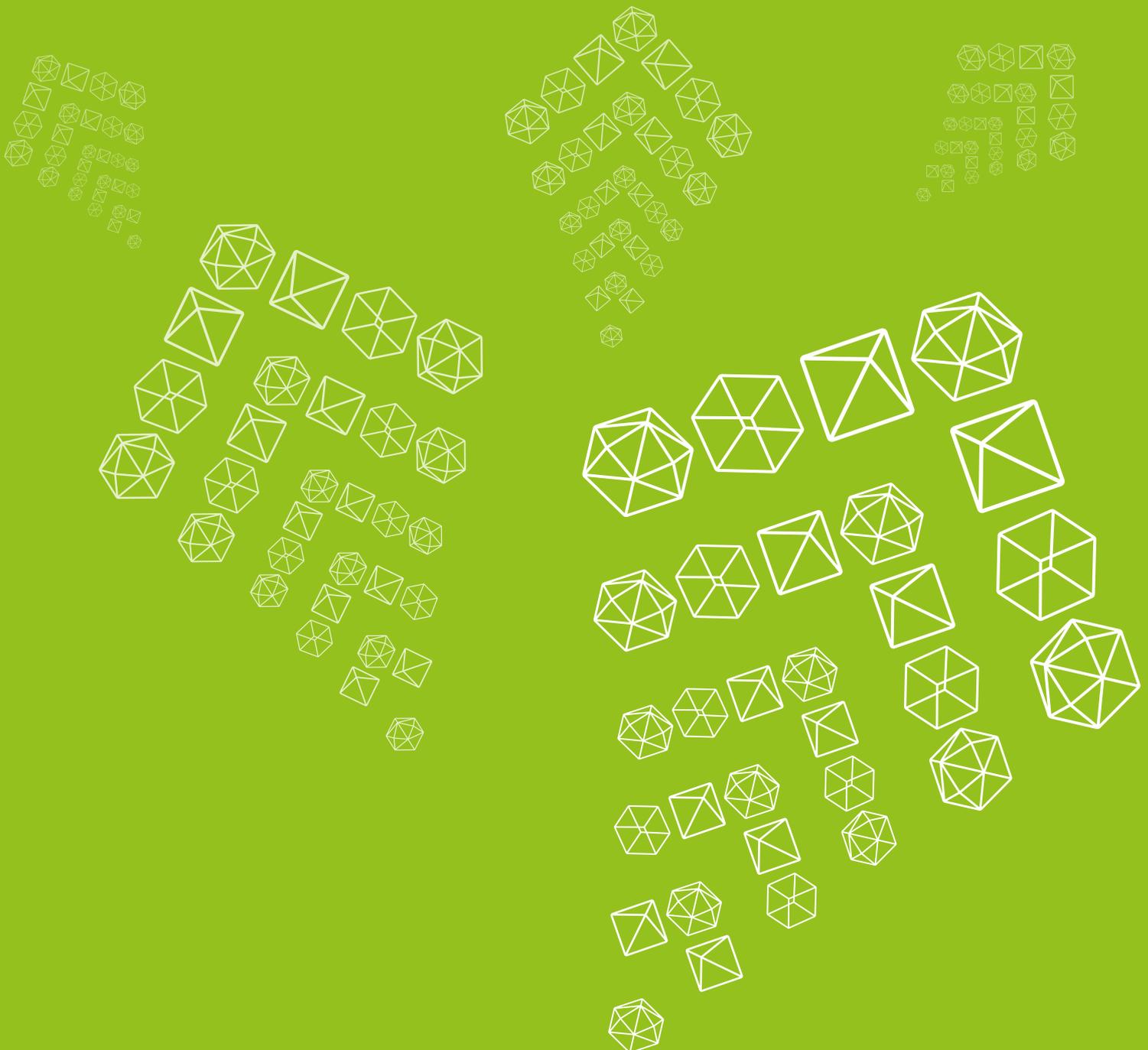


The Startup Factories

The rise of accelerator programmes to support new technology ventures

Paul Miller and Kirsten Bound



NESTA is the UK's foremost independent expert on how innovation can solve some of the country's major economic and social challenges. Its work is enabled by an endowment, funded by the National Lottery, and it operates at no cost to the government or taxpayer.

NESTA is a world leader in its field and carries out its work through a blend of experimental programmes, analytical research and investment in early-stage companies. www.nesta.org.uk

Executive summary

Over the past six years, a new method of incubating technology startups has emerged, driven by investors and successful tech entrepreneurs: the accelerator programme. Despite growing interest in the model from the investment, business education and policy communities, there have been few attempts at formal analysis.¹ This report is a first step towards a more informed critique of the phenomenon, as part of a broader effort among both public and private sectors to understand how to better support the growth of innovative startups.

The accelerator programme model comprises five main features. The combination of these sets it apart from other approaches to investment or business incubation:

- An application process that is open to all, yet highly competitive.
- Provision of pre-seed investment, usually in exchange for equity.
- A focus on small teams not individual founders.
- Time-limited support comprising programmed events and intensive mentoring.
- Cohorts or 'classes' of startups rather than individual companies.

The number of accelerator programmes has grown rapidly in the US over the past few years and there are signs that more recently, the trend is being replicated in Europe. From one accelerator programme, Y Combinator in 2005, there are now dozens in the US that are funding hundreds of startups per year. There have already been a number of high profile startup successes from accelerator programmes.

Early evidence suggests they have a positive impact on founders, helping them learn rapidly, create powerful networks and become better entrepreneurs. Although incubators are sometimes stigmatised as providing 'life support' to companies, these accelerator programmes are notable for the high quality of both mentors and startup teams they work with and the value they add to companies.

The rise of accelerator programmes is closely associated with the changing economics of starting up. Costs associated with early-stage tech startups have dropped significantly in the last decade, creating an opportunity to invest with very small amounts of money (£10,000-£50,000) compared to previous eras of investment in digital businesses.

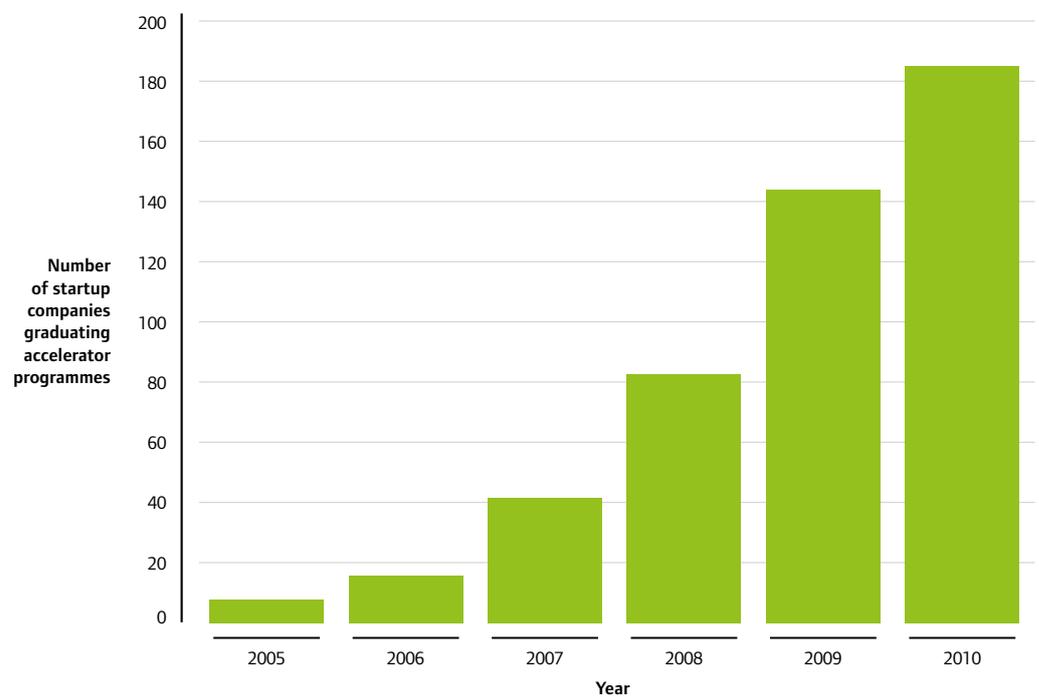
Angel investors and venture capital investors have supported accelerator programmes because they create a pipeline of investable companies, scouting for and filtering talent and connecting them with a concentrated stream of mentors and strategic resources. The connections they create have a positive effect on the local ecosystem in which they operate, providing a focal point for introductions and building trust between founders, investors and other stakeholders.

The catchment area for accelerators is already international and nearly global. Depending on visa status, founders are willing to relocate across the world and certainly across Europe for three months. Yet at the moment, demand for accelerator programmes outstrips supply considerably. There will be limits on their growth: the pool of high quality mentors, opportunities for acquisition by large companies or stock market flotation and competition for startup talent with other careers.

The rise of accelerator programmes points to four areas for further research and debate:

1. How should we track this trend and measure the wider impact of accelerators? Are there risks and downsides to the phenomenon? How will we create reliable evidence on how this compares to other methods for incubating startups?
2. How can accelerator programmes be improved even further for founders? How should they measure their success as individual programmes? What lessons have been learned about supporting very early-stage businesses that can be transferred to other arenas?
3. How many accelerators could there be? Could accelerators be used as an economic development tool in regions outside traditional technology hotspots? How should the public sector be involved?
4. Could accelerator programmes work in other sectors? The model seems particularly suited to those where the equity investment culture is strong and early-stage costs are falling, but what are the limits?

Figure 1: Startups funded by accelerator programmes in the US



Acknowledgements

We'd like to thank the following people for taking the time to be interviewed for this report.

