






Lever 3: Develop Innovation-Enabling Infrastructure

The ability to innovate has been a longstanding driver of productivity gains, and is a growing priority in economic development policy and practice. Tracking the stages of innovation as it translates to economic growth—from idea to product to commercialization, and from new firm creation to market expansion—may reveal the need to intervene to improve knowledge networks, university-industry partnerships, flows of investment capital for R&D and new ventures, and the general business environment and culture.

While the region remains fertile ground for research and development of new ideas emerging from the private sector and the academic environment, there are multiple areas where smaller firms stumble en route to commercialization, hampering prospects for job creation.

<u>Key Findings</u>	<u>Evaluation</u>
<ul style="list-style-type: none"> • In 2008, filers in Minnesota were awarded patents at the 7th highest rate nationally, and nearly double the national average.⁷² Still, in recent years the state’s rank in the number of patent filings fell from 8 to 13.⁷³ 	
<ul style="list-style-type: none"> • The state’s level of research intensity – reflecting the total research and development investment per dollar of the state’s gross domestic product – ranks twelfth nationally.⁷⁴ 	
<ul style="list-style-type: none"> • Key inhibitors to commercializing innovative ideas in the region are a shortage of funding at critical junctures in the startup life cycle and a lukewarm entrepreneurial environment. 	
<ul style="list-style-type: none"> • In 2009, Minnesota companies raised \$24.21 per capita in venture investments, compared to \$110.49 in California and \$158.48 in Massachusetts.⁷⁵ 	
<ul style="list-style-type: none"> • The region’s twenty-one Fortune 500 firms generate innovation and spinoff activity, and bring substantial potential to exchange mutual benefits for smaller companies in the region. 	

Current State of Innovation

The development of new ideas and products has been an area of comparative strength for the region. The presence of a major research institution in the region (and another in Rochester, located eighty miles to the southeast) is an influential force in development of intellectual property. However, the region’s effectiveness in developing intellectual property has not translated well to commercialization. Recent efforts identify two key barriers: Shortage of funding at critical junctures in the startup life cycle and a lukewarm entrepreneurial environment.

Interviews with entrepreneurs, angel investors and venture capitalists depict a marketplace that has shifted in recent years. Transaction costs and the risk of dilution have increasingly pushed investors toward larger investments (\$5 million or more) in later-stage firms, leaving underserved firms seeking early-round capital in smaller amounts. The most acute need for funding frequently involves firms between a “family and friends” round of financing, and the \$5 million level that continues to attract attention from venture capital firms and angel networks.

For several years (including prior to the recession), entrepreneurs and advocates in the region have called for improved availability of startup and small business capital as a lever to stimulate business and job growth. Indices of traditional financing channels for small business present lackluster capital availability in the region. The region lags comparable metros in the number of small business loans and in early and seed stage funding, with \$261 per capita versus California (\$1,230) and Colorado (\$590).⁷⁶

Venture capital investment also flows less aggressively to entrepreneurs in the region than elsewhere. The relatively modest volume of venture deals in the region increases discovery and transaction costs that investors and funds bear, reducing funder interest.⁷⁷ It also undermines the region’s ability to develop a cycle of investment in startups, publicity both for successful firms and their region, which leads to increased investor attention in the region and a reduction in discovery costs that spurs investment.

The biosciences provide an example. Across multiple related clusters – medical devices, biologics and biopharma, animal health, food, renewable energy and renewable materials – startup or seed funding is virtually absent. Analysis indicates limited capital availability for early and mid-stage firms across these industries, and a fully functional access to financing only for the medical devices industry. While offering a strong record of performance both for investors and as centers of job growth, interviews indicate that venture investments in medical technology firms generally demand turnaround (or exit) time of seven to nine years, which further constricts capital for firms in other industries.⁷⁸

In the words of one entrepreneur, the first investment of startup financing is from family and friends. The third investment is an agreement with a venture capital firm. The second, middle investment is the most undependable in the region, leading to its label as “the impossible round.” And yet, without funding expansion in this critical early phase of firms’ lives, there will be no third round or the job creation and economic activity associated with a mature firm in an innovative field, headquartered in the region.

Prospects for Entrepreneurial Culture

The region’s twenty-one Fortune 500 corporations, while generating substantive regional benefits by headquartering in the region, are not part of an entrepreneurship cycle that would offer advantages both to corporate purchasers and the region’s small businesses. Each of these major corporations follows purchasing practices to target disadvantaged businesses, but a lack of emphasis exists on working with small firms located in the region to achieve cost savings and top quality. Such relationships bolster small firms’

pitch to venture capital investors and other audiences key to their expansion. Similarly, public and private pension funds based in the state do not have substantial allocations for venture capital, which is a missed opportunity to stimulate entrepreneurship in the region.

