

## ***Beyond incubators and accelerators: a view of entrepreneurship and innovation training organizations (ETOs) as educational institutions***

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### **Summary**

Startup founders need entrepreneurship, innovation training, and support for their businesses to be competitive, financially sustainable, and responsive to the continuously changing market and societal needs. Entrepreneurship and Innovation Training Organizations (ETOs) are emerging institutions providing support for business founders. We see these ETOs as educational institutions because they offer training and guidance, both formally and informally, for entrepreneurs. This training tends to differ from traditional university instruction by answering the founders' specific needs of an agile, pedagogically flexible format that is fine-tuned to the content knowledge and skills they are missing. They respond to the founders' narrow timelines to apply the new knowledge and skills into their enterprises. Another differentiator is that university training is offered by scholars while ETOs are mostly run by practitioners, who have experience in the business world.

Incubation and acceleration are the most well-known programs offered by ETOs. They also offer university-based academic camps, peer-to-peer-only learning programs, non-academic mentoring, networking activities, seed funding, venture capital investment with mentoring support, and corporate innovation training. Incubation and acceleration tend to be complementary. Incubation programs recruit learners interested in testing an incipient business idea, learning the basics of entrepreneurship, and founding a startup. Acceleration programs, on the other hand, recruit more developed startups to create a solid business plan, provide tailored training on networking, financial sustainability, product prototyping, and lessons on pitching to venture capital investors. Incubation programs usually charge a participation fee while acceleration programs take equity from the startups. Peer-to-peer learning, non-academic mentoring, and networking programs tend to be nonprofits with free membership.

MIT Open Learning (OL) aims to transform teaching and learning at MIT and around the globe through the innovative use of digital technologies. Driven by OL's mission and through the lens of the science of learning, and technology innovation, we embarked on exploring the ETOs landscape to identify their academic interests and approaches. This research is part of our goal to understand emerging educational institutions and assess ways MIT can support them and their trainees.

MIT already has a strong foot in the entrepreneurial hub including pre-incubation, incubation, and acceleration programs. Amongst these initiatives are [Delta v](#), an educational accelerator offered by the Martin Trust Center for MIT student entrepreneurs; [SOLVE](#), a marketplace for funding and supporting tech-based entrepreneurs working on social impact innovation; and [The Engine](#), an accelerator providing long term capital, infrastructure, and connections to Tough Tech companies solving the world's biggest challenges. The list also includes [MIT Bootcamps](#), a pre-incubator from Open Learning that offers intense learning-by-doing, blended, programs following the entrepreneurship and innovation frameworks taught at MIT; and [DesignX](#), an academic program and entrepreneurial accelerator at the MIT School of Architecture and Planning (SA+P) promoting solutions to the challenges facing the future of cities and the human environment. Other initiatives from MIT are the [MIT Global Startup Labs \(GSL\)](#), a program of [MISTI](#) (MIT International Science and Technology

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Initiatives) that supports development in emerging regions by cultivating young entrepreneurs in the fields of mobile and Internet technologies; and the [E14 Fund](#), which aides founders from the Media Lab venture community (students, faculty, members and alumni) in their entrepreneurial journey. Beyond these MIT initiatives, we wanted to explore the broader landscape worldwide. We interviewed 19 executives of top ranked ETOs from around the globe, covering a total of 49 different programs. From the interviews we followed an inductive analysis approach. We found specific differences between ETOs, leading us to classify them in five categories: University, Corporate, Government, Independent, and Mixed. These categories focused on the sector the organizations originated from and allowed us to better understand their purpose and fit. Moreover, most ETOs offer different programs for specific learners, with distinctive training methodology, funding sources, and goals. These programs can be classified into university-based camps, pre-incubation and incubation programs, acceleration and post-acceleration programs, support and mentoring activities provided by seed funds and venture capital investment firms, non-academic networking mentor coaching, and peer-to-peer-only learning programs.

As part of MIT's academic ethos, we consider both technical and professional skills training fundamental. Nonetheless, we found that most programs do not explicitly share this view and do not prepare their learners in professional skills, i.e. conflict resolution, problem-definition, problem-solving, critical thinking, effective communication, leadership. A number of ETOs recognize these are important skills and have indirectly embedded some training in their programs. We also observed that most ETOs do not train their mentors and coaches; instead they rely on regionally available practitioners that volunteer for these activities.

In comparison to the classic incubator and accelerator models, a new trend of innovation training was identified, corporate innovation programs. These are offered by traditional universities, independent, and mixed ETOs. Such programs provide alternative sources of income while responding to a clear corporate need: to reinvent themselves, their products, services, and the way they do businesses. Finally, we noticed a need for an entrepreneurial hub of curated materials in different formats, covering the entrepreneurship basics but also specific topics important for ETOs and startup founders.

The results summarized in this document open opportunities for MIT OL to support ETOs by training both their learners and coaches in professional skills. In the future we will continue exploring the landscape of non-traditional educational organizations with an upcoming focus paper on the corporate training provided by corporate universities.

## 1. Introduction

### 1.1. A flexible and unconventional training for startup founders

According to the U.S. Bureau of Labor Statistics, startup companies in the USA have, on average, a survival rate of 48.87% after 5 years of birth (period 1994 and 2015), and this number continues to fall off to 33.6% after 10 years (period 1994 to 2010) [USBLS 2020]. In its early stages, the startup founders (or learners, we will use the terms interchangeably) require proper training and guidance in entrepreneurship and innovation, which are key for competitiveness, sustainability, and responsiveness to the continuously changing needs of society and the market [Lewis et al. 2011, Isabelle & Westerlund 2016]. There is evidence of the value entrepreneurship and innovation training programs offer: these are *"...an important economic development tool that – when conducted in accordance with best practices and based on due diligence – can foster job creation, increase wealth creation, and serve as an important contributor to the national economy"*. They are *"...designed to buffer start-up enterprises from stiff market forces by providing access to capital, managerial expertise, and marketing assistance"* [Lewis et al. 2011]. A 2014 study from Telefonica's Wayra, in the U.K,

revealed that the average survival rate for startups that joined an incubation or acceleration program reached almost 92%, nearly 20% more than the survival rate of small businesses that went without incubation [Wayra 2014].

Overall, as stated by Miller & Bound, *“the benefits of supporting new businesses through their fragile early stages have been recognized for decades. In the public sector, business incubators have... been a popular policy instrument to foster entrepreneurship and regional development, aiming to create jobs and catalyze 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”* [Miller & Bound 2011].

Entrepreneurship and innovation training organizations (ETOs) are emerging institutions offering specific training to startup founders, and to companies seeking corporate innovation, that tends to differ from the one provided by the traditional university models. Their programs answer the learner’s specific needs of an agile, pedagogically flexible format that is fine-tuned to the content knowledge and skills they are missing. They provide contact with practitioners who have experience in the business world and respond to the learners’ narrow timelines to apply the new knowledge and skills into their enterprises. One of the main goals of an ETO is to support and promote innovation, crossing pathways with the work of universities but following a different training structure, work modality, set timelines, financial incentives, and expected outcomes. We see ETOs as educational institutions because they aim to train their learners on specific content knowledge and skills; present their programs in a structured & organized manner, provide a learning environment and spaces to promote the trainee’s learning journey, and include formative guidance that is outcome-driven and based on the assessment of the learners’ and their startups’ progress.

In the corporate world and throughout literature these ETOs are mainly referred to as incubators and accelerators, but these organizations are diversifying their support to founders and companies. Both are expanding their offerings to include incubation and acceleration programs, peer-to-peer activities, seed funding with mentorship, and consulting services. This evolution in how ETOs are serving the market requires anyone interested in understanding these emerging education institutions to focus on the specific programs rather than only on the organization as a whole, i.e. talking about incubation programs rather than incubators. Nevertheless, we will start with incubators and accelerators, the incubation and acceleration programs, and will build up from there to the other ETOs programs.

