level job opportunities, if the natural environment is seriously degraded). However, it is not possible to sustain regional vitality and quality of life over the long term without an innovative economy (i.e., if residents lack economic opportunity, if communities lack revenues, if the natural environment is not viewed as an indispensable economic asset).

An innovative economy helps create the conditions for a healthy community. As Benjamin M. Friedamin observes in his book *The Moral Consequences of Economic Growth*, “Economic growth—meaning a rising standard of living for the majority of citizens—more often than not fosters greater opportunity, tolerance of diversity, social mobility, commitment to fairness, and dedication to democracy.” In contrast, when an economy stagnates, “the resulting frustration generates intolerance, ungenerosity, and resistance to greater openness of individual opportunity.”

## WHY IS INNOVATION CENTRAL TO RISING LIVING STANDARDS?

The key to prosperity is increasing productivity. Productivity growth is the basis for rising real wages for workers, increasing returns to shareholders, and increasing per capita income for a region and the nation. The basis for increasing productivity is innovation. In the long term, an advanced economy like that of the United States cannot compete by just lowering costs or increasing inputs. The only way to compete and raise our standard of living is to find new and better ways to use natural, human, and capital resources to increase productivity.

Innovation is, literally, the act of making changes. It involves introducing new ideas and new ways of doing things. Peter Drucker defined innovation as follows:

Innovation consists of the purposeful search for changes and the opportunities that such changes might offer.

Innovation can lead to a series of incremental improvements, and it can also lead to breakthrough change. Drucker maintained that innovation and entrepreneurship go together. Entrepreneurs innovate, and innovation is the specific instrument of entrepreneurship. “The entrepreneur always searches for change, responds to it and exploits it as an opportunity.” Economist Joseph Schumpeter, like Drucker, saw innovation and entrepreneurship as the engines of change in the economy. Moreover, he spoke of the process of “creative

destruction” as entrepreneurship and innovation gradually (or quickly) replace less competitive economic activity.

The McKinsey Global Institute has confirmed the importance of innovation in a series of industry reports over the past decade, summarized in the book *the Power of Productivity* (University of Chicago, 2004) by former Global Institute Director, William M. Lewis. Based on studies of nine major industries, this research found that:

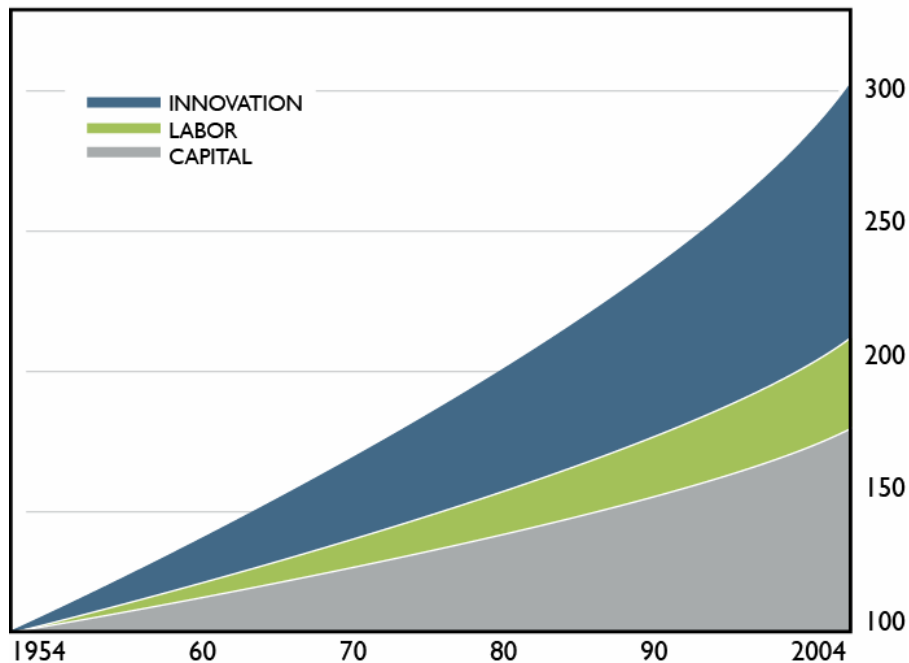
- Productivity growth measured by GDP per capita is key to prosperity
- Economic growth was essential to regional success and at the core of productivity
- Economic growth was the product of continuous innovation in the face of competition by organizing work in more effective ways.

In fact, their studies found that how work is organized was even more important than technology in explaining productivity gains as seen by the success of lean production methods of Toyota in auto manufacturing.

Research by the Boston Consulting Group also supports the view that innovation has become an increasingly important factor in productivity growth (see chart below). According to their analysis, innovation has been growing in relative importance to other inputs, such as capital and labor, over time—and at a much faster rate beginning in the 1990s.

### PRODUCTIVE INNOVATION

U.S. productivity growth  
Output per hour, 1954=100



Source: Boston Consulting Group

Harvard economist, Elhanan Helpman notes in his book, *The Mystery of Economic Growth*, recent “new growth” economics research has shown that capital accumulation (including more capital equipment and higher levels of education) is not the principal factor driving growth. Helpman cites compelling evidence that innovation (organizing equipment and workers in new ways and using new technologies) is a major driver of productivity, which in turn explains significant cross-country variations in per capita income. He cites that differences in productivity accounts for 90% of the variation in cross-country differences in the growth rate of income per worker.

## HOW INNOVATION WORKS IN TODAY’S ECONOMY AND COMMUNITIES

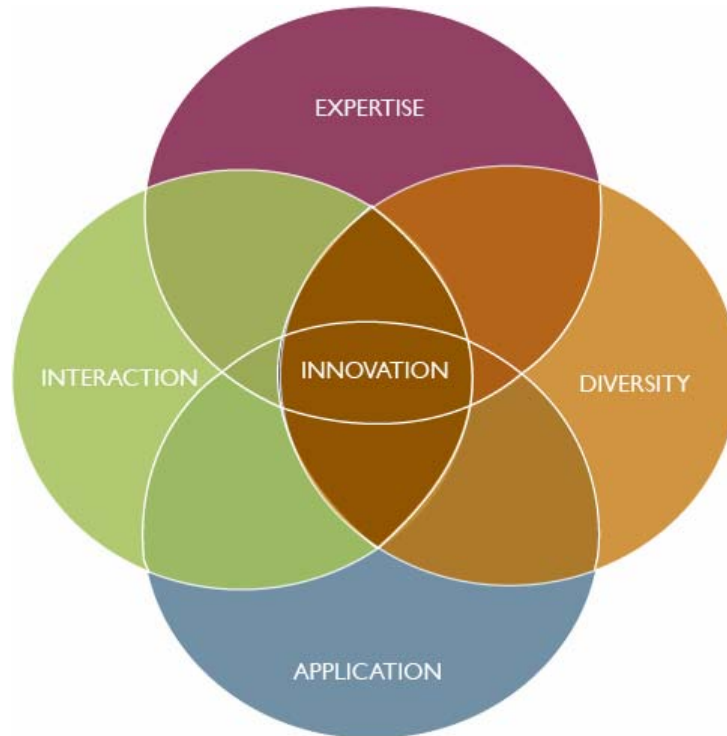
Innovation has become the key to economic and community success: regions must now compete on the basis of increasing productivity, not simply costs. While each region has a different set of industries and must compete globally in its own way, every region and industry needs to become more innovative based on increasing productivity. This is true for agriculture and manufacturing as well as professional services, tourism and entertainment and health care as well as so called “high tech” industries such as information and biotechnology. In fact, there is no such thing as a “high tech or low tech” industry anymore, only innovative and non-innovative. To achieve economic and community success, regions must understand the evolving nature of innovation.

## INNOVATION IS ABOUT IDEAS AND RECIPES

Stanford economist Paul Romer has proposed a “new growth theory” that provides a way to understand the central role of innovation in advanced economies. In new growth theory, ideas are the primary catalyst for economic growth. New ideas generate growth by reorganizing physical goods in more efficient and productive ways. For Romer, the ingredients (natural, human, capital resources) are not as important as the recipes (the ideas about how to put the ingredients together). The recipes are the product of the innovation process.

After assessing the field of research and experience with innovation, the Pew Center on the States and the National Governors’ Association identified a framework including both the recipe and the ingredients. Innovation is the recipe that is composed of four major ingredients (*Investing in Innovation*, p. 16):

- **Expertise**—New discoveries, new knowledge, and new insights come from all people who are given the resources necessary for success.
- **Interaction**—Face-to-Face is still very important for the exchange of ideas and synergy that creates new business models, marketing plans, or products.
- **Diversity**—Ideas will only get better when they are openly discussed and considered by a mix of people with a variety of research fields, backgrounds, approaches, and mind-sets.
- **Application**—Ideas are useless unless used. The true proof of their value is in commercialization.



## INNOVATION IS UNPREDICTABLE AND DISRUPTIVE

Innovation does not occur in a straight line, chain link fashion from research lab to development to commercialization. As British historian James Burke points out:

Innovation is often surprising and unexpected because the process by which new ideas emerge is serendipitous and interactive.... Interlocking threads of ideas, people and events are woven into a web of knowledge and – bingo – we get today’s world of science and technology.

Economist Joseph Schumpeter famously coined the term “creative destruction” to describe the inherently disorderly process of change, where ideas, products, firms, and whole industries are displaced by new innovations driven by entrepreneurship.

New technologies set off a burst of innovation. Innovation, however, is not evenly distributed through time; it appears in groups or bunches. Entrepreneurs financed by credit make investments in the new technologies. If these innovation investments are successful, imitators follow and the economy embarks on an upward surge: prosperity. Then, an avalanche of goods falls on the market and dampens prices, rising costs squeeze profit margins, and the economy contracts: recession. Recessions are the normal process of adapting to the bunching of innovations during the preceding prosperity. (Schumpeter, 1934)

In his new book entitled *The Black Swan: The Impact of the Highly Improbable*, Nassim Taleb describes the inherent limitations of predictions about the future. He has called the unexpected event or innovation a “black swan” based on the story of experts in the Old World who firmly believed, based on scientific observation and common sense, that all swans were white and would remain so indefinitely. The discovery of Australia revealed the existence of black swans, an unpredictable but later completely understandable development. Taleb recounts examples of how experts repeatedly fail to predict the future course of events and innovations:

When I ask people to name three recently implemented technologies that most impact our world today, they usually propose the computer, the Internet, and the laser. All three were unplanned, unpredicted, and unappreciated upon their discovery, and remained unappreciated well after their initial use . . . Look at your own existence. Count the significant events, the technological changes, and the inventions that have taken place since you were born and compare them to what was expected before their advent. How many of them came on a schedule? Look into your own personal life, to your choice of profession, say, or meeting your mate, your exile from your country of origin, the betrayals you faced, your sudden enrichment or impoverishment. How often did these things occur according to plan? (The Black Swan, pp. 135, xix)

Innovation seldom appears according to script and is often disruptive—creating an unpredictable impact. This reality makes nurturing the “habitat” for innovation that much more important than somehow trying to predict and pick “winners and losers” in the innovation race.

## INNOVATION IS OPEN AND GLOBAL

Innovation can originate from anywhere. In the old economy, hierarchy ruled and R&D departments were responsible for generating a predictable flow of new improvements. In today’s innovation economy, anyone with a good idea can potentially become innovation leaders. This new reality creates a positive sum opportunity, where everyone can benefit from participating in innovation networks.

