Silicon Flatirons

A Center for Law, Technology, and Entrepreneurship at the University of Colorado

*Roundtable Series on Entrepreneurship, Innovation, and Public Policy**

A Template for Critical Mass

Next Steps for a Vibrant Denver Startup Scene

Roundtable Report for Denver Mayor Michael Hancock

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Executive Summary

On September 6, 2012, the Denver startup community threw a bash on a scale that the city's entrepreneurship scene had not seen before. Over 1,000 participants, representing more than 520 companies from across Denver and the Front Range, gathered in "celebration of everything entrepreneurial."[3] A party and attendant discussions about startups may seem like a frivolity, however, scholars and commentators underscore that this is exactly the type of social interaction that fuels startup communities as they seek to reach "critical mass." Critical mass, as it relates to entrepreneurship, reflects a tipping point where a community's growing energy and gravity triggers a sustained chain reaction of entrepreneurial activity. Denver is today full of entrepreneurial energy. The crucial question from an economic development perspective is this: *how can Denver best channel today's enthusiasm so as to reach startup critical mass?*

To help answer this question, the Silicon Flatirons Center, in collaboration with Startup Colorado and Denver Mayor Michael Hancock and Paul Washington, Executive Director of the Denver Office of Economic Development, convened a Roundtable of Denver's entrepreneurial leaders on August 10th, 2012 (the "Roundtable"). More than 45 people participated; from startup CEO's and venture capitalists, to entrepreneurial finance specialists, startup service providers, and other community supporters.

The Roundtable aimed to source the collective expertise of Colorado's startup leaders in identifying ways to help Denver's entrepreneurial ecosystem reach "critical mass." Phil Weiser, Dean of the University of Colorado Law School and Executive Director of the Silicon Flatirons Center, moderated the discussion, the Denver offices of Holland & Hart hosted the event, and Larry Nelson and w3w3.com additionally provided media coverage of portions of the discussion. As part of its mission to elevate the debate around technology policy and support entrepreneurship in the technology community, the Silicon Flatirons

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[3] Erik Mitisek *quoted in* Andy Vuong, *Flobots and $40K Denver Startup Bash launches Denver Startup Week*, DENVERPOST.COM BLOGS: TECHKNOW BYTES, (Sept. 7, 2012, 9:45 AM), http://blogs.denverpost.com/techknowbytes/2012/09/07/denver-startup-week-website-launched/6240/.

Center produced this report (the "Report") to summarize and expand upon that discussion. In addition to memorializing the Roundtable's highlights, this Report connects the insights of local leaders to relevant scholarship surrounding successful startup communities, and provides a blueprint for further action as Denver continues to build a vibrant startup scene.

Roundtable participants agreed that the City of Denver and private sector entrepreneurs should be mindful to address frictions that could stymie the community's run-up to critical mass. *First*, the City should help create "centers of entrepreneurial gravity" by encouraging and supporting the development of innovation centers like startup accelerators and open office spaces. Startup scenes are amplified when creative individuals form strong social networks and come together in communities. Innovation centers and other centers of gravity provide natural nexus points for these networks. *Second*, the City can raise Denver's startup credibility by celebrating and promoting its most successful startups and rising stars. National awareness of Denver as "a place where entrepreneurship happens"[4] would provide powerful validation to entrepreneurs looking to attract outside talent and capital. *Third*, the City should grow its "creative class" population by attracting anchor businesses, nurturing scenes populated by talented individuals, and supporting the education of the next generation of innovators.

This Report provides a template for the City of Denver and its entrepreneurial leaders as they collaborate to catalyze Denver's startup scene. Part I provides historical context about the background of Denver's startup community. Part II next explores the elements and characteristic architectures of great startup communities. Commentators underscore that startups thrive where certain conditions and inputs are available. Understanding these characteristics is important in architecting locations where innovation thrives. Part III then summarizes and expands upon frictions that Roundtable participants identified in Denver's ecosystem. Finally, Part IV explores policy options that the City should consider in helping Denver's startup community reach critical mass.