There is an established body of knowledge on incubators and accelerators with regards to their focus and business model. Their numbers have grown from dozens into thousands in the last 30 years [Knopp 2012, Gust 2016]. There are approximately more than 1,500 incubators and accelerators worldwide<sup>1</sup> [UBI global 2020], each offering different programs that are usually not that well described. On the surface incubation and acceleration programs seem to present a similar structure and goals but they present differences in the services offered, funding sources, and business model [Hausberg & Korreck 2020, Bone et al. 2017]. These differences apply to pre-incubation and post-acceleration as well. Pre-incubation and incubation programs target startups that are in their early development stages, recruit

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<sup>1</sup> We found several misrepresentations of the worldwide number of incubators and accelerators. A great deal of references incorrectly suggested the presence of more than 7,000 incubators after 2010, misinterpreting a NBIA (now InBIA) 2012 report, *2012 State of the Business Incubation Industry*, by Linda Knopp. This report states that *“1,400 business incubation programs were operating in North America in 2011, up from 1,100 in 2006.”* The 7,000 figure, or a similar one is not present in the report. For accelerators, in 2020, the worldwide numbers are close to 2,000, not to 10,000, as we found represented in some online sources.

learners interested in testing a business idea, learning the basics of entrepreneurship, and ultimately starting a company. Incubation programs are usually more learner-focused, concentrated on teaching innovation and entrepreneurship [Hausberg & Korreck 2020, Miller & Bound 2011]. Acceleration and post-acceleration programs recruit founders from more developed startups to provide tailored training on networking and financial sustainability, create a solid business and marketing plan, consolidate a pitch deck and approach to venture capital investors, and get a market-level version of the prototype or product (if one is offered), which is usually presented in a pitch/demo day [Miller & Bound 2011]. Overall, acceleration is focused on reducing the startups' time-to-market [Hausberg & Korreck 2020]. In terms of funding sources, pre-incubation and incubation rely more on the public sector and universities rather than private/corporate sources. Acceleration programs are more frequently supported by the latter [Bone et al. 2017]. Finally, incubation programs may have an upfront or monthly fee while acceleration programs normally provide mentorship and capital in return for equity, given they usually have a direct profit goal [Miller & Bound 2011, Fowle 2017].

## 1.2. A historical recap for the incubator and accelerator movement: a three-wave phenomenon

The first incubator in the U.S. dates back to 1959, the Batavia Industrial Center in New York, where an 850,000 square ft<sup>2</sup> industrial complex was transformed to offer shared office space, services, and some assistance with raising capital and business advice [Wiggins & Gibson 2003, Mian et al. 2016]. In the early 1980s, there were only 12 incubators in the U.S. but gradually different forces promoted the first wave of incubators. The main driver was the U.S. Small Business Administration (SBA) [Wiggins & Gibson 2003, Mian et al. 2016], which aimed to strengthen the incubation movement with regional conferences introducing the incubator concept, publications on incubation, and the establishment in 1985 of the National Business Incubation Association (NBIA), the cornerstone of the SBA initiative [Wiggins & Gibson 2003].

In that same period, similar agencies were born all around the globe. In 1987, Brazil created the National Association of Entities Promoting Innovative Enterprises (Associação Nacional de Entidades Promotoras de Empreendimentos Inovadores -Anprotec-) [ANPROTEC 2016]. That same year, China set up its first business incubator in Wuhan, with funding from the government [Chandra & Chao 2011], and in 1988 The Torch Program was implemented by China's Ministry of Science and Technology (MOST) to provide an environment for the development of technology innovation, science and technology parks and business incubators (called *innovation centers* in China [Chandra & Chao 2011]). In the neighborhood, Malaysia's participation in the incubator movement started that same year in the context of their National Innovation System (NIS) framework, which focused (among other aspects) on science parks, venture capital, and technology incubators [Malairaja & Zawdie 2008]. In Europe, Germany founded in 1988 the [BVIZ](#) (German Association of Innovation, Technology and Business Incubation Centres) under the name "ADT - Arbeitsgemeinschaft Deutscher Technologiezentren" in the former West Berlin as the first innovation and start-up centre in Germany. [BVIZ 2020].

A broader definition of science parks was promoted several decades before in France through the creation of *Technopoles*, "...a territorialized industrial organization, integrated basically by 'technological poles' hosting firms and research & development bodies linked on a collaborative basis" with the spirit of creating functional networks to promote research and technical development along industrialization [Chordá 1996]. The first French technopole, *Sophia-Antipolis*, was set up by the French central government at the end of the 1960s and the technopole concept spread around the country (interestingly without much involvement of higher education institutions) until the mid-1980s but decreasing in the 1990s [Chordá 1996].

By 1995 there were 600 incubators in the U.S. From those active in 1998, more than 75% were non-profit, supported by local governments, academic institutions, and or local businesses [Wiggins & Gibson 2003], with a similar trend seen in China (70% of the incubators up to 2011 were government funded) [Chandra & Chao 2011].

With the arrival of the internet, between the late 1990s and 2000 was an increase of for-profit incubators responding to the boom of the dot-com companies [Wiggins & Gibson 2003, Chandra & Chao 2011]. This started the second wave of incubators, which also morphed into business accelerators, a consequence of concomitant changes in technology and business philosophy during the mid-2000s [Fowle 2017]. This new trend of for-profit incubators had a capital-oriented model, with startups leveraging the new internet-oriented economy and raising impressive amounts of venture capital. Since then, for-profit incubators have grown [Wiggins & Gibson 2003, Chandra & Chao, 2011]. This phenomenon paved the way for a new incubation model, materialized in the first accelerator program. In 2005, *Y Combinator* was founded in Cambridge, Massachusetts [Mian et al. 2016]; followed in 2007 by *Techstars* in Boulder, Colorado; as well as *Seedcamp* in London, the first accelerator in Europe. In 2007, there were only 3 accelerators in the world but by the end of 2010 this quadrupled: more than 12 accelerators existed in the U.S., with most specially focused on tech development [Miller & Bound 2011].

During these years incubators and accelerators increased in numbers worldwide. In 2002 the European Union counted approximately 900 of these ETOs in its territory [European Commission 2002] while in Australia there were approximately 100 incubators [Bliemel & Flores 2014]. According to Ratinho & Henriques, European incubator numbers for the period 2007-2008 reported from the *Science Park & Innovation Center Association (SPICA<sup>2</sup>)* database were: 58 for Finland; 66 for France, 3 for Greece [Sofouli & Vonortas 2007], 42 for Italy, 24 for Spain, 13 for Sweden, and 13 for Portugal [Ratinho & Henriques, 2010]. In other regions of the world, Brazil increased its numbers from 27 in 1995 to 359 in 2006 [Padrão & Andreassi 2013], China moved from 77 in 1998 to 534 in 2006 [Chandra e Chao 2011], while Asia as a whole had 2,000 incubators and accelerators in 2006 [Chandra et al 2007].

Finally, a third wave emerged when conditions were perfect for nimble internet and mobile tech startups, creating a great demand from investors and buyers [Miller & Bound 2011]. This was catapulted by the arrival of the smartphones, faster wireless internet, and an exponential decrease in computing power costs. Overall, the startup cost shrunk considerably [Miller & Bound 2011]. By 2011, *Techstars* had programs in more than 4 U.S. cities, *Seedcamp* was a pan-European program, and the U.S. had more than 15 accelerators, while Europe had over ten [Miller & Bound 2011]. Meanwhile, in China, based on the MOST statistics, there were 1,239 technology business incubators by the end of 2012 [Farhan et al 2016].

The last decade has shown an increase in incubators and accelerators responding to ventures mainly focused on digital, tech-enabled, and internet-connected services. In 2013, Seed-DB<sup>3</sup> reported over 213 accelerators worldwide supporting approximately 3,800 new ventures [Clarysse et al. 2015, Mian et al. 2016]. By 2016, there were over 1,250 incubators and 178 accelerators in the United States and Canada [Mian et al. 2016, Gust 2016]; 82 accelerators in Latin America, 369 in Brazil [ANPROTEC 2016], 193 in Europe, 51 in the Middle East & Africa, and 76 accelerators in Asia & Oceania [Gust 2016]. In 2017 a total of 205 incubators and 163 accelerators were reported in the United Kingdom [Bone et al. 2017]. By 2019 Germany had 247 incubators and accelerators [SIM 2019] while UBI Global reported more than 1580 incubators and accelerators for their world ranking 19/20 report [UBI global 2020].

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<sup>2</sup> 2008 database report: The State of the Art–Key data about the business incubation.

