

But Will it Blend?: An Overview of the relative ability of Incubators and Accelerators to nurture and fund space-related startup enterprises

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ABSTRACT: Is the "Accelerator," often used in today's tech sector, truly a new and effective funding and business development model for the space entrepreneurial enterprise? From a results-oriented viewpoint, how do incubators and accelerators stack up to more traditional and "competitive" prize models, angel investment, VCs or investment banks? Is it a potential replacement for competitive models?

In this analysis, the Author will look deeper into this and many other aspects of accelerators and incubators, how they have worked in other sectors, and determine whether this model "ports over" well in the realm of space entrepreneurship.

**ACCELERATORS AND
INCUBATORS: WHAT THEY ARE
AND HOW THEY OPERATE**

Although business "incubators" had their earliest beginnings back in the early 1990's, the "accelerator" model is a more recent phenomenon, going back only a decade or so.

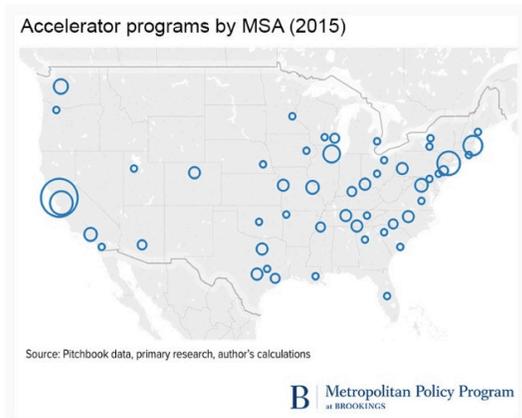
Startup accelerators are officially defined as "a fixed-term, cohort-based program, including mentorship and educational components, that culminates in a public pitch event or demo day" (1).

Startup accelerators, in general, support early-stage, growth-driven companies through education, mutually-beneficial cooperation with other startups in similar fields, professional mentorship, and (in most cases) modest financing. Startups enter accelerators for a fixed-period of time, as part of a cohort of companies selected by the accelerator's sponsors and management team. The accelerator

experience is – at least ideally – a process of intense, rapid, and immersive education aimed at accelerating the life cycle of young innovative companies, compressing years' worth of learning-by-doing into just 3-6 months, on average.

Primarily something geared toward the Tech sector, there are now an estimated 2000 or more accelerators globally, over 700 in the US alone (8).

Geographically, US accelerator programs (the main focus of this paper) are – unsurprisingly – concentrated in the well-known technology startup hubs and major cities of San Francisco-Silicon Valley, Boston-Cambridge, and New York (7). These three regions account for about 40 percent of all accelerators in the United States, and almost two-thirds of accelerator-funded deals between 2005 and 2015.



However, a good amount of activity is beginning to occur outside of the prime tech hubs. Fully 54 metropolitan statistical areas and four non-metropolitan regions spread across 35 states and the District of Columbia have accelerator programs today. A number of surprises show up in terms of cities with more than two accelerators, including Chattanooga, Nashville, Cincinnati, Milwaukee, and Honolulu.

Colorado might be the most interesting up-and-coming region. The birthplace of accelerator pioneer TechStars, Colorado has local accelerators in places like Durango and Telluride. Boulder is home to CanopyBoulder, an accelerator focused on the budding cannabis industry in that state.

WHY ACCELERATORS?

Tech “incubators” have been around since the early 1990’s. Like their faster cousins, incubators help new ventures by providing subsidized office space, shared administrative services, access to capital/financing, networking opportunities, and assistance with legal, technology transfer, and export procedures. Both programs are generally “regional” in scope, and are funded, in

the main, by local or state governments, private corporations, or investor groups.

Governments may engage, as they want to attract new capital and business opportunity to their specific region, as a boost to their local/regional economy, or to replace other industries that have left, stimulating startup activity to create a new ecosystem.

By contrast, large private corporations may fund an incubator to develop new technologies or services they may wish to internally acquire.

Investor-led groups, angels, VCs or investment banks, may fund such a program to find the best investment opportunities in a specific area.