Absence of a unified economic development entity leaves an unmet need for coordination of a myriad of organizations that already provide technical assistance, advocacy for raising capital, and other support. Reducing the costs of finding and leveraging these supportive services is a method of facilitating entrepreneurship. The more quickly and efficiently entrepreneurs can become aware of and utilize available support, the more potential for employment and economic growth is brought to bear.

Entrepreneurs have noted in interviews the comparative embrace of business failure in other regions as evidence of experience and hands-on learning; in this region, business failure is viewed much less favorably. Cultural factors of risk aversion and modesty undermine both the willingness to assume entrepreneurial risk and the impulse to celebrate successful entrepreneurial efforts.

Improving the Innovation Channel from Research Institutions

The University of Minnesota-Twin Cities ranks among U.S. institutions with the highest measures of research activity, ranking in the top ten in a tally of scientific papers generated, and 9th among public institutions in aggregate dollar value of research.⁷⁹ Academic research undertaken in the region is recognized for its economic value: The University ranks in the 99th percentile for licensing income and 77th percentile for licenses executed for research generated in the institution.⁸⁰ Still, leaders within the research institutions and business community indicate room for improvement. Among the top eight universities in licensing income (University of Minnesota ranks sixth), Minnesota is ranked the lowest in terms of start-up activity.⁸¹

In addition to limited bricks and mortar infrastructure bridging the commercialization gap, the University has been criticized in the past for a prohibition on researchers holding more than a 5% equity position in firms bringing their intellectual property to the marketplace.

Economic development starts with existing assets, and a robust flow of innovation and idea generation provides a critical first building block in increasing regional economic health and competitiveness. The region's prospects for growth are constrained not by innovation, but its effective commercialization. Improving funding availability and the environment for entrepreneurship are key ingredients to increase the productivity of ideas generated in the region.

Goals

- Increase volume of risk capital available across early stages of firm life cycle
- Translate strong idea generation effectively to commercial enterprise and job growth
- Retain and grow concentration of Fortune 500 firm headquarters
- Coordinate economic development activities in innovation and entrepreneurship

- Promote an environment that values risk taking and entrepreneurship

Strategies to Develop Innovation-Enabling Infrastructure

Create a Regional Entrepreneurship Accelerator

A substantial inhibitor of commercialization of intellectual property in the region is lack of funding continuity across multiple early stages. The ability of entrepreneurs to access capital is most effectively expanded with financial products coupled with technical assistance, providing the type of support offered by an entrepreneurship accelerator. The need exists regionally to accelerate entrepreneurship by matching seasoned veterans of regional startups with entrepreneurs currently engaged in building companies from scratch. These veterans are matched to entrepreneurs to advocate on their behalf and accelerate their learning to land early stage capital of all types, produce business and strategic planning, evaluate viability of products and services, identify markets and leverage potential links to research institutions. The accelerator also identifies cases of effective and flexible local approaches to business development and approval, and leads an initiative to organize leaders in metropolitan cities to effect metropolitan change one municipality at a time.

JumpStart, Inc., established six years ago in Cleveland, provides a compelling model for this breed of intervention. JumpStart, funded by the U.S. Economic Development Administration, Surdna Foundation and Knight Foundation, is partnering with the region to establish a new local initiative reflective of the JumpStart model. In its implementation phase, the entrepreneurship accelerator will aggregate and invest risk capital in new firms, provide technical assistance and apply matching technology to connect investors globally with entrepreneurs in the region.

Biomedical Discovery District

University of Minnesota efforts to commercialize technology and intellectual property have significantly improved in recent years, but are making up for years of lost time. The development of the University Enterprise Labs (UEL) business incubator by the University of Minnesota and the City of Saint Paul has met mixed success. While occupancy rates have been high, UEL has not hatched start up companies spun out of University research. Currently, the University is in the middle of developing a \$292 million Biomedical Discovery District which will house research facilities conducting translational research on diabetes, Alzheimer's, cancer and infectious diseases. To aid the commercialization of this and other University research, private sector developers are planning the Minnesota Science Park literally across the street from the Discovery District. The Minnesota Science Park is planned to comprise a series of buildings housing start up and established companies attracted to the proximity to the University. A \$20 million private venture capital fund to finance early stage activity is a key part of the plan.

Itasca Project Initiative for Further University-Business Community Collaboration

The Itasca Project has developed recommendations to enhance commercialization of innovation emerging from research institutions. Concepts include strengthening the market focus of University research, liberalizing the ability of researchers and other faculty to participate as investors and entrepreneurs more fully with respect to ideas they cultivate, and raising the profile of business plan competitions in coordination with the University.

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