Accelerating the development of an innovation economy in Cincinnati

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Context

The Cincinnati region is the home to a diversified group of large, successful companies, with nine Fortune 500 company headquarters in the area. In particular, Cincinnati possesses a distinctive strength in consumer goods and services, anchored by companies such as Procter & Gamble (P&G), Kroger, Macy's, and the many design and branding agencies that these companies have helped attract to the city to work with them. Health care and life sciences are other particular industry strengths within the region. Area pillars include both academic institutions – such as Cincinnati Children's Hospital ("Children's") and the University of Cincinnati (UC), with its Colleges of Medicine and Engineering – and companies such as Ethicon Endo-Surgery and Hill-Rom.

The region lays claim to a long and robust history of innovation across a broad array of domains – from jet engines to Benadryl. The region continues to churn out patents at an enviable rate led by institutions such as P&G and GE Aviation. Over $400 million in annual research funding between Children's and UC complement this patent activity. The emergence of accelerators like the Brandery and entrepreneurial support providers and funders such as CincyTech and the Queen City Angels have created the necessary support to turn innovative ideas into commercial entities. Together, Cincinnati has established a foundation for the region across three critical dimensions for any thriving entrepreneurial ecosystem: ideas, environment, and capital.

However, recent economic indicators have shown that Cincinnati is lagging many of its peer cities on some of the most critical needs for startup companies, such as the attraction of venture capital. Thus, the Cincinnati Business Committee formed a Regional Innovation Task Force to build the strategic framework and action plan to dramatically accelerate the development of an innovation economy in the region.

Task Force Membership

Chairs

Jim Anderson, Fmr. Pres & CEO, Children's Hospital

Bob McDonald, Chairman & CEO, P&G

Members

John Barrett, Chairman & CEO, Western & Southern

Margaret Buchanan, President/Publisher, Cincinnati Enquirer

Bob Castellini, Chairman Castellini Company

Bob Coy, President, CincyTech USA

Dave Dougherty, Exec. Dir., Cincinnati USA Regional Partnership

Michael Fisher, President & CEO, Cincinnati Children's Hospital

Kay Geiger, President, Cincinnati/N. KY, PNC Bank

Fr. Michael Graham, President,Xavier University

Julie Janson, President, Duke Energy OH & KY

David Joyce, President & CEOGE Aviation

Gary Lindgren, Exec. Dir., CBC

Mike Prescott, Cincinnati Market President, US Bank

Ed Rigaud, Owner/Co-Director, EnovaPremier/Taft Business Consulting

Ellen van der Horst, President & CEO, Cincinnati USA Regional Chamber

Jeffrey Weedman, VP, Global Bus. Dev., P&G

Gregory Williams, President, University of Cincinnati

Tom Williams, President, North American Properties

McKinsey & Company contributed to this effort by providing fact-based analysis to support the recommendations of the Regional Innovation Task Force.

Objectives

The goal of this Task Force was to identify the most critical means to foster an environment – or "ecosystem" – in which entrepreneurs can start and grow innovative businesses. To that end, there were five objectives:

1. Build an objective, 'outside-in' inventory of the assets that Cincinnati can leverage to foster an innovation economy.

2. Identify priority industry clusters to focus the efforts and understand their capitalization needs.

3. Map the required 'ecosystem' of capabilities, talent and enablers and how they will interact to create the virtuous cycle of economic development.

4. Compare inventory to required 'ecosystem' to identify and prioritize key gaps to address and unique strengths to leverage.

5. Develop transition roadmap that the Regional Innovation Task Force can implement

1. INVENTORY OF ASSETS

The Task Force identified three critical dimensions of any thriving innovation economy: idea generation and commercialization ("Ideas"), people and entrepreneurial environment ("People"), and financial capital ("Capital"). "Ideas" refer to innovations (including but not limited to intellectual property) that can be commercialized into quality goods and services. "People" refers not only to the entrepreneurs with the drive to start, grow, and manage businesses, but also to a culture that encourages risk taking and organizations that provide valuable mentorship and other services to entrepreneurs in their earliest stages. "Capital" refers to the availability of the necessary forms of financial capital at various stages of company formation and development – startup, early, growth.

To develop the 'outside-in' inventory of Cincinnati's assets along these three dimensions, we engaged more than 150 community stakeholders through interviews and workshops and also collected the necessary fact base to assess the themes that emerged.

Ideas

The two major research institutions in the region, the University of Cincinnati (UC) and Cincinnati Children's Hospital have been successful at attracting meaningful research funding. Children's received the second-most NIH funding among pediatric research centers in 2010, and UC is among the top 25 in research spending for public universities. Combined, these two attracted nearly $450 million in research funding in 2010. Furthermore, UC translates its research funding into more invention disclosures, normalized per dollar research, than such institutions as MIT and Stanford.

Corporate pillars in the region also represent meaningful pools of ideas – both in traditional intellectual property and through their strong employee talent base. Procter & Gamble, GE Aviation, Ethicon Endo-Surgery (a Johnson & Johnson company), and Hill-Rom all generated more than 100 patents each between 2005 and 2009. As a result, Cincinnati has averaged more patents per employee than peer cities such as Pittsburgh, Cleveland, or Columbus over this time period.