While there are an estimated 1600 incubator programs in the US today, there are also drawbacks to them:

1. The average time spent by a startup company in an incubator is three years. While the metaphor for a hen’s egg incubator providing warmth and comfort until they hatch is compelling, the reality is that some firms like the collegial comfort zone of the startup incubator so much, they simply never leave the nest.
2. The tech focus of an incubator may be overly broad, and also include a broad range of financing stages.
3. While the selection process is competitive, based on available space and resources, there is no true “cohort” structure, due to the broadness of scope.
4. While incubators claim to provide a wide variety of services, from basics like internet access and office supplies, to low-level training on finance and presentation skills, to high-level guidance on intellectual

property management and securing funding connections, the average incubator has less than 2 full-time staff and serves 25 firms, making it is arguably questionable whether so few staff could adequately provide service to so many firms.

5. Most offer fee-based professional services. They do not offer investment or stipends, and their educational and mentorship offerings, if provided, are ad hoc at best.

As a challenge to the incubator model, the first true “accelerator”, Y-Combinator, was founded in 2005.

Their programs – self-funded at first, but attracting large outside investors later – were narrow in tech focus, limited to pre-seed and seed stage startups, had a highly competitive selection process (essential to their business model), offered a “cohort” structure, and had a program duration of 3-6 months, at which time, their charges were pushed out the door, into the waiting arms of angels and VCs, with checkbooks ready.

There was no coddling, for the most part no money, but specifically no protection from the harsh realities of the real world. With a much more Darwinian approach, accelerator programs like those pioneered by Y-Combinator (and later by TechStars (2007)), were designed to give these startups a serious pounding, force them to quickly confront those realities and determine whether the business is viable. When successful, they attract investor interest, and scale rapidly into a high-growth business. For this, Y-Combinator, for example, would receive a 5-7% equity stake in the selected firms upon “graduation”.

Most accelerators offer working space and other services in addition to

mentorship, educational and networking opportunities. Some also offer a larger, guaranteed investment in the startup, in the form of a convertible note, upon graduation. Many accelerators are vertically-focused (healthcare, energy, digital media). Despite the vertical or industry focus, careful examination of the products/services provided by the portfolio companies of accelerators reveals that nearly all accelerator portfolio startups offer some form of software or internet services, though such software may be targeted towards use in a specific industry vertical.

In practice, accelerator programs are a combination of previously distinct services or functions that were each individually costly for an entrepreneur to find and obtain: seed investment, value-added mentorship and advisement, co-working/co-location with other startup companies, capital introductions and exposure, network building, and the opportunity to pitch to multiple investors, a likely result of which is a reduction in search costs for the entrepreneur, and an increase in leverage vis a vis potential VC investors. Indeed, accelerators often attempt to be an organized version of the “dealmakers” described in Feldman and Zoller (2012), drawing the community together and creating social capital surrounding entrepreneurial efforts.

From the perspective of the VC investors, accelerators serve a dual function as “deal sorters” and “deal aggregators”. The accelerator application process screen among a larger population of startups to identify high-potential candidates, and the program aggregates these candidates in a single location, attracting investors who might otherwise find the costs of searching for opportunities in smaller regions too high

to justify. Investors often serve as mentors, thus getting an early look at the startups, business plans, team dynamics and progress over the term of the program. The public demo day, or pitch event, allows them to observe multiple companies pitch in a single instance, and since they are already traveling to the region, non-local investors often choose to look at other opportunities in the area as well. The aggregation and sorting function performed by accelerators is thus believed to result in a reduction in search and sorting costs for the VCs when investing in smaller regions.

This deal aggregation, sorting and matchmaking underlies the financial model for most for-profit accelerators. The accelerator typically raises a fund in the form of a Limited Partnership, similar to the structure used for a VC fund. Here, however, the limited partners (LPs) are typically VC funds, rather than institutional investors. These VCs serve as mentors in the program. This mentorship role allows them early access to the portfolio companies; the best companies in each cohort often close funding before they ever reach demo day (Cohen and Hochberg (2014)). The expectation is that the VCs will then make back their money on the larger investments they make in these accelerator graduates out of their primary funds, rather than generating direct returns on the small investment in the accelerator. Rather, the investment in the accelerator-limited partnership is viewed as a fee to fund the deal screening and aggregation, with the costs split across multiple VC funds. Hence, we should also see the accelerator organization itself as a form of “startup”.
(source: Forbes)

Accelerator graduates can earn a “seal of pre-approval” when they present themselves to seed-stage investors. The gateway, however, has not gotten significantly wider. On average, members of the Global Accelerator Network (GAN) receive 450 applications and only accept 2.1 percent of them.