John Borthwick	Betaworks
Jon Bradford	The Difference Engine, Springboard
Henry Chesbrough	Berkeley University
David Cohen	Techstars
Jed Christiansen	Google
Rob Deeming	Gilt Groupe
Esther Dyson	ED Ventures
John Geraci	DIY City
Scott Heiferman	Meetup
Reid Hoffman	Greylock Ventures
Ian Hogarth	Songkick
Joi Ito	MIT Media Lab
Amit Kumar	Vurve
Dave McClure	500 Startups
Jakub Nesetril	Apiary.io
Paul Rawlings	Screenreach
Nick Seguin	Kauffman Foundation
Megan Smith	Google
Reshma Sohoni	Seedcamp
Ed Spiegel	RentMineOnline
Ryan Spoon	Polaris Ventures
Harj Taggar	Y Combinator
David Teece	Berkeley Research Group
Andrew White	BoomStartup

Contents

The Startup Factories

The rise of accelerator programmes to support new technology ventures

Part 1: Pedal to the metal	7
The rise of startup accelerator programmes	7
Defining accelerator programmes	8
Haven't we seen this all before?	10
Who benefits from accelerator programmes?	11
Y Combinator	14
Techstars	16
Seedcamp	17
The Difference Engine	19
Startup Bootcamp	20
Part 2: Show me the money	21
The new economics of startups	21
Changes in the investment market	23
Accelerator business models	24
Part 3: Why founders apply	26
What founders get out of accelerator programmes	26
What are the alternatives?	28
Part 4: The future of accelerator programmes	32
Criticisms of the model	32
Questions for the future	33
Conclusion	37
<hr/>	
Appendix 1	38
Endnotes	39

Part I: Pedal to the metal

The rise of startup accelerator programmes

In January 2011, investors Yuri Milner and Ron Conway made a blanket offer to invest \$150,000 in every single startup in the most recent batch from the Y Combinator accelerator programme in Mountain View, California.² This is a remarkable validation of a model of startup support that has proliferated since Paul Graham's team selected the first batch of eight Y Combinator companies in 2005.

This isn't just a Silicon Valley story. In 2007, investors David Cohen and Brad Feld set up Techstars in Boulder, Colorado with a hope of transforming an underwhelming startup ecosystem. Meanwhile in London, Saul Klein and Reshma Sohoni were plotting the first cycle of Seedcamp. The Techstars programme now operates in four US cities, and has inspired and supported a network of peers around the world. Seedcamp has grown to be a pan-European programme eliciting over 2,000 startup applications a year.

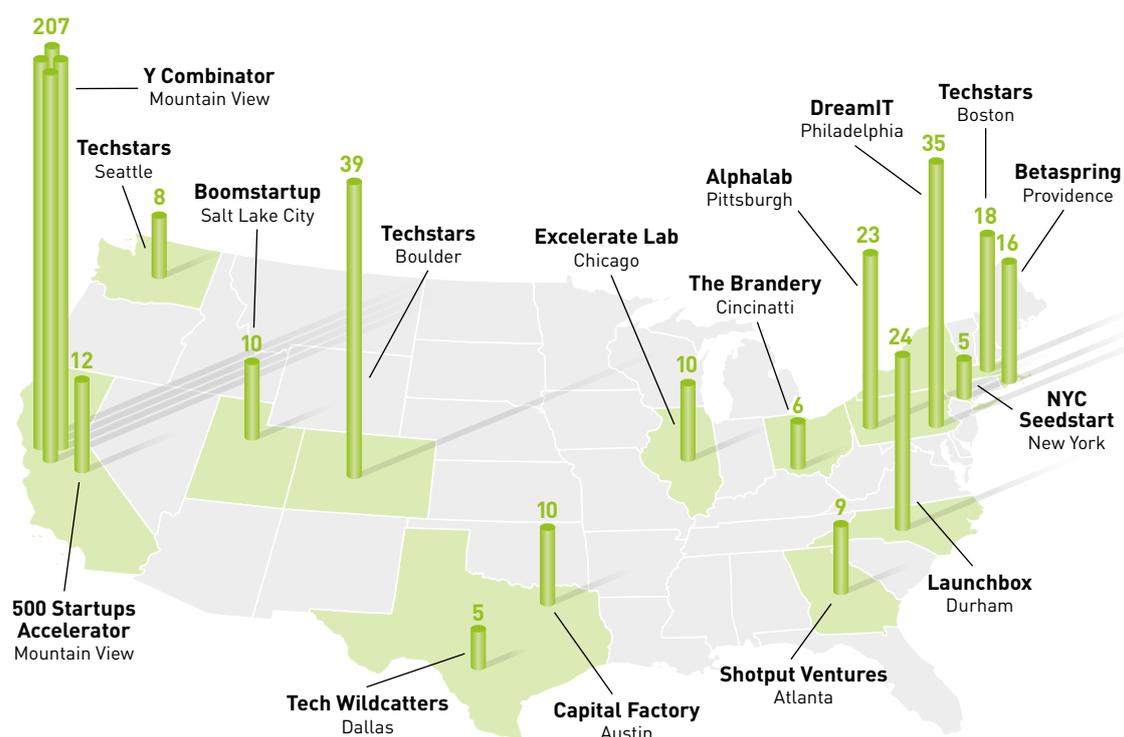
In the decade since the dot-com boom, the environment for building tech startups has changed dramatically. Conditions are perfect for nimble internet and mobile tech startups with talented teams and big ambitions, and the demand from both investors and buyers has never been greater. Accelerator programmes, as we define them, appear to be addressing a growing opportunity in the market for innovation. A market which is rapidly changing, in part as a result of technologies that this sector has already created. As Megan Smith, Vice President for Business Development at Google told us, *"they are an idea whose time has come"*.

With attempts to boost economic recovery at the heart of the British political agenda, the Government aims to create a cluster of technology businesses in the capital making *"East London one of the world's great technology centres"*. It hopes to foster greater entrepreneurialism through the Startup Britain campaign. Recognising that the *"people best placed to help business are the people who do business"*.³ Accelerator programmes have been on to this strategy for a while.

This report is informed by interviews with leading investors and academics, as well as new founders and those operating accelerator programmes in the US and Europe. It draws on a host of online resources and gathers newly available performance data.⁴ While we hope this will be a practical resource for founders, investors and those considering running an accelerator programme, we also hope to contribute to an important debate on how to amplify the efforts of entrepreneurs and investors to better support new high-growth, innovative tech businesses. This report aims to help define and map the accelerator programme phenomenon and begin a debate about how the rise of accelerator programmes could help transform both the UK and wider European startup ecosystems in the future.

Since 2005 there has been year-on-year growth in the number of companies taking this route through their early-stages. Y Combinator has taken on more and more companies each year, but the main driver of growth has been that new programs have been created. Techstars now operates in four US cities and is growing a global network of peers. In Europe, the number of programmes has risen from just one in 2007 to over ten in 2011.

Figure 2: Notable US seed accelerator programmes by location showing total number of startups funded to 2010



Note: Bar size indicates number of startups funded to 2010.

Defining accelerator programmes

The benefits of supporting new businesses through their fragile early stages have been recognised for decades. In the public sector, business incubators have for over 30 years been a popular policy instrument to foster entrepreneurship and regional development, aiming to create jobs and catalyse local economic growth. For the private sector, incubation based on a rent-seeking model has grown into a significant international industry in itself, while professional services firms now often collaborate on a shared offering to companies. At the same time, investors have experimented with incubation as a way to improve the performance of their portfolio, and large companies have developed in-house incubators to support new companies as a way to boost supply chains or source new ideas.

As practices have matured and multiplied, hundreds of variations on incubation processes have emerged. Those wishing to analyse and assess incubators come up against the problem that there are no fixed definitions for different types of incubation, and the semantics used vary widely across countries and sectoral backgrounds. This issue is compounded by the stigma attached to incubation as a term and concept for some as a kind of company 'life support'.

If one could discern one trend across all these efforts, it would be an understanding that the job of an incubator has evolved from one of helping companies survive their formative years (decreasing downside risk) to one of adding value to companies (increasing upside advantage).⁵

Yet there is still a lot to learn, and much hard evidence is needed if governments are to better support new high-growth companies. In this report we define accelerator programmes and highlight the trends that lead us to believe this may offer a particularly promising new approach to supporting startups. At this early stage in data availability, this is all with a view to setting the parameters for further analysis.

Accelerator programmes in the new wave have a number of distinctive features that set them apart from existing incubators and other programmes to support startups. Up until recently they have been driven almost exclusively by private investors, and concentrated in the web and mobile sector. There is some variation between programmes, but they comprise five main features. This is how we define accelerators and how we group them to permit analysis:

- An application process that is open yet highly competitive.
- Provision of pre-seed investment, usually in exchange for equity.
- A focus on small teams not individuals.
- Time-limited support comprising programmed events and intensive mentoring.
- Startups supported in cohort batches or 'classes'.

An application process that is open yet highly competitive

Accelerator programmes have web-based application processes through which anybody can apply, usually from anywhere in the world. Paperwork is kept to a minimum. The Techstars (see case study on page 16) application form is a single page but encourages applicants to include video. The forms often focus on questions designed to reveal as much about the team behind a startup as about the startup idea itself. Following a first cut, applicants are invited to interview. These are often remarkably short. For Y Combinator they last ten minutes. The process of selection from the application deadline through to a decision is often very short compared to many routes to funding or business education programmes. For Techstars for example, the gap between the application deadline and the first day of the programme is just six weeks.

Programmes are highly selective, using expert judgement to choose the teams with the most promise. Most of the accelerators reviewed for this report have an applicant success ratio of less than one in ten. For high profile accelerators, fewer than 1 per cent of applicants will be successful. Accelerator programmes often invest considerable time in speaking and running events to reach out to potential applicants to maintain the quality of the applicant pool.

For some accelerators there is a limit on the number of startups they can support in each cohort based on the amount of office space they have available or the number of mentors and operational staff needed to handle larger numbers. Techstars has settled on ten companies per batch whereas Y Combinator has been less constrained. Interviewed for this report, Harj Taggar, partner at Y Combinator, described the YC selection criteria: *"It's simple enough: do they seem good enough that we would regret not funding them?"* They now fund over 60 companies per cycle.

Provision of pre-seed investment

The investment provided by accelerator programmes varies but is usually based on an assumption about how much it costs per co-founder to live during the period of the programme and for a short period afterwards. Programmes usually provide a minimum of £10,000 and a maximum of £50,000 investment during the first three months. This can be in the form of a convertible note or an equity investment.

A focus on small teams not individuals

Most accelerator programmes will not take on lone founders unless there are exceptional circumstances. As the Y Combinator FAQ puts it: *"A startup is too much work for one person."* It's also rare for accelerator programmes to take on teams larger than four people because the investment needed to cover the costs of larger groups would be greater.

Time-limited support comprising programmed events and intensive mentoring

Accelerator programmes provide support for a set period of time – usually between three and six months. This time frame is partly linked to the decreasing length of time it takes to launch a web startup, but it's also about creating a high pressure environment that will drive rapid progress. While a number of programmes do offer ongoing support to successful companies there is always a more intense interaction with the programme for a limited time initially.