[4] Erik Mitisek, co-founder of Next Great Place, https://www.nextgreatplace.com/

I. Historical Context of Denver's Startup Scene

Entrepreneurism is nothing new in Colorado and Denver boasts a rich entrepreneurial history, ranging from telecommunications (e.g., Dish and the Daniel's involvement in the cable industry) to software (e.g., Quark and Jabber), to restaurant chains (e.g., Chipotle Mexican Grill and Quiznos Subs). Scalable, high-growth, venture capital-backed companies – a particular subset known as "startups" – began to proliferate in the 1980's. Buoyed by the 1979 "Prudent Man" Amendment to ERISA,[5] which allowed pension funds to begin investing in alternate asset classes, venture capital in the United States saw a precipitous rise in funding. While much of this activity centered on Silicon Valley and Boston, Denver also enjoyed significant VC-backed startup activity over the ensuing three decades. In 1980, the venture capital industry raised just $600 million dollars, with roughly 30% coming from pension funds.[6] Over the next 17 years, however, VC funding rose steadily, with only minor downturns in the late 1980s and 1990s. It soon became a $3 billion dollar a year industry.[7] An abrupt upward spike in the late 90's, however, presaged the collapse of the industry alongside the tech bubble in 2000.[8]

Venture capital in Denver and the Front Range followed a similar trajectory. Prior to the early 1980s Colorado had no venture capital industry to speak of, but from 1982 to 2000 venture firms proliferated. Many, such as Meritage Funds,[9] Access Ventures,[10] Vista Ventures,[11] and Sequel Ventures[12] focused on local investment. Some, like Centennial Ventures,[13] invested nationally. By 2000, according to Steve Halstedt, Managing Director and co-founder of Centennial Ventures, Denver and the Front Range supported a

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[5] Employee Retirement Income Security Act (ERISA).

[6] Josh Lerner, *Yale University Investments Office: June 2003*, HARV. BUS. SCH. CASES 26 (2003).

[7] *Id.*

[8] *Id.* From 1997 to 2000, nationwide investment in venture capital funds increased from $6.1 billion to just under $74 billion. *Id.*

[9] http://meritagefunds.com/

[10] http://www.accessvp.com/

[11] http://www.vistavc.com/

[12] http://sequelvc.com/

[13] http://www.centennial.com/

vibrant ecosystem of investors, software developers, hardware firms, and service providers necessary to support a strong startup ecosystem. Moreover, outside investors found Colorado attractive during this time and, accordingly to Halstedt, for every $1 of local capital raised, outside investors contributed $5.[14] At the same time, however, Denver nonetheless lacked large, home-grown businesses – such as Silicon Valley's Hewlett Packard and Intel, or Seattle's Microsoft – to anchor its scene. Without these magnets for talent and natural acquirers of innovative startups, keeping successful companies in state was difficult. Many successful Colorado startups were sold to out of state purchasers.

When the tech bubble burst in 2000, Colorado firms and portfolio companies went into survival mode or failed. Many venture firms were shut out of fund raising markets in the early to mid 2000s. The inherently long-term structure of the venture capital industry – most funds having a lifespan of 10-12 years – means that recovery is still playing out for Colorado's venture capital sector. The first decade of the 2000s was a backwards step for Denver's startup scene.[15]

Halstedt points out, however, that Denver today enjoys momentum and is again approaching critical mass. Key indicators of this resurgence are thriving venture firms, startups, and accelerators; increasing network growth; and community events such as Denver Startup Week.[16] Venture capital firms like Foundry Group,[17] Grotech Ventures,[18] and Access Ventures; home-grown startups like SendGrid,[19] LogRhythm,[20] Ping Identity,[21] and

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[14] One attendee suggested that this ratio is true for telecom, however, in software Colorado has struggled with the reputation that money goes in to Colorado, but insufficient amounts come out. This commenter underscored that that Colorado needs need $1 billion software company exits and IPOs with 10x returns on substantial investments in order to change this perception. To date, the attendee observed that Colorado is strong in the launch phase for software startups, with relatively modest amounts of money raised (under $5 million), then followed by company exits under $100M.

[15] Jim Franklin, CEO of SendGrid, noted that while the first five years post 2000 were difficult, the second five years (2006-2010) was on balance a favorable period for the Front Range area, especially the Boulder scene which enjoyed the success of TechStars and emergence of other companies.