WORKING MODELS

As the accelerator organization is in itself similar to a “startup”, let me digress and review the varying business models:

The business model that Y-Combinator executes very well is the “seed fund” model. This model is based on a combination of “high-quality filter” and “broad portfolio” approaches. The high-quality filter approach attempts to ensure that the very best minds, teams and ideas get in to begin with. After acceptance, they spend three months getting to the next level. The other dimension, the broad portfolio approach, statistically, discovers a few breakaway companies, like Airbnb and Dropbox, in order to provide big returns to investors. Y-Combinator, today, is still top of the accelerator heap, and funding around 200 companies at any one time. So it is reasonable to say that a broad portfolio approach is fundamental to its strategy. (Author’s note: Apparently, YC is just as picky about applicants as the NewSpace Business Plan Competition, or even pickier!)

Another model, pioneered by YouWeb (11) is the “high-quality tech founder” + “constant pivot” model. YouWeb, interestingly, doesn’t accept teams, ideas or business plans. They only accept top-shelf hackers, developers and technologists. Entrepreneurs receive one

year of program participation, versus the three months offered at seed starters like YC. The Entrepreneur-in-Residence spends time building a product, launches it and measures traction. If the entrepreneur gets no traction they will pivot to a new idea or space.

In terms of the impact on the local startup community, early evidence shows that accelerators may have a big effect on attracting seed and early-stage financing, as well as additional investors to a community, including outside of the accelerated companies (7). This could bring additional spillover benefits to the wider regional economy. Previous research has found that attracting venture capital to a region has a positive impact on broader employment growth and entrepreneurship more broadly.

It may be for this reason that policymakers have taken notice. Beyond the myriad of efforts at the state and local level to boost growth-driven entrepreneurship and entrepreneurial ecosystems, at the federal level the Obama administration has done its share by pursuing initiatives like Startup America and the JOBS Act.

Additionally, the Small Business Administration (16) has adopted an aggressive strategy to bolster the proliferation of accelerator programs and other startup ecosystem models throughout the country with its Growth Accelerator Fund Program. With its inception in 2014, the SBA awarded \$2.5 million in cash prizes to a group of 50 such organizations. The program expanded in 2015, offering \$4 million in cash prizes to 80 organizations throughout the country.

To look at the funding trends involved with accelerators, the list of accelerators was merged with the Pitchbook venture capital database (7). During the 2005 to 2015 period, these 172 US-based accelerators invested in more than 5,000 U.S.-based startups with a median investment of \$100,000. These companies raised a total of \$19.5 billion in funding during this period—or \$3.7 million per company on average—reflecting both the relatively small investments made in these early-stage companies by accelerators, and the fact that many go on to raise substantial amounts of capital later on. Both figures—the number of companies and the amount of capital raised—will increase in the years that follow, as accelerator programs continue to turn out companies, and recent graduates work their way through maturity.

Accelerators provide information that business angels and VCs need for diversifying their portfolios of high-potential companies. As explained by Scott Shane (7), “organizations that typically invest \$3 million in a single early-stage venture deal, as venture capitalists do, are not designed to evaluate and assist 120 ventures that each receive \$25,000.” Accelerators provide those financiers a service in many ways, through their structures and processes that allow them to make these types of decisions, and push “investor-ready” startups further down the pipeline.

WHAT’S WORKING

According to a recent study by the Rockefeller Foundation (4), both good outcomes and challenges were in evidence. What was working included:

1. Localized and/or sector-specific accelerator models: A one-size-fits-

all acceleration approach is ineffective because market dynamics differs across geographies and sectors.