Frequent direct contact with experienced founders, investors and other relevant professionals is a core aspect of an accelerator programme. This can come in a variety of forms, from introductions to thematic sessions where mentors present their ideas and experience and then spend time with teams on a one-to-one basis. The aim of this kind of mentoring is two-fold – first, to challenge the teams and give them honest feedback on where they're going right and wrong and second, to give them a chance to create longer-term relationships with mentors who could take on the role of an advisory board over time. It's not uncommon for angel investors who act as mentors to become investors in the companies they work with.

It is essential for an accelerator programme to develop an extensive network of high quality mentors. The depth and quality of mentoring at the best programmes is very high. This tends to be due to the connections of the accelerator operator, but also the ability to tap into a desire among successful founders and investors to 'give back' to the start up community. Attracting high quality mentors requires high quality startups.

Accelerator programmes usually comprise structured events. Themes range from legal and tax advice to pitch practice. A consistent feature in accelerator programmes is a demo day. This is the culmination of the programme and the target of frenetic preparation. They are designed for angel and venture capital investors to come and see what has been developed during the programmes. It can also give companies a chance to launch their product or service to the outside world – media coverage, particularly on industry sites such as Techcrunch is common. These events give participant teams access to a large and high quality group of investors in a way that would be very difficult to achieve without the accelerator programme. By comparison it costs up to \$18,500 to launch a service at the Demo conference in Silicon Valley – although lower rates are available for bootstrapped companies.

Startups supported in cohort batches

Accelerator programmes differ from other early-stage investment since cohorts or 'batches' of companies are invested in at the same time. Some people liken this to the effect achieved in business schools of students graduating together. Cohorts of companies are sometimes even called 'class of...' as a way of representing that they worked with other companies.

Our metaphor of the 'startup factory' comes from the model of taking the raw materials for high-growth startups, putting them through the same process and mass producing them by finding efficiencies that can be achieved by helping companies all at the same time.

One core advantage of cohort working is the peer support that startup teams provide each other. This can take the form of technical co-founders helping each other out with problem solving through to early feedback on pitches that avoids embarrassing mistakes ahead of more vital presentations to investors or clients. By encouraging the startups to support one another, some of the burden is also taken off the accelerator management team, allowing them to focus on bringing in outside expertise.

Co-working is a key part of the accelerator programme offer to founders. But desks aren't essential features of an accelerator. While some accelerator teams provide desk space, others limit interactions to once or twice a week. These are not 'virtual' incubators, and face-to-face meetings and events between peers and mentors are essential.

Haven't we seen this all before?

Some readers might have a sense of déjà vu. In the dot-com boom of the 1990s, incubators focused on digital firms proliferated.

Henry Chesbrough of the Haas Business School at the University of California at Berkeley wrote a report with colleagues in 2001 about the rise of what he called at the time 'networked incubators'.⁶ The report came out in the few months before the dot-com crash and in the years afterwards many of the incubators he wrote about folded, having developed a very bad reputation – even

being nicknamed ‘incinerators’ by investors such as John Doerr whose portfolio boasted Google, Netscape and Amazon.⁷

When we interviewed him for this report, Chesbrough admitted that, with hindsight, he had been overly optimistic about the economic resilience of these organisations.

“I think the thing we missed was that many of the dot-com incubators were too highly specialised and many of the companies they were trying to create were spending a lot of money. But with this batch of seed accelerators, that’s not the case.”

Not all the incubators Chesbrough and his colleagues wrote about folded. IdeaLab, founded in 1996 by Bill Gross and colleagues, is considered by some to be the original accelerator programme, although it doesn’t take companies in batches, and many of the ideas for companies come from the IdeaLab management team themselves. While the company peaked at a valuation of \$8 billion in 2000, it now has a more modest profile.⁸ But it still focuses on a range of technologies and continues to create impressive companies such as eSolar and Evolution Robotics, albeit more capital intensive ones than many of those supported by the new accelerators.

Accelerator programmes of this new wave are not only very different in approach from those of the dot-com era, but they emerge in an environment for starting a web business that has changed dramatically, as we will look into more closely in Part 2.

Who benefits from accelerator programmes?

Startup founders inevitably gain a range of benefits from participating in an accelerator programme, and we will turn to those in Part 3. But the benefits of these programmes go beyond the direct impact on founders and accrue to stakeholders in the wider technology community.

The accelerator programme features described above have the effect of scouting new talent, filtering down to only the highest quality and providing a focal point for advisors and investors to concentrate their time and resources.

Angel investors get involved to make more informed decisions about companies to invest in at the end of the programme. After three months of intensely working on a startup, a number of things are much clearer. Does the team work well together under pressure? Is there a product market-fit? Can they pitch well? As an angel investor, it’s hard to get a really good level of information from very early-stage companies but accelerators make it much easier.

Venture capital firms (particularly outside Silicon Valley) are less likely to invest in startups at the point they emerge from accelerator programmes, but they benefit eventually from a higher quality pipeline of ventures to invest in. The large number of companies and technologies applying to accelerator programmes also gives them insights into future trends in technology. A measure of whether accelerators are serving the investment community well could be the number of deals and the amount of follow-on investment attracted by the companies that go through accelerator programmes.

Large technology firms support accelerator programmes because they see the business opportunities of new startups that use their technology. Facebook even ran their own accelerator programme in California for services built on top of their platform and have now partnered with Seedcamp in Europe with a similar aim.

It’s also common for accelerator programmes to be sponsored by law, PR and accountancy firms to give them business development opportunities with new startups.

Table 1: Who else benefits from accelerator programmes?

Angel investors	Reduce the need for due diligence as that role performed by accelerator. Reduce the cost and time required to find new companies to work with. Ability to meet other investors and company founders.
Venture capital firms	Improve deal pipeline, creating more high quality startups. Get first sight of new technology and ability to map trends in startups. Ability to meet other investors and company founders.
Large technology firms	Talent scouting for new employees. New customers for their platforms and services. Associate their brand with supporting new businesses.
Other startup founders	Talent scouting for new employees. Rapidly create a very high quality business network. Meet customers and later-stage investors that might be relevant to their businesses.
Service providers (e.g. accountancy firms, law firms, PR firms)	New customers in the form of the startups the accelerators support.

The growing ecosystem

There are a number of other models that are improving the ecosystem for early-stage ventures that are closely connected to the rise of accelerator programmes. Each has its own struggles to become sustainable but the combination of different models and the network of relationships that form between all the different players are gradually building a vibrant ecosystem for technology businesses on both sides of the Atlantic.

Table 2: The new early-stage ecosystem

Startup weekends	e.g. Startup Weekend Launch48 Garage48	While many would think that three months is a short period of time to start a startup, it's an age for some hackers. The Startup Weekend format is now backed by the Kauffman Foundation in the US and is being supported by Startup Bootcamp in Europe. Other examples include Launch48 and Social Innovation Camp in the UK and Garage48 based in Estonia.
Investment Marketplace	e.g. Angel List SeedSummit CrowdCube	Started by the VentureHacks founders in 2009, Angellist is an attempt to open up the process of raising angel investment. While most angels deliberately hide themselves away online, Angellist puts their record up for all to see. It still makes it difficult to contact them though – unless you have what they call 'social proof' they're unlikely to forward your pitch onto investors. Silicon Valley angel investor Dave McClure describes it as the "single greatest innovation in the venture capital industry since Paul Graham started Y Combinator". It's now been replicated in Europe by the Seedcamp team in the form of Seedsummit.org. There has also been a recent growth in crowdfunding investment platforms including Profounder in the US and CrowdCube in the UK.

Startup Schools	e.g. The Founder Institute School for Startups Startups@TechHub	The Founder Institute has already spread from its first location in San Francisco to 17 locations around the world at the time of writing. UK efforts include Doug Richard's School for Startups and TechHub's Startups@TechHub programme. Some of these programmes even describe themselves as 'pre-accelerator programmes' ⁹ and encourage their graduates to go on to apply for Y-Combinator or Techstars. One interesting example is Founder Labs created by the team behind Women 2.0 and funded by the Kauffman Foundation which runs a five-week series of events to help encourage more female founders apply to accelerator programmes.
Meetups	e.g. MiniBar Silicon Roundabout Social Club OpenCoffee	It's now much easier to find like-minded people in the startup community because of services like Meetup or GroupSpaces. In London events include Minibar, the London Tech Meetup, Open Coffee. Although it's often the smaller more specialised meetups to look out for if you want to see the health of the local startup ecosystem.
Office and co-working spaces for startups	e.g. Plug and Play TechHub	Perhaps most famously pioneered by Plug and Play in Silicon Valley, office space tailored for startups has started to be replicated in other US cities as well as in the UK by Tech Hub in East London. They offer monthly or even daily rent, shared meeting and conference facilities, relationships with service providers and events put on for startups that may lead to introductions to investors or potential clients.
Hackdays	e.g. Music Hackday History Hackday Home Camp	Most weekends, there's a choice of hackdays. These differ from meetups because there's a focus on building new tools rather than on connecting with new people, but they aren't as focused on creating new businesses as startup weekend events.
Venture incubators	e.g. White Bear Yard Betaworks	Sometimes described as 'foundries', these are investment-led incubators that provide intensive support to occupant companies. Betaworks in New York liken themselves to a movie making studio – engaged in producing and managing their own startups but also backing external productions when there's a fit with their expertise. Unlike accelerators they are not time limited and do not accept applications in cycles.

Founded: 2005

Location: Mountain View, California

Founders: Trevor Blackwell, Paul Graham, Jessica Livingstone and Robert Morris

Companies per class: approx 30 in 2010, over 60 in 2011

Total startup alumni to date: 316 companies

Notable alumni: AirBnB, Reddit, Dropbox, Scribd, Herocu

The space that Y Combinator uses is in a nondescript street full of low-rise offices and light industrial buildings on the outskirts of Mountain View in the middle of Silicon Valley. They share the building with Anybot – a company that builds telepresence robots founded by Trevor Blackwell, also a co-founder of Y Combinator. It's a bright and airy space with furniture that can be moved around – long benches and tables that give it the slight feeling of a school dining hall. On the wall is a whiteboard charting the classic trajectory of a Y Combinator startup to growth through the 'trough of sorrow' and 'wiggles of false hope'. There are no desks because Y Combinator doesn't offer office space to teams, who mostly work from their apartments. Just to the side of the main room is a smaller room where interviews for the programme take place and teams can talk to YC partners in 'office hours.'