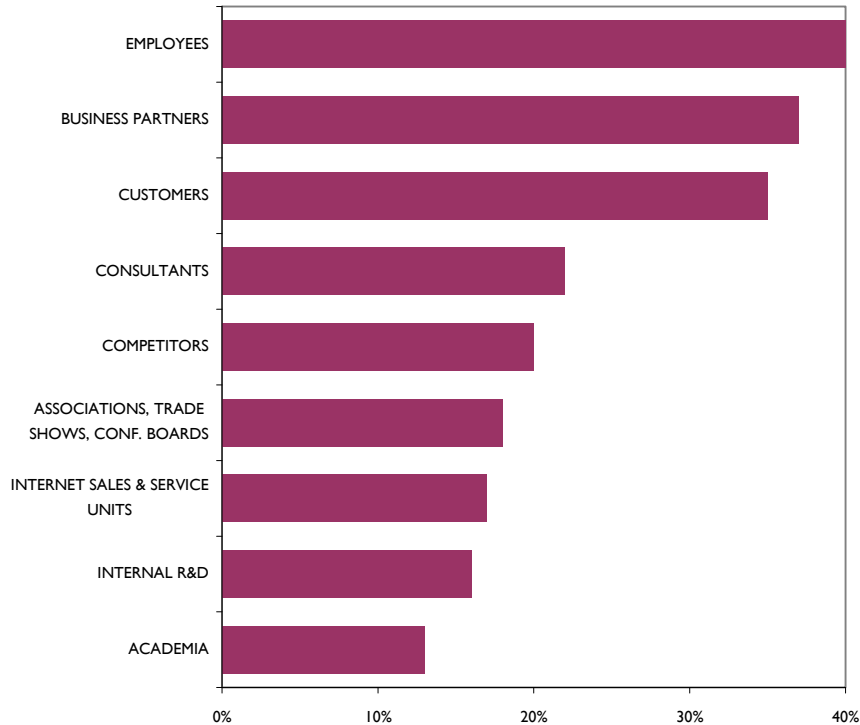
Not only can anyone become an innovator, but the commercialization process has also become more universal. Anyone can access global markets and supply chains thanks to technological advances in telecommunications and transportation. A 2006 IBM survey of global CEOs illustrates this phenomenon. Asked to identify the most significant sources of innovative ideas, many business leaders said employees, business partners, and customers—and far fewer identified internal R&D, sales, or service units (see chart below)



## PEOPLE POWER

Most significant sources of innovative ideas

% of respondents selecting up to three choices



Source: IBM "The Global CEO Study 2006: base on interviews with 765 CEOs and business leaders

The type of knowledge useful in the innovative economy is no longer solely based on formal training and knowledge. Tacit knowledge based on personal experience is as valuable for innovation as theoretical or “explicit” knowledge. Theoretical or explicit knowledge establishes a base of information for innovators. It is, however, the know-how gained through personal experience and learning by doing that leads to innovation. This also makes innovation more universal because innovation does not solely rest in the hands of the educated or formally trained.

All this means that we have entered the open innovation era. The logic of open innovation is very different than that of the closed innovation traditions of the past (see chart below).



FROM: CLOSED INNOVATION LOGIC	TO: OPEN INNOVATION LOGIC
<ul style="list-style-type: none"> <li>&gt;&gt; The smart people in the world work for us.</li> </ul>	<ul style="list-style-type: none"> <li>&gt;&gt; Not all the smart people in the world work for us, and our customers have ideas, too.</li> </ul>
<ul style="list-style-type: none"> <li>&gt;&gt; In order to bring new products and services to the market, we must discover and develop them ourselves.</li> </ul>	<ul style="list-style-type: none"> <li>&gt;&gt; External ideas, when integrated into your architecture, can be as valuable as internal ideas.</li> </ul>
<ul style="list-style-type: none"> <li>&gt;&gt; If we discover it ourselves, we will get it to market first.</li> </ul>	<ul style="list-style-type: none"> <li>&gt;&gt; We don't have to originate (and own) the research in order to profit from it.</li> </ul>
<ul style="list-style-type: none"> <li>&gt;&gt; If you create the most, best ideas in the industry, you will win.</li> </ul>	<ul style="list-style-type: none"> <li>&gt;&gt; If you make the best use of internal and external ideas, you will win.</li> </ul>
<ul style="list-style-type: none"> <li>&gt;&gt; We should control our intellectual property (IP), so that our competitors don't profit from our ideas.</li> </ul>	<ul style="list-style-type: none"> <li>&gt;&gt; We should sell our IP to those who can make good use of it, and we should buy IP whenever it fits our own business model.</li> </ul>

Source: Henry W. Chesbrough, *Open Innovation: The New Imperative for Creating and Profiting from Technology* (Cambridge: Harvard Business School Press, 2003).

Wayne Johnson of Hewlett Packard has observed that globalization is ushering in a new wave of innovation. In the past, the focus of innovation was university laboratories and corporate R&D departments. This model evolved into universities, companies, and governments beginning to work together, making investments, building infrastructure, and creating partnerships—but in a fragmented fashion. The result was too often narrowly focused efforts to serve local interests, with collaboration getting mired in complexities such as intellectual property issues, institutional silos, and the like. Instead, in the new wave he has dubbed “Innovation 3.0,” Johnson describes how a region like the Bay Area needs to change:

In the past, innovation in the Bay Area has happened in a bottom-up, relatively unorchestrated manner, building on the results of the social fabric and the intense creativity and entrepreneurial spirit of the region, and taking advantage of an infrastructure which has taken decades to build up. Innovators thought globally and acted locally. However, to be assured of future innovation leadership, Bay Area



innovators (as well as regional innovators elsewhere) must start thinking locally and acting in the global landscape (Bay Area Innovation Network Roundtable, pp. 4-5).

Just as in the economic sphere, social and environmental innovation can originate from anywhere—not simply large national organizations or traditional policymaking bodies. Grassroots innovations are emerging all across the country to preserve the natural environment, address global warming, educate the workforce, and address a variety of community challenges.

## INNOVATION IS COLLABORATIVE AND NETWORKED

In the traditional economy, ideas were held tightly within institutions; in the innovation economy, ideas flow more freely within networks. The unit of innovation has become the network, not simply the firm. To stay abreast of change and speed up the commercialization process, the walls that once separated public and private institutions, education and business, large and small firms, are coming down.

The new hybrid model, sometimes called “co-opetition,” means that individuals and companies can compete ferociously, but collaborate at the same time to create knowledge. Through a wide variety of formal and informal relationships, networks organize the sharing and distribution of knowledge.

Navi Radjou of Forrester Research has also described the emergence of the “global innovation networks model.” Driving this model are four kinds of collaborators:

Under the global innovation networks model, inventors serve as the intellectual powerhouses that conduct basic science research and/or design products and services that results in patentable inventions. Transformers provide multifunctional production and marketing services that convert inputs from inventors or other transformers into valuable business innovations for either internal or external customers. Financiers provide funding for both inventors and transformers, usually in return for intellectual property rights. Brokers serves as the matchmakers or facilitators in this system who find and connect the other three network entities . . . The global innovation networks model is a collaborative ecosystem that allows businesses to innovate faster and grow more quickly (Bay Area Innovation Network Roundtable, pp. 6-7).

Global value chains have evolved from top-down supplier networks to innovation networks in which suppliers and buyers become integral partners in the innovation process. Differentiating between value chains and production networks, Timothy Sturgeon (2000) describes a value chain as a specific, product-based thread of activity that runs through a larger constellation of activities and linkages in a production network. Meanwhile, a production network consists of two or more value chains that share at least one actor. Further, the author puts forward that some global-scale value-chains and production networks act as mechanisms to weave together various specialized industrial clusters, which then give rise to a network of clusters.<sup>1</sup>

The nature of the connection matters and is in flux. Gereffi, Humphrey and Sturgeon (2005) outline five types of global value chain governance: hierarchy, captive, relational, modular, and market. The authors explain too the dynamics of these value chains that can lead to changes in relationships: suppliers can increase their competencies or technological advances can exceed capabilities of current suppliers, new suppliers emerge, and concerns over protecting intellectual property create a constant tension.<sup>ii</sup> Over a wide range of industries, “increasing capabilities in the supply-base have helped to push the architecture of global value chains away from hierarchy and captive networks and toward the relational, modular, and market types” (96).

The emergence of such innovation networks is accelerating worldwide as a result of the demand for innovation and a limited supply of talent. A recent Forrester report suggests that more than processes and tools, talent will determine the winners.<sup>iii</sup> In other research, Lee and Yang (2000) describe the knowledge value chain and propose that competitive advantage will grow according to how well a firm performs individual knowledge activities and organizes its entire knowledge value chain. This model consists of three parts, knowledge infrastructure (recruitment, storage, customer/supplier relationship management), knowledge management process (acquisition, innovation, protection, integration, dissemination), and knowledge performance which is the quality of interaction among all components.<sup>iv</sup>

The increased complexity and global distribution of the innovative process across a network presents the need for brokers or orchestrators who can enable these vital connections across sectors and continents. Such network brokers can take various forms: an industry association, university extension program, or professional services. In innovative regions, professional services have developed specialized services tailored to the unique needs of start-ups and the region’s unique industry mix. These services include legal, design, advertising, consulting, accounting, engineering, and testing services as well as venture capital. Increasingly new firms are launched on a global platform and professional services are expanding their worldwide presence to meet the demands of new and established firms for global networks.

In sum, research and experience shows that large-scale and sustainable economic, social, and environmental innovation is the product of collaboration and networks rather than the lone inventor, the inspirational community leader, or the single policy initiative.

## INNOVATION IS PLACE BASED AND REGIONAL

The networks at the heart of the new innovation model function most effectively when their components are clustered geographically in a region. Geographic clustering of people, companies, and institutions is a powerful mechanism for transferring and augmenting personal knowledge quickly. Sharing knowledge, skills, and experience is simply easier when the components of the learning network are in the same place.

The most innovative work occurs primarily in face-to-face exchange within teams where people work in close proximity to each other. The most rapid advances in a trial-and-error, iterative learning process take place through in-person information exchange. Face-to-face interaction remains important in the Internet age. As a recent report by the National Bureau of Economic



Research found: “increasingly the economy is dependent on the transmission of complex uncodifiable messages, which required understanding and trust that historically have come from face-to-face contact. This is not likely to be affected by the Internet, which allows long distance ‘conversations’ but not ‘handshakes.’ ”

Although electronic communication is important, it is not a substitute for the trust, sharing, and intense interpersonal interaction essential for the innovation process. For this reason, the creative heart and soul of the economy (where the action is) will continue to be tied to place. Ultimately, place matters because people matter. Talented and creative people want to be where the action is, where their ideas stand the best chance of coming to fruition.

Innovation is both place-based and globally-connected at the same time. John Kao has suggested that:

We are in urgent need of new concepts to explore how innovation works as an emergent, global, networked social phenomenon . . . an expanded palette of social and community networks, connecting players regionally and globally to find needed resources on a worldwide basis. Entrepreneurs can now go global through such mechanisms, which connect them to potential partners, markets, or manufacturing in any other part of the world. Such brokering and facilitation mechanisms also link clumps of small and high-growth, science-based companies to their counterparts around the world (*Innovation Nation*, p. 190, 195).

Regional capabilities matter—especially to companies that are innovation-based. As a recent report called *Investing in Innovation* published by the National Governors’ Association and the Pew Center on the States observes: “Companies jockeying for advantage are likely to be attracted to places that offer critical ingredients for innovation—smart people, research institutions, professional networks, favorable intellectual property agreements and so on. This stands in stark contrast to companies that compete on price, which are known to move great distances in search of lower costs, leading them to China and other developing countries.” (p.32)

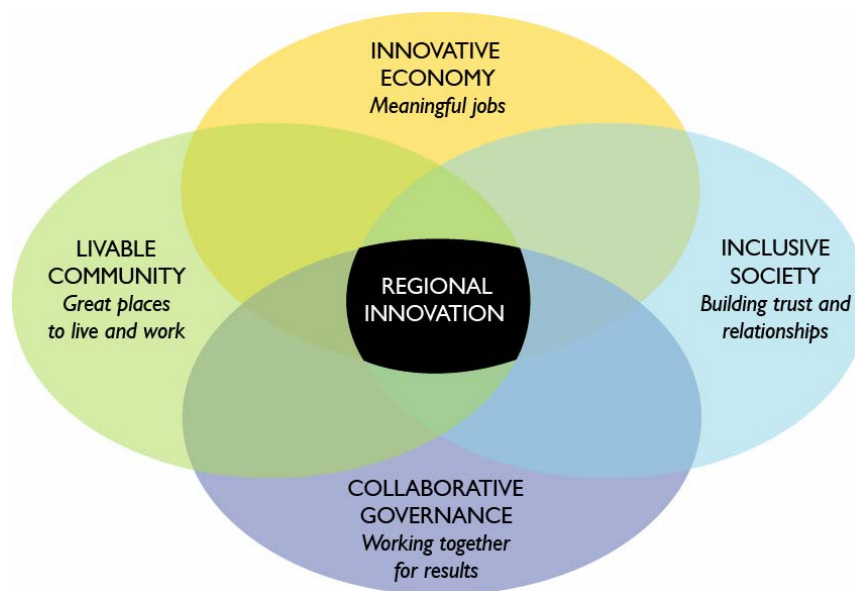
William F. Miller of Stanford University has explained the imperative of “regional habitats” in innovation-driven economic development:

What works? What is effective are “people and place” policies. What does not diffuse away quickly are infrastructure and workforce. Although a few key people may be mobile, large numbers of the workforce are not mobile. Policies that support the education and training of the workforce, that support research combined with education, that support a modern infrastructure, and support the development of institutions that facilitate collaboration between business, government, and the independent sector will have lasting effects of building capacity that does not diffuse away. Develop the people and places—the habitat for living and working (*Regionalism, Globalism, and the New Economic Geography*, p. 15).

## INNOVATION IS ACCELERATING AND EXPANDING IN SCOPE

Technology advances are diffusing at ever-increasing rates. It took 55 years for the automobile to spread to a quarter of the country, 35 years for the telephone, 22 years for the radio, 16 years for the personal computer, 13 years for the cell phone, and only seven years for the internet (*Measuring Regional Innovation*, Council on Competitiveness). Because of advances in communications and access to information, economic, social, and environment innovators can find one another, develop collaborations, and begin implementation much faster than in the past.