<sup>3</sup> Seed-DB is a platform that compiles information about accelerators and the startups they have supported. Available at <https://www.seed-db.com/accelerators>

In the second semester of 2020, the number of active accelerators reported by Seed-DB was 165 programs worldwide with more than 8,153 companies accelerated so far. It is expected that the effects of the COVID-19 pandemic will have a toll on incubators and accelerators, but it is also true that these programs promote creative solutions to the pressing social and global problems, like the pandemic itself.

### 1.3. Success for the ETOs programs

Evaluating the success for any of the aforementioned programs is a tough task to accomplish given the absence of available (public) and reliable data [Hausberg & Korreck 2020]. Comparisons between programs with different models, sector focus, funding sources, and variable startup maturity levels make aligning the assessment criteria extremely difficult. Nevertheless, multiple organizations have created yearly metrics, such as the [UBI global](#) ranking for incubators and accelerators. It considers factors such as the number of startups supported, jobs created and sustained, seed funding attracted, mentor support, 1- and 5-year survival rates, amongst others [UBI global 2020]. Assessing the success of acceleration programs tends to be easier given that these deal with more mature startups and a good number of the ETOs take equity: as each startup grows so does the ETO as a whole. In comparison, ETOs focused on incubation aim at the earlier aspects of the startup process, including basic entrepreneurship and idea generation, requiring a deeper and longer analysis for assessing success (longer times for the venture to have a potential socioeconomic and technological impact).

As of the end of 2020, some of the most successful and well known incubators are [HSE Business Incubator](#), [ETC Baltimore](#), [1871](#), [HCDC Business Center](#), [Chalmers Ventures](#), and [Centech](#). When it comes to recognized accelerators, these include [Y Combinator](#), [Techstars](#), [MassChallenge](#), [Startupbootcamp](#), [Wayra](#), [500 Startups](#), [Amplify.LA](#), [SeedCamp](#), [StartX](#), [AngelPad](#), and [Start-Up Chile](#).

## 2. An opportunity for traditional and unconventional education to join forces

Most of these ETOs are preparing founders for their future challenges using available technologies and resources, promoting collaboration innovation and knowledge sharing. MIT Open Learning (OL) aims to transform teaching and learning at MIT and around the globe through the innovative use of digital technologies. Understanding the need to provide relevant and timely training beyond the conventional university structure while following the science of learning, technology and experimental innovation, we embarked on exploring the entrepreneurship and innovation landscape (initially seeing it as only composed by incubators and accelerators<sup>4</sup>) to understand their academic opportunities and challenges. This study is part of a bigger goal exploring the emerging educational institutions and assessing ways MIT can support them and their trainees. As we approached this assessment, we were guided by these questions:

- What do entrepreneurs learn at the ETO?
- How is the learning journey structured?
- Who creates the curriculum?
- How is that curriculum delivered?
- What is the role of the mentors?
- What are the technical and professional skills covered in the programs offered by the ETO?
- What areas of knowledge or skills do your entrepreneurs generally lack?

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<sup>4</sup> We initially considered incubators and accelerators as organizations offering incubation and acceleration programs only. Deeper research revealed a broader array of organizations, more than these two, leading to the concept of ETOs.

- What is the financial model driving the ETO?
- What is the biggest challenge the organizations face?
- What are the qualities and background of the learners?

Our approach aimed to shed light on ways MIT could support ETOs and their trainees in an open, collaborative and innovative way, guided by the latest evidence from the science of learning.

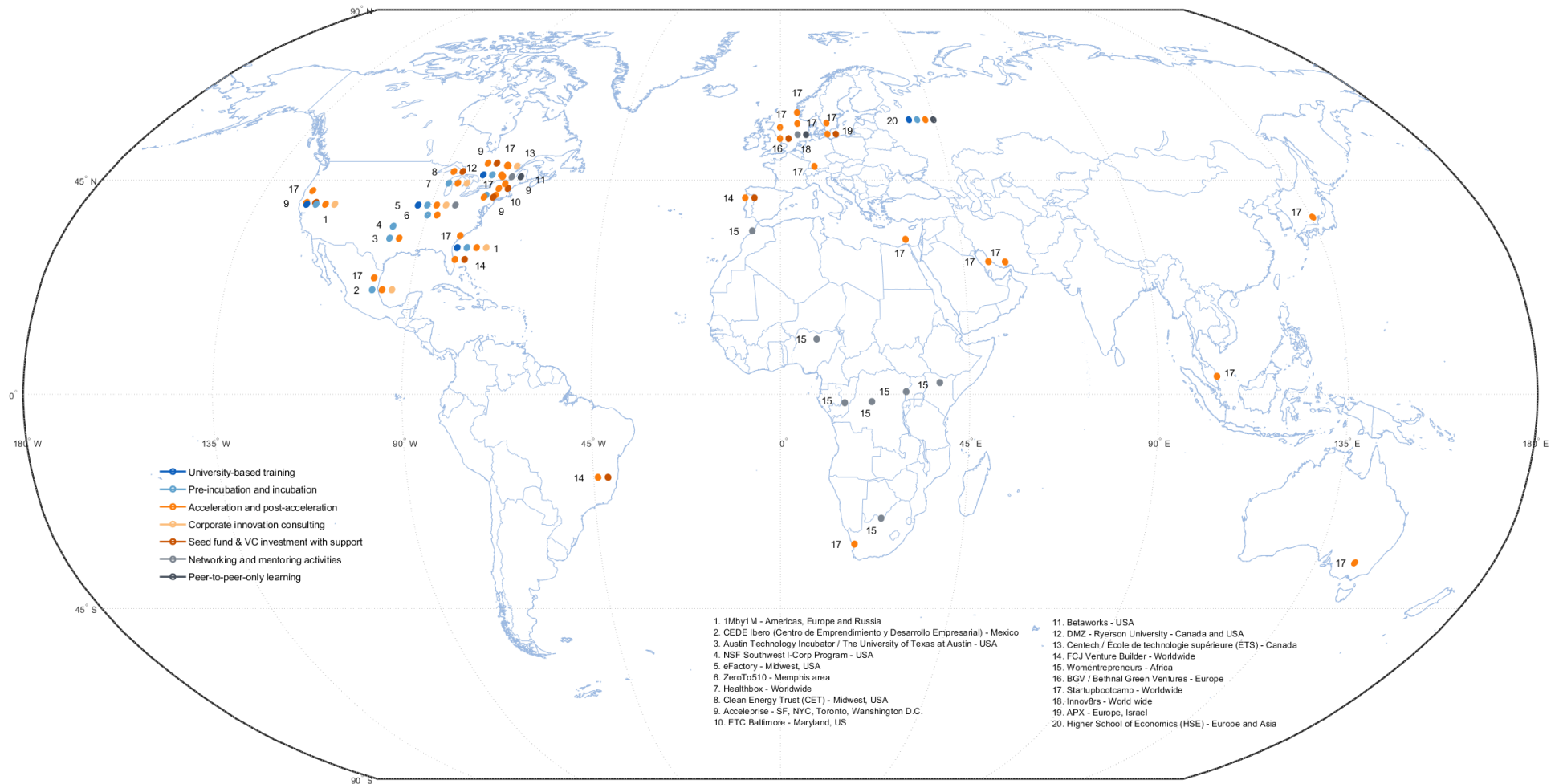
### 2.1. Our methodology to explore the ETOs landscape

As previously mentioned, in the world we find more than 2,000 incubation and acceleration programs [Knopp 2012, Ursache 2020]. Just like startups, many ETOs struggle to gain sustainability. In several cases, these organizations are startups themselves, hence being influenced by the fast-pace changes in the world, struggling to find proper funding, financial sustainability, market recognition, and new customers. Marius Ursache notes in Metabeta’s online Disciplined Accelerators report “...private accelerators forget that they are startups themselves as they have limited resources, tons of assumptions, a business model and approach yet to be validated, and very slim chances to turn into a sustainable business... a private accelerator has very few chances to stay alive beyond 2-3 years. Even the largest accelerators have low success rates (being selling member startups to more mature companies)” [Ursache 2020].