People

Area academic and corporate institutions also serve to create a pipeline of young entrepreneurial, creative, and technical talent for the region. For example, Miami University, Xavier University and the University of Dayton all have undergraduate entrepreneurial programs ranked in the top 25 by Princeton Review. UC's DAAP program consistently ranks among the top design schools in the country, and its engineering program awarded over 600 undergraduate and masters degrees last year.

In addition, there are many area organizations that serve a range of needs for entrepreneurs – from physical space provided by accelerators and incubators to mentorship and business plan competitions by a variety of service organizations.

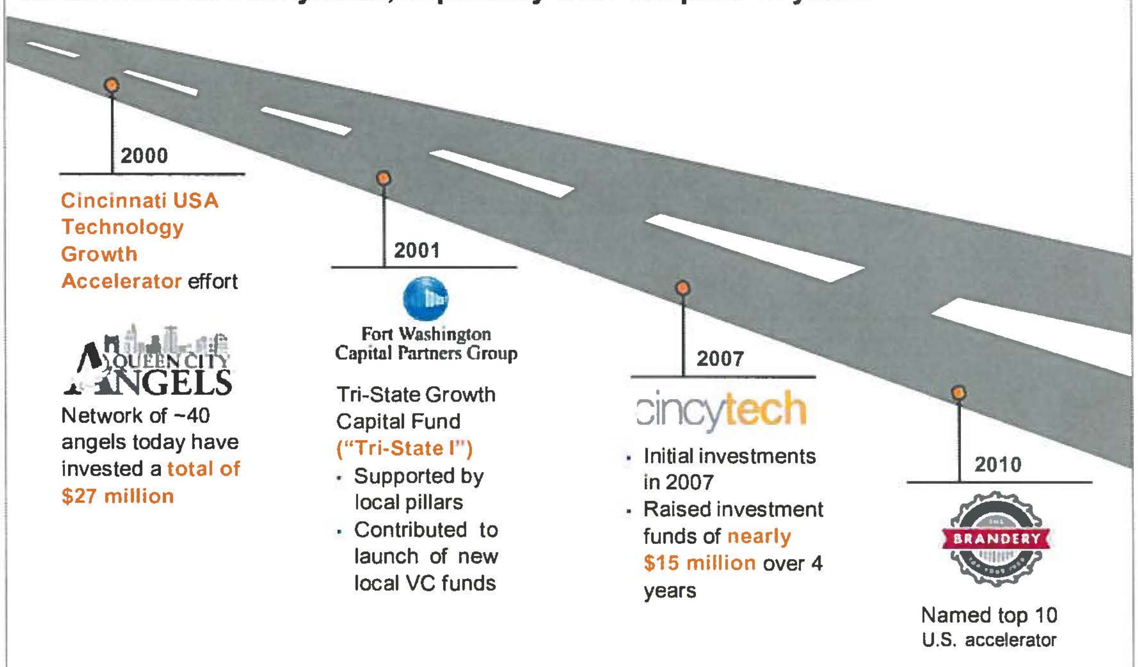
Financial capital

Prior efforts to bolster innovation in the region laid the groundwork for financial capital in the region. On the heels of former P&G CEO A.G. Lafley declaring the need for greater regional support in the fall of 2000, the region established the Tri-State Growth Capital fund of funds of approximately $40 million with investments from local pillars such as P&G, Western and Southern, Convergys, Fifth Third Bancorp, E.W. Scripps, Ashland, Children's, UC, GE Aircraft Engines, and Castellini Co. The fund – along with its successor, Tri-State Growth Capital Fund II – not only contributed to the launch of local venture capital funds, but also to investment support in area startups, such as Comet Solutions, Construction Software Technologies, and SpineForm.

Importantly, there has been significant growth recently in local seed-stage capital investment, far outpacing the national average growth rate from 2007-2010. This is due in part to prior efforts that resulted in the creation of CincyTech, the growth in the organized angel investor community through the Queen City Angels, and support from Ohio's Third Frontier Program.

Exhibit 1: The Cincinnati region has been investing to develop its innovation ecosystem, especially over the past 10 years