At the same time, the scope of innovation is expanding. Regional innovation is the product of economic, social, environmental, and other place-based factors. It requires innovative companies, but also talent with education, skills, and creativity, and livable communities that provide a quality environment, one that is attractive and supportive for people and commerce. It also requires effective regional governance—the ability of public and private entities to work together across boundaries to strengthen economic, social, and environmental assets that are the key to regional vitality and quality of life.



Today, many regions face the threat or reality of lagging innovation because one or more of these ingredients has been underdeveloped or overlooked.

- Some regions lag in innovation and entrepreneurship because they have underdeveloped their talent base and economic infrastructure.
- Some struggle to recruit and retain increasingly mobile talent because they lack livable communities with an attractive mix of creative districts, amenities, and the natural environment.
- Some have focused primarily on smart growth challenges, but now find that the economy is lagging and that many residents are not prepared to compete.



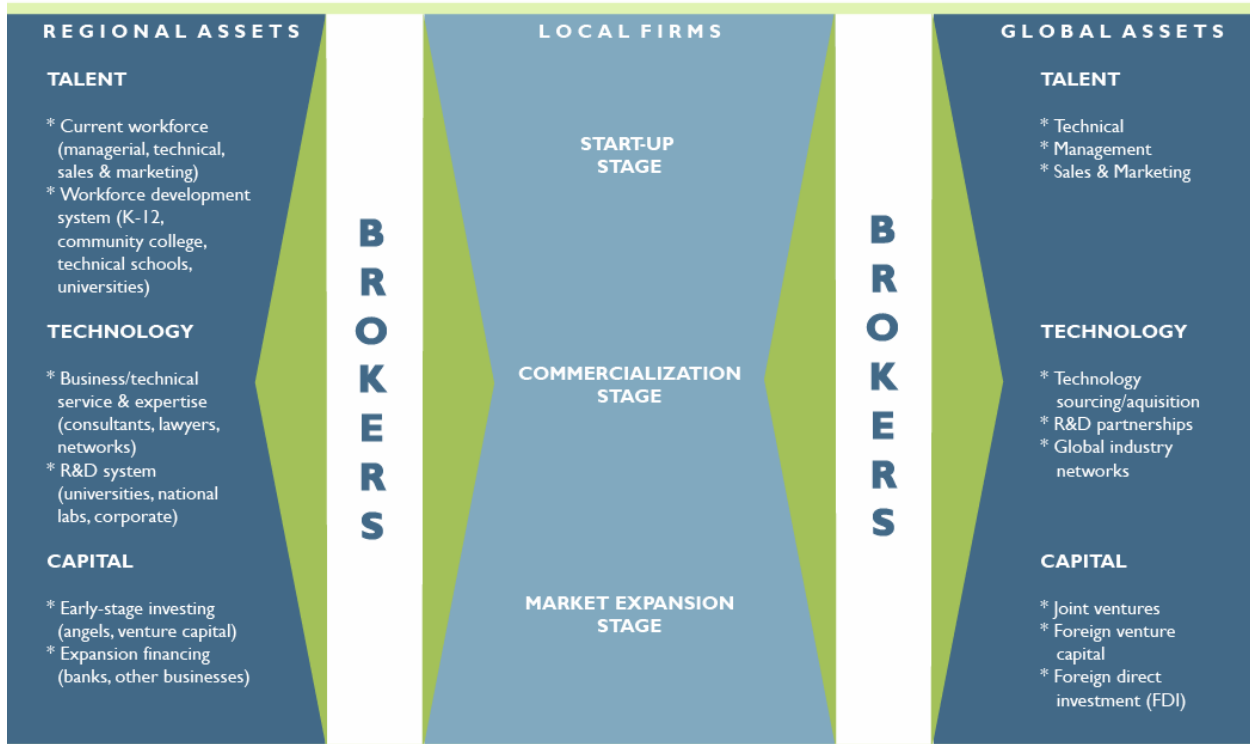
- Some have made social equity a priority, but now find that not enough attention has been paid to expanding economic opportunity and a healthy environment.
- Some have undertaken visioning processes to identify and connect economic, social, and environmental goals, but now find that they lack the necessary mechanisms for regional implementation.

## WHAT ARE THE IMPLICATIONS FOR ECONOMIC DEVELOPMENT?

Despite the strong and growing body of evidence about its importance, regional innovation is not at the core of many economic development strategies. Many regions are still focused on industrial recruitment or other strategies that are not strengthening their ability to innovate and compete in the global marketplace. While it is true that these strategies can produce benefits, it is also true that they can be a distraction from pursuing a more critical regional innovation agenda.

Economic development must now change because the nature of the business development in the global economy has fundamentally changed. Business development today is based on an open innovation model where firms seek innovation assets- ideas, talent, capital- from many sources, often outside the firm itself. Under this model, the role of economic development is to intervene at appropriate times to help firms achieve higher value and productivity by gaining access to appropriate innovation assets at each stage of the business development process- start up, expansion, production and marketing.

### BROKERS IN AN OPEN INNOVATION SYSTEM





**Many economic development practitioners are operating under the expectations and metrics of a cost-driven economic development model.** For example, they are expected to grow the number of jobs. Even if they succeed on this basic metric, their region could be falling behind in innovation, which in today's global economy is increasingly the factor that will determine productivity and living standards. Failing to focus on factors that produce a strong innovation habitat, regions run the risk of trying to compete for jobs and markets with other regions of the world that have much lower wages. The key differences between these models are described in the chart below:

Key Characteristics	Cost Driven Economic Development Model	Regional Innovation Driven Economic Development Model
Focus	Domestic competition Zero sum game	Global competition and collaboration Positive sum game
Logic	More inputs (land, labor, capital) create more output  The lower the costs of inputs, the higher the profitability of outputs	More efficient and innovative use of higher-value inputs (physical, human, knowledge resources) creates more profitable output
Goal	Growth of jobs	Increasing productivity and per capita income
Approach	Incentives to attract or retain cost-driven firms and industries	Investments in talent and infrastructure to support innovation-driven clusters
Role of economic development practitioners	Lead industry attraction and marketing efforts to firms and industries	Broker innovation networks, connecting inventors, financiers, and transformers, to produce results
Performance metrics	Quantity of jobs, number of firms attracted/retained	Quality jobs, wage and income growth, innovation (e.g., patents, commercialization, start-ups, etc.)

The cost-driven model creates a set of incentives that actually undermine the innovation-driven model of economic development. It defines success in ways that actually undercut a regions ability to compete longer-term. Having more of something that does not improve your competitive prospects in the global economy can provide a false sense of progress and security,

and prevent community leaders from focusing on the strategic investments and policies needed to advance regional innovation.

Part II describes the innovation-driven economic development model—a series of specific steps that economic development practitioners and others can take to become “regional innovation brokers.”



[www.InnovateCalifornia.net](http://www.InnovateCalifornia.net)



## PART II

# THE INNOVATION-DRIVEN ECONOMIC DEVELOPMENT MODEL AND THE REGIONAL INNOVATION BROKER



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Part I described an exciting and sobering new reality driven by globalization and the changing nature of innovation. Part II will describe in practical terms how to adopt an economic strategy that drives innovation and makes a region more competitive in the global economy. We have entered a new era in which innovation has become the key to both economic and community success. This change is structural, rather than cyclical—it is a fundamental shift in how regional economies compete, rather than a product of the ups and downs of the business cycle. While regions have different economies, every region and industry can become more innovative based on increasing productivity. This reality is true for large, complex metropolitan regions as well as less-developed rural regions. Innovation is everyone’s business.

If innovation is now the imperative, what does it mean for strategy? It means that the focus of public and private sector action must be on those factors that are crucial to improving a region’s ability to innovate. We need to ask how existing economic development, workforce development, and other strategies promote innovation—keeping or expanding those that are making an important contribution. We must also consider new strategies that promote the kind of innovation needed to compete in today’s fast-changing global economy, not just other U.S. communities or states.

What do these changes mean for the economic development practitioner—whether they come from an economic development corporation, a city or county agency, a college or university, a chamber or industry association, or somewhere else? Simply put: They must embrace a new role if they are to remain relevant in these challenging times. The good news is that a growing number of practitioners are doing just that—becoming “brokers” of regional innovation.

What does it mean to be a broker of regional innovation? Navi Radjou of Forrester Research has described four kinds of people key to the innovation process:

Inventors serve as the intellectual powerhouses that conduct basic science research and/or design products and services that results in patentable inventions. Transformers provide multifunctional production and marketing services that convert inputs from inventors or other transformers into valuable business innovations for either internal or external customers. Financiers provide funding for both inventors and transformers, usually in return for intellectual property rights. Brokers serve as the matchmakers or facilitators in this system that find and connect the other three network entities. (Bay Area Innovation Network Roundtable, pp. 6-7).

All parties are important to fully leverage innovation in a region. Brokers play a special role in that they have the ability to find the inventors, transformers, and financiers—but also connect them in partnerships that can produce economic and community benefits. Moreover, inventors, transformers, and financiers are typically very focused on individual innovations, while brokers are more likely to be able to focus on the broader climate for innovation. Without a strong broker function, innovation can still happen, but likely in more isolated, fragmented, and fleeting ways.



## WHO ARE THE INNOVATION BROKERS?

*The most effective brokers often come from the ranks of business service professionals—individuals who have strong networks and relationships among inventors, transformers, and financiers. Economic development practitioners are less likely to play the broker role because they are expected to provide marketing, recruitment, information collection, technical assistance, or other services. Those practitioners who do play the broker role have often delegated, curtailed, or dropped these other activities.*

*For practitioners choosing to make the transition to regional innovation brokers, this model identifies a series of steps based on extensive experience in regions across the country. These steps can be completed within months, and should become part of an ongoing cycle of innovation over time.*

1. Raise the Stakes: Introduce Innovation as the Imperative
2. Reassess the Region: Identify Current and Potential Sources of Innovation
3. Connect the Innovators: Conduct a Disciplined, Collaborative Process
4. Broker Breakthroughs: Help Innovators Take Collaborative Action
5. Network the Brokers: Accelerate and Expand Innovative Collaborations
6. Redefine Success: Change the Metrics in Economic Development

### I. RAISE THE STAKES: Introduce Innovation as the Imperative

The regional innovation broker must often begin by changing the subject. They need to refocus their region on innovation as the imperative in economic development. Too often the discourse among local leaders focuses on specific deals, disputes, or tactics in economic development, often at the expense of focusing on the bigger picture. The media is drawn to conflicts, and battling jurisdictions in many regions provide a steady stream of stories—creating a destructive diversion from the more important conversation about how best to innovate to compete globally. To lift a region out of a pattern of political and tactical debates, the first task of an innovation broker is to raise the stakes. Success in economic development today is about increasing innovation to produce higher living standards for people and growing prosperity for communities.

#### Personally Share the Latest Thinking and Experience

Brokers should share the latest thinking and experience about innovation-driven economic development with other leaders in their region. Part I of this document provides a starting point—a vocabulary and hard numbers that illustrate the new economic situation facing

communities across the nation. It offers a new narrative about changing nature of global competition and innovation—and provides a wake-up call to business, government, and community leaders about what is at stake. Practically speaking, sharing the latest thinking and experience means meeting with lots of people, and leaving them with key introductory information on innovation. Brokers can get help in this process by enlisting surrogates. However, it is important that brokers themselves do the bulk of this outreach, as that helps them simultaneously establish themselves as a source or “broker” of key information critical to the future of their region.

### **Give Innovation a Human Face**

For many people, putting a “human face” to complex concepts like innovation is the key to understanding. As brokers do their personal outreach, they should also ask about local innovators—people who have launched companies or introduced innovative products or practices in existing firms. Create a database, collecting names and stories along the way. Researching the local and national media for past stories on local innovators and entrepreneurs is also critical to add to the database. Go talk to these individuals, building your network and documenting compelling local stories.

### **Be the Johnny Appleseed of Innovation**

With a package of key concepts, data, and testimonials about innovation, it is time for the broker to pursue a broader dissemination strategy. Like a modern-day Johnny Appleseed, the broker plants the seeds of innovation in many organizations across the region. The broker should systematically get innovation (and innovators) on the agenda of upcoming meetings of business, government, and community organizations and forums. Both the broker and local innovators can make their case and tell their stories through speeches, panel discussions, op-ed pieces in the local newspapers—or as features in organizational board meetings, strategic planning exercises, and the like. Remember: while the media is drawn to conflicts, they are also drawn to compelling stories of innovators and entrepreneurs.