Our analysis focused on the top ETOs, mainly well-known *incubators* and *accelerators*, around the world. This included those that have been active more than 2 years and are highly ranked by international startup projects [UBI global 2020], seed-funding agencies, and influencing institutions centered on business, investing and entrepreneurship ([Forbes](#), [Crunchbase](#), the [MIT Seed Accelerator rankings](#)), and available databases of active ETOs ([Incubator list](#), [Orbit MIT](#), [Seed-DB](#)).

We reached out to the executives of 125 of these ETOs from all four continents and scheduled 19 interviews (15% of them). Table 1 presents a list of the ETOs interviewed and the programs we explored. Their headquarter offices are distributed in the Americas (13, representing 68.42%), Europe (4, 21.05%), Africa (1, 5.26%), and Eurasia (1, 5.26%). In Fig. 1 we present the geographical distribution and area of influence of the ETOs interviewed color-coded by their program type (see *section 3.2*): university-based training (dark blue), pre-incubation and incubation (light blue), acceleration and post-acceleration (medium orange), corporate innovation consulting light orange), seed fund & VC investment with support (dark orange), networking and mentoring activities (light gray), and peer-to-peer-only learning (dark gray).

Our methodology for each interview included pre-meeting work, accessing publicly-available information, and post-interview data consolidation, following an inductive analysis approach [David 2003]. The interviews took place over one month, between June and July 2020. Each one lasted 30 to 60 minutes and included at least two members of our team and one executive from the ETO (9 women out of 19, 47.4%). In a few cases more than one executive joined the meeting. The interviewee’s role in the ETOs was either the head/co-founder/leader or executive director (57.9%, 11/19), program manager (15.8%, 3/19), head of partnerships/corporate engagement (15.8%, 3/19), or representative/spokesperson for the organization (10.5, 2/19). Most of the interviews were done on Zoom (74%, 14/19), although some happened on the phone (26%, 5/19). We inquired about the basics of the ETO’s programs and dug deeper into a range of specific topics covering Program goals and sector focus; Skills, curriculum, and pedagogy; Learner’s profile; Mentors, coaches, and facilitators training and profile; and ETO financial structure and funding sources.



**Figure 1.** Geographical distribution<sup>5</sup> for the ETOs interviewed and the programs explored. The name of each ETO is followed by its area of influence. Colors represents the type of program: university-based training (dark blue), pre-incubation and incubation (light blue), acceleration and post-acceleration (medium orange), corporate innovation consulting (light orange), seed fund & VC investment with support (dark orange), networking and mentoring activities (light gray), and peer-to-peer-only learning (dark gray).

<sup>5</sup> Map boundaries from ArGIS, *World Countries (Generalized)*. Retrieved on Feb 2021 from [https://hub.arcgis.com/datasets/2b93b06dc0dc4e809d3c8db5cb96ba69\\_0/data](https://hub.arcgis.com/datasets/2b93b06dc0dc4e809d3c8db5cb96ba69_0/data)



**Table 1.** ETOs interviewed and the programs explore.

Company info	Program 1					
Acceleprise	Accelerator					
APX	APX pre-seed and accelerator					
BGV / Bethnal Green Ventures	The Tech for Good Program (accelerator and VC)					
FCJ Venture Builder	Global Startup Studio					
Healthbox	The Foundry Program - Innovation Consulting					
Womentrepreneurs	Womentrepreneur					
Betaworks	Camp: thematic accelerator including Botcamp, Voicecamp, Visioncamp, Synthetic Camp, Audiocamp					
Company info	Program 1			Program 2		
Clean Energy Trust (CET)	Summer Clean Energy Trust (CET) University Accelerator Program			Seed-fund program - Illinois Clean Energy Innovation Fund (ICEIF)		
Innov8rs	Innovat8rs Conferences			Innovat8rs Connect Unconference		
Startupbootcamp	Accelerators including: ASPIRE - Virtual Program, Media, EventTech, SportsTech, FinTech, D15, CyberSecurity, FashionTech, EnergyAustralia, Commerce, Digital Health, InsurTech			Starupbootcamp Scale, post-accelerator		
ZeroTo510k	Pre-Accelerator Program			Medical Device Accelerator		
Company info	Program 1		Program 2		Program 3	
Baltimore Emerging Technology Center (ETC)	Incubate Baltimore		Accelerate Baltimore		Pioneer Baltimore	
Centro de Emprendimiento y Desarrollo Empresarial (CEDE Ibero)	Programa de Emprendimiento Social CDMX		Programa Mipyme / Achieving Traction		Consulting	
CentTech	Acceleration Program		Propulsion Program		Collision Program	
1Mby1M	1Mby1M Basic		1Mby1M Premium		Incubator-in-a-box	
Company info	Program 1	Program 2	Program 3		Program 4	
Austin Technology Incubator - The University of Texas at Austin	Blackstone LaunchPad, Incubator	Student Entrepreneur Acceleration & Launch (SEAL) program	AIT FASTForward Austin, Small Business Incubator		NSF Southwest I-Corp program, Incubator	
Company info	Program 1	Program 2	Program 3	Program 4	Program 5	
eFactory	Incubator - mentorship program	Accelerator	Corporate accelerator	Rossie	Business Ownership and Management & Leadership Training and Workforce Development programs	
Company info	Program 1	Program 2	Program 3	Program 4	Program 5	Program 6
DMZ	Incubator	Accelerator	Sandbox Basecamp	Sandbox Startup Certified	Sandbox Student Grant Program	DMZ Ventures
Higher School of Economics (HSE)	HSE Startup School	HSE Startup Community	HSE Startup Acceleration Program	HSE Startup Education	#Bezcode Academy	EDU Tech Hub

### 3. Results

#### 3.1. Lessons learned

We can summarize our results in the following lessons learned:

- Entrepreneurship and innovation training organizations (ETOs) span beyond the classic incubator and accelerator model. They also include university-based camps focused on academic training; pre-incubators and post-accelerators; organizations offering consulting services on corporate innovation; seed fund & venture capital corporations providing direct mentoring and support to founders; organizations providing mainly networking and mentoring without any technical/academic support; and peer-to-peer-only learning groups.
- Based on the sector the ETOs originated from and their purpose and fit, we classified these organizations in five categories: University, Corporate, Government, Independent, and Mixed.
- Most ETOs do not specifically train their learners in professional skills i.e. conflict resolution, problem-definition & problem-solving, critical thinking, effective communication, and leadership. Nevertheless, most ETOs recognize these are important skills and have indirectly embedded some of them in their programs.
- Most ETOs do not train their mentors and coaches, instead rely on regionally available practitioners that volunteer for these activities.
- Peer-to-peer learning is a key element in the training process for all of the ETOs interviewed: high quality participants enrich the learning journey of their peers.
- There is a need for a centralized entrepreneurial hub of curated, easy to digest, material in different formats (not only videos), covering from the basics of entrepreneurship and innovation to specific topics important for startup founders.

#### 3.2. Entrepreneurship and Innovation Training Organizations (ETOs) Categories

Performing a holistic analysis of the ETOs landscape and work requires, first, a clear understanding of the organization's purpose and fit. Their purpose is defined by the sector they originated from and who holds its stakes: these drive the ETO's underlying design and fundamentally shape its mission, type of programs, and output. The fit refers to the industry, sector, and area of interest for each ETO, which leads to different applicants, funding sources, and mentors. Both the purpose and fit are key characteristics for startups to consider when browsing the ETOs landscape so founders can choose which program best fulfills their startup needs.

From our 19 interviews we recognized 20 different organizations working on entrepreneurship and innovation training. The extra one is due to the work The University of Texas at Austin does supporting the Southwest branch of the U.S. National Science Foundation's (NSF) I-Corp program. Overall, the 5 categories are: Government (1, a 5% from the total), University (3, 15%), Corporate (0%), Independent (13, 65%), and Mixed (3, 15%, all including public universities).

A Government ETO is a non-profit organization funded and run by the government that supports programs training in entrepreneurship and innovation, seeking to incubate and/or accelerate startups for socio-economic development as well as to tackle challenging/hard problems from society. Only one program from the 49 explored is covered by this criterion, the southwest branch of the [NSF I-Corps](#) incubator program, which is aimed mainly at researchers and scientists to support the marketing of their inventions.