NOT EXHAUSTIVE



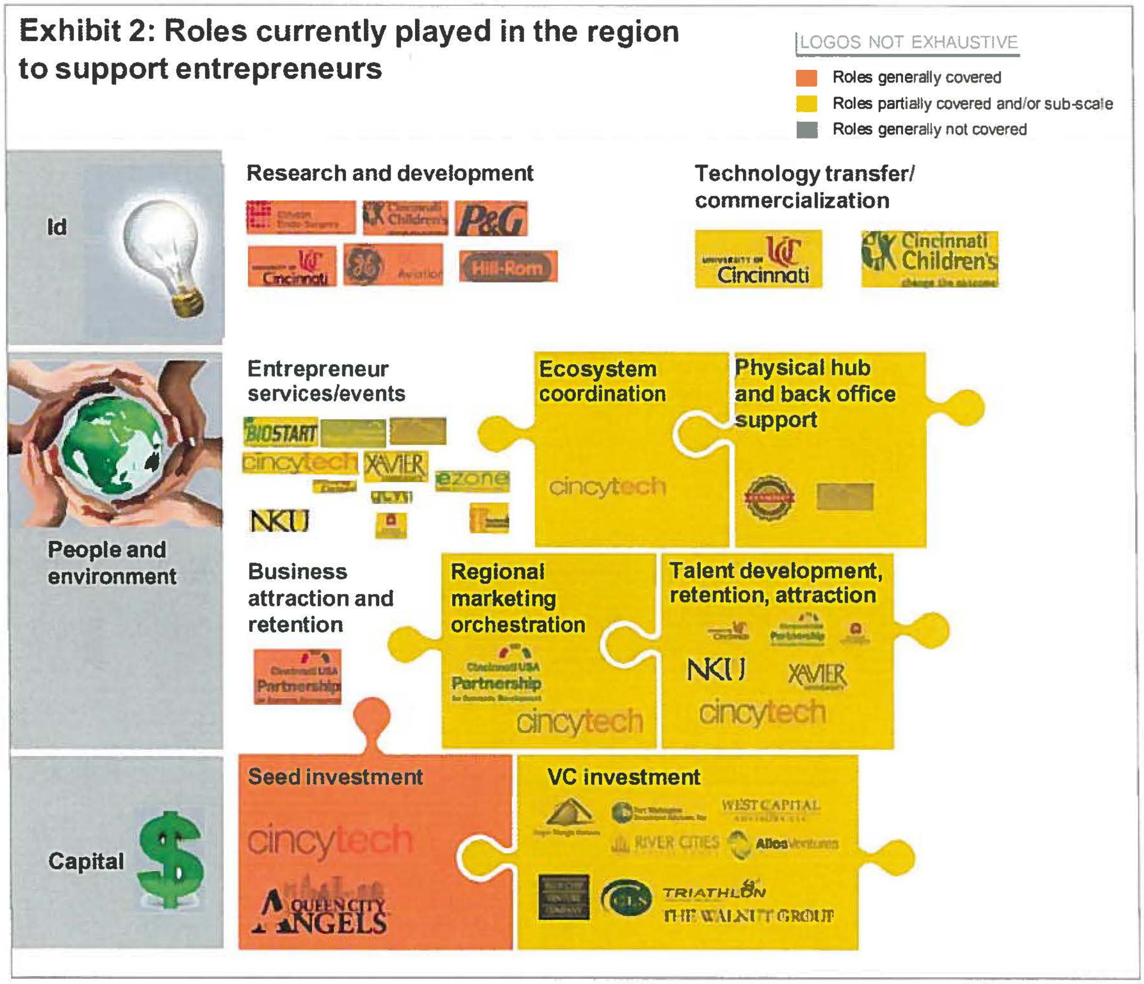
SOURCE: Press search; organization Web sites

Together, this has helped to fuel a meaningful pipeline of recent startups in the region. Several startups – Akebia Therapeutics and AssureRx – successfully raised institutional venture capital from both local firms and those from outside the region.

2. REQUIRED ECOSYSTEM ROLES AND ASSESSMENT OF GAPS

Within Ideas, People, and Capital, we identified the key roles required for any ecosystem in which entrepreneurs can create and grow businesses successfully. Several roles in the Cincinnati region are operating effectively, such as research funding and seed capital investing. Many others, however, lack sufficient resources and/or capabilities to enable a truly distinctive innovation economy.

Exhibit 2: Roles currently played in the region to support entrepreneurs



Ideas

Research and development: Research institutions are attracting meaningful investment and multiple corporations have a foundation of intellectual property and innovative talent. Over a ten-year period, UC produced more invention disclosures per dollar of funding than MIT and Stanford. Children's attracted over $150 million in funding, making it one of the largest pediatric research programs in the nation.

Technology transfer/commercialization: Despite the "inflow" of financial and human capital to creating ideas, there is broad recognition that the region could improve the degree to which these ideas are commercialized. This requires not only resources at the research institutions, but also the mindset and behavior changes to produce more commercial ventures (see Figure 1). This requires not only resources at the research institutions, but also the mindset and behavior changes to produce more commercial ventures.

Figure 1: Research commercialization for select universities and hospitals, 2000-09 cumulative

Group	Institution	Research expenses $ Billion	Invention disclosures Per $10 MM research	Patents filed/ Invention disclosure	Patents issued/ Patents filed	U.S. Patents issued	Normalized licensing revenue $MM/$ bn R&D	Licens-ing FTEs	Other TTO FTEs
Frequently cited	MIT	10.7	4.55	92.8%	32.3%	1,457	46	16	18
	Michigan	7.5	3.57	83.1%	32.6%	729	18	8	16
	Stanford	5.7	5.91	**96.5%**	30.5%	991	**82**	15	12
	Ohio State	5.2	2.71	45.6%	37.9%	242	2	6	5
	Purdue	3.6	5.20	94.7%	14.5%	255	9	6	6
	Case Western	2.8	4.24	60.2%	23.0%	163	31	7	3
	U. of Utah	2.7	**6.63**	87.5%	19.3%	305	46	8	12
Peer universities by $R&D[1]	Carnegie	2.1	5.28	49.7%	**48.6%**	270	22	5	4
	Oregon State	1.7	2.75	74.3%	21.4%	75	10	4	1
	U. of Kentucky	1.7	4.36	35.9%	**85.2%**	225	9	2	1
	Dartmouth	1.5	2.69	**118.1%**	22.4%	108	56	2	2
	UConn	1.5	5.11	81.0%	30.0%	183	6	4	2
	U. of Cincinnati	**1.5**	**6.44**	**49.4%**	**24.9%**	**115**	**15**	**4**	**2**
	Clemson	1.4	3.31	76.0%	26.4%	92	23	2	2
	Arizona State	1.4	**8.29**	**97.7%**	15.7%	172	15	5	5
	Wake Forest	1.3	3.50	56.0%	34.6%	91	**336**	3	2
	Utah State	1.3	4.07	41.4%	19.5%	44	3	3	1
General hospitals[2]	Massachusetts General Hospital	4.2	5.41	112.7%	21.4%	554	239.1	9	16
	Mayo Foundation	4.0	7.14	61.4%	19.2%	339	42.7	10	12
	Beth Israel Deaconess Medical Ctr.	1.8	4.13	102.5%	20.6%	153	14.6	4	4
	Cleveland Clinic	1.6	9.43	53.5%	18.6%	151	33.7	10	6
Children's hospitals	**Cincinnati Children's**	**1.6**	**3.04**	**66.2%**	**16.8%**	**53**	**27.6**	**2**	**4**
	Children's Hospital Boston	1.5	7.05	99.9%	21.7%	223	93.3	5	9
	Children's Hospital of Philadelphia[3]	0.7	2.57	77.5	16.3%	23	279.9	6	1