All along the way, brokers should be taking names and building their network of innovators and individuals who are interested in how to help the region innovate to compete globally. This step should get leaders to think differently about innovation and economic development. It should produce a growing database of innovators and those interested in helping promote innovation. It is now time to complete a more systematic assessment of innovation in your region, as described in Step 2.





## 2. REASSESS THE REGION: Identify Current and Potential Sources of Innovation

After raising the stakes, the innovation broker will likely face a growing chorus of questions, most of them a variation on: “what should we do?” The answer is that before lunging ahead, the region needs to reassess its strengths and opportunities—it’s current and potential sources of innovation. Once this reassessment is complete—and it can typically be done in a few months—the region can move to action.

### Make the Case for Reassessment

Potential funders and participants may say: “why is a reassessment so critical?” It is true that most regions have mountains of reports and data on current conditions. Most regions have already collected information about business climate costs, demographics, educational attainment, jobs, and a host of other data. Some have completed regional indexes, which measure indicators of economic, social, and environmental progress. The broker will need to make the case that, while the region has all this information, it may not be connected very well—and key pieces of information may be missing to move forward on an innovation agenda. Past reports may have been sufficient for a different model of economic development, but inadequate for one based on innovation.

## Massachusetts Shifts Their Focus to Innovation-Based Economic Development

Brokers might find the Massachusetts example helpful in making the case for reassessment. Over the past decade, the state has pioneered a new way of defining, understanding, and promoting its innovation economy. In 1996, the Massachusetts Technology Collaborative (MTC) set out to develop a new way to understand the state's changing economy and create a framework that could help Massachusetts align its investment priorities with the needs of its changing economy. The result was the Massachusetts Innovation Index, a document that measures the strength of the region's innovation resources and how well they are being turned into results (see examples of metrics below).

MASSACHUSETTS INNOVATION INDEX		
	Framework element	Indicator (samples)
RESOURCES	<b>Human Resources</b>	<b>Engineering &amp; Computer Science Degrees</b>
	Technology R&D Resources	R&D Expenditures
	<b>Investment Capital Resources</b>	<b>Venture Capital Investment</b>
	Infrastructure Resources	Information Infrastructure Use
PROCESS	<b>Idea Generation</b>	<b>Patent Activity</b>
	Commercialization	Technology Licensing Activity and Values
	<b>Entrepreneurship</b>	<b>Initial Public Offerings (IPOs) Activity and Values</b>
	Company Business Innovation	Proportion of Revenues from New Products
RESULTS	<b>Individual Opportunity</b>	<b>Real Income Adjusted for Cost of Living</b>
	Competitiveness	Industry Value Added
	<b>Business and Cluster Performance</b>	<b>Job Cluster Growth</b>

What the broker needs to do is offer a new kind of assessment—examining familiar topics in new ways and including new kinds of information altogether. The reassessment offers a great opportunity for the broker to restart the conversation about economic development and how innovation is the key driver.

### Focus on the Cornerstones of Innovation: Assets, Networks, Culture, and Community

What will be the focus of the reassessment? Research and experience have shown that not only assets like talent, capital, and physical infrastructure, but regional networks, culture, and community quality of life are critical cornerstones for regional innovation. Regional innovation brokers must analyze not only the assets, but the networks and culture of innovation that translates assets into economic and community benefits. And, they must focus on the community quality of life that is critical to the people who drive innovation.

**ASSETS:** Assets are critical building blocks for regional innovation. Traditional assets, such as access to raw materials or low cost labor are no longer sufficient to succeed in today's knowledge driven global economy. Assets can include R&D/Technology (e.g., universities,

research institutes), talented people, financial capital, industry clusters, and physical infrastructure. Assets also include innovative individuals and organizations in the environmental and social fields—and especially major institutions that shape the environmental and social outcomes in a region—such as water districts, educational systems, and the like.

Regions may have different amounts of assets, but every region has basic innovation assets or the ability to identify and cultivate them. These assets are developed in many diverse parts of a region, including university classrooms, non-profit organizations, venture capital offices, community colleges, boardrooms, fledgling startup companies as well as individual families and their aspirations.

Innovation assets are turned into results when a dynamic environment for innovation and entrepreneurship is in place. This technological dynamism includes new product and services development, technology commercialization or adoption, new business formation as well as business closures, and productivity growth.

**NETWORKS:** Assets are leveraged through personal and institutional networks. Networks are a complex web of tight relationships among people who know how to translate ideas into new products, services, policies, or initiatives fast enough to stay on the innovation curve. These complex networks continually connect people with good ideas and test the changing environment, always searching for the next innovation.

Well-established networks that spark creativity and facilitate knowledge sharing are often the performance difference between regions. In her path breaking research comparing Silicon Valley and Boston’s Route 128, *Regional Advantage*, Anna Lee Siberian found that the performance difference between two technology regions was the “network model” in Silicon Valley that connected companies and sped up the innovation process. Route 128 had similar assets but different results because it failed to collaborate and build open networks for information sharing.

More broadly, in two books published in the past decade (*Grassroots Leaders* and *Civic Revolutionaries*), Collaborative Economics has documented dozens of regions across the United States that have advanced through networks of economic, social, and environmental innovators or “civic entrepreneurs.”

**CULTURE:** The attitudes, beliefs and mind-set that supports an environment for innovation and entrepreneurship. This cornerstone, like networks, is intangible and often overlooked in economic development and other community improvement strategies. A culture of innovation that encourages creativity and risk taking is essential for the development of new business models, creative community partnerships, and breakthrough technologies. An innovative culture is inclusive and accepting of new ideas from untraditional sources. It is not confined to any one particular industry or sector and extends beyond the market place to being open to new ways of examining and approaching community development and environmental issues. An important attribute of a culture of innovation is that it views failure as a lesson in how to succeed and encourages reinvention when necessary.



Like assets and networks, culture can also be influenced and changed over time, even in regions not considered entrepreneurial hubs. San Diego and Austin, for example, were not always centers of entrepreneurship and innovation. San Diego was a military town and Austin a university town until about the 1980s, when both actively encouraged the emergence of a new culture that embraced innovation and entrepreneurship in new industries—as well as in community and environmental innovation.

**COMMUNITY QUALITY OF LIFE:** Innovation is driven by people and people flourish when they are part of vibrant, healthy and creative communities. Regions must have a strong quality of life to recruit and retain talented people, who are instrumental in growing technology, attracting capital, and solving complex economic, social, and environmental problems. Many regions are recognizing that to sustain success, quality of life problems, such as schools, environmental preservation, and transportation need to be made a priority.

Basic questions that can guide a regional reassessment include:

- What are our driving clusters and how innovative are they?
- How is innovation and entrepreneurship contributing to regional vitality and quality of life?
- What are the strengths and weaknesses of assets for regional innovation? What is missing?
- How does the regional mindset or culture support or inhibit innovation and entrepreneurship?
- What networks connect assets that support regional innovation? How strong are they? What connections are missing?
- How does the region's quality of life contribute or hinder regional innovation? Is innovative and entrepreneurial talent attracted and retained?
- How does the region compare to benchmark regions with regard to the cornerstones of innovation?

One of the best sources of questions, data sources, and survey methods is the Council on Competitiveness' 2005 report called *Measuring Regional Innovation* ([www.compete.org](http://www.compete.org)). To provide a focal point, a document can be created that will describe and diagnose the region's innovative cornerstones, revealing strengths and weaknesses. Many regions have used such a document to inspire innovative thinking, dialogue and action.

## FINDING OUT WHAT IS REALLY IMPORTANT TO INNOVATION

One of the biggest challenges is to go beyond developing a long inventory of “assumed” innovation assets—a list of institutions and programs that experts say should be important to companies and regions. Instead, go to your most innovative companies and ask them what helps them innovate. The answer can include things that exist in the region—or outside the region, even outside the country. We suggest the following approach to find out what is really important to innovation among your region’s firms. Use a simple four-quadrant format as illustrated below.

<b>ASSETS</b>	<b>NETWORKS</b>
<b>CULTURE</b>	<b>COMMUNITY</b>

Ask innovative businesses the following series of questions:

1. What in the region helps you innovate? What hinders you from innovating? *Here you can probe for answers in each of the quadrants, recording plusses and minuses.*
2. What outside the region helps you innovate? *Here you can add important outside, even global assets and networks that are of particular importance.*
3. What is missing in the region that could help you innovate? *Here you can test ideas suggested by experts to see if they could be important to your firms.*
4. Where could you specifically use help? *Here is where you explore the potential roles for the innovation broker.*

Your most innovative businesses—large, small, across different industries—can point you to what is really important to innovation in your region. After you have talked with them, approach other firms and test how their answers compare—and where they could use help. While it is important to look at overall innovation indicators and understand the range of innovation assets in the region, it is even more important to understand what really makes the difference to firms that are proven innovators.

### 3. CONNECT THE INNOVATORS: Conduct a Disciplined, Collaborative Process

Brokers should start at the source. The drivers of innovation will primarily come from the private sector. With the network of relationships that the broker has developed during Steps 1 and 2, they should now be able to reach out and engage the drivers of innovation—some of whom may be well-known business leaders, some of whom are little-known entrepreneurs. These are the individuals who are on the frontlines of innovation, and can often leverage the resources needed to drive a regional innovation agenda forward.

#### Take Time to Design a Disciplined Process to Engage Innovators

Brokers should spend time upfront on process design before convening innovators. Bringing together innovators for an unstructured brainstorming meeting will likely produce few results, and may even discourage further involvement. Instead, a carefully constructed process that is both disciplined and results-driven will “hook” innovators and get them to invest the time to explore and solidify collaborations with tangible outcomes.

One effective method for engaging innovators is through a “cluster of opportunity” mobilization process. This process has been documented by Collaborative Economics in a step-by-step fashion for the California Economic Strategy Panel, with a detailed user guide available at [www.labor.ca.gov/panel](http://www.labor.ca.gov/panel). Below is a brief summary of the key elements of this process.

This method has produced positive outcomes in regions as varied as San Diego, Arizona, Portland, Silicon Valley, Florida, Cleveland/ Akron, North Carolina Research Triangle, South Carolina, Columbia, and Louisville. Cluster mobilization engages employers from the region’s driving industry clusters and gains their insight and commitment to strengthen a region’s asset base. Through this method, employers actually become *partners* in developing a regional innovation strategy.

To begin organizing for cluster mobilization, establish a leadership group, a staff support team and the cluster groups led by co-chairs:

- Cluster groups, composed of employers, provide the focal point to set priorities and develop specific ideas for implementation. Cluster group members can serve as the core of action teams organized around key priorities, and including “asset” leaders (e.g., university, government, community institutions).
- An overarching leadership group can sponsor the overall process, empower cluster co-chairs to conduct cluster groups, receives the results from the cluster groups, charter action teams, and ultimately decides how to support implementation.

- The staff support team includes a local project manager, facilitators and administrative support to assist the co-chairs of the stewardship and cluster groups—and action teams—in carrying out their roles.

The most important success factor for cluster mobilization is that it be both “top down” and “bottom-up.” The good ideas and talented people who will surface through the cluster groups must be connected to experienced leaders in the community who can lend their credibility, connections, and resources to aid implementation.



After the analytic and initial organizational work has been completed, the next step is to choose potential clusters for mobilization. The fact that a region has clusters of opportunity does not mean that the region must engage all clusters at once. Two sets of criteria can be combined to select clusters for immediate mobilization.

The first set of criteria is based on the numbers. Clusters might be chosen for engagement for their past performance and future potential—as well as their “fit” with the region’s goals in workforce and economic development. These criteria could include size, growth, concentration, and wages.

A second set of criteria focuses on “ripeness” for action. For example:

- *Industry commitment* – Are industry leaders committed to trying this approach?
- *Potential benefit* – Can the cluster benefit from a collaborative process?
- *Added Value* – Can the process add value to any existing efforts?

Convene the leadership group and decide on the range of criteria to be used in selecting clusters for immediate mobilization. Once the group determines the cluster(s), summarize the quantitative and qualitative information for each cluster into a concise “cluster briefing paper.” This paper is an important input to the first round of cluster meetings.



### **Structure of Cluster Briefing Paper (10-15 pages)**

- I.** Regional Clusters of Opportunity (overview of approach, range of clusters identified)
- II.** Cluster Components (include Cluster Map)
- III.** Cluster Characteristics (i.e., size, growth, wages, concentration)
- IV.** Cluster Evolution (including external forces and internal attractors)
- V.** Cluster Potential and Requirements (potential future for cluster and what is needed to get there)
- VI.** Collaborative Opportunities (potential areas for collaboration between cluster employers and with other partners)

The next step is to organize groups for the clusters of opportunity chosen for immediate mobilization. First, identify and recruit co-chairs for each cluster group. Choose a balanced set of co-chairs for each cluster. For example, consider matching a large company leader and a small company leader, leaders who represent different industry sectors within the cluster, and established and emerging industry leaders. Choose two to three co-chairs to ensure continuity of the process and division of work load.