[16] Denver Startup Week runs from October 22-26, 2012, http://denverstartupweek.com/

[17] http://www.foundrygroup.com/

[18] http://www.grotech.com/

[19] sendgrid.com/

[20] http://logrhythm.com/

[21] https://www.pingidentity.com/

Rally Software;[22] and startup infrastructure-building initiatives such as Startup Colorado,[23] the Colorado Innovation Network ("COIN"), Techstars,[24] Plug and Play Colorado's Innovation Pavilion,[25] Galvanize,[26] and Battery621[27] – signal an increasingly vibrant Denver entrepreneurial ecosystem. In short, many ingredients for a successful startup scene are present.

II. Elements of Great Startup Scenes

While there is no definitive recipe for creativity and innovation, several commentators provide a set of insights about the architecture and geography of successful startup communities where creativity and innovation are most likely to occur. Scholars describe an alchemical mixture of creative talent, diverse culture, dense geography, and inclusive internal leadership associated with successful startup scenes. While creativity is clearly the indispensible raw building material of innovative communities, creative individuals operate most powerfully within particular social and geographic contexts. Densely energetic and socially diverse environments are the foundries of new ideas. As Brad Bernthal, Associate Professor at Colorado Law noted, cities, neighborhoods, and other geographic communities provide natural focal points for this creative density, and are crucibles for energetic interactions between innovators. Leadership structures also play a key role in creative communities. Exclusive hierarchies break up creative density and often stifle creative class individuals. As a high-level conclusion, then, it is unsurprising that the most successful communities are creative, diverse, dense, and inclusively entrepreneur led. The devil is in the details, however, and understanding the individual elements of this conclusion is important.

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[22] http://www.rallydev.com/

[23] http://www.startupcolorado.com/

[24] http://www.techstars.com/

[25] http://www.plugandplaytechcenter.com/; http://innovationpavilion.com/

[26] http://galvanize.it/

[27] http://battery621.com/

Creativity

The modern "creative economy"[28] is one in which creativity has replaced labor as the key input[29] and natural resource.[30] A recent Kauffman Foundation report highlights the importance of the creative economy and startups. The Kauffman report finds that net job-growth in the U.S. is almost exclusively a function of startups.[31] Scholar Richard Florida argues that talented "creative class"[32] individuals – ranging from engineers to artists – produce "new forms or designs that are readily transferable and widely used"[33] and are the foundation of a successful startup communities. These innovators are the creators of new products, the founders of new companies, and the pioneers of new markets. Surrounding this core is a broader group of "creative professionals" – such as lawyers, doctors, and financial specialists – who provide essential support to the innovators.[34] If modern economic growth depends on startups, then engineering creative class communities presents a crucial 21st Century challenge for cities. Denver is well served to focus upon this challenge.

Diversity

Diversity is one characteristic of successful startup communities. Today's most innovative economies are those with a strong affinity for technology and talent as well as tolerance for new and different ideas.[35] Jane Jacobs comes to a similar assessment, finding that the most vibrant and creative communities are characterized by individuality, diversity, and social interaction.[36] "Domain activity,[37] intellectual receptiveness, ethnic diversity, [and]

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[28] *Id.* at 29.

[29] *Id.* at 5.

[30] *Id.* at 8.

[31] Tim Kane, THE IMPORTANCE OF STARTUPS IN JOB CREATION AND JOB DESTRUCTION, http://www.kauffman.org/research-and-policy/the-importance-of-startups-in-job-creation-and-job-desctruction.aspx. "The study reveals that, both on average and for all but seven years between 1977 and 2005, existing firms are net job destroyers, losing 1 million jobs net combined per year. By contrast, in their first year, new firms add an average of 3 million jobs." *Id.*

[32] Richard Florida, THE RISE OF THE CREATIVE CLASS: REVISITED 5 (10th Anniversary Ed. 2012).

[33] *Id.* at 38.

[34] *Id.* at 9.

[35] Florida, *supra* at 11.

[36] *Id.* at 28.

[37] Math and hard sciences, generally speaking.

political openness" fuel diverse creative communities. In the engineering context this sort of diverse environment is called a "doped" system.[38] Energy tends to flow between areas of difference. Uniform or "pure" substances are often poor conductors because, where there is homogeneity, there is no potential for change and no flow. In contrast, diversity in a startup community provides the heterogeneity necessary to unleash potential creative energy. A doped system facilitates differences in opinion and challenges to preconceived notions. Uniform communities are non-conductive precisely because they are uniform. By "doping" the system – viz., introducing impurities or differences – the community can become more conductive, sparking creativity and innovation in the spaces between.