1 Excludes universities with incomplete data sets
2 Only hospitals that reported separately from affiliated universities
3 Data only available for 2000-01, 07-09 (5 years)

SOURCE: AUTM STATT database

People

"A lot of effort gets spent on many events. We need fewer with more bang for the buck."

Entrepreneur services / events: There are numerous organizations in the region that organize events and other support services for entrepreneurs, but the efforts are fragmented and lead to sub-scale activities. These efforts would have more significant impact if resources were pooled and initiatives better coordinated. Said one entrepreneur, "A lot of effort gets spent on many events. We need fewer with more bang for the buck."

Ecosystem coordination: The many organizations in town make coordination across all of them a challenge. Coordination between some organizations certainly occurs, but there are few, if any formal mechanisms for all support organizations to come together and align agendas and goals on a regular basis. Said one entrepreneur, "We need someone who's waking up in the morning with the responsibility for all of these pieces of the puzzle."

Physical hub and back-office support: The region is already starting with one of the largest incubators in the Midwest, in the Hamilton County Business Center, which has housed nearly 300 business start-ups since 1989. The recent addition of the Brandery has created a beacon for new classes of startups each year. Still, most participants acknowledged that there was no true locus of innovative entrepreneurship in town, and no physical facility that provides a wide range of basic back-office, education, networking, and mentorship services to entrepreneurs at low or no cost.

Business attraction and retention: With the recent restructuring of the Cincinnati USA Partnership and participation as a Jobs Ohio Network Partner, most participants acknowledged that there was sufficient resource focus for business attraction, retention, and growth.. While startup development is not a Partnership focus, strong coordination with their work in priority cluster areas will be increasingly important for the region.

"We need someone who's waking up in the morning with the responsibility for all of these pieces of the puzzle."

Regional marketing orchestration: There is broad acknowledgement that the awareness of the startup community has vastly improved in recent years, with much greater traction in the local press. Still, when compared against peer cities, two distinctions stand out: first, the much greater degree to which similar organizations (e.g., Jumpstart in Cleveland) invest in human and financial resources for ongoing marketing efforts and second, the formal policies of organizations like BioEnterprise to put forth all press releases on behalf of Northeast Ohio as a region, rather than on behalf of any specific organization.

Talent development, retention, and attraction: While there was nearly universal recognition that attracting the right talent for statups – particularly executive and technical talent – was difficult for the region, efforts to address this gap are still nascent or not fully coordinated across different kinds of institutions (e.g., support organizations leveraging university alumni associations).

Strategic roadmap planning and execution: As compared to peer cities such as Pittsburgh (Allegheny Conference) or Cleveland (NorTech), no independent organization exists to set the strategy and goals for the region with respect to innovation and continue to execute against them by convening the right participants and orchestrating the execution plan for the entire region.

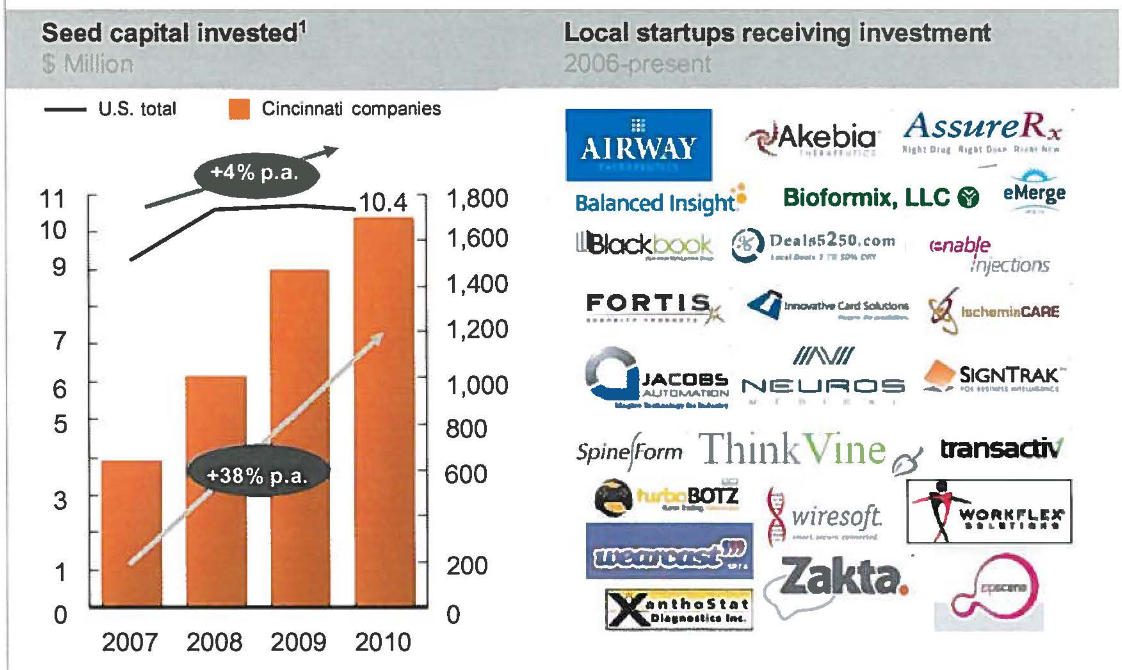
Consolidated fundraising and allocation: An important enabler for greater coordination seen in other regions is the ability to tie regional priorities to funding. Once again, no independent, non-profit organization exists that is squarely focused on raising and distributing financial resources that are aligned to the regional innovation strategy.