The University ETOs are sister organizations or units inside a higher education institution that are mainly focused on academic training and technology-based startups that can take advantage of the theoretical-practical and research capabilities of the universities. They leverage the university

resources (content, qualified personnel, labs, possible founder population) as well as their connections with the local organizations and government. These ETOs usually offer training opportunities on entrepreneurship and innovation to their students, faculty, and staff as well as to the local community following a non-profit structure (in most cases). We have several examples of university ETOs, including [CenTech](#) from École de Technologie Supérieure (ÉTS), and the Higher School of Economics ([HSE](#)) incubator.

Corporate ETOs, which we did not interview, are internal units or sister companies that branch out of a specific corporation. They scout new technologies, markets, and products to promote the growth of their corporate founders, as well as creative solutions to corporate processes and challenges. These ETOs tend to focus on a specific field or market and in most cases have a for-profit structure by taking equity from their spun startups.

The independent ETOs cover the group of ETOs that do not fit the other categories. They can be non- or for-profit organizations, either sector focused or with a broad reach, and typically offer programs that can be funded by private institutions, NGOs, universities, and the government. We include [Startupbootcamp](#) and [ZeroTo510](#) as examples of independent ETOs.

Mixed ETOs are those that include two or more of the previous categories, usually when an ETO is part of a public university, hence funds to support the different programs come from government, university and private institutions. [DMZ](#) from Ryerson University, [eFactory](#) and the [Austin Technology Incubator](#) are examples of mixed ETOs.

### 3.3. ETOs Programs

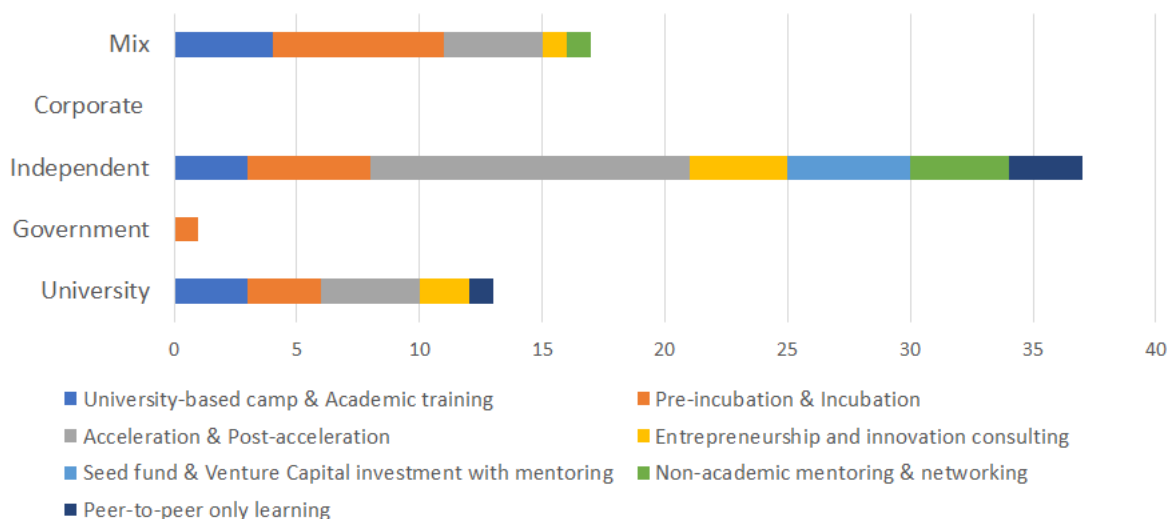
From the 19 interviews and extra research conducted we found that these organizations run, collectively, 49 different programs. If we classify each by the category given to the ETOs, we have 1 (2.0%) for Government, 12 (24.5%) for University, 0 for Corporate, 22 (44.9%) for Independent, and 14 (28.6%, all including public universities) for Mixed.

A deep analysis on the program's characteristics revealed they can be classified not only as incubation and acceleration but in 7 different groups, orbits or journeys: university-based camps focused on academic training (10, 20.4%), pre-incubation and incubation programs (16, 32.7%), acceleration and post-acceleration (21, 42.9%), entrepreneurship and innovation consulting mainly focused on corporate innovation (7, 14.3%), seed fund and venture capital investments with mentoring and support to founders (5, 10.2%), non-academic networking and mentoring programs (5, 10.2%), and peer-to-peer-only learning activities that do not include mentoring (4, 8.2%). Figure 2 presents the distribution of these programs per ETOs category.

One reason for such variety is that sustainability is key for these ETOs. As a consequence, one organization can offer different programs, each one with specific overarching goals, groups of learners (their customers and possible products -if startups have a successful exit), revenue streams and financial support, and sectors of interest. Another approach to remain sustainable is for a single program to offer variety from one cohort to the next so a different niche is covered at a time. [Betaworks's](#) acceleration programs focus on a specific emerging theme in the digital industry often based on analyzing previous applicant data. Past programs have been on audio ventures (Audiocamp), bots (Bootcamp), voice-oriented startups (Voicecamp), computer vision (Visioncamp), and synthetic media (Synthetic Camp).

From the 19 ETOs interviewed, 13 (68.4%) offer more than 1 program, 5 ETOs offer 2 programs (26.3%) and the remainder 8 (42.1%) offer more than 2. The ETOs offering a single program (6, 31.58%) work

in very specialized sectors or have strong financial muscle to support their efforts: from these 6 ETOs, 4 have an approach that is a mix of both an acceleration and seed funding with mentorship.



**Figure 2.** Program type distribution per ETOs category.

In more detail, university-based camps and courses focus mainly on the academic training of students, faculty, staff, and the local community. They are offered by universities and in some cases require an enrollment fee. Their goals include training in entrepreneurship and the basics of running a business, idea validation, customer discovery, marketing, and sales. These programs are more structured, follow a course syllabus, have meeting times, facilitators lead lectures, and in most of the cases do not require a business idea for participation. These activities can span from 1 month up to more than 24 months, when activities are part of long-term entrepreneurship courses.

Pre-incubation and incubation programs are offered by government, university, independent and mixed ETOs; a majority are non-profit programs, some require a registration fee while others select applicants to fund their participation. They usually expect a clear business idea so the program can support founders through more hands-on learning, theory and practice combined. They cover ideation and product definition, sales, customer acquisition and interaction, market research and business plan, as well as fundraising (ready for pitch presentations to possible investors). The goal of these programs is to test ideas and train to innovate, promote socio-economic impact and job creation, as well as consolidate and grow a business through sales. The average length is 3 months, but shorter or longer formats are available depending on the content and type of support provided. At the end of the program it is common to have a final presentation (often referred to as Demo Day) that can include a monetary prize for the best incubated startup.

The programs offering acceleration and post-acceleration require a more mature startup (including a finished prototype or having customers using the product or service) and even having completed incubation or pre-accelerator programs. The approach is geared towards the founders, focused on the startup’s specific needs: these programs are “training them to fly” (as framed by Mor Eini, [APX’s](#) corporate program manager) where “the value is the tactical support” provided (as mentioned by Olivia O’Sullivan, [Acceleprise’s](#) head of corporate engagement & partnerships). A good portion of these programs are for-profit, they take equity, and give participants with capital (USD\$10k - 200k) and other services (e.g. cloud computing, data storage, software licensing and digital resources, access to maker spaces, and technical experts). These programs are offered by independent, university and mixed ETOs and expect founders to develop a clear market research and business plan, a prototype of the product or service, as well as a polished pitch for investors during the 3-4 months of activities. Overall, the

ETOs seek from their startups business consolidation and growth, solving hard problems and getting revenue return due to equity investment.

The entrepreneurship and innovation consulting services are provided to different organizations (public and private) by independent, university, and mixed ETOs. In most cases the programs are focused on corporate innovation for companies seeking to develop new revenue streams, products, or services. The learners, the employees, have a clear picture of the business and its challenges, and solutions are built from the bottom up using ideation, creative thinking, and other methodologies. These programs provide facilitators and resources to identify the problem, possible solutions and then “*productivize*” them; with idea validation, customer discovery and market research as the program’s deliverables.

The programs providing seed funds & venture capital with mentoring and support to founders are offered by independent and private organizations, focused mainly on maximizing the return of their investment (equity). They go the extra mile by not only giving access to funds but also services, workshops, and a network of mentors with office hours availability. In some programs, as in FCJ Venture Builder’s [Global Startup Studio](#), they see their model as “co-founding with hands-on”, where the mentors can become co-founders as well.