Density

In addition to creativity and diversity, *density* is a third aspect of vibrant startup scenes. Creative communities form where there are around *dense* populations of diverse and creative people. Jonah Lehrer, in his book *Imagine: How Creativity Works*, highlights the power of social "collisions" in explaining why creativity scales almost super linearly within cities.[39] Lehrer identifies innovation as the result of collisions between people with diverse ideas and backgrounds. He observes that "the most creative cities are simply the ones with the most collisions."[40] Dense physical proximity in cities like Denver and – more specifically, neighborhoods within the City – strongly affects startup success.

The United States' diverse and creative population is source of broad entrepreneurial strength. Nonetheless the geography of innovation within the United States is not flat. Centers of innovation, rather, appear increasingly clustered in discrete geographic areas, which Richard Florida depicts as "spiky" areas of innovation. The spiky nature of geographic startup activity can be explained in terms of economics, sociology, and

[38] *Doping (semiconductor)*, WIKIPEDIA, http://en.wikipedia.org/wiki/Doping_(semiconductor) (last modified Oct. 12, 9:35 PM).

[39] Jonah Lehrer, IMAGINE: HOW CREATIVITY WORKS 190 (2012).

[40] *Id.*

geography.[41] Denver's economic future hinges on its success as a spiky center for innovation.

External economies of scale and *network effects* are economic concepts that help explain why startup communities cluster in close geographic proximity to one another.[42] External economies of scale refers to the *external* benefits that accrue to firms that agglomerate in geographic markets. Economies of scale explain why *costs* are often lower for a startup located within a geographic center of entrepreneurship activity. The legal market provides an example. As additional startups concentrate in a particular geographic market consume legal services, lawyers become familiar with, standardize, and even routinize the legal needs of startups. This decreases the marginal cost of future startup legal services. As a result, the average cost of legal services per startup drops due to economies of scale.

Another economic concept, *network effects*, also explains geographic startup agglomeration. Network effects refer to increasing *internal* benefits each startup experiences as additional participants are added to a startup system. For example, consider the telephone network. While a telephone network connecting ten users may be useful, a network consisting of millions is much more valuable to each member. Similarly, while a scene of 10 computer programmers who share information is helpful, a scene of 1,000 programmers who regularly interact and share information is even more powerful. Network effects explain that each additional user increases the internal value for other users of the network. Startups that cluster in close physical proximity can take advantage of benefits associated with external economies of scale and network effects.

Dense startup communities, as scholar Anno Saxenian observes, benefit from strong horizontal social networks that distribute knowledge across the community through "information spillovers."[43] Horizontal networks refer to the social connections that cross

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[41] Brad Feld, STARTUP COMMUNITIES: BUILDING AN ENTREPRENEURIAL ECOSYSTEM IN YOUR CITY 22-24 (2012); Florida, *supra* at 8. The *Density* section of the Roundtable report is based upon a similar section in Feld's *Startup Communities* book. Each section benefited from drafting assistance from Brad Bernthal, Associate Professor, Colorado Law School.

[42] *Economies of agglomeration*, WIKIPEDIA, http://en.wikipedia.org/wiki/Economies_of_agglomeration (last modified Oct. 12, 2012, 8:23 PM).

[43] Saxenian, *supra* at 95; AnnaLee Saxenian, *Inside-Out: Regional Networks and Industrial Adaptation in Silicon Valley and Route 128*, 2 CITYSCAPE: A JOURNAL OF POLICY DEVELOPMENT AND RESEARCH 41, 42 (1996); The term "knowledge spillover" is widely attributed to Jane Jacobs, and is commonly referred to as a "Jacobs spillover" in the startup economics context, as distinguished from a "MAR" (Marshall-Arrow-

traditional boundaries – *e.g.,* boundaries between companies, boundaries between companies and academic research, boundaries between public and private sectors, etc. In ecosystems with strong horizontal networks, information often "spills over" from one part of the community to the next. This produces a "Borg Effect"[44] where what one member of the community learns, the entire community learns. This yields responsive ecosystems capable of rapid adaptation to changing market conditions. Strong horizontal networks are in contrast to "autarkic" systems. [45] This is because autarkic – or closed – systems fails to rapidly learn from insights beyond the structure of a single entity. As a result, as Saxenian explains, autarkic systems struggle to keep pace with innovation during times of rapid change