Capital

Seed investment: The region has far outpaced the national average in its growth in seed capital, facilitated in part by state policies and the local private investment in organizations such as CincyTech and the Queen City Angels. Still, advances should not be taken for granted as continued success depends at least in part on state policy decisions and the ability to raise increasing levels of local capital to match state grants. At current rates of startup company formation, an estimated $40-60 million of seed stage funding will be needed in the next 5 years – nearly all of this would likely need to be funded at the local or state level (see Figure 2).

Figure 2: Recent momentum in local seed/angel funding has helped to propel startup creation

NOT EXHAUSTIVE



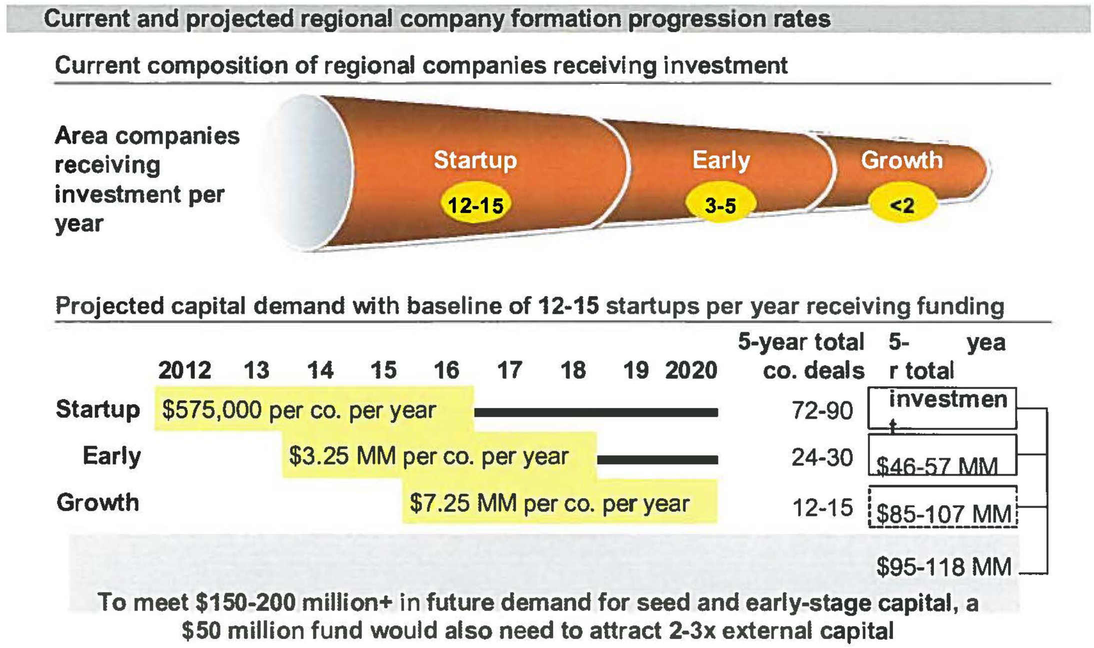
1 Excludes Akebia; does not capture all individual investments
SOURCE: VentureSource, CincyTech, PWC MoneyTree

Venture capital investment: While there are a number of venture capital firms in the region that provide much more than financial capital (e.g., networks, domain expertise), many of them are low on funds. Furthermore, with the growing demand for venture capital driven by the increase in seed-stage companies in the region, this gap is likely to continue to widen without a material change in the current venture capital landscape in the region (see Figure 3).

Government advocacy: The region had an important role in shaping many of the state policies that directly support innovative entrepreneurship, but the results over the last ten years indicate the lack of a continued, formalized effort to align regional efforts to state funding (and vice versa). Efforts by individual organizations at times achieve positive results, but the lack of a formal, coordinated "advocate" on behalf of the entire innovation ecosystem for the major sources of public funding remains a gap.

Foundation support: Additionally, the philanthropic community in the region has focused relatively less on economic development causes than other cities in the state of Ohio (see Figure 4). Other cities in the region (e.g., Cleveland) have much more effectively coordinated the philanthropic assets to target outcomes in economic development and even more specifically in the entrepreneurial ecosystem.