2. Supportive Infrastructure: Most entrepreneurs need help with fundraising or business pitching, but successful, scalable enterprises require supportive infrastructure. Accelerators need to partner with mentors, investors, and sector stakeholders—sometimes addressing governmental regulation—to create the supportive ecosystem where enterprises can thrive.
3. Strong collaboration: Many enterprises are working to solve similar challenges and the best alternative to learning from one's own experience is by learning from someone else's. While the solutions differ, this approach enables these enterprises to solve larger systemic problems by working or learning together.
4. Long-term enterprise engagement: Achieving and demonstrating sustainable growth requires time and many enterprises need long-term accelerator support to facilitate that growth. Because traditional accelerator programs are often short, some accelerators supplement their engagement through mentorship and investor support, or connections to later-stage accelerators for enterprises who need further incubation.
5. Customized support for every enterprise: While each accelerator offers its own model or approach for enterprise growth, two enterprises are seldom identical. Accelerators must cater their solutions to each

enterprise within the broader framework of their approach.

Challenges to the accelerator model included:

1. Limited awareness around the value of accelerator support: In many ways, the impact enterprise landscape is nascent. This makes it challenging for accelerators to attract the right types of enterprises to their programs or to identify appropriate funders.
2. Accelerator funding models, in their current state, are not sustainable: In addition to raising funds for their respective enterprises, accelerators also need to develop sustainable funding models for themselves. More creative funding models—including accelerators that take an equity stake in the enterprises—are becoming more common in addressing the issue of sustainable revenue.
3. Balancing business with social impact: The dual goals of social and financial performance make planning for success more complex. Determining how to balance these objectives requires more upfront thinking from entrepreneurs and the right accelerator match based on this prioritization.
4. Standardization vs customization: While the needs of enterprises differ, customizing an accelerator's solutions for each impact enterprise is expensive. Some accelerators have identified a set of issues that nearly all impact enterprises experience, and have crafted a standard curriculum that addresses them. They then layer on tailored services in a more leveraged way by drawing on relevant case study examples or

appropriate mentors from their network.

5. Shortage of quantitative data to support insights on best practices: As with many new fields, quantitative data can help legitimize innovation, and attract more investors and stakeholders to new approaches or sectors. Without verifiable or case-based data on accelerator practices, it's challenging to demonstrate an evidence base.

That last bit raised an eyebrow. It turns out many of the criticisms leveled at accelerators, and incubators as well, is that real quantitative data as to efficacy an outcomes, compared to non-incubated or accelerated control groups, is extremely lacking. Many accelerators don't do a good job of tracking data over time — relatively few can tell you how many companies are still operating after five years or how many received additional funding or showed revenue growth.

BENCHMARKING PERFORMANCE

Alejandro Amezcua, at Syracuse University, published the only direct study of this kind in 2010 (2)

His dissertation investigated two questions: 1) Do incubated firms outperform their unincubated peers? And 2) Does the economic performance of incubated firms vary according to design characteristics of incubators and attributes of the entrepreneur? He performed a survey of approximately 950 business incubators, 19,000 incubated businesses, and a matched control group of unincubated businesses. Metrics of new venture performance included survival, employment growth, and sales growth. Overall, he concluded that business incubation lowers the

expected lifespan of incubated businesses while increasing their employment and sales growth rates. Additionally, this dissertation finds that certain types of business incubators create better-performing new ventures and that women owned firms benefit more from incubation than men owned firms.

Hallen, Bingham, and Cohen (2014) compared graduates of some accelerator programs with a matched set of comparable companies that didn't participate in an accelerator program. They found that the top programs do in fact accelerate the time for reaching key milestones, such as time to raising venture capital, exit by acquisition, and gaining customer traction. However, these positive effects dissipate when looking at a broader sample of accelerators. Many programs do not accelerate startup development, and in some cases may be harmful.

In 2015, the Initiative for a Competitive Inner City (ICIC) partnered with JP Morgan Chase (12), collecting extensive qualitative and quantitative data and developed an approach that analyzed the effectiveness of *both* the programs and resources offered by the incubator or accelerator as well as the performance of the businesses they support.

ICIC surveyed 538 businesses supported by seven incubators and accelerators over the past five years. They achieved a 38% response rate (206 businesses). An additional incubator shared their own survey results from an additional 89 businesses.