For entrepreneurs in Denver, the formation of horizontal networks is of course not limited to the City limits or any individual neighborhood. Indeed, electronic tools and social networks collapse geography by allowing individuals with common interests to more efficiently find each other. Horizontal networks are, nonetheless, often formed and strengthened through unexpected physical encounters (think, meeting someone on a walking mall) or informal interactions (think, a coffee house meeting). Close geographic proximity facilitates development of valuable horizontal networks.[46]

The final reason that geographic advantage persists in startup communities relates to a virtuous cycle of mutual attraction. Notably, Florida argues that creative class individuals are drawn to certain types of places – *e.g.,* locations with outdoor opportunities, locations that teem with new ideas, and locations with diverse and energetic social scenes – as well as other creative class individuals. That is, many creative class individuals want to be located within creative communities. The punch line is that where a community attracts a critical mass of creative individuals, this in turn attracts more creative individuals, and a scene emerges

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Romer) or "Porter" spillover. *Knowledge spillover,* WIKIPEDIA, http://en.wikipedia.org/wiki/Knowledge_spillover (last modified Aug. 9, 2012, 7:33 AM); *see generally* Jane Jacobs, THE ECONOMY OF CITIES (1961).

[44] I attribute this term loosely to either Brad Feld or Jeff Clavier. *See generally Borg (Star Trek)*, WIKIPEDIA http://en.wikipedia.org/wiki/Borg_(Star_Trek) (last modified Oct. 25, 2012, 6:01 AM).

[45] *See generally* AnnaLee Saxenian, REGIONAL NETWORKS AND THE RESURGENCE OF SILICON VALLEY (1989).

[46] While this may seem less important than ever due to the Internet and modern telecommunications, Feld points out that geography remains the central social organizer. Feld, *supra* at 22-24. As the prevalence and impact of online social networks increases, however, this conclusion may prove no longer the case over the long term.

where innovation happens on a widespread scale. This is the type of virtuous cycle of mutual attraction that Denver should cultivate.

Inclusive and Entrepreneur Led

A final characteristic of successful startup communities is that they are inclusive and led by entrepreneurs.[47] Brad Feld, in his recent book *Startup Communities,* emphasizes the power of inclusiveness and celebrates the mentality that growth in the entrepreneurial community is not a zero-sum game.[48] This inclusive mentality is part of the solution to entrenched hierarchies – or, as Feld colorfully puts it, the "old-white-guy-problem[49] -- that arises when hierarchical leadership structures exclude willing and new would-be participants.

The key takeaway from observations about startup scenes is that broad diversity, creative density, entrepreneurial inclusiveness, and entrepreneur-led structures are each elements of a great startup scene. Mindful focus upon each of these elements is important as Denver charts a roadmap for its entrepreneurial future.

III. Reducing Denver's Startup Friction

During the Roundtable discussion, participants identified areas of friction that should be reduced as Denver amplifies its startup scene. Participants agreed that eliminating these speed bumps would accelerate Denver's startup community.

The Roundtable kicked off with a discussion of entrepreneurial mentorship, however, the topic promptly shifted to the topic of early stage capital. Jim Franklin, CEO of SendGrid and longtime mentor to startup companies, questioned the proposition that *access* to capital poses a significant problem in Denver and the Front Range. He emphasized that capital is efficient and flows toward fundable teams. *Attracting* capital is a better statement of the problem. The $1:5 ratio in local and outside capital noted by Steve Halstedt supports this point insofar as it suggests that outside investors are willing to invest locally given

[47] *Id.*

[48] *Id.* at 28.

[49] *Id.* at 59.

fundable teams. Franklin instead suggested that the principal cause of friction in Denver's startup scene is an insufficient number of "entrepreneurial centers of gravity."

Franklin proposed that Denver does not lack quality people – in his opinion, great people are one of Denver's key assets – but that they must be brought together more efficiently. Franklin also believes that the Front Range needs a marked increase in the number of engineers.[50] Moreover, Franklin pointed out that Denver's entrepreneurs and investors are separated geographically, which makes it difficult to build momentum. In considering geography, Franklin's suggested rule of thumb is that "anything walking distance" counts as connected (or, perhaps, direct light rail if the trips are frequent enough). Roundtable participants agreed that Denver would benefit greatly from bringing groups together in tighter proximity. Franklin pointed out that "in Boulder, everyone is within six blocks of each other" and that this creates natural dynamism and momentum. Entrepreneurs have walking-distance access to a strong community of investors, mentors, and potential partners. Similar entrepreneur-dense neighborhoods would stimulate Denver.