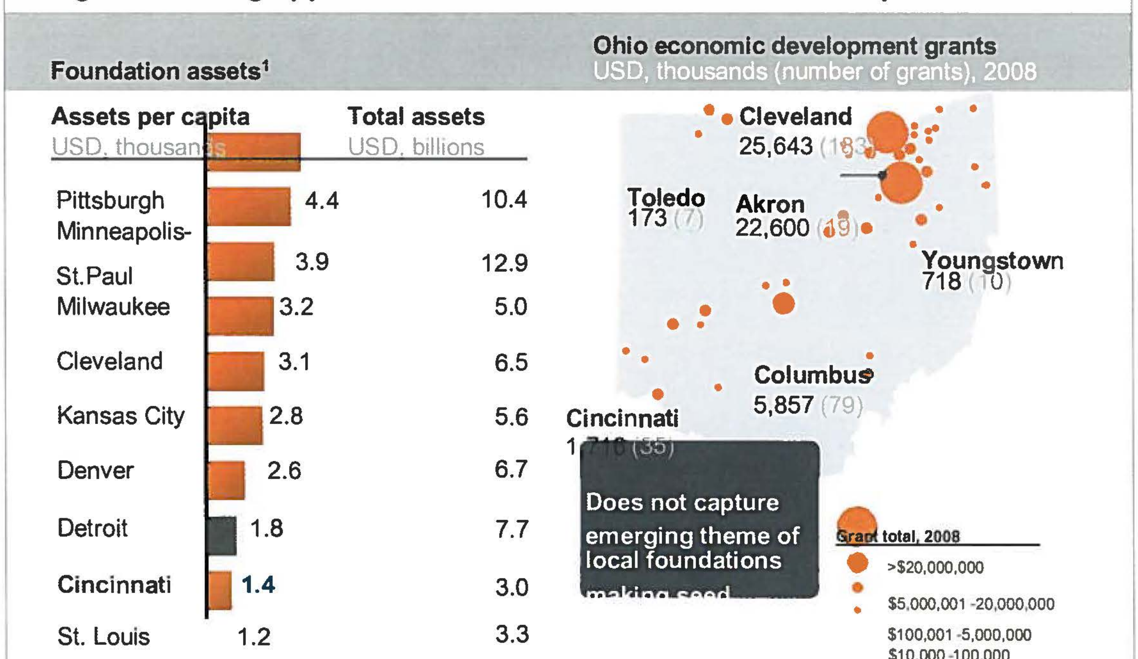
Figure 3: Current and projected regional company formation progression rates



1 Companies assumed to remain in each stage for 2 years, with 33% chance of progressing from seed to early stage and 50% chance of progressing from early to growth stage; number of seed companies receiving investment assumed to increase 6% per year from 15-20 in 2011, investment per company assumed to increase 5% per year; assumptions largely based on 2009 Ohio Venture Capital Report, Fisher College of Business

SOURCE: VentureSource; PWC MoneyTree; Preqin; Blue Chip Ventures; CincyTech; Queen City Angels; 2009 Ohio Venture Capital Report, Fisher College of Business

Figure 4: Cincinnati has fewer foundation assets than national peer cities and grant making appears less focused on economic development



1 As of 2009; Search set includes all active private and community grantmaking foundations located in the state

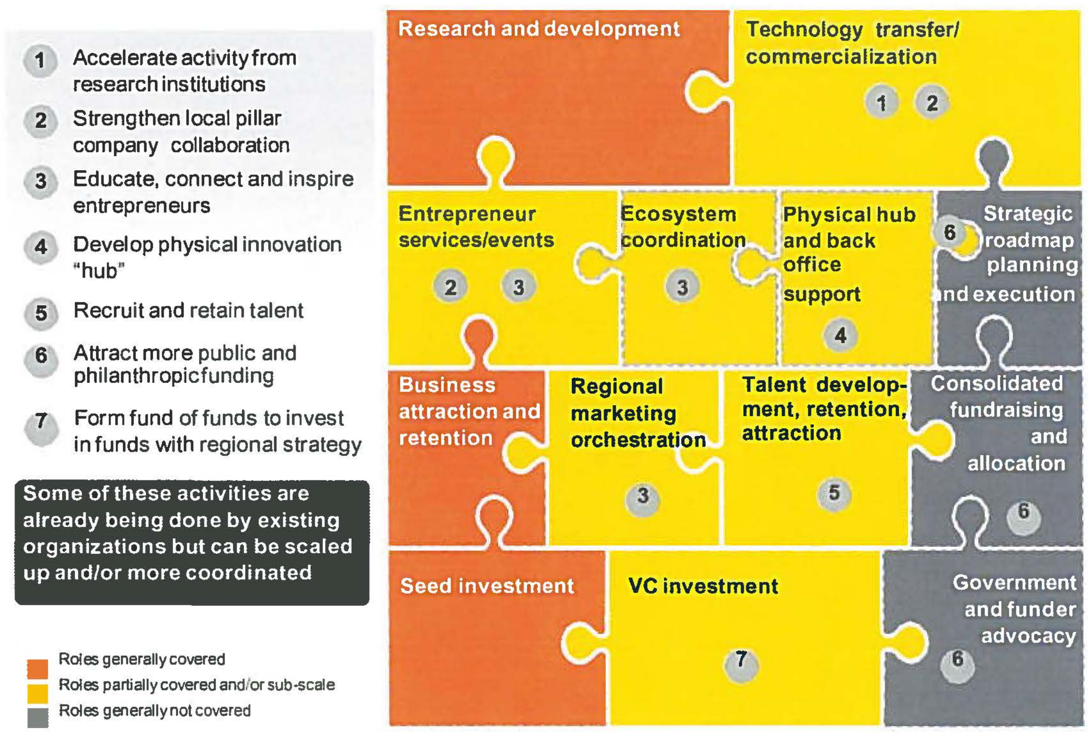
SOURCE: Foundation Center

Summary

Many of these roles and capabilities discussed across Ideas, People, and Capital already exist in the region in some form today. However, what many local stakeholders made clear is that they want a fundamentally independent organization with its interests aligned with those of the region overall. Still, rather than try to replace existing efforts, an independent entity should also leverage the capabilities of existing organizations and avoid duplication.