Non-academic networking and mentoring programs are focused on the power of community to propel innovation and entrepreneurship. These are supported by independent organizations and universities with a big capacity to bring the entrepreneurial community, not only students but also industry and government decision makers to work together towards promoting innovation. These programs help “*Engineering serendipity*” (as framed by Hans Balmaekers, chief of [Innov8tors](#)), testing new ideas and training to innovate. Facilitation and mentorship are common but the emphasis is not on academics, rather on the power of the interactions between participants.

Peer-to-peer-only learning programs are usually supported by universities and independent organizations with a long history of entrepreneurship and innovation training. These leverage their networks and contacts to create a platform and environment for peer founders to test new ideas, interchange experiences, support each other, and connect. For these learners, no direct mentoring is present since it relies on peer-to-peer interactions. These programs are usually free, have online platforms to connect the learners and are self-passed, although some programs have minimum participation requirements (e.g. [HSE Startup Community](#)).

Moreover, some programs not only cover one orbit but follow a continuum across them or combine two or more programs. Two examples are [APX’s](#) pre-seed and accelerator and [BGV’s](#) The Tech for Good Program, both accelerators and seed fund programs providing extra support to founders. The [Foundry program](#) offered by [HealthBox](#) covers the spectrum from incubation to acceleration in one. Of the 19 interviews we found 9 (47.4%) organizations that ran both pre-incubation and incubation, and accelerator and post-accelerator programs.

Following this trend, some programs require founders to complete one training stage before moving to the next one, as with the [Startupbootcamp Scale](#) post-accelerator program or the [ZeroTo510](#) Medical Device Accelerator, which provide an acceleration and pre-acceleration program, respectively. Centech’s [Acceleration](#) is a stage that leads to their [Propulsion](#) program and DMZ’s [acceleration](#) can be a continuation of their [incubation](#) program, as well as ETC Baltimore’s [Pioneer](#) can be followed by their ETC [Incubate](#) program.

Each one of these programs presents specific features regarding 1) program goals and outcomes, 2) sector focus, 3) curriculum and pedagogy implemented, 4) funding sources, 5) length, 6) emphasis on

specific technical and professional skills, and the 7) role of the mentors and coaches. We will explore each one of these in more detail.

### 3.4. Program goals

From all 49 programs we identified 6 different goals that span private, financial, and social interests:

- Sales, Consolidate business, Growth and Scale (23 programs)
- Test ideas, training to innovate (22 programs)
- Social Impact, create jobs (15 programs)
- Solving world hard problems (9 programs)
- Formal academic training (8 programs)
- Return due to equity (6 programs)

Overall, 19 programs (38.8%) had one specific goal while the remainder 30 (61.2%) presented two or more goals. In Fig. 3 we find the goals separated by the program type and ETOs category. Training in innovation and social impact are focus goals mainly for university-based camps and incubation whereas sales and growth are mainly for acceleration, consulting, and seed funding with mentorship programs.

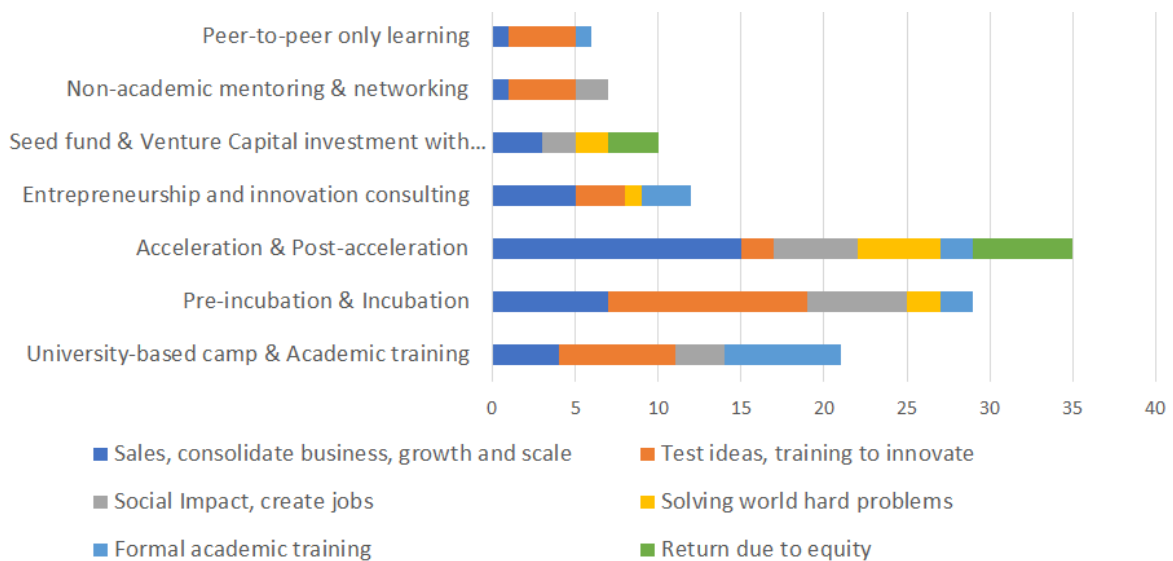


Figure 3. Distribution of program's and ETO's overarching goals.

### 3.5. Sector focus for the ETO's programs

An important factor influencing the programs is that they respond to the needs of very different fields and sectors. 39 programs accept startups and founders developing solutions in varied, mixed fields. A smaller group clearly stated to be focused on tech-enabled (19, 38.8%) and on deep-tech (11, 22.4%) products and services. Tech-enabled and deep-tech are not mutually exclusive and 4 (8.2%) programs supported founders in both sectors.

We aggregated our results into 9 different sectors, with several programs supporting more than one:

- Healthcare and wellness, MedTech, Biomed/Medical devices, Drugs (12 programs).
- Cleantech, Sustainability, Food and Agriculture, Sustainable infrastructure: energy, water, mobility, food, education, recycling (7 programs)
- Transportation, Supply chain, Housing, Smart Cities & Living (6 programs).
- Software as Services (SaSs) and Cybersecurity (4 programs).

- Automation/Robotics, Advanced manufacturing (4 programs)
- Fashion, Retail, Commerce, Sports, Media (4 programs)
- Education (4 programs)
- Fintech (3 programs)
- Public safety (1 program)

Overall, if we count the number of different sectors covered by each program, 27 (55.1%) are not focused on a specific one, 11 have a single sector focus (22.4%), and 11 programs are focused on two or more sectors (22.4%). A more detailed picture of the sector distribution per program type is presented in Fig. 4.