### **Role of Co-Chairs**

- Help organize the cluster group to ensure that the right people participate
- Preside over three cluster group meetings, supported by a facilitator.
- Report progress of the cluster group to the Leadership Group
- Serve as spokesperson for the cluster group.

### **Lessons: Co-Chair Selection**

- Select on personal characteristics.
- Team different perspectives:
  - Small and large company
  - Established and emerging leaders
  - Private and public.

Use existing industry databases and other sources to identify cluster group participants. Work with the co-chairs to flesh out a draft invitation list. The list should include representatives from each of the component industries of the cluster. They should come from a combination of large firms and small businesses, product and service sectors, and business and government/education/community.

Participants should also be selected for how they will help the process succeed – including their stature, entrepreneurial drive, and collaborative style. A total of 30 – 50 invitees should be identified for each cluster (see following figure for sample invitation letter). The target is 15 – 20 participants in the first meeting.

### **Role of Participants**

- Participate in three two-hour meetings over three to five months.
- Participate in shaping action initiatives, as desired.

### **Lessons: Participant Selection**

- Mirror cluster map.
- Seek out new and next-generation leaders.

## Sample Invitation Letter

Date

Address

Dear <invitee>:

We invite you, as senior executives in our industry, to participate in a high-level working group to identify collaborative actions that will grow the XXXX industries in the XXXXX region. Now is the time to act together to move our local industry cluster to its next stage.

Our group is one of ### of industry working groups being convened by the XXXXXXX, a collaboration of local business, government, and nonprofit partners. The enclosed Briefing Paper tells the story of the cluster. It examines the driving sectors of the cluster and what might be done to help them to thrive in the future.

The purpose of the working groups is to identify and act on issues important to the region's most innovative, growing businesses – focusing on local industry “clusters” in A, B, and C. Companies in these clusters are particularly important to our region; they will be the core drivers of our future economy. It is imperative that we understand their needs and work together to meet those needs.

We have agreed to co-chair the XXXX cluster working group because we believe that our region is poised for excellence and that greater collaboration among key executives will benefit us all. We invite you to join the team.

The first meeting will be held on XXXXX at XXXXXX (map enclosed). Please RSVP by XXXX by faxing the enclosed form. We request your personal participation, because we need the region's top senior executives working together in order to make a difference.

Sincerely,

Co-Chairs  
Cluster XXXXX Working Group

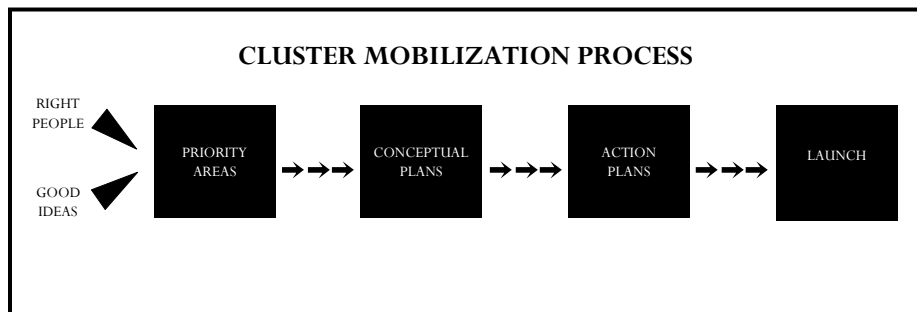
Co-Chair Name, Title  
Organization

Co-Chair Name, Title  
Organization

Enclosures: Map, RSVP form, Briefing Paper

## Focus on Opportunities and Requirements to Capitalize on Opportunities

The cluster mobilization process described here is designed to involve key leaders personally in identifying significant issues and priorities, developing potential solutions, and committing to specific actions and collaborative initiatives. Although many processes are possible, experience shows that a three-stage process is short enough to keep busy executives engaged, but long enough to generate quality thinking and commitments to action. The figure below illustrates the three-stage process:



The purpose of the first meeting is to give participants an opportunity to describe their vision for the future of the cluster, identify requirements to make that vision a reality, and choose priorities for which requirements should be addressed immediately.

Before Meeting #1, make sure co-chairs understand their roles. If possible, convene the co-chairs for a “training session” that lays out the process steps, their individual and collective roles and the expected process outcomes so they know what is coming and how to manage their assignment. At this training session, the co-chairs working with a facilitator should brainstorm names of invitees for the cluster group as well as set the dates for the three meetings in the coming months (spaced at least one month apart). Review the agenda and participants’ specific roles before the meeting.

Make sure a core of leaders attends the meeting. Send out invitations to the first meeting at least one month before the meeting to enable people with busy schedules to attend. Ask participants to RSVP and follow up with phone calls from administrative support team members and co-chairs (if necessary) to ensure that key people attend. Emphasize the importance of the personal participation of senior executives (or, on a case-by-case basis, someone close to the senior executive). It is critical that the cluster groups be populated with individuals who have decision-making authority within their own companies and organizations.

A sample agenda for Meeting #1, which typically requires two hours, is included below:

**Sample Agenda  
Cluster Group Meeting #1  
8 AM – 10 AM**

- 7:30 Pre-Meeting of Co-chairs and Facilitators**  
*Role of co-chairs: Review meeting agenda and outcomes with facilitators*
- 8:00 Welcome and Introductions**  
*Role of co-chairs: Welcome and give short statement about why this process is important – why you got involved; turn meeting over to facilitators who will ask participants for basic introductions.*
- 8:15 Project Overview**  
*Facilitators give overview of briefing information and cluster engagement process.*
- 8:30 Vision and Requirements for Development**  
Participants identify their opportunities and requirements.  
*Role of co-chairs: give your views just like other participants.*
- 9:15 Discussion of Top Priority Areas**  
Facilitators lead discussion of top priority areas to flesh them out.  
*Role of co-chairs: Participate in discussion*
- 9:45 Champions Volunteer for Action Teams**  
Facilitator asks for volunteers by priority area, those willing to take the next step of developing a one-page “action plan.” Based on response, 1-3 priority areas are chosen for action plan development.  
*Role of co-chairs: Volunteer as champion/ask others to be volunteers*
- 10:00 Adjourn**  
*Role of co-chairs: Thank participants and announce next meeting date*

At Meeting #1, it is essential that the broker start the process off on the right foot. In short, lead with opportunity. Populate the process with innovators who are driven by opportunity, rather than individuals who are obsessed with constraints. At the first meeting, ask the innovators three fundamental questions:

1. *Opportunities*: Describe the drivers of growth of the cluster (including global markets, technological innovation, industry convergence)
2. *Requirements*: Identify top requirements for future growth of the cluster (including talent, infrastructure, financing, industry networking, export assistance, regulatory change)
3. *Priorities*: Identify priority actions that they are willing to help champion to address these requirements.

The first question gets the process focused immediately on opportunities. This is critical, as even most innovative individual if asked to identify issues and constraints will make a list. Once a list of problems and issues is constructed, it drives the rest of the process and typically produces little impact, except frustration. Alternatively, the immediate focus on opportunities elicits what have been past drivers of growth and innovation—and what will be the drivers in the future. This approach focuses the group on specific opportunity areas worth the effort.

After a set of priority areas of opportunity and innovation are identified, then it is appropriate to ask what will be required to capitalize on these promising possibilities. The requirements may be steep—and may actually raise constraints and other issues that hamper the region—but they are raised in the context of how best to remove them to capitalize on a great opportunity. Only with a compelling reason (i.e., opportunity) on the table will there likely be substantial movement on specific constraints or issues. The third question is then a natural extension of the first two: given these great opportunities and key requirements, what can we do collaboratively to move forward. These three questions can be answered in a well-designed two hour meeting that sets the stage for action in Step 4.

The expected outcomes of Meeting #1 are a small number of (i.e., up to three) priority areas, with individuals identified for each area as potential “champions.” “Action teams” can be created with the responsibility of working on the priority area, incubating possible action steps, and creating the first draft “action plan” during Meeting #2.

Co-chairs present Meeting #1 results to the Leadership Group. One of the roles of the co-chairs is to act as the voice for their group, summarizing the results of Meeting #1 for the benefit of the Leadership Group. The Leadership Group should give the co-chairs constructive feedback, suggesting issues that should be considered as action teams consider their deliberations. Co-chairs, working with their facilitators, should communicate this feedback to the appropriate action teams.

At this point, the Leadership Group and Support Team can help recruit additional members to the action teams. Depending on the focus on the team, individuals from the specific institutions

or sectors of the community (e.g., a community college dean) can be added to work with cluster employers on the action plans.

#### 4. BROKER BREAKTHROUGHS: Help Innovators Take Collaborative Action

Brokers must now shift gears, and help innovators translate their ideas into collaborative action in Meeting #2. Collaborative action can take many forms, which requires both flexibility and discipline at the same time.

##### Provide an Action Plan Template and Insist on Breakthrough Outcomes

A simple Action Plan template (see below) can provide the structure for creating the collaboration. An Action Plan calls for specificity and the discipline of articulating clear and compelling goals, outcomes, strategies, and implementation requirements that are all in alignment.

Brokers must also play a crucial role to insist on breakthroughs to bolster the regional innovation. Because of the need to build new connections and assets, breakthroughs will likely be required to make a meaningful difference in this field. Breakthrough strategies should focus on the cornerstones: building assets, strengthening networks, changing culture, improving community quality of life. Brokers can organize teams, and give them the charge of mapping out breakthrough strategies using the Action Plan template. These implementation plans or “roadmaps” should include outcomes and metrics for action, roles and commitments for multiple sectors and stakeholders, and timelines for implementation.

Meeting #2 should focus on getting the long-term goal and near-term breakthrough measurable outcomes right. Emphasize that quality is preferable over quantity. Success is “a few good outcomes,” not a long wish list that no one will take responsibility to implement. These measurable outcomes should meet a four-part test. They should be:

- *Clear.* They have to be a good choice of words that communicate effectively to a wide variety of people, or it will be difficult to rally people to help implement.
- *Compelling.* They have to be worth doing. If they are marginal steps, they will not excite people and keep them engaged. They should make people and organizations “stretch,” or they are not going to make much of a difference if achieved.
- *Outcomes, not process.* One of the biggest pitfalls is to equate process steps with outcomes. Saying that you will hold a meeting is not an acceptable measurable outcome.



## ACTION PLAN WORKSHEET

DATE: \_\_\_\_\_

LONG-TERM GOAL:

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### SPECIFIC BREAKTHROUGH MEASURABLE OUTCOMES

(Meet Four Criteria: Clear, Compelling, Outcome Not Process, Achievable Within One Year)

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- 
- 

### STRATEGIES TO ACHIEVE BREAKTHROUGH MEASURABLE OUTCOMES

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- 
- 

### IMPLEMENTATION REQUIREMENTS

(Including needed commitments of financial resources, expertise and materials, and proposed organizational structure for implementation)

- 
- 
- 

NAMES AND COMMITMENTS OF CHAMPIONS (i.e., implementation volunteers)

- *Achievable within one year.* Although the big picture (i.e., a long-term goal) is important to keep in mind, it is equally important to articulate achievable, short-term outcomes that can help build momentum. If objectives remain only long-term, little is likely to get done. If objectives are solely short-term, a lot might get done that is not focused on the right goal. The best mix is both a long-term goal and measurable outcomes that are achievable within one year.

## Make Sure Actions Have Champions and Will Produce Breakthrough Outcomes

With clear breakthrough outcomes, brokers should make sure that the innovators identify both strategies and implementation requirements that can deliver results. Brokers must also ensure that champions step forward—or the action plan is dropped. Remember and repeat this rule: “No Champions, No Initiative.”

Completing and finalizing the action plans will likely take a third meeting, or one or more conference calls among the champions. When completing the action plan, innovators should consider the following elements:

### ACTIONS TO ACHIEVE BREAKTHROUGH OUTCOMES

**RESULTS**—the specific, measurable “breakthrough” outcomes expected. What constitutes a breakthrough will depend on the scope, setting, and stage of regional problem-solving.

**ROLES**—the specific roles implementation partners will play, depending on their unique set of capabilities to achieve the desired breakthrough results

**RELATIONSHIPS**—the specific connections among partners, depending on the level of interdependence required to achieve the desired breakthrough results.

**AGREEMENTS**—specific actions that can be taken, often focused projects or initiatives, or mobilizations such as campaigns, and specific multi-party arrangements that establish specific commitments or guidelines for policy and action by partners, such as compacts.

**ACCOUNTABILITY**—specific and ongoing commitments to hold partners (and the entire coalition) accountable for results, both follow-through on agreements and overall impact on regional competitiveness.

**ARCHITECTURE**—an organizational “platform” or “web” that provides the capacity to support, expand, and renew fledgling efforts, such as multi-party forums or networks.