Beyond the geographic concern, Bryan Leach, Founder and CEO of Ibotta, pointed to shortage of facilities and supporting social networks. He emphasized that Denver lacks critical facilities such as affordable and scalable office space and reliable high-speed connectivity. This makes team building difficult because there is limited room to grow. It also makes running a technology company decidedly challenging – after all, he said, "it's hard to be an Internet company when the Internet is down." Fledgling efforts in Denver such as Battery 621, Galvanize, and Innovation Pavilion each merit attention as they attempt to address some of the issues identified by Leach.

Regarding social support structures, Leach related his attempts to recruit Silicon Valley-based engineers to Denver. Many declined with comments to the effect of, "if this blows up [in Silicon Valley] there are 50 other companies here that will hire me. But if I go to Colorado, and you blow up, I am done." Whether this outside impression of Denver is

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[50] Franklin suggests that an actionable goal would be to educate 1,000 engineers per year or more until the Front Range becomes a net exporter of technical talent. As a tagline, he suggests: *Colorado: where the talent is*, or, Colorado: *Great engineers available*. Franklin notes that the "world would beat a path to our door if that were true."

accurate or not,[51] it underscores another advantage enjoyed by dense centers of entrepreneurial gravity. Startup centers enjoy strong informal networks between firms that provide a safety net of alternative employment options. They enable mobility where a creative worker can pursue new projects and/or move on when a venture fails, resolving what some have called the "second move" problem. Moreover, the concept of a "center of gravity" is closely tied to outside credibility. Outside perception, as illustrated by Leach's hiring attempts, acts in powerful ways.

Denver's startup credibility outside of Colorado is a second significant point of friction that the Roundtable identified. Participants agreed that Denver lacks the big startup successes that build industry credibility. In this context, it is impossible to avoid a comparison to Silicon Valley, which was put on the map as an entrepreneurial hotbed by a succession of hugely successful startup businesses. As Bart Lorang, co-founder and CEO of FullContact, put it, to truly drop a pin on the map that says, "startups happen here" and "we need entrepreneurs who think *big*, billion dollar big." To be sure, the Front Range has produced billion dollar businesses such as Zayo, Dish, Teletech, Level 3 and others. Whether this success will translate into the software / Internet / mobile sectors, however, remains to be seen.

Part of the problem identified by the Roundtable is that successful companies often sell too early, so there is little outside awareness of successful Colorado startups. These companies sell to acquirers before pursuing broader ambitions. Part of this, Roundtable participants agreed, is confidence. Until the idea of hugely successful Colorado startups takes hold, entrepreneurs may not have the confidence to turn down attractive acquisition offers, and hold out for the glory of "billion dollar big." Lorang also pointed out that credibility has a less obvious, but critical, economic impact on teambuilding. Silicon Valley's startup credibility supports the perception that stock options are valid currency. Less startup credibility makes attracting and incentivizing teams in Colorado more challenging.

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[51] One Roundtable CEO participant, while acknowledging Leach's point about perceptions, reacted strongly to the underlying impression that there are insufficient quality opportunities in the Front Range "Damn. This is not true. But the perception is tough to unroot."

The capstone of the Roundtable discussion of friction concerned early stage fundraising and the availability of capital for startups. Several Roundtable participants opined that institutional financing is disproportionately weighted towards mid- and late-stage startups. Participants pointed out that institutional investors are increasingly cautious at the earliest (and riskiest) stages of a company's lifecycle, instead adopting a more cautious "wait and see" approach. While Colorado has some notable early stage VC investors, much of early – or seed – funding is left to individual angel investors.[52] Startups increasingly depend on these wealthy individuals for the initial infusions of capital required to build working prototypes or further develop their products to attract follow-on venture capital investment. One salutary trend on this score is the emergence of super-angel funds (also known as micro-VCs) in Colorado. Typically $2.5 to $10 million in size, super angel funds specialize in making small and early investments across many companies. Bullet Time Ventures, led by TechStars Founder David Cohen, is one such fund. In Denver, Galvanize also offers a super angel fund, and other similar efforts are afoot in the Front Range.