Over the past five years Y Combinator has become a Silicon Valley institution, a household name among founders and investors alike. Part of its fame comes from its association with Hacker News, one of the most popular aggregators of news for people interested in technology and engineering, but mainly it comes from the quality of the companies the programme has backed.

There are a number of distinctive features to the YC approach:

'Dinners' – Food is involved, but it's not the only concern. These are weekly co-working sessions that run from 6pm often to midnight. Glitterati from the startup world give off the record talks about successes and screw-ups and teams present the progress they have made during the previous week to each other. British YC alumnus Ian Hogarth described the pressure of these weekly sessions: *"they're about helping each other solve problems, but there's also a strong element of competition, and you need to show progress – the other teams, these are the kind of people whose opinions you care about."*

Events – There are a number of events throughout the YC cycle, usually based around obtaining input, advice and challenge from experienced founders and investors. Two critical events are Angel day and Demo day. Angel day occurs half way through the cycle, when each startup is teamed with two angel investors, who will work with them to hone their company until Demo day. This is in some way the culmination of the cycle, when teams present to over 400 investors. Around a third of YC companies will have already raised some angel money by this point.

Office hours – Aside from the Angel advisors brought in after demo day, a core part of the YC offer is the advice from the small group of YC founders and partners. There's little doubt that Y Combinator's success is closely tied to the skills of the experienced founders behind the programme. YC partner Harj Taggar is also a graduate of the programme. His company, Auctomatic was acquired in 2008 by Live Current Media for \$5 million, an early acquisition. He's careful not to offer advice beyond his areas of first hand expertise.¹⁰

Alumni – With 316 startups funded, if you include the summer 2010 batch, the value of the YC alumni network is gradually coming to light. There is now an alumni demo day prior

to that for investors, so teams can get friendly feedback and frank advice from people who have been in their shoes. Founder Ian Hogarth told us what an influential resource this is. *“As a YC alumni you know you can ask advice from anyone in the network and they will get back to you.”* In Silicon Valley, the strength of the network is even beginning to affect the power balance between founders and investors.

Asked how they designed and planned the alumni network, partner Harj Taggar was frank: *“it wasn’t planned, it just emerged because there is value in it.”* Like many a hacker project, Y Combinator has evolved through the founders undertaking thousands of small experiments and seeing what worked.

The results

Y Combinator released their first public results on 1st June 2011. Until this year 94.4 per cent of companies received follow-on investment during or after the programme. Follow-on funding will be less useful as a metric since the blanket offer by SV Angel to invest in all YC graduates. Twenty-five companies have been acquired, five of those for over \$10 million.

Paul Graham has estimated the value of the portfolio of companies that Y Combinator funded until 2010 to be \$4.7 billion based on valuations of the 21 best performing companies in the portfolio. Spread over the 210 companies in his sample, this gives an average value of \$22.4 million per company that Y Combinator has supported. No details have been released for how many jobs have been created by Y Combinator companies.

Founded: 2007

Location: Boston, Boulder, New York, Seattle

Founders: David Cohen, Brad Feld

Companies per class: Ten per location

Total companies funded to date: 80

Notable alumni: Graphicly, SendGrid, Vanilla Forums

A few doors along from Union Square in Manhattan, just above a yoga school, is the entrance to Techstars New York. David Cohen and Brad Feld founded Techstars in Boulder, Colorado in 2007 but a growing demand for the programme means it has already spread to three other cities in the US and inspired a network of similar accelerator programmes around the world.

Interviewed for this report, Cohen described the aspiration behind the initiative: *"I started Techstars because I was interested in technology and I wanted to make Boulder a better place. But I know it will take 20 years to really work."*

The programme lasts 12 weeks, for which the companies have to move to the Techstars office space and completely focus on their projects. During our interview with David Cohen, founders come over to interrupt to ask about pitch practice later that day. Seeing as they're less than halfway into the programme this might seem strange but there's a sincere belief that by repeatedly telling people about their business, they will improve their chances of success. By the time the programme ends, they'll have pitched their ideas hundreds of times.

Mentoring is at the heart of Techstars approach and the first month of the programme consists almost entirely of meeting experienced tech entrepreneurs and investors and receiving often brutal feedback on their businesses. Unless a team can attract five mentors to help them, Techstars feel they're unlikely to succeed.

Each of the branches of Techstars in the US has come from a local investor approaching Techstars rather than them recruiting. Cohen thinks the ideal combination to make a programme work is one operator and one networker to connect the programme to the local investment community – basically the combination that helped Techstars grow in Boulder – David himself and investor Brad Feld.

He's convinced that there will be hundreds of accelerator programmes across the US and even more across the world. His prediction is a hundred accelerator programmes by 2012. Techstars has deliberately set out to 'open source' the accelerator model, encouraging other people to start accelerators and join the Techstars Network. At the time of writing there are 24 members of the network in the US and across the world.

The results

Since 2007, Techstars has funded 80 companies, of which 68 are currently active, 43 have gone on to raise further funding and seven have been acquired. The companies have 417 full time equivalent employees. They have raised a total of \$51,190,661 in follow-on investment to date.

Founded: 2007

Founders: Saul Klein and Reshma Sohoni

Backers: Angel investors, investment firms, NESTA

Location: London but with events and networks across Europe

Companies per class: 13 in 2010, 15-20 expected in 2011

Total companies funded: 40

Notable alumni: Mobclix, Zemanta

When Saul Klein and Reshma Sohoni founded Seedcamp in 2007, their aim wasn't just to help early-stage companies get going. They saw a bigger role – they wanted to make Europe as good a place as the US to start a technology business.

Backed by a number of London-based venture capital firms and angel investors, they took their first applications in July 2007 with the first Seedcamp week taking place in September of that year. Of the 20 companies selected for the week, they invested €50,000 in six who all relocated to London for the following three months.

The model is quite different from US accelerators, with a larger investment that Reshma Sohoni thinks is more appropriate in the European context. *"We need to give them some breathing room"* she says, *"It can take longer to raise money over here"*. Seedcamp now hosts regular 'mini Seedcamp' events across Europe and even further afield (including in Singapore and Cape Town) where 20 companies are selected to pitch their businesses and be mentored by other founders and investors from the Seedcamp network. This year, Seedcamp expect 15-20 of those companies to win investment and become part of the portfolio, but over a hundred companies benefit from advice at the mini Seedcamp days.

Sohoni was instrumental in working with the UK Government to develop a new type of visa that allows company founders from outside the EU to live and work in the UK, while they are trying to raise investment for their companies, provided they have been accepted onto an accelerator programme that is recognised by the Department for Business Innovation and Skills.

They've also branched out into hosting the SeedSummit network of angel investors which mirrors AngelList in the US and hosts an annual event for European angel investors. All of this supports their mission of making Europe a great place to start a technology business.

Seedcamp has always had bigger aims than just being successful as an investment fund. The aim has been to improve the ecosystem of early-stage investment in tech startups in Europe. And Reshma Sohoni says that compared to three and half years ago when Seedcamp started, *"Europe is on its way to being a much better place to start-up."*

The results

Seedcamp has just published data on the first 22 companies they invested in between 2007 and 2009 (they've invested in 18 more during 2010 and 2011). Those 22 companies now have over 300 full-time equivalent employees. They've raised €30 million in further funding over and above the €1.1 million invested by Seedcamp. Three companies have been acquired – one, Mobclix, for \$50 million.

Seedcamp can also point to success in terms of revenue as well. Seven of the 22 companies have revenues of over €1 million per year. Only two of the companies have closed down.

Figure 3: In addition to 13 UK-based teams, seedcamp companies have been attracted from throughout Europe and beyond



The Difference Engine



Founded: 2009

Founded by: Jon Bradford

Location: Sunderland and Middlesbrough

Backers: One North East, The North East Design and Creative Fund, Middlesbrough Council and Sunderland City Council

Companies per class: 9-10

Total companies funded: 19

Notable alumni: Screenreach

In a function room at the Baltic Gallery in Gateshead overlooking the Tyne, nine startups gather to pitch their businesses to investors. Most of them have come from outside the region but many of them expect to stay afterwards – locating their businesses in Newcastle or nearby. The room is buzzing with the nervous energy of the teams but also of the mentors they've become close to over the course of the programme, who are there to support them on the day.

The Difference Engine is unusual as an accelerator programme because during 2009-2011 it was publicly funded. This means its criteria for success have been set by organisations with a brief for improving economic development in the North East rather than investors expecting a return on investment. The primary objective was to *"attract high growth/high potential early-stage digital businesses to locate to the region"* against which the evaluation team suggest the programme has made *"good progress"*.

The Demo Day in Gateshead (and another for investors in London a few days later) was the culmination of The Difference Engine 13-week programme. Inspired and directly supported by the Techstars approach in the US, it consists of three phases:

Refine – teams have a series of meetings where they were encouraged to stop discussing technology and think about their core business proposition.

Build – teams are paired up with mentors to develop their product and business.

Show – teams prepare a pitch to potential investors.

The results

Data for the first batch of companies shows that 16 jobs have been created and 21 by the second batch of companies. Of the 19 companies supported by the programme 56 per cent have raised further investment.

The evaluation carried out of the programme shows that the costs of running the programme were found to be lower than expected – they dropped from a budgeted £400,000 per cycle to £250,000 per cycle, not including any eventual return from the equity stake that the programme took in the companies it supported.

Startup Bootcamp



Founded: 2010

Founders: Alex Farcet, Luis Riviera, Eoghan Jennings

Backers: Rainmaking, Okuri Ventures

Location: Copenhagen, Madrid (2011) Dublin (2011), London (planned 2012), Berlin (planned 2012)

Companies per class: 10

Startup Bootcamp has been a European project from the start. A glimpse into the address book of co-founder Alex Farcet, a French national married to a Dane, born in Spain to French and American parents but raised in England and Zaire, might give you a sense of the international aspirations of this accelerator.

Eighty per cent of applications for the first cohort in Copenhagen 2010 were from outside the Nordic region. The ten startups selected comprised entrepreneurs from eight different countries in Europe plus Russia, Nigeria, USA and Argentina.