The businesses surveyed were mostly:

- Small, young start-ups

- On average 11.3 FTE staff (US ave 12.7)
- 83% of the businesses were 5 years old or younger, versus 35% for all U.S. businesses.
- Nearly 80% considered themselves to be either seed or early stage

Program Effectiveness Metrics

Table 1. Program Effectiveness Metrics

	Percentage of Businesses Rating the Program as Effective (avg. across organizations)*	Lowest Organizational Percentage	Highest Organizational Percentage
Business Education	34%	15%	50%
Equity Connections	42%	14%	71%
Debt Connections	9%	0%	19%
Grant Connections	19%	0%	33%
Capital Access Training	38%	15%	59%
Customer Connections	43%	13%	71%
International Customer Connections	12%	0%	29%
Professional Support Service Connections	42%	28%	59%

Key Performance Indicators

Table 2. KPIs for Incubator and Accelerator Start-Ups

	All Organizations (avg. across organizations)	Lowest Organizational Score	Highest Organizational Score
Share of businesses that generated any revenue	59%	39%	88%
Average revenue*	\$1.1 mill.	\$226,616	\$4.6 mill.
Share of businesses that reported any positive net income	44%	29%	62%
Average positive net income	\$252,743	\$4,884	\$1.2 mill.
Share of businesses that raised any equity*	64%	33%	100%
Average equity raised in 2014	\$1.4 mill.	\$472,662	\$3.7 mill.
Share of businesses that received any debt capital*	27%	10%	50%
Average debt capital in 2014	\$498,535	\$75,663	\$2 mill.
Share of businesses that were awarded any grants*	37%	11%	55%
Average grants received in 2014	\$273,400	\$0	\$832,663
Share of businesses that received any patents in 2014	18%	7%	31%

For six of the eight incubators and accelerators in the study, the businesses they supported on average outperformed the control groups in terms of revenue. For four of the incubators and accelerators, their businesses outperformed their control groups in terms of net income. Across all organizations, 13% of the businesses they support outperformed their control groups in terms of revenue and 28% outperformed in terms of net income. This analysis indicated that more in-depth analysis was still needed.

According to Brad Feld, an early stage investor and entrepreneur with the Foundry Group in Boulder, CO, Accelerators do best when (7):

- Understand what an effective mentor is and knowing how to effectively engage with them throughout the program's duration
- Have a good rhythm for the program that is absorbable by founders—don't go too fast or too slow
- Create awareness of the stress and conflict points among and between the various participants (companies, founders, mentors) that will inevitably occur throughout the program, and strategically channeling those into learning opportunities embedded in the program itself
- Build a culture and network around the accelerator that feeds on itself and perpetuates a lifetime process of learning

By contrast, Feld said accelerators do poorly when they:

- Fail to have a clear view of the mentor dynamic—not helping mentors understand how they can be effective in working with companies
- Fail to set expectations at the outset around what the accelerator can do, and what is sensible given a company’s individual situation
- Fail to focus on the people, rather than idea (at TechStars the mantra is people, people, people, idea—the idea is the price of admission, the key thing is the people), because it is the people that matter most and will be lasting, while the idea will morph a lot
- Fail to understand how to scale their program (how fast do you want to grow? What is your strategy? To expand geographically? To expand the number of programs?)
- Fail to have a point of view about what they are trying to accomplish. Simply emulating what other accelerator programs are doing, for example, fails to understand that there is more than one approach

HOW DOES ALL THIS, THEN, AFFECT NEW SPACE STARTUPS?

Since accelerators are doing so well, in general, it’s been suggested in some circles that accelerators are the “wave of the future” of space startups and investing, and we should go “all in” on this model, forsaking all others.

To that end, for example, the Space Frontier Foundation, at it’s annual NewSpace conference in June, 2016, announced a “Virtual Accelerator” for

space startups, and a “Concierge” service, connecting such startups with local investors.

The results of this major move were not so rosy. The Virtual Accelerator ended up a panel discussion during one conference session. The Concierge service attracted one company, and no investors.