Roundtable participants evinced consensus that early stage angel financing is often problematic. Several observations from the Roundtable echoed the insights from a recent Silicon Flatirons report, entitled *Bringing Angel Investing Out of the Shadows.*[53] Difficulties associated with angel investment are often discouraging to startups at their most nascent and fragile stages. Providing anecdotal evidence along these lines, Bryan Leach explained that his early fundraising succeeded in raising capital from 51 angels. Almost all of his investors, however, were from other states including New York and California. Leach referred to it as raising "$3 million the hard way." Bart Lorang concurred and noted that seventy-five percent of investors only invest locally. Lorang said that he seriously considered moving to San Francisco due to frustrations in early fundraising.[54] Leach reported resisting investor calls to relocate outside of Colorado, as well.

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[52] *Angel investor*, WIKIPEDIA, http://en.wikipedia.org/wiki/Angel_investor (last updated Nov. 3, 2012, 9:32 PM).

[53] *Bringing Angel Investing Out of the Shadows* (Silicon Flatirons Center, May 2012), http://siliconflatirons.com/documents/publications/report/AngelReport2012.pdf

[54] Along these lines, after the Roundtable discussion, a Colorado-based CEO who reviewed this Report noted that his company may re-brand its headquarters in San Francisco because the valuations seem to be higher there.

Joe Zell, Managing Director at Grotech Ventures, estimates that there are around 75,000-85,000 accredited investors in Colorado who could potentially be involved in angel investing.[55] The volume of active angel investors, however, remains low relative to the number of potential investors. Several Roundtable participants espoused efforts to bolster the amount of capital available to startups. One path may be to encourage investors to consider investment as a limited partner in a Colorado-based super angel fund. Zell pointed out that the learning curve in early stage investing is expensive and, to do it well, typically requires extensive experience. Angels acting individually are often unable to survive the Darwinian learning process involved in gaining expertise – and losing money – through early stage investing. Super angel funds provide the prospect for inexperienced individuals to get behind "smart money" – *viz.,* experienced investors who can identify and nurture high caliber startup investment opportunities.

Super angels making more savvy investments also could increase capital allocation efficiency. Vic Ahmed, founder of Innovation Pavilion, suggested that more selective investing was called for, not more investing. Ahmed argued that too many early stage companies are being funded at a stage before they are ready for funding. He suggested that angels should focus on identifying startups that are doing well, have produced revenue, and have gained customers, then "promote the hell out of them to get them to that super stage." Bob Newman, co-founder of JD Edwards, commented on the impact Denver angels' lack of experience and confidence. As Newman explained, many angels feel "there is too much noise in the system," and often find it difficult to filter good investments from bad. Most angels are familiar only with certain industries, and are hesitant to step outside of that comfort zone. He suggested that a better filtering process within the angel community would lead to more confident investing in companies with the potential to produce reasonable returns in reasonable timeframes.[56]

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[55] Zell's estimate stems from 82,000 households in Colorado from the most recent census with over $200k in annual income.

[56] This point speaks to angel investing that is primarily driven by economic returns. Other angles have more philanthropic goals – e.g., I made money in this industry, now I want to give someone else a chance. Of course, some angels blend philanthropy with economic objectives as well.

While not without its challenges, Denver and the Front Range is home to a strong and supportive community. Bob Ogdon, CEO of Swiftpage, related that when he went for angel funding, "many people in this room said 'no,' but not a single one didn't take me to someone else." This is the sort of community support that drives startup ecosystems.

IV. A Template for Hitting Critical Mass

If creativity, diversity, geographic density, and inclusive entrepreneurial leadership are key indicators of innovation, what tools are available for local government and entrepreneurial leaders to move the Denver needle towards creative critical mass? Roundtable participants suggested that Denver must continue to build the social and physical infrastructures necessary to support startup growth, must work to promote Denver's startup credibility, and must take steps to reduce unnecessary friction in early stage investing. To be sure, the primary impetus for reaching startup critical mass typically comes from entrepreneurs. Government should, however, play a critical role in bolstering innovation within Denver by helping architect supportive social and economic institutions, convening informed stakeholders to facilitate information exchange and spillovers, and making "noise" which calls national attention to Denver's success stories. Building a startup community, however, is not a short-term endeavor.[57] A long-term view should be taken where progress is measured over decades.