Startup Bootcamp is closely modelled on Techstars, becoming its first global affiliate in the Techstars Network. Outreach in Europe has emulated Techstars' approach in the US. Following a new cohort recently selected in Madrid, Startup Bootcamp aims to scale up to five cohorts comprising a total of 50 startups a year in five European cities.

The results

Since the first cohort graduated in November 2010, half of the companies have already raised follow-on finance, and the other companies are 'happily bootstrapping'.

Part 2: Show me the money

The economics of startup life have changed a great deal in the past decade and this is one of the biggest factors behind the growth of accelerator programmes, first in the US and now in Europe. This chapter examines two parts of the equation – what’s changed for startups and what’s changed for investors – and then outlines the business models that have developed for accelerator programmes.

The new economics of startups

Three trends – cheaper technology costs, easier routes to customer acquisition and better forms of direct monetisation – all suit nimble, talented, technology-heavy teams able to iterate a product or service quickly. It is these small teams that accelerators have grown up to serve.

Shrinking startup costs

A common theme in our interviews was the falling cost of hardware and software as one of the main drivers in the proliferation of startups over the last five years and an important factor in the growth of accelerator programmes. *“It used to be that taking your servers to the data centre was a rite of passage for any technology business. You had to physically lift and carry them. Of course, you don’t have to do that any more.”* Amit Kumar of Vurve.com told us – *“Most startups use the cloud in the early days because it costs so little.”* It costs less than \$0.16 to host one Gigabyte per month using Amazon Web Services in 2011. In the year 2000 hosting costs were roughly \$19 per Gigabyte and that involved buying your own hardware which needed maintaining too. Effectively hardware costs have fallen by a factor of 100 over ten years.

Table 3: Starting up in the dot-com era versus the lean startup era

2001	2011
Buy servers and drive them to the datacenter	Create a new instance in the cloud from your desk
Go out and buy software licences for all your employees	Activate Google Apps for your domain
Agree and sign an office lease	Book by the hour at TechHub
Launch a billboard campaign	Google Adwords or Facebook adverts
Take years to build software and then release	Iterative agile software development with daily updates

Open source software has also made a large difference. Where licences for software used to cost thousands of pounds, there are now similar and often superior tools available for free. Common frameworks for developing the technology of web and mobile services include Ruby on Rails which was released in 2004-2005, and Django released in 2005. The real advantage of these tools though isn't their low cost but the community around them which allows developers to find help and get feedback on their code.

Another trend is towards pay-as-you-go infrastructure. It's possible to pay lower monthly costs rather than having to pay large sums up-front which can allow founders to try things out before taking the plunge and spending larger amounts. Examples include Mailchimp which allows startups to manage mailing lists effectively or project management services such as Basecamp or Huddle that make systems only previously available to large organisations affordable for small teams.

Other costs have become lower for startups too. There are now more specialised office providers allowing greater flexibility, shorter contracts and even introductions to investors as part of the deal. The archetypal 'garage' that companies such as Apple and Google started out in, is now the coffee shop or the co-working space.

All this means that the major cost of early-stage startups isn't technology, but people, and often the problem first time founders face is how to cover their living costs while they build their first product, get their first customers or attract their first investment.

Easier to reach new customers

Dave McClure, founder of investment firm and accelerator programme 500 Startups, says that the running costs of startups are just one part of the story. The more dramatic change is that customer acquisition costs (the cost of advertising to and attracting a paying customer to your service) have dramatically fallen and the sophistication of the tools available to target particular customers and measure the effectiveness of different approaches has improved markedly.

There are now platforms for acquisition that give a two to three person team access to as many potential customers as only large companies with multibillion dollar advertising budgets had in the past. By setting up Google Adwords or Facebook Adverts, small teams can test how much it will cost to gain new customers using different approaches and refine their messaging and call to action.

Easier routes to revenue

Along with the sheer numbers of potential customers that are available to online businesses today compared to a decade ago, there are much better routes to monetisation, particularly through direct payments in the form of transactions (e-commerce), app stores and subscription models.

- Shopping carts – a technology that used to be only available to large retailers, is now easy to install as part of any service.
- PayPal and other internet payment platforms remove the hassle of registering for merchant accounts where a trading history and minimum level of turnover is often required.
- App Stores such as the Apple App Store, the Android Market or Amazon's Android Appstore offer startups a way of directly monetising their apps with clear submission guidelines.

Also as the sector has matured, business models have become better known and understood. There's a great deal more experience available from companies that have become profitable – which perhaps was rarer in the dot-com boom of the late 1990s.

These new, more predictable business models and ways of reaching new customers mean that consumer facing startups have easier ways to make money from day one than in the past. It used to be that the business model was something that was worked out once a startup got big – but not any more. Paul Graham of Y Combinator uses the term 'ramen profitable' to indicate a startup that is making enough money to cover the costs of any hosting that might be necessary and the living costs of a small team (including the instant noodles they'll need to live). If a startup can get themselves into that position, they have much more power in conversations with investors because they're not likely to run out of money anytime soon.

Changes in the investment market

At the same time as costs have rapidly decreased, the venture capital industry has struggled to adapt. VC has retreated from early-stage investments, particularly in Europe, and the composition of early-stage investment is changing.

In the US a number of multi-stage investment funds have emerged, but in Europe, bar a few newly developed 'feeder funds,' like Index Seed and Atomico, an investment gap is growing. As Laurence Garrett from Highland Capital, a global investment firm explained at a recent NESTA event: *"In the US we are now happy to give out \$100k cheques, but we have a differentiated product in Europe – the early-stage is too hard here, and the good companies are too dispersed."*

In both the US and Europe, business angels have stepped in to fill this gap since 2000. The US Angel Capital Association found that the number of angel syndicates tripled over the ten years from 1999-2009. In 2009 the total amount invested by angels was \$17 billion in around 57,000 deals. In the UK, business angels' share of private sector investment has doubled from 15 per cent to 30 per cent between 2001 and 2007. Public investment funds have also been introduced over the last decade to address the gap, and are improving in performance, particularly where co-investments are concerned.

Yet despite positive signs that the gap in venture performance between the US and Europe is narrowing, it is likely that the gap will widen again as US investors are set to reap the social media boom. The problem with the European investment market is not that European investors aren't as good at growing companies, but that the environmental conditions, and particularly the pipeline of companies is inadequate. This is proved by venture performance data – UK VCs perform better than average when they invest in the US and US VCs perform worse than average when they invest in the UK.¹¹

Box 1: The Lean Startup

In the last two years 'Lean Startup' has grown as a methodology to reduce the costs of creating a new business. The Lean Startup movement has two founding fathers – serial entrepreneur and Berkeley professor Steve Blank and entrepreneur and investor Eric Ries. In 2009, Blank wrote a self-published book version of a course he ran at Berkeley called Four Steps to the Epiphany and has given hundreds of talks on the subject of what he calls 'customer development'. Ries's book which comes out later this year is already heavily trailed on technology and entrepreneurship blogs.

With a nod to lean manufacturing pioneered by Toyota in the industrial sphere, the basic ideas are:

- Customer development not product development – get out of the office and talk to the people who will use your product. Don't build anything until you're sure people want it.
- Build, measure, learn – when you do build a product, include metrics that allow you to iterate the product based on feedback from actual use. Continually improve your offering.
- Pivot – if it's not working out, go back to the drawing board. Don't be afraid to start again.

Ries and Blank are keen to point out that lean doesn't necessarily mean cheap, but their aim is to stop people wasting their time on businesses that don't have a product market fit or the ability to scale. Since time is one of the scarcest resources for early-stage startups, lean startup has become a useful set of tools for the kind of companies that most accelerators accept.

ICT investments have historically generated the highest returns for venture funds. Europeans often lament the absence of a European Yahoo, Google or Facebook, and the kind of major scale returns seen in the recent \$10 billion LinkedIn IPO. However, this earlier wave of internet superstar companies is being followed by a wave that is far more geographically dispersed. There is a huge demand from investors to find and nurture new company pipelines.

This early stage is where accelerator programmes have stepped in on both sides of the pond. But how do the programmes themselves survive? Is there any money to be made here, or is acceleration all about driving value into the wider ecosystem?

Accelerator business models

The primary route to profitability for technology company investors and founders over the past decade has been from the acquisition market. There are many more multi-billion dollar technology firms than there have ever been, and many actively seeking early-stage startups as part of an innovation strategy. For the past decade, the last few months notwithstanding, the market for IPOs has been slow to non-existent, and so it is this market for selling companies to other companies that has driven returns for founders, early-stage investors and venture capital firms.

Accelerators, so far, have usually set themselves up to make money or become sustainable in the same way, that is looking for the companies they support to be acquired by larger firms. These may not be the high profile exits such as YouTube or Skype; there have been many more where the details of the deals have remained secret and smaller sums of money have changed hands. These are some of the deals that might be more suited to accelerators. *"I feel like we can be more efficient hitting singles and doubles because big VCs aren't going after them, they think these markets are too small"*, says Dave McClure referring to the opportunity to build companies that are 'medium exits', acquired for a few million rather than a billion dollars.

There are a number of variations, but the core business model of accelerators is simple: investors invest in the accelerator programme which acts as a small fund. Some part of the fund goes on the costs of running the programme while some of the fund is invested into startups that are accepted onto the programme. The accelerator programmes take equity in the startups and hope to make a return on those shares. Some programmes take ordinary shares, others prefer what's called a 'convertible note' which offers a discount on stock should the company raise further funding, others have a clause that makes the investment into a soft loan to be returned if certain conditions are met.

Legally, the structure of accelerator programmes varies both between different legal jurisdictions and within countries. In the UK for example, some programmes hold the shares themselves in an LLP and run the programme through a company limited by guarantee, others let their investors hold the shares themselves (thus qualifying for tax benefits under the Enterprise Investment Scheme recently strengthened by the UK Government), and run the programme through a limited company. Some programmes are overtly not for profit. The recently announced Oxygen Accelerator in Birmingham is an evergreen fund, with any profits being reinvested into the next cohort of companies. Startl in the US has applied for 501(3) c dispensation – the equivalent of charitable status in the UK. It should also be noted that some of the investors in accelerator programmes are not just 'for-profit' investors. Startl for example is backed by a number of large foundations. In the UK, NESTA is an investor in Seedcamp and Springboard.