There is a “space incubator” of sorts operating currently in the US, at NASA Ames Research Center, offering otherwise underutilized office building space for startups such as Deep Space Industries. They gain a collegial atmosphere, industry/government contacts, and potential access to Silicon Valley capital.

The biggest challenges I see for the accelerator model, as applied for New Space companies, are:

Focus – for many years, the focus of space advocacy where space business startups are concerned are on only three things: *launch, support services, and payloads/deployment*. There are many other areas one could focus on, but advocacy always seems to circle back to the most expensive (sexiest) items in the bunch.

Price tag – if you only focus on *launch, support services, and payloads*, you are looking at companies that need at least US\$500M just to get something out of the garage. For today’s accelerators – again, funded primarily by local governments, large corporations, or investor coalitions – the current range of financial support goes from \$0 to \$150K. The *average* support level is only \$22,000, plus taking an average equity stake of 5-7%. For many a New Space startup, you would not only have to “add

a zero” to that average, in many cases, you would need to add another *comma*. In many ways, this flavor of New Space is much like biotech, also a big-ticket industry that accelerators simply cannot serve. Although it has been reported that US\$3B was invested in the private commercial space sector last year, the vast bulk of that went to firms with developed tech and paying customers, only a tiny fraction went to startups.

If the focus became much broader, as, for example, Space-Scalable™ companies not involved with the Big Three areas mentioned above, the entry price would be significantly lower, and such firms might lend themselves to an accelerator model.

Geography – for practical purposes, accelerators, and the incubators preceding them, were designed to boost a particular region’s business sectors, and are not built (or funded) to effectively treat an entire nation as such. There is no study or quantitative data indicating that a nationwide “Space Accelerator” operated by industry advocacy groups, would gain sufficient traction or financial support to make any real difference in either the numbers of firms created or improve success rates.

CONCLUSIONS

As with any startup phenomenon, research on long-term performance has not kept pace with the growth of accelerator offerings. While the knowledge gap regarding accelerators is beginning to narrow, somewhat, it is premature to say that this model is practical with New Space startups, and should somehow be considered acceptable to safely ditch the time-honored “Prize” and “BPC” models.

REFERENCES/RESOURCES

- (1) <https://hbr.org/2016/03/what-startup-accelerators-really-do>
- (2) http://surface.syr.edu/ppa_etd/80/ Amezcua, Syracuse University, (2010)
- (3) Clarysse, et al; “A Look Inside Accelerators – Building Businesses”, Feb, 2015 www.nesta.org.uk
- (4) Monitor Deloitte, et al; “Accelerating Impact: Exploring Best Practices, Challenges, and Innovations in Impact Enterprise Acceleration”, Feb, 2015 Rockefeller Foundation
- (5) Fehder, Hochberg (MIT/Rice); “Accelerators and the Regional Supply of Venture Capital Investment”, Sept., 2014
- (6) <http://www.kauffman.org/blogs/growthology/2015/03/are-incubators-beneficial-to-emerging-businesses>
- (7) <https://www.brookings.edu/research/accelerating-growth-startup-accelerator-programs-in-the-united-states/>
- (8) <http://www.kauffman.org/blogs/policy-dialogue/2016/april/a-hard-look-at-accelerators>
- (9) <https://hbr.org/2016/03/what-startup-accelerators-really-do>
- (10) <https://www.devex.com/news/when-are-incubators-and-accelerators-effective-hint-we-may-not-know-yet-86868>
- (11) <https://techcrunch.com/2012/10/14/90-of-incubators-and-accelerators-will-fail-and-why-thats-just-fine-for-america-and-the-world/>
- (12) <http://icic.org/benchmarking-performance-high-tech-incubators-accelerators/>
- (13) <http://disciplinedentrepreneurship.com/blog/avoid-stagnation-acceleration-trumps-incubation>
- (14) <https://www.rockefellerfoundation.org/blog/incubators-are-helping-impact/>

(15) Isabelle; “Factors Affecting a Technology Entrepreneur’s Choice of Incubator or Accelerator”, Technology Innovation Management Review, Feb., 2013

(16) Dempwolf, et al, “Innovation Accelerators: Defining Characteristics Among Startup Assistance Organizations”, Oct. 2014
SBA Office of Advocacy, Final Report

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