3. RECOMMENDATIONS TO ADDRESS GAPS

Exhibit 3: The 7 recommendations are designed to address identified gaps



1. ***Accelerate activity from research institutions:*** The major research institutions need to establish a blueprint for their own internal efforts with collaboration from ecosystem stakeholders These blueprints should include (but not limited to) commercialization advisory committees, significant staffing and financial resources to increase the rate of patent filings, and aggressive institution-wide goals for invention disclosures and startups.

   The culture within research organizations is also critical to the long-term success of this vision. Encouraging, promoting and rewarding innovation, commercialization and entrepreneurship among faculty, staff, and students is critical to these efforts. Other institutions have addressed these issues through enabling faculty to simultaneously hold C-level positions in start-up companies (e.g., Carnegie Mellon University), incorporating patents and commercialization into tenure decisions (e.g., Texas A&M University), and permitting part-time employment and leaves of absences for faculty wishing to start companies (e.g., University of Michigan).

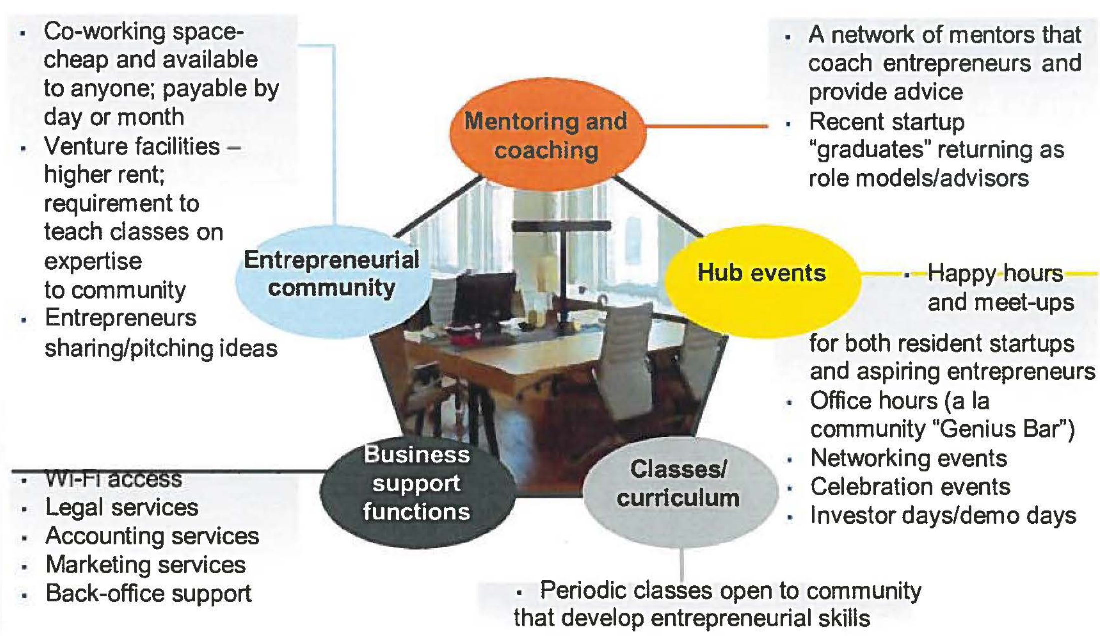
2. ***Strengthen local pillar company collaboration:*** Corporations have underutilized assets beyond just financial support – employees as mentors, capacity as customers, non-core intellectual property, etc. These institutions should identify the most meaningful ways they can actively participate in the ecosystem. In the same vein, representatives from pillar companies identified the need for a more formalized "triage" process of ideas coming to them. There is a need for a "trusted agent" role to streamline the process of connecting local idea generators with pillar companies.

3. ***Educate, connect and inspire entrepreneurs:*** Many service providers exist in the region, but they need even greater coordination to scale up the many efforts to create truly distinctive support through marketing, mentorship, and networking. Currently, multiple organizations play roles within this, but there is no clear consensus on a single organization that serves as the overall coordinator between groups and opportunities. Creating clarity and accountability for a single point – for someone "who's waking up in the morning with the responsibility for all of these pieces of the puzzle" – would address this need.

4. ***Develop physical innovation "hub":*** The region should thoughtfully focus resources around a specific geographic location to create a physical place to concentrate a critical mass and needed "buzz" for entrepreneurs to share ideas and resources. The "Hub" could eventually serve as the central "campus" in a network of physical locations throughout the region. Some of these locations may already exist while others will grow out of the ongoing work.

   A central "Hub" will create a neutral, single point of entry for entrepreneurs in an area of town that is conducive to attracting a critical mass of entrepreneurs. This role should represent a collaborative environment, market successes and events on behalf of the region (not any one organization) and lead pilot programs or other efforts to attract talent. It could also provide back office services to startup companies. In many cases, it can begin to build out the services before a permanent physical location is established.