The problem that accelerators solve for venture capital funds is that they create new deal-flow. A number of investors told us that this was the compelling reason for supporting Seedcamp in London in the early days. There simply weren't enough young founders and companies having any contact with the world of investment. The venture capital community has an interest in growing the overall number of good companies. If they can attract talented people to think about setting up startups rather than going to work for large organisations, that could be good news for the whole sector.

A number of accelerator programmes have supplementary business models including sponsorship of events and support from public bodies. The basic principle however remains. The accelerator programme's continued survival is based on the startups it invests in being successful – to the point of being extremely profitable or to the point of the original shares being sold via an IPO or an acquisition.

It would be unfair to judge the newer accelerators on their returns to investors at this stage – most have only been in operation for under three years. However, as we'll come back to in Part 4, we believe that the economic benefits of accelerator programmes aren't just to the direct investors – indeed our research showed that getting a financial return wasn't even their primary motivation. There are wider benefits of accelerator programmes that justify interest from other players.

Part 3: Why founders apply

What founders get out of accelerator programmes

The most important raw material for accelerator programmes is the founders of the companies they support. But who are they and what made them choose this route over other options? Ian Hogarth, co-founder and CEO of London-based live music startup Songkick who went through the Y Combinator programme in 2007 told us, *“Getting in was definitely one of the biggest and best things that has happened to Songkick.”* And the number of applications to accelerator programmes suggests there is a high demand from founders, but why are so many people interested? Our interviews uncovered some consistent themes in the benefits that attract founders to accelerator programmes.

Funding

The money that accelerator programmes offer is a valuable part of the package and is certainly an attractive feature for people applying for accelerator programmes. However, it was rarely rated as being the most important consideration when we talked to people who had been through accelerators. The amount of funding offered varies from programme to programme. Research evaluating The Difference Engine which experimented with different levels of funding between its two rounds in 2009 and 2011 suggested that funding any lower than £14,000 for a team of three would be prohibitive, especially to those who have to relocate. The main advantage of the funding identified by participants was that it allowed them to concentrate on their startups full-time without having to work on the side.

Business and product advice

Accelerators give founders the chance to meet people in the tech industry, both from successful startups and in larger tech businesses and get feedback on their product and company. For Seedcamp, Techstars and Springboard, this is achieved through mentoring, while in the case of Y Combinator, dinner speakers and Y Combinator partners are the most obvious exposure the teams have to people who are already founders. The quality and relevance of this advice was seen by many founders we spoke to as being difficult to replicate in such abundance outside accelerator programmes. The Airbnb story demonstrates this in a spectacular fashion.

Box 2: Airbnb

The example of Airbnb shows quite how quickly an accelerator can turn around the fortunes of a startup with potential once they get access to the right resources and networks. In 2008 the founders approached many investors and according to a founder most said, *“the market is too small”*, or were concerned that two of the three founders were designers. Running out of money, Airbnb started selling novelty breakfast cereal by simply repackaging cereal as Obama ‘O’s and Cap’n McCain’s in the run up to the US Presidential election, and

made \$30,000 in the process. *“With their website low in traffic, their kitchen is without food. Airbnb starts living off their collectible cereal. This is a low point.”*

Things turned around when, at a dinner with the founders of Justin.tv in November 2008, the Airbnb founders were convinced to apply for Y Combinator. Paul Graham told them *“the idea is terrible,”* but liked the founders and decided to accept them. That was their first \$20,000 of investment. By Demo Day in April, 2009, Airbnb became *“ramen profitable,”* and venture capital firm Sequoia led a Seed Round of \$600,000.

In November 2010, a year and a half later, Airbnb announced a Series A Round of \$7.2 million led by Sequoia Capital and Greylock Partners. Seven months on and, according to technology news site Techcrunch, Airbnb is about to raise their next round of \$100 million funding based on a company valuation of over \$1 billion, making them the highest valued Y Combinator company so far. Not bad for a company that only two years ago was having to eat their own novelty breakfast cereal.

Connections to future investment

Accelerators give founders introductions to investors and time face-to-face with them which can be hard to get for first-time founders. Because accelerators provide a quality pipeline of new companies, a lot of investors make sure they go along to accelerator events and getting them all in the same place is something that is a very rare opportunity for new companies. Most accelerators measure themselves on the proportion of their companies that go on to raise further investment. This was an important part of the value of programmes for all founders we talked to. Apiary.io are just beginning their accelerator journey.

Box 3: Apiary.io

After working for a startup in the Czech Republic, Jakub Neseštril knew that he wanted his first company to be global from the outset. After a great idea for a company emerged from a *“48 hours of mad coding”* at a programming hackathon, Jakub and his co-founder started applying to accelerators. *“It was about breaking out and proving ourselves in a global market. If our last startup had been in London or San Francisco we wouldn’t have needed the network so badly.”* At time of writing, Jakub is only four weeks into the programme at Springboard in Cambridge, after turning down a place at Y Combinator. *“It was partly a question of timing, of favouring a hands-on rather than hands-off approach, but it was also a question of logistics.”* The team is already planning a marketing and sales outfit in the US, but they expect to keep their R&D in Europe. *“It’s easier to hire here and the EU passport combined with cheap flights means we have a lot of flexibility.”*

Validation

Founders identified the fact that once accepted onto a programme you’ve been vetted by a group of successful founders and investors as a major benefit, whether with journalists, investors or potential clients. It helps to be able to say that you’ve been selected as a ‘promising startup’ by an accelerator programme. The value of that validation is linked to how well the programme is regarded. Saul Klein has written about this in relation to Seedcamp:

“Raising money if you’re an entrepreneur is tough at the best of times, but if you’re a first time entrepreneur it’s incredibly difficult because the reassurance investors look for more than anything else when they look to fund is validation.”¹²

But Ed Spiegel, a veteran of Seedcamp in the UK and Facebook's Rev programme, says you do need to get beyond the brand and it's important to remember that early-stage investors are backing the team first and idea second.

"There's a temptation to think 'cool, I've got all this validation from these amazing people – I must be onto something big'. But they don't necessarily know whether your idea is going to work. It's only when you get real users and have money coming in that you have any idea about that. The brand isn't going to help you on its own."

A peer support group

Despite all the meetups and hack days it's still hard to meet other founders especially outside major technology centres. But by spending time in the same building or meeting each other regularly over the course of a few months founders spoke of the value of getting to know their accelerator peers to a level where they could provide each other with meaningful support. The alumni network of some programmes was also invaluable to many people who had been through the schemes. The power of the alumni network is identified by Y Combinator as one of their strengths. Harj Taggar explains:

"To put it bluntly, it's a pretty dumb idea for an investor to try to screw over a YC company. There will be about 450 people in their network who will know about it within a few hours."

Pressure and discipline

A number of founders told us that one of the things they got out of an accelerator programme was a deadline and basic framework for getting there. Of course every company should be able to provide this themselves, but in reality in the early days it's tricky to do. Even for more experienced entrepreneurs like Screenreach's Paul Rawlings, the forced progress can be attractive.

Box 4: Screenreach

When Paul Rawlings applied to the Difference Engine he had already sold a couple of small startups. But one longer play idea with more global ambitions had been kicking around for a couple of years. For Paul and his co-founder of Screenreach, taking part in The Difference Engine was about taking in their initial product and *"getting their heads down"* and seeing just how big this could be. He didn't expect the mentoring to be that much use but it turned out to be the secret sauce. *"We hugely underestimated the value of the mentors. We were pitching to over 80 people in a month. We learned how to sell and what the market wanted to buy."* One of the mentors joined the company full time as COO and they pulled together the board of their dreams. They left with a product and a customer. Two days after Screenreach completed the programme they raised £250k. One year on they've raised over a million in investment, built a global client list, grown from two to 20 staff, and opened a New York office. Paul's ambition is for Screenreach, or Screach, to be so widespread that it becomes a verb.

For his 2009 paper about accelerator programmes Jed Christiansen asked a number of people who had been through schemes such as Y Combinator, Techstars and Seedcamp what they valued most about their time there. Christiansen's analysis was that *"entrepreneurs value the elements of programmes that give them long-term chances for success: connections to investors, other connections, and product/business support."*

What are the alternatives?

Do founders need to apply to an accelerator programme at all? Ed Spiegel of RentMineOnline says it's probably not necessary for anything other than first time founders. The chances are that

if you've founded a company before, you'll already be connected to some of the network that an accelerator gives you whether your startup succeeded or failed. And if you have the capital yourself, it's only cheaper to go through an accelerator if you think you could buy in the skills you need for less equity than accelerators want to take (typically 5-10 per cent).

One alternative is bootstrapping or not taking any investment at all. Some first time founders work freelance alongside working on their startup. Some startups are founded with the savings of the founders or loans from friends and family. Bank loans are a possibility but usually require security or an already proven revenue stream.

The valuations that accelerator programmes place on the companies they invest in are at the low range for seed investing – however most companies applying for accelerators would probably be described as 'pre-seed' with little existing traction or revenue.

Another source of early-stage finance for startups has been business schools and university programmes and many engineering and business degrees include business plan competitions which offer seed funding at a similar level to accelerator programmes. Perhaps the closest academic programmes to accelerators are schemes like NYU's Interactive Telecommunications Programme and the MIT Media Lab because of their focus on practical projects as opposed to theoretical teaching. However, since these schemes cost upwards of \$50,000 and take two years, it does seem that accelerators have a much lower financial risk for entrepreneurs.