After Meeting #2 and a subsequent meeting or conference call(s), the co-chairs should present action plans to the Leadership Group. The Leadership Group should give the co-chairs constructive feedback, focusing their comments on the goal, outcomes, strategies,

implementation requirements, and commitments of the action plans. The Leadership Group should also identify additional people and resources that could help the action teams in implementation. And the Leadership Group should continue to identify commonalities across the action plans – similarities that might suggest a merging of teams or other collaborative arrangement. Finally, the Leadership Group should give each action plan its approval or withhold approval until certain changes are made.

The cluster mobilization process described here provides a roadmap for those who want to recruit cluster employers as partners in regional innovation. The general process should be customized to meet the specific needs of each region. In doing so, however, there are important lessons that have been learned through experience:

- *Structured meetings discipline the process and retain cluster employers.* Carefully structured meetings that set priorities and build momentum keep people engaged. Each of the three working group meetings has an explicit outcome, and each meeting clearly builds on the previous meeting. The expectations are high, but achievable. The process respects the busy schedules of participants.
- *Volunteers do emerge, sometimes from unlikely places.* If a mix of group leaders are invited and attend the meeting, volunteers will emerge to form action teams and move forward. Expect that volunteers could include individuals beyond those who are usually the most active civic leaders. Don't assume that the large company leaders are the only ones who can champion an action team. Be opportunistic about finding and connecting new people to the process.
- *Look for linkages among action teams and plans.* The objective of the process is not to create a proliferation of new organizations, a new infrastructure of action teams or small teams without implementation resources. Rather, the process is a means to an end; it serves as a means of surfacing priorities and experimenting to find the right structure to carry these priorities forward. Rarely is the first structure chosen the perfect structure for implementation. A common result of collaborative processes is a mix of group-specific initiatives and cross-cutting initiatives that are a combination of ideas and people from several action teams.
- *The bottom line is actively engaged cluster employers and good measurable outcomes.* The bottom line in this process is the engagement of cluster employers who can help identify clear, compelling and achievable measurable outcomes and help drive them to create a short-term success and build momentum toward a longer-term goal.
- *Cluster mobilization is an ongoing process.* An initial cluster mobilization process can produce a burst of implementation, but can also create a foundation for a new relationship between cluster employers, workforce development, economic development, and other community and regional entities. In fact, it is critical that explicit actions be taken to build on initial steps so that cluster employers are kept engaged as partners in regional innovation, providing a continuous flow of information about shifting trends and needs and a source of business leadership for the region.

Engaging the innovators and insisting on breakthroughs are important, but instilling a sense of urgency in implementation is also an indispensable role for brokers. There are many ways to organize for implementation. Staff/facilitators can help the volunteer champions finalize their action plans, combine them into a “blueprint document” and prepare them for public unveiling at an implementation launch event. Facilitators should help package the action plans into a concise public document that can be disseminated throughout the region or community. They should prepare the volunteers for presenting their plans at an implementation launch event, which signals the transition to the implementation stage.

## 5. NETWORK THE BROKERS: Accelerate and Expand Innovative Collaborations

Over the long term, to sustain and multiply the productive collaborations among innovators, the broker will need help. Providing a focal point, some kind of vehicle (such as a forum) to serve as an ongoing communication and networking mechanism can yield impressive results. In the process of completing the first four steps, it is likely that the broker will discover others who also play a brokerage function in linking entrepreneurs, firms, and the like. By putting together an ongoing mechanism to network these individuals, they will naturally find other areas around which to convene innovators. In a sense, this keeps the collaborative process going beyond the initial high-profile convening of Steps 3 and 4. Part III of this guide provides a number of specific examples of network models—from San Diego’s Partnership for the Global Economy and Research Triangle’s Regional Partnership to Northern Kentucky’s Vision 2015 and the California Partnership for the San Joaquin Valley.

## 6. REDEFINE SUCCESS: Change the Metrics in Economic Development

To succeed over the long-term, the broker must also fundamentally change the expectations in economic development. Without changing the incentives and the metrics for success, any efforts to shift to innovation-driven economic development will be ephemeral. With some initial success coming from the first five steps above, the broker is positioned to propose changes to the metrics which will guide their actions. Typically, this shift requires a broker working with his or her board to move away from cost- to innovation-oriented metrics. Beyond his or her own organization, the broker will need to drive the conversation about redefining success and changing metrics back into the full range of organizations involved with economic development—including those who provide funding, offer services, and lead jurisdictions. The new metrics should be in alignment with the measurable outcomes developed in the action plans. Good examples of specific metrics can be found in Joint Venture: Silicon Valley’s Index ([www.jointventure.org](http://www.jointventure.org)) or the Massachusetts Technology Collaborative’s Innovation Index ([www.masstech.org](http://www.masstech.org)).

## CONCLUSION

Regional innovation is not a new challenge. What is new is the broad agreement that innovation and regional vitality and quality of life are inextricably linked. What is also new is the understanding that innovation is not simply the responsibility of individual companies, economic development professionals, public officials, or non-profit leaders—nor is it simply an economic issue. Regional innovation requires collaboration across jurisdictions, sectors, and issues—including economic, environmental, and social concerns. Boundary-crossing of this kind is what regional innovation brokers do. In fact, with America’s communities facing new global economic pressures, brokers are in a unique position to forge coalitions and catalyze campaigns to make innovation a top priority.

### PRACTICAL GUIDANCE FOR REGIONAL INNOVATION BROKERS

There are many ways brokers can advance regional innovation—improving the region’s assets, networks, culture, and community. As brokers consider different options, the following principles can help guide their decision-making.

#### #1: Innovation is a Team Sport

Innovation is not simply the job of experts, nor is it the product of a lone inventor working in a garage or the single inspirational leader. Regional innovation brokers are the key in building diverse teams from business, education, government and the community that will work together to promote an innovative region.

#### #2: Good Information Puts Innovation on the Regional Agenda

Brokers can use well-designed indicators to raise the visibility of innovation as a key to regional success, spotlight key issues and opportunities, and provide a catalyst for action. Without good information on sources of innovation in a region, it is unlikely the region will embrace innovation as a priority.

#### #3: Inform, Connect, and Promote (Over and Over Again)

Good information is not enough. Brokers must share information widely and often as a tool to connect leaders from diverse perspectives and help them embrace a regional vision for innovation. Brokers can work to inform, connect and promote innovation through formal visioning processes and repeated reminders through the media, speeches, and face-to-face encounters.

#### #4: Think Regionally, Act Regionally

Many believe that innovation is either something that “just happens” or is largely the product of strong assets (e.g., universities) dependent on funding from outside the region. They see little if any regional role. Encouraging new thinking about the cornerstones of regional innovation can lead to action on a regional basis—action to use both national and regional assets to promote a regional vision for innovation.

#### #5: Tear Down the Walls Between People

The greatest barrier to innovation has been the traditional “walls” that separate universities, industries, and entrepreneurs. Brokers can immediately create new forums and mechanisms to permeate these boundaries. Forget worrying about institutions and programs per se, and focus on connecting people.

## PRACTICAL GUIDANCE FOR REGIONAL INNOVATION BROKERS (cont.)

### #6: Hot Ideas Come From Cool Places

Innovation is about sharing knowledge or “know-how”. Creating environments where innovative ideas can be shared face-to-face is important in innovative regions. These can be personal networks of people with hot ideas who want to gather in creative places. Brokers can create spaces and amenities that are attractive for innovative people.

### #7: Learn from Others, But Create Your Own

Benchmarking against best practice is an important learning tool, but each region’s assets, networks, culture, and community are so different that borrowing instead of creating is a mistake. Brokers should take time to understand their unique challenges, consider the experience of others, and customize strategies to fit their situation. Trying to duplicate the Silicon Valley experience is not going to work.

### #8: Unleash the Power of Networks

Remember that encouraging the growth of networks has a very high leverage impact. Metcalf’s Law shows that the number of nodes on a network grows exponentially—i.e., each new node adds its own set of network connections. Networks connect to networks. Brokers can encourage the “networking of networks,” and address obstacles discouraging the growth of networks.

### #9: The Job is Never Done

Innovation is a continuous process. Once an innovation culture is created, an environment of continuous improvement must take over. Brokers can create the expectation that continuous innovation is the norm. They must remain vigilant and prepare the next generation of leaders to understand and further build the cornerstones of regional innovation.

### #10: Anyone Could Create the “Next Big Thing”

Innovation can originate from anywhere. Innovation used to be the domain of research and development departments. The universal nature of innovation means that the regional culture of innovation must be inclusive and welcoming, accepting of new ideas from untraditional sources. Brokers can nurture and celebrate the diversity of innovators—and in the process help expand the scope and benefits of regional innovation.

# PART III

## EXAMPLES OF REGIONS PURSUING THE INNOVATION-DRIVEN ECONOMIC DEVELOPMENT MODEL



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Regional innovation brokers build the teams that strengthen assets, connect assets through networks, promote a culture of innovation and make quality of life an innovation asset. They, in short, help turn their regions into innovation “habitats.”

Part III recounts the examples of regions—from San Diego to Austin to North Carolina’s Research Triangle to Fresno to Louisville—that have effectively made innovation a regional priority through foresight, collaboration, and persistence. What the regions described in this section have in common is a commitment to work together towards becoming globally competitive and well-positioned for long-term prosperity. They also share a common understanding that sustaining competitiveness requires continuous reassessment, re-evaluation and sometimes reinvention.

This section also recounts the two examples of very large regions that have effectively made broad-based innovation a priority: Northern Kentucky and California’s San Joaquin Valley. Both examples include a focus on innovation that spans economic, environmental, and social concerns—and specific action initiatives with measurable objectives to deliver results over the long-term.

### **SAN DIEGO, CALIFORNIA:** *Building and Linking Innovation Assets, Networks, and Culture*

Throughout much of the century, San Diego, California was known as a tourist-oriented Navy town with a defense technology base—not as a wellspring of innovation. But in the early 1960s, visionary regional leaders worked diligently to build on an existing asset, the well-respected Scripps Institute for Oceanography, an effort which culminated in the creation of the University of California at San Diego (UCSD) in 1965.

Over the next three decades, UCSD grew to become one of the leading research universities in the UC system and one of the top research universities in the country. It became one of the leading catalysts in helping create a regional technology economy. In a relatively short period of time, San Diego has become one of the nation’s innovation hot spots, generating excellence in defense (1970s), health (1980s), and telecommunications (1990s). Today, the region is known as being a leader in biotechnology and telecommunications.

What brought about such a transformation? A series of catalytic actions strengthened the cornerstones of regional innovation. Under the leadership of Chancellor Richard Atkinson, an innovative networking model was created, UC Connect, to connect entrepreneurs to university researchers and business service professionals. Today, industry networks BioComm and the Telecom Council connect entrepreneurs and firms in ongoing networks to work on practical workforce and marketing opportunities as well as big-picture policy issues.

Another important catalytic event that transformed the San Diego region was the creation of the 1999 Partnership for the New Economy to promote a cluster-based economic strategy. Between 1990 and 2005, employment in San Diego’s science and technology clusters grew by 25%. The Partnership led to breakthrough outcomes in four major areas:



- **Technology Entrepreneurship and Management** - Grow the regional pool of technology industry managers who can transform promising ideas into business plans and start-ups and those who can manage the growth of existing technology companies, helping create the \$70 million Rady School of Management at UCSD as well as initiatives at other universities.
- **Quality of Life** - Articulate the voice of technology employees and companies on quality of life issues: improved transportation mobility, airport infrastructure, affordable housing for the workforce in close proximity to employment centers, and balanced land use, leading to EDC's leadership role in the passage of Proposition A, the extension of the half-cent sales tax for transportation, and other transportation initiatives.
- **Access to Capital** – Improve the accessibility of growth capital for technology companies. Today there are vibrant capital-formation initiatives at CONNECT and BIOCUM to attract investment capital to San Diego. Venture capital funding has skyrocketed and investment banks and venture arms of major companies are establishing offices here.
- **Educational Excellence** - Produce a workforce that meets the needs of the regional economy, including the growing technology sector and other sectors needing knowledge workers, leading to High Tech High and other mentoring and math-science programs like Project Lead the Way.