In building a template for critical mass that leverages these competencies, Roundtable participants identified three broad areas for City and other governmental involvement.

1. Encourage the growth of startup neighborhoods and innovation infrastructure. Open workspaces and accelerators can help provide centers of gravity necessary for the growth of strong startup communities. Startup community stomping grounds, including accelerators and innovation centers such as Battery 621, Galvanize, and Innovation Pavilion, can facilitate formation of horizontal social networks and environments for information spillovers. They not only provide a place for teams to form and grow, but a place for

[57] Feld, *supra* at 26.

investors and founders to meet and interact. Additionally, Denver can sponsor and promote conferences and events like Startup Denver, hackathons,[58] and developer weekends. These events provide essential opportunities for cross-pollination and the formation of regional networks between innovative communities and neighborhoods. Moreover, they raise national awareness of Denver's startup scene.

Denver can also help build the modern infrastructures necessary to support innovation. High-speed networks are a key example. Promoting the franchising and build out of high-speed telecommunications networks is a role uniquely suited to government, and is an area where Denver can make huge contributions to the startup community. The importance of office space, also, cannot be overlooked. Innovation centers are only one aspect of team building – and are generally well suited to early growth. Once companies reach a certain level of success, however, team expansion becomes a priority. This requires significant room to grow – room that accelerators can't provide. Denver can help ensure that there is adequate, optimally located space for startups to grow their teams.

2. Stimulate the startup ecosystem by educating and attracting talent. "Education" is a common political buzzword but its significance to any startup community cannot be understated. Today's students are tomorrow's startup founders, and are the single most critical input in startup ecosystems. The City can use its influence to encourage the establishment and funding of diverse curricula, promote early exposure to innovation and creative problem solving, and to support strong math, science, and engineering programs. Each of these is central to success in a creative economy.

The City can also attract talented teams by attracting big businesses. Big businesses attract big talent…but just as importantly, they also *lose* big talent. This is a great thing for startup communities – look at the Traitorous Eight and the history of Silicon Valley.[59] The best innovators often wash out of the biggest companies, because they rarely fit into the often-autarkic hierarchies. The surrounding startup community is well positioned to capitalize on the unexpected availability of these creative individuals.

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[58] *Hackathon*, WIKIPEDIA, http://en.wikipedia.org/wiki/Hackathon (last modified Oct. 14, 2012, 2:21 PM).

[59] *Traitorous eight*, WIKIPEDIA, http://en.wikipedia.org/wiki/Traitorous_eight (last modified Nov. 5, 2012, 5:07 PM).

3. Make noise that amplifies success. The City can make noise by recognizing supporters of the entrepreneurial scene, celebrating successes, and promoting potential success stories. Local validation is critical for attracting and focusing outside capital. National attention to the Denver scene offers local startups greater credibility. One participant suggests that the City of Denver should buys billboards on Route 101, which connects Silicon Valley to San Francisco, which promote mountains (e.g., "You could live here") and company logos (e.g., "You could work here"). Promoting successful startups also builds credibility around the startup scene and draws attention to Denver as a creative center. Denver must also promote and vocalize its support for strong potential successes like SendGrid, Ping Identity, Rally, LogRhythm, and others. As Erik Mitisek, co-founder of Next Great Place, and one of the key organizers behind Denver Startup Week, put it – city, state, and local governments must raise flags that say, "this is where entrepreneurship exists." Boulder has been successful because it has been able to generate, channel, and capitalize on national energy and interest in its success stories such as TechStars. Denver can support even more and has the potential to do so.[60]

Where We Stand Today

Despite areas of friction, the startup scene in Denver is rapidly accelerating. Denver Startup Week 2012 attracted over a thousand entrepreneurs, investors, and startup junkies together. Startup Colorado and the Colorado Innovation Network (COIN) providing meta infrastructure that supports and enables the community through new tech meetups, entrepreneurial summer camps, open coffee clubs, and community office hours across the state. Mayor Hancock and other Denver leaders, meanwhile, are increasingly signaling to the startup community that they "get it" that startups are crucial to economic development and require special types of support to succeed.

[60] Tom Higley, CEO of Vokl, Inc.