Table 4: Alternatives to equity investment as a route to growth

Route to growth	Pros	Cons
Bootstrapping	Don't lose equity or take on large debts	Growth can be slow Can be more difficult to get external advice
Bank loans	Don't lose equity	Difficult to obtain pre-revenue or without security
Soft start (using consulting projects for early-stage funding)	Don't lose equity Can lead to new intellectual property	No direct customers so difficult to get feedback Can be distracting from overall aims
Government funding	Don't lose equity	Often reliant on match with subject areas in calls for proposals Slow approval process May require relocation or come with other strings attached Often bureaucratic reporting procedures
Friends and family investment	Can be quick	Emotional pressure

Table 5: Founders guide to European accelerator programmes

Name	Founded	Location	Length of program	Investment	Equity stake taken		Total companies supported	Applicant success ratio 2010	Backers	Advertised mentor network size	Follow on funding to date	Website
Seedcamp	2007	London, UK	1 year	€ 50,000	8-10%		40	less than 1%	Angel, VC, Foundation	1200	85% follow on funding, 3 acquisitions, 2 shut downs	http://www.seedcamp.com
Springboard	2009	Cambridge, UK	13 weeks	£5,000 per founder	6%		10	4%	Angel investors, Foundation	100+	-	http://springboard.com
Startup Bootcamp	2010	Copenhagen, Madrid (2011), Dublin, (2011), Berlin, London (2012)	13 weeks	€4,000 per founder (up to 3)	8%		10	7%	Angel	75+	50% follow on funding (25k to 200k, 2-3 more in discussion)	http://www.startupbootcamp.org
Open Fund	2010	Athens, Greece	16 weeks	€30,000 to €50,000	15%		5	less than 10%	Bank	60+	-	http://theopenfund.com
Oxygen Accelerator	Planned 2011	Birmingham, UK	13 weeks	Up to £5,000 per founder + £5,000	6% + loan		-	-	Public, Angel	50+	-	http://oxygenaccelerator.com
The Difference Engine	2009 (closed 2011)	Middlesbrough, Sunderland, UK	13 weeks	£5,000 per founder + £3,200	6%		19	-	Public	30+	56%	http://www.thedifferenceengine.eu
Propeller Accelerator	2010	Dublin, Ireland	12 weeks	€ 30,000	6.50%		6	9%	Angel	-	-	http://www.dcu.ie/ryanacademy/venture.shtml
H-Farm seed programme	2010	Treviso, Italy	12 weeks	€ 30,000	not disclosed		-	-	VC	-	-	http://www.h-farmventures.com/news/seed_program_q3_2011_open_now
Betafoundry	Planned 2011	Oxford, UK	10 weeks	£5,000	5-10%		-	-	Angel	-	-	
Closely associated models												
Start VI	2010	Belfast, UK	6 months	none	6%		3	-	Angel	-	-	http://startvi.com
Le Camping	2010	Paris, France	6 months	none	none		12	-	Public, Corporate sponsors	60+	-	http://www.lecamping.org
Startup sauna	2010	Aalto, Finland	6 weeks	none	none		35	-	Angel	-	14%	http://aaltovg.com/startupsauna
Hack Fwd	2010	Europe-wide	1 year	€91,000-191,000	27% + 3% for advisers		6	N/A	Angel	-	-	http://www.hackfwd.com
Bethnal Green Ventures	2010	London, UK	3 months	None	None		6	10%		-	-	http://bethnalgreenventures.com

Part 4: The future of accelerator programmes

While their growth has been rapid and the model has started to spread to new countries, it's still very early in the history of accelerator programmes to say whether or not they have had a positive impact overall. It seems from our interviews that accelerator programmes have benefited hundreds of startup founders in the US and Europe and they are attempting to solve a number of important issues in the ecosystem of support for early-stage companies. However accelerators are not without their cynics. In Part 4 we outline some of the main criticisms followed by four important areas that need to be debated and researched further.

Criticisms of the model

Despite the generally positive feedback from within the technology and investment communities on accelerator programmes, and emerging data on their impact, they also have their detractors. Several areas require future research if we are to track performance and wider impact and understand how this model really compares to other means of supporting startup ecosystems.

They only build relatively small companies

Could an accelerator programme create a company like Google or Facebook? Perhaps. But there is an incentive for them to support companies that do already have a revenue model and perhaps don't have quite the global ambitions of those companies and are instead looking to be acquired. These are sometime called 'body parts' – companies that are building something that will become a feature of a larger service, rather than aiming to become a large company in its own right.

They divert talent from other high-growth startups

Attracting talent is a perennial concern of technology-based startups. Events such as the recent Silicon Milkroundabout in London show the lengths that fast-growing startups have to go to compete with the City for talented engineers and programmers. Investor Esther Dyson told us she was worried that accelerators were making entrepreneurship so accessible that they were draining talent from fast growing tech companies.

Good companies still fail after accelerator programmes

There was some anxiety among investors we spoke to that the hype around particular accelerator programmes was leading to complacency about how hard it is to build a successful business, even if all the fundamentals are sound. One investor told us that, *"[when a company finishes an accelerator programme] it's still just such a young company, it's only been in existence for 90 days. And as a consequence they're fairly fragile and then they're thrown into the Darwinian process of the market. They still take quite a bit of nurturing in order to figure out whether they're actually viable."*

They exploit startup founders

The amount of equity taken by accelerator programmes has also been controversial. American-born but UK-based startup founder and conference organiser Ryan Carson expressed his anger as the Oxygen Accelerator in Birmingham was announced in a blog post titled 'Let's mug a startup founder'. He writes: *"You know what I'm tired of? Rich guys launching 'startup accelerators' so they can rip off new startup founders."* His criticism was of the combined equity stake and soft loan nature of the investment made by the programme, but elsewhere he's also scathing of programmes where the team behind the programme have little credibility or experience as startup founders themselves.

They attract companies that are already struggling

Some of our interviewees worried that as the number of accelerator programmes rises, they will struggle to avoid making investments in B-grade companies. It is often argued that if a business is attracted to an incubator it probably won't be as successful as a businesses that doesn't need support. Programmes are always going to be short of information about companies at the time they apply, partly because not all relevant information can be conveyed in a short online application and interview, but also because it's difficult to judge the future performance of any company at this stage.

They're helping to create a bubble

The market for smaller startups to be acquired by established technology firms at the time of writing is buoyant, but is still limited to hundreds of smaller companies each year. If accelerators continue to grow and start producing thousands of small companies, we can expect to see a bottleneck developing and in the event of a crash in confidence in the sector (as happened in the Autumn of 2008), the value of the portfolios of companies supported by accelerators could shrink considerably.

The approach of accelerators has also been likened to 'Spray and Pray' investment where investors make a high number of almost random investments hoping that the value of companies in the whole sector will rise. Opinions are divided as to the merits. Investors such as Dave McClure argue that a large number of investments is more likely to generate a few highly successful companies, while Bryce Roberts of early-stage venture capital firm O'Reilly AlphaTech Ventures argues that a smaller number of highly-targeted investments are a better use of investors' money.

They're just 'startup schools'

Some of our interviewees speculated that accelerator programmes are a reaction to shortcomings of the university education system in creating suitable technical and business founders rather than a viable option for investors. Positive attitudes to the accelerated pace of learning and real life experience that accelerators provide compared to business school was a common theme in our interviews with alumni of programmes. Certainly there are many in the technology sector worrying that the education system at all levels is failing to keep pace with the needs of the sector or society more widely. Peter Thiel – co-founder of PayPal and an investor in many high profile startups – is just one, with his scheme to encourage 20 students under the age of 20 to drop out and start companies in return for \$100,000 over two years.¹³ It's unlikely that accelerator programmes would accept teams who simply view them as an opportunity to learn rather than build a business, but the career benefits add security for people applying to the programmes. Accelerator experience could be a valuable point on many CVs.

Questions for the future

These criticisms prove that the model is not without its problems and is worthy of scrutiny. There could be a valuable opportunity for the public sector to amplify the efforts of accelerator programmes, improve their performance and potentially learn how to better support high-growth tech startups in a rapidly changing economic environment. There are four connected areas we believe need further research and debate.

How should the performance and impact of accelerator programmes be measured?

Throughout the interviews for this report we found that the reasons for creating accelerator programmes went beyond the direct benefits to investors in the programmes. But it's difficult to quantify the indirect, spillover impacts of programmes, or measure whether they make a positive contribution to the economy in the regions in which they operate.

Alongside traditional incubation performance indicators such as job creation, talent attraction, stimulation of private investment and business survival, we should understand more about the impact on individual entrepreneurs and environmental conditions.

Two sources of wider value in particular could be further investigated:

- Convening power – accelerator programmes perform a useful function in bringing together different stakeholders and building networks. How can that be measured – both for individual programmes and for the approach more widely?
- Creating an entrepreneurial culture – as accelerators create success stories, could they convince more people to start businesses and have an impact on the elusive 'culture of entrepreneurship' that investors and governments so covet in a region?

Can performance of accelerators be compared?

As early data is published about the performance of accelerator programmes, initial performance benchmarking is becoming feasible. A project by Aziz Gilani from DFJ Mercury, working with Tech Cocktail and the Kellogg School of Management, has set out to determine the best startup accelerator programmes in America and create an overall ranking of the top 15.

The ranking immediately caused controversy among founders with programmes commanding loyalty among their alumni and mentors. A ranking of European accelerators is also being prepared and will be published later in 2011. However, most founders we spoke to were circumspect about overall rankings, saying that which accelerator programme you should apply for depends on the circumstances of your company and finding a match between your needs and what the programmes provide.

This ranking was designed as a guide for founders about the relative merits of different programmes. The methodology used comprised three basic components. The number and value of qualified financing events (which companies got funded after completing the programme), the overall success of the companies that came out of an accelerator, and finally on programme characteristics (including the money startups receive, the equity the accelerator takes and the size of the alumni base). Additionally, the rankings were supplemented by interviews with investors and past accelerator participants to better understand the perception and reputation of the various accelerator programmes in the industry.¹⁴

What could accelerators teach us about creating high-growth companies?

Accelerator programmes are a relatively new phenomenon and there's a need for further structured quantitative research of their impact on founders and companies, so that founders can make better informed decisions and the whole community of organisations that aim to support new businesses can learn. The Kauffman Foundation in the US is working with Techstars to create a common application platform for accelerator programmes that could generate a valuable new dataset. It's not difficult to envisage a time when there will be hundreds of schemes using a common application process in much the same way that universities operate today and multiple rankings to help founders make their decision. New datasets could help us understand:

- Who is applying to accelerator programmes and why? Are attitudes to equity and debt affecting the type of person who applies?
- What is the longer-term impact on individuals who are supported by accelerator programmes? Longitudinal data on the impact of the model on individual entrepreneurs and founders is needed.
- How does the growth path of successful teams compare to those that just missed out on a place in an accelerator programme?