Almost a decade later, San Diego's regional economy and its role in the global economy are changing rapidly. These shifts are producing benefits, but are also raising the stakes. San Diego realized it would have to meet new challenges if it was to keep pace in this new competitive global environment. In 2007, the **San Diego Partnership for the Global Economy** ([www.sandiegobusiness.org](http://www.sandiegobusiness.org)) was created to bring together business leaders in key industries to understand the challenges and opportunities, identify strategic priorities, and organize for action with public and community leaders to ensure that economic change benefits both San Diego's companies and residents. The Partnership found new challenges and opportunities:

1. **San Diego is participating in a new global innovation economy**, where top regions both compete and collaborate—sharing talent, ideas, and capital to create new high-value products and services.
2. **San Diego's global reach has grown substantially over the last decade.** The region has broadened its existing international relationships and developed new partners in more countries. It is now ranked 5<sup>th</sup> among regions worldwide in attracting venture capital, including \$665 million from outside the United States between 2001 and 2006.
3. **San Diego's economic drivers are changing with the convergence of key industries and technologies.** The region's strengths in life sciences, information technology, and advanced manufacturing are interacting in new, creative ways—and other sectors such as health services, visitor services, commercial and infrastructure construction, and professional services are becoming stronger economic drivers.

4. **San Diego's growing participation in the new global innovation economy is expanding economic opportunity for a wide range of San Diegans.** While the region's leading industries have created many high-wage jobs, an average of about 40% of jobs in these sectors are at the mid-wage level.
5. **San Diego's challenge is to ensure that its economic drivers have the regional and global resources necessary to compete.** Public and private leaders in other regions are working together to make strategic investments, grow their talent pools, and extend their global reach. Regions as diverse as Silicon Valley, Research Triangle, Ireland, Finland and Singapore are forging collaborations to improve their competitiveness. San Diego must pursue its own collaborative strategy or risk playing a diminishing role in the global innovation economy.
6. **Benefiting from globalization requires hands-on regional leadership.** Global competitiveness requires a proactive regional agenda. There are important ways private sector collaboration and public-private partnerships can help maximize the regional benefits derived from greater global integration. This is the rationale for the Partnership for the Global Economy.

The Partnerships launched a collaborative process that brought together more than 200 executives from these driving industry clusters. They identified strategic priorities and developed eight action plans to champion. Together, these priorities and action plans provide a new economic roadmap for the San Diego region.

Through this dialogue two important areas of consensus emerged:

- The region's future economic prosperity rests on three competitive factors: growth of **high-wage industries**, an expanding **skilled workforce**, and **infrastructure** to support a globally connected community—the roadmap for success.
- Successfully following this roadmap will require a business community that proactively champions **innovation** and **investment** through an active program of **civic leadership**.

**WORKFORCE:** If prosperity rests on higher-wage jobs, then higher-wage jobs rest on a skilled workforce. The concentration of highly skilled individuals in San Diego has grown dramatically over the past 50 years – fueled in equal parts by individuals coming from California, other parts of the United States, and the rest of the world. Companies will locate and expand where the talent lives. Today, the region needs **more** skilled employees than are available – a deficit that must be addressed.

**INFRASTRUCTURE:** Highways, energy, water, housing and open space impact our economy and our quality of life. As Governor Schwarzenegger has highlighted, California is currently relying on investments that are decades old. So is San Diego. Continuing the momentum started by the extension of Transnet (2004) and approval of state infrastructure bonds (2006),

the business community must champion investment that keeps our community and economy second to none.

**CONVERGENCE:** San Diego – with its cutting-edge research and leadership in science and technology-based industries – is in a unique position to build opportunities through integration of existing industry expertise and functions.

- Healthcare and information technology
- Defense, security, information technology
- Maritime
- Sustainability and cleantech

Around strategic priorities – Infrastructure, Workforce and Convergence -- eight teams of civic entrepreneurs assembled to create action plans, which define bold, sustained and definitive initiatives to capitalize on opportunities and resolve challenges. Their implementations will take many forms from policy recommendations to industry collaborations to new projects and require **innovation**, **investment** and, of course, **civic leadership**. Through a series of actions, the plans will achieve the following long-term goals:

## WORKFORCE

- The San Diego region has a sufficient concentration of high-skill, college-educated people with science, technology, engineering and math (STEM) expertise to support key industry clusters, including life science and health sciences, communications, defense, security, and other technology-driven industry clusters.
- San Diego meets its economy's need for high-demand entry - and mid -level workers in the region's industry clusters. The region substantially grows the number of workers entering the pipeline to sustain its industry clusters, with employers able to recruit strong new-hire candidates locally. San Diego retains local talent in the pipeline by facilitating career transitions and advancements among clusters.

## INFRASTRUCTURE

- The San Diego region develops and implements an infrastructure investment strategy that builds and assures global access to people, markets, and resources necessary for increasing prosperity and quality of life and, by doing so, builds industry clusters around sustainable transportation, energy, and water technology.
- The San Diego region establishes and maintains a sustainable balance between housing and job growth sufficient to recruit and retain a workforce with the skills and education necessary to assure the region's long-term economic prosperity.

## CONVERGENCE

- San Diego is a global leader in “smart” healthcare and wellness—leveraging its strengths in life sciences, healthcare, information and communications technology to become a leader in delivery of personalized healthcare.
- San Diego becomes one of the leading security centers in the world by integrating the region’s military and security technology into new security markets (homeland security, law enforcement, commercial markets) through cutting-edge work in technology development and integration.
- San Diego’s maritime technology industry cluster makes the region a leading center in the world in the maritime—producing 5,000 new jobs in five years.
- The San Diego region is recognized as a global leader in the sustainable economy by achieving tangible green metrics and creating an innovative, profitable cleantech industry. The region’s largest industry clusters gain competitive advantage because private industry and local government establish benchmarks and promote the early adoption of cutting-edge sustainable practices. The San Diego region leads the larger mega-region of San Diego, Imperial County and Baja California to build a strong cleantech cluster by 2015, doubling the size of today’s cleantech cluster in innovation-driven areas like building design, materials and construction, operating smart systems for energy, and water and waste management.

### **AUSTIN, TEXAS:** *Creating a Cycle of Innovation*

In recent decades, Austin, Texas has focused on expanding its fundamental innovation assets. During this time, no region has moved as quickly into the top ranks of prosperous, innovation-driven regions as Austin. In early 1980s, Austin was still torn in a grow/no-growth debate that blocked progress toward any objective. The university was not connected to business, and the State government, more attuned to oil and real estate issues, did not see Austin as its focus. Then came an opportunity and a group of regional stewards who knew how to seize it as a way to transform Austin into a hub for innovation.

Austin business leaders, the university, and the State joined forces in 1983 to recruit MCC (Microelectronics and Computer Technology Consortium), the first major U.S. technology consortium assembled to meet the competitive challenge from the Japanese. In succeeding, Austin set its sights on the goal of becoming a major player in technology and added a critical asset: an R&D consortium that included many of the top technology firms in the country.

Austin used this new “asset” as leverage. To attract and support the consortium, leaders secured new investments in the University of Texas, including the endowment of 32 \$1 million faculty chairs in engineering and natural sciences, which catapulted the University into the top tier of research universities in these fields. They succeeded in attracting SEMATECH, a second

national consortium, which involved another set of major technology firms. Business and civic leaders supplemented these assets with new entrepreneurial support programs including incubators, seed capital funds, and mentoring.

In response to these regional efforts, leading technology firms began making commitments of people and resources to Austin, which helped fuel innovation in the region. More and more companies came to know the region, and with the collaborative efforts of Austin's leaders, selected it as an expansion site. Within a decade, Austin had added more manufacturing jobs than any other metropolitan area. During the 1990s, jobs in the region grew more than 5 percent per year, and per capita income rose dramatically compared to the rest of the nation.

Like many regions across the country, Austin was impacted by the national recession and shifts in global technology at the turn of the century. The region suffered from a stagnant economy, layoffs and job reductions. Understanding that innovation is a continual process, Austin responded to the challenge by creating a five-year, five-county "roadmap for recovery" called Opportunity Austin to rejuvenate the economy and create jobs. The goal of the plan is 72,000 new jobs in five years and a \$2.9 billion aggregate increase in payroll. Austin plans to diversify its economic base, recruit new businesses, retain existing businesses, and address quality of life issues. Since the Initiative was launched in September 2003, the regional business community has invested more than \$12.8 million to finance the program. In 2004, the first year of operation, the region attracted more than 19 business relocations, and more than 56 existing businesses have announced significant expansions.

## **RESEARCH TRIANGLE REGION:** *Creating Competitive Advantage Through Innovation*

*"Thinking regionally will not be an option in the future; it will be a matter of survival."*

*—Choices for a New Century, North Carolina Rural Economic Development Center*

In the 1950s, a group of innovative leaders conceived the idea of the Research Triangle Park (RTP), an idea that changed the economic course of the region. They focused on the concept of a research park where businesses, universities, and area entrepreneurs would work together, reflecting a special spirit of cooperation and learning within the scientific and technological community.

The Park overall grew slowly through the early 1960s, then with the advent of both International Business Machines Corp. (IBM) and the National Institute of Environmental Health Sciences in 1965, the Park began to grow in earnest over the next several decades. From 1990 to 2000, more than 42 new companies established facilities in RTP. New construction and



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expansion has totaled over 5 million square feet. A research business incubator was formed to provide interim laboratory facilities for early-stage companies.

Over the past few years, the 13-County Research Triangle Region has faced the decline of traditional industries, layoffs from leading businesses, and global white-collar outsourcing. Regional leaders recognized the need for a new economic strategy to sustain competitiveness in the global economy, and they also understood that regional collaboration and innovation was the way to achieve positive outcomes.

In 2004, the Research Triangle Regional Partnership, a public-private partnership, crafted a nationally recognized innovation based strategy, known as “*Staying on Top: Winning the Job Wars of the Future.*” The goal of this \$5 million, 5-year plan is to create 100,000 new jobs and boost employment in all 13 counties of the region. *Staying on Top* calls for focusing and coordinating the region’s business, academic, and economic development resources on a shared vision for creating jobs, using the five strategies described below.

1. Organize economic development strategies around industry clusters where the Research Triangle Region has a demonstrated or emerging competitive advantage.
2. Create plentiful job opportunities using a balanced economic development approach of targeted recruitment, global brand recognition, business creation and existing business retention and innovation.
3. Integrate the region’s higher education resources into all economic development efforts.
4. Develop creative, inclusive approaches to improve rural prosperity.
5. Create agile leadership networks to respond to market challenges, changes and opportunities.

Key components of the plan’s success will be:

- Narrowly targeted recruitment of industry clusters.
- A comprehensive regional leadership network capable of responding to market challenges, changes and opportunities.
- Innovative new initiatives, such as a regional retention strategy, rural “mini-hubs” and university portals.
- Continuous monitoring of competitiveness indicators.

The Research Triangle region has benefited from the vision of key public and private sector leaders, who recognize the importance making innovative economy a priority on the regional agenda and that a collaborative approach is key.

### **FRESNO, CALIFORNIA:** *Creating a Recipe for Regional Prosperity*

Monumental change began occurring in the San Joaquin Valley when leaders recognized that their challenges, which spanned from joblessness to poor air quality, were regional in nature and required collaboration between various government entities and private sector





organizations to solve. This new mindset led to the establishment of the Fresno Regional Jobs Initiative (RJI). As the Initiative's founders have stated:

Society's transformation from an industrial economy to a knowledge-based economy is undeniable. If we are to improve the standards of living for all people in the Fresno Region, then we need to compete in the global, information-driven economy. An abundance of well qualified knowledge workers in the labor market is the cornerstone of competitiveness in the knowledge-based economy. Knowledge workers improve the competitiveness of our existing businesses, and the availability of knowledge workers will allow the attraction of a much higher quality of industry with higher paying wages to the region.

Led by regional stewards from business, government, education, civic, and labor sectors, the RJI seeks to diversify the economy, make businesses more competitive, foster innovation and expand local companies. To help achieve those goals, the volunteer organization is trying to create more jobs in the region's most promising industries, or clusters: advanced manufacturing, construction, health care, information processing, logistics and distribution, tourism, water technology, food processing, innovative energy and software. RJI has set a goal of 25,000 to 30,000 net new jobs in these clusters at an average salary of \$29,500 in the Fresno Metropolitan Statistical Area between 2003 and 2008. As of early 2006, almost 9,000 net new jobs had been created.

The Regional Jobs Initiative operates through several task forces focusing on multiple dimensions of competitiveness, including innovation, work force development, physical and technology infrastructure, customer service, government affairs, finance and capital, communications and livability.

RJI also recognizes that these efforts will only produce short-term gains unless every component of the community continually strives to innovate and collaborate. The RJI was founded upon a list of ten community values known as the 'Guiding Principles of the Fresno Region', which were developed collaboratively by over one hundred business, education, civic, and grass roots leaders. They include values such as stewardship, boundary-crossing, "art of the possible" thinking, fact-based decision-making, truth telling, and power parity. Today, these values act as a touchstone not only for RJI, but other regional efforts.

Because of work of RJI and other regional initiatives, in June 2005, California Governor Arnold Schwarzenegger signed an executive order creating a state partnership with the San Joaquin Valley to improve the economic, social and environmental quality of life in the region, seeking to focus state resources and policies to be supportive of regional priorities. More detail on this partnership is found later in this section.