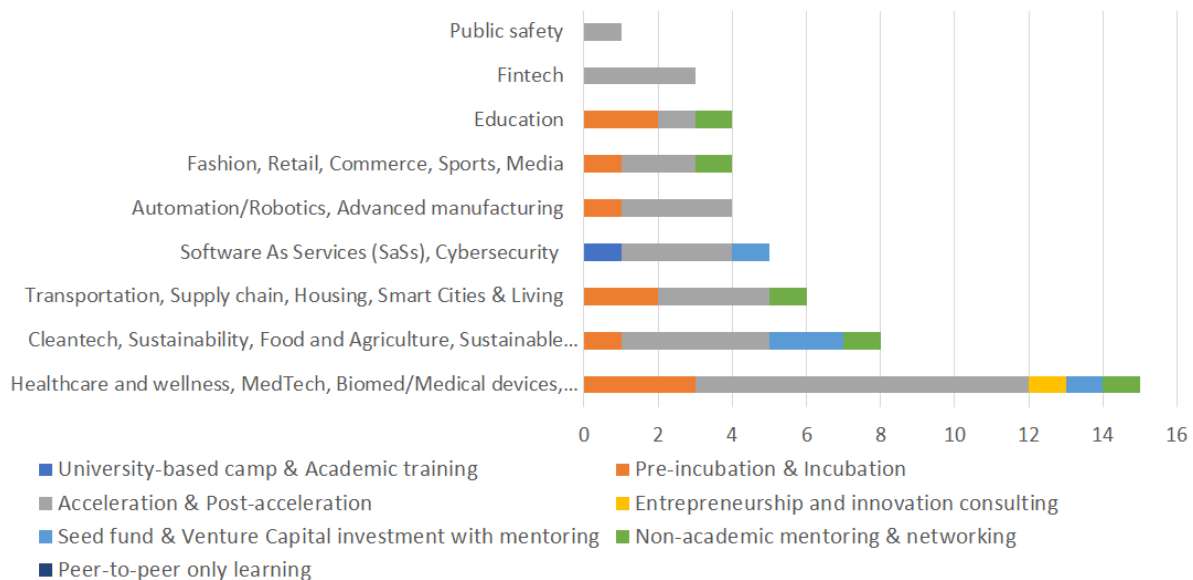


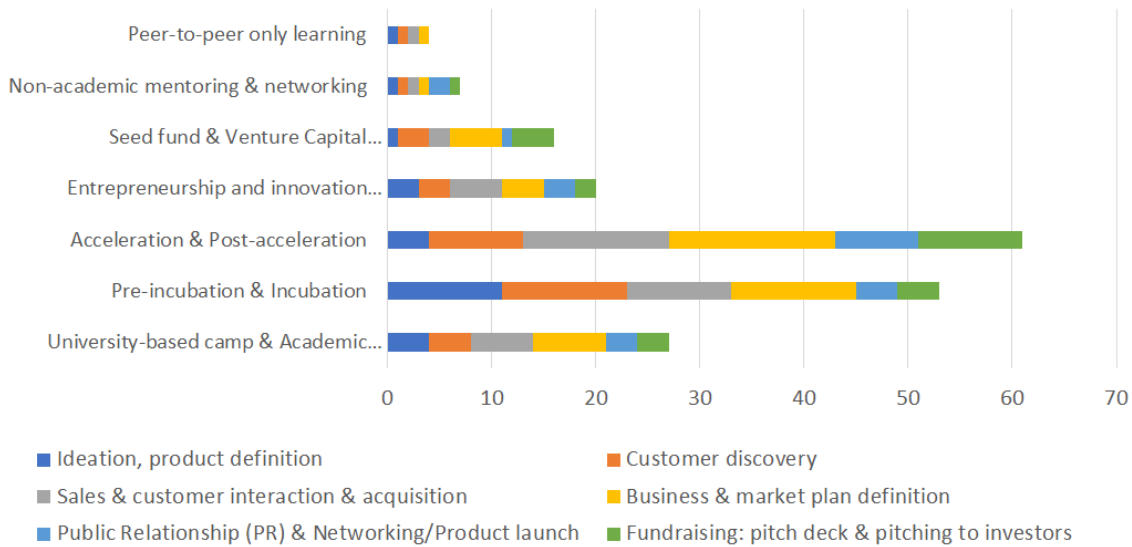
Figure 4. Sector focus distribution per program type.

### 3.6. Technical and professional skills

One of the reasons founders join these programs is to acquire specific content knowledge and skills in a timely manner. *“The question is accelerating what takes 18 months into only 4”*, points out Olivia O'Sullivan, Acceleprise's head of corporate engagement & partnerships. Quoting Rachel Anderson, director of Efactory, the goal is *“how to teach them to be a well-rounded entrepreneur without going through 1-3 years of life experience”*.

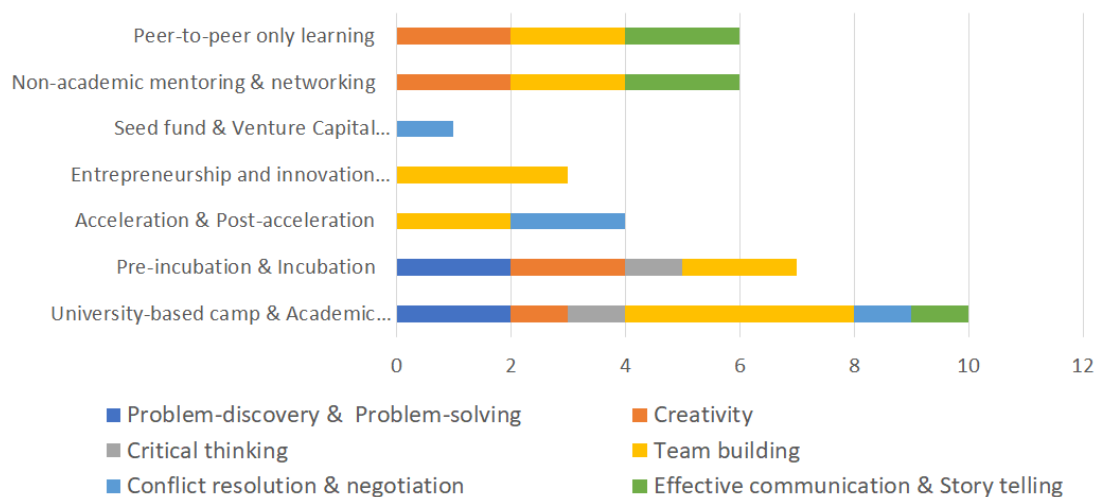
The key players here are the skills (technical and professional) and content knowledge, and the time required to develop them. The interviewed ETOs focus on specific technical skills related to the sector and products that their founders and startups work on, usually by providing a network of technically savvy mentors that can point out to different technologies and resources (with some programs having in-house technical experts). Specifically, corporate and management skills are provided through mentorship, workshops, and hands-on activities. Overall, the ETOs do not specifically train the founders in professional skills like problem-discovery and problem-solving, critical thinking, conflict resolution, and effective communication. Most of the interviewees expressed some of these skills are embedded in other activities but rather tangentially and that is up for the learners to get the most out of it: [Betaworks](#) camp director Sören Wrenn mentioned they *“provide capital, mentorship, and direction, but a lot of internal leadership comes down to the founder's ability to team build and lead themselves. They cannot be every startup's core team in the long run”*.

**Technical skills:** 19 (38.78%) programs train on ideation, product definition; 26 (53.06%) on customer discovery; 28 (57.14%) on sales & customer interaction and acquisition; 34 (69/39%) on business and market plan definition; 16 (32.65%) on public relationships, networking and product launch; and 17 (34.69%) on fundraising (pitch deck and presentation to investors). 8 programs do not provide technical skills training (16.33%), 1 program (2.04%) focuses on one technical skill only (public relations, networking and product launch), and 40 programs focus on 2 or more technical skills (83.67%). In Fig. 5 is depicted the distribution of technical skills per program type.



**Figure 5.** Technical skills per program type.

**Corporate and management skills:** 18 (36.73%) programs train on overall business & executive training, 12 (24.49%) on corporate strategy, 9 (18.37%) in operations, 9 (18.37%) in legal topics, and 5 (10.20%) on hiring and firing personnel. 29 programs do not provide corporate or management skills training (59.18%), 6 programs (12.24%) focus on one corporate & management skill, and 14 programs focus on 2 or more corporate & management skills (28.57%). The distribution of corporate and management skills per program type is presented in Fig. 6.



**Figure 6.** Professional skills directly and indirectly covered in the different ETOs programs.



**Professional skills training:** 8 (16.36%) programs provide direct training in one or more professional skills and 4 (8.16%) do it indirectly. The rest do not clearly specify if they do it or not. Specifically, 3 (6.12%) programs train on problem-discovery and problem-solving; 4 (8.16%) on creativity; 2 (4.08%) on critical thinking; 7 (14.29%) on team building; 3 (6.12%) on conflict resolution & negotiation; and 3 (6.12%) on effective communication & storytelling. Aggregating all professional skills directly and indirectly covered, 38 programs do not provide any training (77.55%), 6 programs (12.24%) focus on one professional skill only, and 5 programs focus on 2 or more professional skills (10.20%).

### 3.7. The learners profile

Our interviews reflected some trends that the leaders, executive directors, and program managers seek in the founders admitted to their programs, personal and leadership skills. Cognitive flexibility and ability to listen & receive criticism were the top two applicant's traits that most of the ETOs executives highlighted as fundamental. These qualities are important since founders need to be open to modify their plans as they learn more about the problem they want to solve, possible solutions, and their market. In other words, as Neil Patel, president of [Healthbox](#), stated, cognitive flexibility *"is an important skill set that should be native to any individual or organization who understands that the world is changing, and they must change with it. From ideation to a fully formed organization, adaptability is an important aspect of any successful learner's profile"*. The ETOs also mentioned some key leadership qualities such as team building and public speaking. In detail, the skills these ETOs are seeking in learners are: Cognitive flexibility (12, 24.49%), ability to listen & receive criticism (7, 14.29%), persistence and determination (6, 12.24%), curiosity and openness to learning (6, 12.24%), communication (idea and vision articulation 4, 8.16%), work ethic (3, 6.12%), networking (2, 2.04%), and business mindset (1, 2.04%). Also, team building (4, 8.16%), and public speaking & story-telling (2, 4.08%).