Table 6: Tech cocktail ranking of US accelerator programmes

Rank	Programme	Location
1	Techstars Boulder	Boulder, Colorado
2	Y Combinator	Mountain View, CA
3	Excelebrate Labs	Chicago, IL
4	LaunchBox Digital	Durham, NC
5	Techstars Boston	Boston, MA
6	Kicklabs	San Francisco, CA
7	Techstars Seattle	Seattle, WA
8	Tech Wildcatters	Dallas, TX
9	DreamIt Ventures	Philadelphia, PA
10	The Branderly	Cincinnati, OH
11	Capital Factory	Austin, TX
12	NYC Seedstart	New York, NY
13	Betaspring	Providence, RI
14	BoomStartup	Salt Lake City, UT
15	AlphaLab	Pittsburgh, PA

Source: <http://techcocktail.com/top-15-us-startup-accelerators-ranked-2011-05>

- How does the impact and cost effectiveness of accelerator programmes compare to other forms of startup support?

Could accelerators be used as an economic development tool?

In his description of 'What happens at Y Combinator' Paul Graham wonders whether the market for accelerator programmes is regional, national or even global. He falls on the side of national for the US thus pitting Y Combinator against the programmes run by Techstars and others across the US. However, there's no evidence from the US that accelerators in secondary markets don't work. While Y Combinator has managed to find a scale that others have struggled to match, there is still a great deal of value in accelerator programmes that take five to ten companies per batch, rather than the 60 or so which Y Combinator now takes each cycle. David Cohen says he has an overt strategy to focus on 'secondary markets' for technology businesses – and thinks that Techstars can do 'just fine' without opening a programme in Silicon Valley.

Certainly the evaluation of The Difference Engine in North East England suggests that accelerator programmes can work in areas with a lower concentration of investment and potential mentors in the UK as well – albeit with support from public money. This raises an interesting question about whether accelerators should be supported using public money in areas where the market is failing early-stage companies or there is a lack of new ventures or investment. Although more evidence is required, there are some signs that they may be a financially efficient method of creating new businesses and jobs. They should certainly be considered alongside other tools for supporting early-stage businesses. A number of programmes in the US are supported already using public money such as Betaspring in Providence, Rhode Island.

However, if accelerator programmes are fully paid for or run by public sector organisations, they risk becoming disconnected from the local investment community. The involvement of private investment should be a requirement of any public sector backing. That could be in the form

of direct investment from angel or institutional investors or in the form of sponsorship from private sector companies. However, data on the effect of public sector involvement in accelerator programmes is still very scarce and this is an important area for further research.

What is the scope for expansion of the model to other sectors?

In the past year a number of accelerator programmes have launched within the technology sector that have a more specific focus than simply web or mobile services. Examples include RockHealth and Healthbox for healthcare-related technology companies and K-12 Accelerator and Start1 for education-related technology startups. This specialisation is a trend that we expect to continue as accelerator programmes seek to differentiate themselves.

But is this a model that could apply to other sectors? Based on our research we believe there are a number of pre-requisites for the model to work and create a wider value for a particular sector:

An investment based financing system – the model of accelerators relies on occasionally large multiples in return on investment in a fairly short period of time. It's unlikely that a debt-based model could work.

An open culture – perhaps partly influenced by the open source software movement, the process of documenting and distributing successes and failures openly is common. This flows through to the way that mentors are willing to provide advice for free and that young companies are willing to share office space and their business secrets with other teams in their accelerator. Few other sectors share this characteristic.

The possibility of scale – the model also only really works if there is the potential for a few of the businesses supported to reach a very large scale with millions of users or very high revenues or if there are potential acquirers for the companies who see a business advantage in buying out the founders to fuel their own growth.

Beyond these prerequisites there are two trends to look for that make the model more likely to succeed. These are a) falling costs in the early stage of businesses in the sector and b) high demand from entrepreneurs to start businesses in that sector (successful role models will be influential here).

Example areas of technology that might be possible arenas for accelerator programmes include:

- Physical devices – many of the aspects of economics that have affected web and mobile technologies are now coming to technologies such as sensors, toys, health monitors and consumer electronics. Rapid prototyping, increased sophistication of supplier networks and even open source approaches to hardware are enabling startups to prove their initial markets. As Betaspring in Rhode Island in the US (who have already made this a focus of their accelerator programme) write: *“Just as computing started with hobbyists and computer kits in the 70s before becoming a gigantic industry, PhysTech is on the cusp of emerging from the maker culture to revolutionizing the way that we make, buy, customize and interact with the things around us.”*
- Social ventures – over the past five years there has been a notable growth in the number of people wanting to create businesses that have a social as well as profit motive. This is now starting to be mirrored by ‘impact investing’ where the investment not only produces a financial return but also generates measurable social impact. This is more than philanthropy because it requires commercial logic and discipline. There are already a number of programmes in this area including Bethnal Green Ventures in London and the ViCap network of programmes which include peer assessment by members of the startup cohort in the allocation of an investment prize at the end of the scheme.

Conclusion

We can expect to see many more new accelerator programmes created in the coming years and for the model to become a much more common route for ambitious young companies and founders to take through their earliest, most fragile, days.

We make no prediction about the future success of individual programmes because we believe that the business model for running an accelerator programme is yet to be proven. There is certainly no one correct way of running a programme and there will continue to be a great deal of innovation in this area over the coming decade.

The biggest contributing factor to the success of accelerators as a whole will be how the people who create and run them learn and iterate their offering to startup founders – leveraging but also contributing to the communities of founders and investors in their networks.

Overall, the ecosystem of investment, founders and the other raw materials of high-growth technology businesses is becoming stronger and stronger in the UK and Europe more widely. Our assessment is that accelerator programmes have the potential to speed the growth of the sector even more.

Appendix 1

Table 7: New accelerator programmes by year founded – a working list

	2005	2006	2007	2008	2009	2010	2011
US	YC		Techstars, Boulder	Launchbox,	Techstars, Boston	Techstars, Seattle	Techstars, New York
				Dream IT	FbFund Rev	StartI	500 Startups accelerator
				Alphalab	Bootuplabs	NYC Seedstart	ER Accelerator
					Shotput ventures	Excelerate Labs	Rockhealth
					Capital Factory	Tech Wildcatters	
					Next start	The Brandery	Greenstart
					Betaspring	Boomstartup	Blueprint Health
	EU			Seedcamp, London		Sproutbox (no fixed equity, 10 mth cycles)	Startup Bootcamp, Copenhagen
					Springboard, Cambridge	Start VI, Belfast (equity but no investment)	Startup Bootcamp, Dublin
					The Difference Engine, Sunderland	OpenFund, Athens	Oxygen Accelerator, Birmingham
						Propeller Accelerator, Dublin	Betafoundry, Oxford
						H-Farm seed programme, Treviso	
						Le Camping, Paris (no equity, stipend not investment)	
						Startup Sauna, Aalto (no equity, no investment)	
						HackFwd (application by referral only)	

Endnotes

1. The most comprehensive study has been Jed Christiansen's paper 'Copying Y Combinator' (2009). Available at: <http://www.scribd.com/doc/19982837/Copying-Y-Combinator>
2. Waters, R. (2011) Russia's DST invests where other angels fear to tread. 'Financial Times.' 2 February, 2011.
3. UK Government (2011) 'StartUp Britain.' Press Release. Monday 28 March, 2011. Available at: <http://www.number10.gov.uk/news/latest-news/2011/03/startup-britain-62546>
4. See for example Levy, S. (2011) Y Combinator Is Boot Camp for Startups. 'Wired Magazine.' June 2011. Available at: http://www.wired.com/magazine/2011/05/ff_ycombinator/; also Chafkin, M. (2009) The Start-up Guru. 'Inc Magazine.' June 2009. Available at: <http://www.inc.com/magazine/20090601/the-start-up-guru-y-combinators-paul-graham.html>; also Moules, J. and Bradshaw, T. (2010) Fledgling ventures flock to London for seed funding. 'The Financial Times.' September 17, 2010. Available at: <http://www.ft.com/cms/s/0/b943c712-c280-11df-956e-00144feab49a.html>
5. For a full account of the evidence see Dee *et al.* (2011 forthcoming) 'Incubation for growth: A review of the impact of business incubation on new ventures with high growth potential.' London: NESTA.
6. Hansen, M., Chesbrough, H., Nohria, N. and Sull, D. (2000) 'Networked Incubators: Hothouses of the New Economy.' Available at: <http://hbswk.hbs.edu/item/1717.html>
7. Little, D. (2000) Incubator or Incinerator? 'Business Week.' October 23, 2000. Available at: http://www.businessweek.com/2000/00_43/b3704089.htm
8. For more information, see http://www.idealab.com/about_idealab/timeline.html
9. See <http://www.founderlabs.org/start.html> for example.
10. Arrington, M. (2008) Communicate Acquires Y Combinator Startup Automatic, Unveils New Business Strategy. 'Techcrunch.' March 26, 2008. Available at: <http://techcrunch.com/2008/03/26/communicate-acquires-y-combinator-startup-automatic-unveils-new-business-strategy/>
11. Lerner, J., Pierrakis, Y., Collins, L. and Bravo Biosca, A. (2011) 'Atlantic Drift: Venture capital performance in the UK and US.' London: NESTA.
12. Klein, S. (2008) From First Timer to Funded – Valuing Validation. 'localglo.be.' July 18, 2008. Available at: <http://localglobe.blogspot.com/2008/07/from-first-timer-to-funded-valuing.html>
13. Lacy, S. (2011) Peter Thiel: We're in a Bubble and It's Not the Internet. It's Higher Education. 'Techcrunch.' April 10, 2011. Available at: <http://techcrunch.com/2011/04/10/peter-thiel-were-in-a-bubble-and-its-not-the-internet-its-higher-education/>
14. Gruber, F. (2011) Top 15 US startup accelerators and incubators ranked; Techstars and Y Combinator top the rankings. 'Tech Cocktail.' May 2, 2011. Available at: <http://techcocktail.com/top-15-us-startup-accelerators-ranked-2011-05>

About the authors

Paul Miller is co-founder and CEO of the internet startup School of Everything and co-founder of Social Innovation Camp and Bethnal Green Ventures which help people start ventures that use the potential of technology to solve social problems.

Kirsten Bound is Lead Policy Advisor for Innovation, Investment and Growth at NESTA.

We'd like to acknowledge the valuable support of the rest of the NESTA Innovation and Economic Growth team: Louise Marston, Yannis Pierrakis, Liam Collins, Albert Bravo-Biosca, Robert Crawford, in addition to Stian Westlake and George Whitehead.

NESTA

1 Plough Place
London EC4A 1DE

research@nesta.org.uk
www.twitter.com/nesta_uk
www.facebook.com/nesta.uk

www.nesta.org.uk

Published: June 2011
SF/72