Exhibit 4: A central hub can serve to attract potential entrepreneurs, startups, funders and mentors in one area



5. ***Recruit and retain talent:*** Startup companies find it extremely difficult to identify C-level executives who have relevant experience in the region, as well as needed technical talent. There are a number of efforts by individual organizations underway or being designed that should be appropriately resourced and piloted to identify the most impactful way to attract needed talent to the region.

6. ***Attract more public and philanthropic funding:*** The region has not attracted its pro rata share of Third Frontier dollars from the state and lags other cities in Ohio on philanthropic grants made towards economic development. The region must be better organized in developing proposals and aggressively pursuing state and local opportunities. In addition, the region must be more proactive in shaping the policy landscape related to innovation and economic development. Furthermore, the region is home to significant pockets of individual wealth, with more households per capita with over $1 million in assets than Austin, Pittsburgh, and Columbus. Yet only three of the top eleven area foundations have a stated focus on economic development. These examples highlight the potential opportunity from promoting the need for greater economic development support.

7. ***Form fund of funds to invest in funds with regional strategy:*** As more startups with seed funding grow in the region, an estimated $80-110 million in early-stage funding will be needed for these companies over the next 5 years. There is wide acknowledgement that it will be difficult to meet these needs entirely from local investor sources. But recent examples like AssureRX have highlighted the importance of having a local venture capital firm (i.e., Allos) that can make an investment from outside firms more attractive, because it provides greater oversight and close support during such a critical growth stage. To address this gap, the region should form its own fund of funds to target venture capital funding for local companies, while balancing the need to attract external capital by not placing overly burdensome requirements on fund managers.

   The risk in doing nothing is the potential for many seed-stage companies recently formed to feel compelled to move closer to funding opportunities, as several local CEOs have indicated they have already contemplated.

4. GETTING STARTED – YEAR 1 ROADMAP

Existing organizations will need to add resources and build capabilities in the next 6-12 months to address some of the major recommendations. Many organizations like UC are already stepping up to create a more formalized roadmap for itself on how to drive more commercial ventures out of its research. Additionally, organizations like CincyTech with support from the Cincinnati Business Committee and Cincinnati USA Partnership are leveraging privately matched state support to target resources at some of the most critical support infrastructure needs.

We see three groups of capabilities that need to be built or drastically accelerated for the region in the next 6-12 months to enable these recommendations.

1. ***Strategy and funding:*** There must be a clear leader of the strategy and execution of associated initiatives to accelerate the innovation economy for the region. This will require the organization of corporate and philanthropic support and distribution of operating grants to other organizations tied to the execution of the strategy, as well as education of public officials to support innovation-based entrepreneurship.

2. ***Ecosystem orchestration:*** The region should evaluate options for a physical location "hub" to provide physical location/back office services, create a neutral, single point of entry for entrepreneurs in an area of town that is conducive to attracting a critical mass of entrepreneurs. This role should represent a collaborative environment, market successes and events on behalf of the region (not any one organization) and lead pilot programs or other efforts to attract talent. In many cases, it can begin to build out the services before a permanent physical location is established.

3. ***Fund of funds:*** The region would need to raise a minimum of $50 million in a fund of funds to meet the projected $150-200 million in future demand for seed and early-stage capital from regional companies. To do this in a model similar to the Renaissance Venture Capital model in Michigan, it must also be extremely diligent to hold investment funds accountable to the same regional strategy they articulated upfront as well as facilitate support from pillar company investors to its portfolio companies.

Each of these capabilities would be needed within a fundamentally independent organization that will serve as the overall coordinator for the entrepreneurial network, advocate for innovation and entrepreneurs as the face of the region, and leverage the capabilities of existing organizations and avoid duplication.

Initially, the region would likely need to start with 2-3 FTEs (with a highly capable leader) and $1 million in operating funding within 12 months.

5. IN CONCLUSION

Success cannot be defined only within a 12-month timeframe. The impact of such an undertaking for the region goes beyond even a 5-year horizon. Other cities that have developed truly distinctive innovation ecosystems have gotten there different ways (contrast Silicon Valley and Boston) but have done so over decades, not days or months. Even Midwestern peer cities such as Cleveland and Pittsburgh have made concerted regional efforts for over a decade to accelerate their own innovation economies and yet few there would be willing to declare "victory" at this point.

The Cincinnati region will and should become much more rigorous about outcomes with metrics that are specific and measurable. Across peer cities and regions, several indicators emerged as the kind of the outcomes the region should use to measure its own success – along the dimensions of Ideas, People, and Capital:

- Number of startup companies originating at local research institutions
- Number of jobs created by startup companies in the region
- Risk capital attracted to the region

The future-state vision for the region centers on this notion of "the hub" – but it's much more than simply a physical space. This should be a vibrant environment that supports and celebrates entrepreneurs within the region both through physical events and a coordinated marketing strategy for the region to attract and retain entrepreneurs. It should provide a community to connect people with ideas and capital. It should facilitate mentoring and coaching opportunities, as well as classes from experienced professionals to emerging startups. Finally, the hub should provide basic services to local entrepreneurs that they often could not afford on individually – legal, accounting, marketing, etc.

This hub development will be coordinated with other area development efforts so that we build on the great progress the region has already made.