## **GREATER LOUISVILLE:** *Shifting to an Entrepreneurial Orientation*

In the early 1980s, Louisville had been in the midst of a “smokestack” recession. For decades the area’s economy had grown by attracting manufacturing branch plants with plentiful low-cost, hard working labor. Companies like General Electric and Ford built large facilities. By 1974, manufacturing provided the region with 124,000 jobs and 36 percent of work earnings. However, the combination of back-to-back recessions and Asian competition resulted in a severe decline in local manufacturing activity. By 1983, the number of manufacturing jobs had dropped to 86,000 and the total number of jobs in the region had fallen by five percent.

In response to this crisis, the Louisville Chamber of Commerce and later the Greater Louisville Partnership sought to diversify the region’s economy to include two new activities that fit its competitive strengths—air freight and back office/call center operations. By all accounts, the region succeeded quite well with its aims. But Louisville’s leadership did not become complacent. In mid-1996, the two organizations joined forces to reassess the direction of the region’s economy. They convened a regional collaborative visioning process, involving several hundred local executives from the private and public sectors. The visioning process effectively created a challenge for the community—it raised aspirations for Louisville to move from being a “nice, average city” to become an entrepreneurial “hot spot.”

The roadmap that came out of the visioning process was thorough in its coverage of the elements of an innovation-based economy. First, the region chose to intensely focus on two target industries in which it could excel—logistics/distribution and biomedical. Second, the plan called for a “community permeated with a culture of entrepreneurialism” (Economic Development Administration, 2001, p. 17). Investing in assets—including the region’s workforce, physical infrastructure, and the University of Louisville—was recognized explicitly as key to success. In its implementation, the visioning document called for accountability and benchmarking. The region also created one voice for development by merging the Louisville Chamber of Commerce and the Greater Louisville Partnership to form the Greater Louisville, Inc. (GLI).

In a few short years, Louisville has made great strides in promoting entrepreneurship. GLIS created the Enterprise Corporation as a subsidiary to encourage entrepreneurship in general and stimulate advanced-technology business development in particular. The University Of Louisville College Of Business now has one of the top entrepreneurship programs in the country. The region’s local supply of venture capital climbed from \$9 million to \$150 million. To compete even more effectively, Louisville merged with Jefferson County, climbing from the sixty-seventh to the sixteenth largest city in the nation.

## NORTHERN KENTUCKY VISION 2015

Great communities don't happen by accident. They start with vision. In March 2005, a team of nearly 100 civic, business and government leaders launched a community planning effort to develop a strategic plan for Northern Kentucky's future. The group identified six critical areas the region must successfully address to ensure its economic competitiveness and prosperity. The group divided into action teams to study critical issues and develop actions related to:



- Economic Competitiveness
- Educational Excellence
- Effective Governance
- Livable Communities
- Urban Renaissance
- Regional Stewardship.

The teams, which were co-chaired by members of Legacy, Northern Kentucky's young leaders group, engaged neighborhood and community groups, local and state officials, educational and social service organizations, and academic experts from Kentucky's nine northernmost counties and Cincinnati.

In all nearly 2,000 members of the community shared their ideas. Input from that community planning initiative evolved into Vision 2015, a 10-year blueprint for Northern Kentucky. Vision 2015 is sweeping and ambitious. Over the next decade it has the potential to transform Northern Kentucky through talent, innovation and civic contribution.

But Vision 2015 is more than just a plan. It is a call to action. Northern Kentucky's future depends on the ability of regional stewards to work cooperatively and find creative solutions to the economic and social issues facing the area.

### **Q: Who is involved in Vision 2015?**

A: Business, civic, government and education leaders from the nine northernmost counties in Kentucky and Cincinnati are directly involved. Community members and volunteers working with our partners on projects such as Success by Six® and Strive are indirectly involved as they are advancing the goals laid out by the Vision 2015 report.

### **Q: Vision 2015 emphasizes diversity and intergenerational leadership. Why?**

A: There are a number of reasons. First, our community is home to people of different backgrounds, religions, races, genders, ages and abilities. It's essential that the vision represents everyone's needs and desires. Second, we live in a global economy. If we are to speak to

international customers and trade partners, attract diverse talent and appeal to employers, we must make sure everyone feels welcome and represented.

Because Vision 2015 is a plan for shaping our future, intergenerational leadership is essential. During the visioning process members of Legacy, Northern Kentucky's young leaders group, co-chaired the process and each of the action teams. Today, members of Legacy are represented on each of the RSC working teams.

**Q: What authority does Vision 2015 have?**

A: Vision 2015 is not a government organization and doesn't work in any "official" capacity. As members of every sector of the community, we are interested in the region's future. Our job is to encourage organizations – be they government, business, educational or civic – to work toward achieving the goals spelled out in the community vision and to provide any assistance we can.

**Q: What is the focus of Vision 2015?**

A: During the year-long community planning process six areas were identified as critical to the region's economic competitiveness and future prosperity. Today under the direction of the Regional Stewardship Council (RSC), six action teams are dedicated to issues relating to:

- Economic Competitiveness
- Educational Excellence
- Effective Governance
- Livable Communities
- Urban Renaissance and
- Regional Stewardship

## CALIFORNIA PARTNERSHIP FOR THE SAN JOAQUIN VALLEY

### The Partnership

Set in motion by an executive order from Governor Schwarzenegger in June 2005 and renewed in November 2006, the California Partnership for the San Joaquin Valley is an unprecedented public-private partnership sharply focused on improving the region's economic vitality and quality of life for the 3.4 million residents who call the San Joaquin Valley home. The Partnership is addressing the challenges of the region by implementing measurable actions on six major initiatives to help the San Joaquin Valley emerge as California's 21st Century Opportunity.

Led by an appointed, 31-member board, the Partnership engaged hundreds of people in the eight-county San Joaquin Valley to focus on action strategies, and the Board released its Strategic Action Proposal in October 2006. Gov. Schwarzenegger and the state Legislature approved \$5 million in the State Budget for 2006-2007 to jumpstart implementation of the Strategic Action Proposal.



## The Challenges

The San Joaquin Valley has persistent problems of poverty, environmental degradation, and social separation, as evidenced by consistent under-performance compared to other regions in California.

- Average per capita incomes are 32.2 percent lower than the rest of the state
- College attendance is 50 percent below the state average
- Violent crime is 24 percent higher than the rest of the state
- Access to healthcare is 31 percent lower than the rest of the state (based on the number of primary care physicians)
- Air quality is among the worst in the nation

## The Opportunity

The California Partnership has a unique opportunity to provide a world-class region with a diversified economy, a healthy environment, and a high quality of life for all residents through collaboration on a scale that has not been done before.

- Cutting-edge, state-of-the-art, renewable energy systems
- Mobility for people and commerce in new ways
- New model of economic development that supports agriculture and a healthy environment with clean air and plentiful, clean water
- Diversified, globally-competitive economy with skilled workforce
- K-12 public school system that supports student achievement and prepares children for success in college and career
- High-quality, accessible health and human services



## The Work

The Partnership has brought together experts and leaders committed to sustainable economic development, environmental stewardship, and human advocacy. The Partnership is focused on action around ten work groups:

- Advanced Communications Services and Information Technology
- Air Quality
- Economic Development
- Energy
- Health and Human Services
- Higher Education and Workforce Development
- K-12 Education
- Land Use, Agriculture and Housing
- Transportation
- Water Quality, Supply, and Reliability

## The Success So Far

- Five enterprise zones designated in the Valley – City of Arvin, City of Delano, City of Fresno, County of Fresno, and Merced County.
- San Joaquin Valley Air Pollution Control District provided grant funding to plan for a Clean Energy Office as recommended in the Strategic Action Proposal.
- The Hospital Council received a \$500,000 grant from the State to establish the San Joaquin Valley Nursing Education Consortium.
- CA Labor & Workforce Development Agency’s Employment Training Panel awarded Kern Community College District \$500,000 for training in high-wage occupations, such as manufacturing, logistics and construction.
- A \$2 million Community-Based Job Training Grant was awarded to State Center Community College District and West Hills College to provide training through the “Ensuring Agriculture for Tomorrow” (EAT) program.
- U.S. Dept. of Labor awarded \$1.85 million to expand nurse training at community colleges in Merced and Modesto, as well as SCCC’s Madera Center.
- Superintendents from the eight Valley counties have convened to improve K-12 education.
- All eight Valley counties and their respective councils of government are collaborating on the Regional Blueprint Process and were awarded \$2 million in grant funding.
- CalTrans accelerated completion of the Highway 99 Business Plan (274 miles from Bakersfield to Stockton) which calls for \$6 billion to be invested over the next 10 years - \$1 billion was earmarked by the Governor and State Legislature to jumpstart Highway 99 improvements; it was approved in November 2006.
- \$5.3 million in general obligation bonds was approved by voters in November 2006 to be used for water projects in California.





## REFERENCES

Bay Area Economic Forum. *Bay Area Innovation Network Roundtable: Identifying Emerging Patterns of the Next Wave of Innovation*, April 5, 2007.

Chesbrough, Henry. *OPEN INNOVATION: The New Imperative for Creating and Profiting from Technology*. Harvard Business School Press: 2003.

Collaborative Economics. *Clusters of Opportunity Users Guide*. California Regional Economies Project, California Economic Strategy Panel: 2007 edition.

Collaborative Economics. *Innovation, Productivity and California's Prosperity*, California Regional Economies Project, California Economic Strategy Panel: 2004.

Collaborative Economics. *Innovative Regions: The Importance of Place and Networks in the Innovative Economy*. The Heinz Endowments/Innovation Works, Inc./The Pittsburgh Regional Alliance, 1999.

Collaborative Economics. *Strategic Planning in the Technology-Driven World*. Economic Development Administration, 2001.

Council on Competitiveness. *Measuring Regional Innovation: A Guidebook for Conducting Regional Innovation Assessments*, 2005.

Ewing Marion Kauffman Foundation. *Kauffman Index of Entrepreneurial Activity*, 2007.

Friedman, Benjamin. *The Moral Consequences of Economic Growth*. Alfred A. Knopf: 2005.

Gereffi, G.; Humphrey, J.; Sturgeon, T. *The Governance of Global Value Chains*, Review of International Political Economy, February 2005.

Helpman, Elhanan. *The Mystery of Economic Growth*. Belknap Harvard: 2004.

Henton, Doug, John Melville and Kim Walesh. *Grassroots Leaders for a New Economy*; Jossey-Bass: 1997.

Joint Venture Silicon Valley Network. *Index of Silicon Valley*, 2006 and 2007.

Kao, John. *Innovation Nation: How America is Losing Its Innovation Edge, Why It Matters, and What We Can Do to Get It Back*. Free Press: 2007.

Kelly, Tom; Littman, Jonathan. *The Ten Faces of Innovation: Ideo's Strategies for Beating the Devil's Advocate & Driving Creativity Throughout Your Organization*. Currency / Doubleday: 2005.

Lee, C.C. and Yang, J. "Knowledge Value Chain," Journal of Management Development – Volume 19 : Issue 9, November 2000.

Lester, Richard K.; Piore, Michael J. *Innovation: The Missing Dimension*. Harvard University Press: 2004.

Lewis, William W. *The Power of Productivity: Wealth, Poverty, and the Threat to Global Stability*. The University of Chicago Press: 2004.

Massachusetts Technology Collaborative. *Index of Massachusetts: Innovation Economy*, 2007.

Miller, William F. *Regionalism, Globalism and New Economic Geography*. Speech from October 2002.

Miller, William F.; Rowen, Henry, S.; Hancock, Marguerite Gong; Lee, Chong-Moon. *Silicon Valley Edge: A Habitat for Innovation and Entrepreneurship*. Stanford University Press: 2000.

National Center of Education and the Economy. *Tough Choices : Tough Times – The Report on the New Commission on the Skills of the American Workforce*, 2007.

National Governor's Association. *Innovation America: A Final Report*, 2007.

National Governor's Association. *Innovation America: Cluster Based Strategies for Growing State Economies*, 2007.

Radjou, N.; Orlow, L.; Bright, S.; Sessions, L. *Innovation Networks: Global Progress Report 2006 – How Early Adopters Worldwide Profit and Overcome Deployment Hurdles*. Forrester Research, 2006.

Schumpeter, Joseph A. *The Theory of Economic Development*. Transaction Publishers: 1996 reprint (originally published 1934).

Sturgeon, Timothy. "How do we define value chains and production networks?" MIT IPC Globalization Working Paper, Special Working Paper Series, Globalization Study Industrial Performance Center, 2000.

Tabscott, Don; Williams, Anthony D. *Wikinomics: How Mass Collaboration Changes Everything*. Portfolio: 2006.

Taleb, Nassim Nicholas. *The Black Swan: The Impact of the Highly Improbable*. Random House: 2007.

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