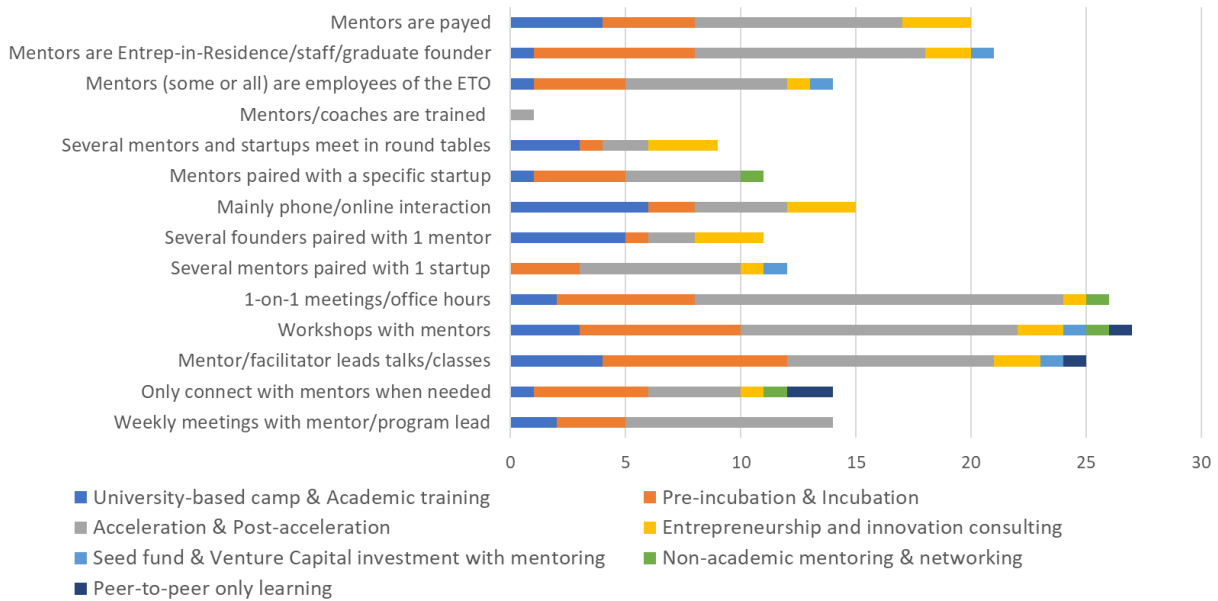
### 3.8. The role of mentors

All the executives interviewed expressed the importance of mentors and coaches for the success of their programs. Nevertheless, their roles, capacity, and engagement differed across ETOs. The university-based camps, incubation and acceleration programs have a more structured and clearer role for the mentors and coaches.

Matching mentors with startups is clearly defined in 10 (20.41%) programs, where one mentor exclusively interacts with a specific startup; in other programs mentors and startups mainly share round table meetings (3, 6.12%). In some cases, several mentors are paired with 1 startup (10, 20.41%) to support different needs (e.g. technical) whereas other programs promote meetings of several founders with 1 mentor (5, 10.20%) to share together challenges and possible solutions. Interaction with mentors can be scheduled or needs-based. A total of 26 programs (53.06%) include 1-on-1 meetings or office hours for the startups throughout the program with 13 (26.53%) of those having scheduled weekly meetings with their mentor or program lead while 12 (24.49%) promote their startups and mentors to only connect when needed. Beyond direct interaction with the learners, mentors make presentations or lead classes in 19 programs (38.78%), and participate in workshops in 21 (42.86%) of them.

As part of the upskilling process provided, mentors could also be trained to better support the founders. Only one program (2.04%), [Startupbootcamp](#), performs such training. Regarding mentors, coaches, and facilitators, 18 (36.73%) have Entrepreneurs-in-Residence (EIR), ETOs graduated founders, or specific ETOs staff as part of the mentors' lineup. Another important consideration is the mentors' engagement and sense of commitment with the program and its learners, which can be boosted if the mentor's participation is compensated. From all the programs, only 14 (28.57%) pay

mentors for their services. In Fig. 7 is presented a detailed distribution of the mentor and startup interaction per program type.

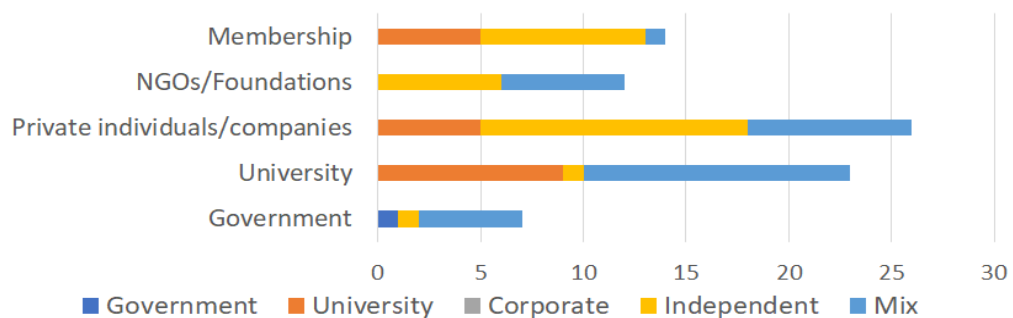


**Figure 7.** Mentors and startups interaction per program type.

Before [COVID-19](#) hit the world, only 10 programs (20.41%) included phone or online interaction between the mentors and founders. After March 2020, all programs transitioned to the online format.

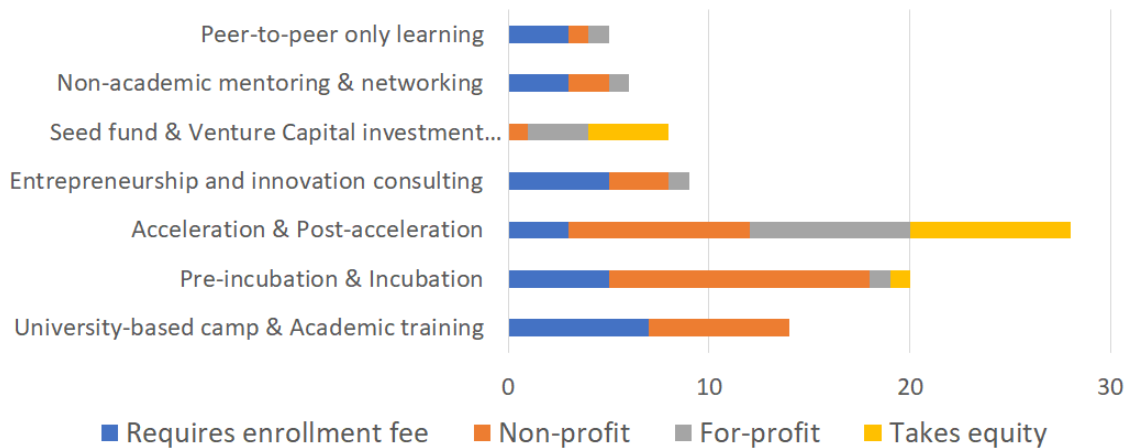
### 3.9. Financial structure of the ETOs and programs

Every ETO leverages its business capital, human resources, and network of mentors in all the programs offered. Nevertheless, each one can have different financial incentives and funding sources. Some of these programs require an enrollment fee (14, 28.57%) and others provide direct seed funding (17, 34.69%, ranging from USD\$10k-200k) or connect the startups with investors (21, 42.86%). From the programs investing seed funds, 9 take equity (18.37%) for their support. Also, some programs can be non-profit or for-profit. Funding sources of the former are usually public or from NGOs while for-profit programs have more private investment. The distribution of funding sources per ETO category is included in Fig. 8.



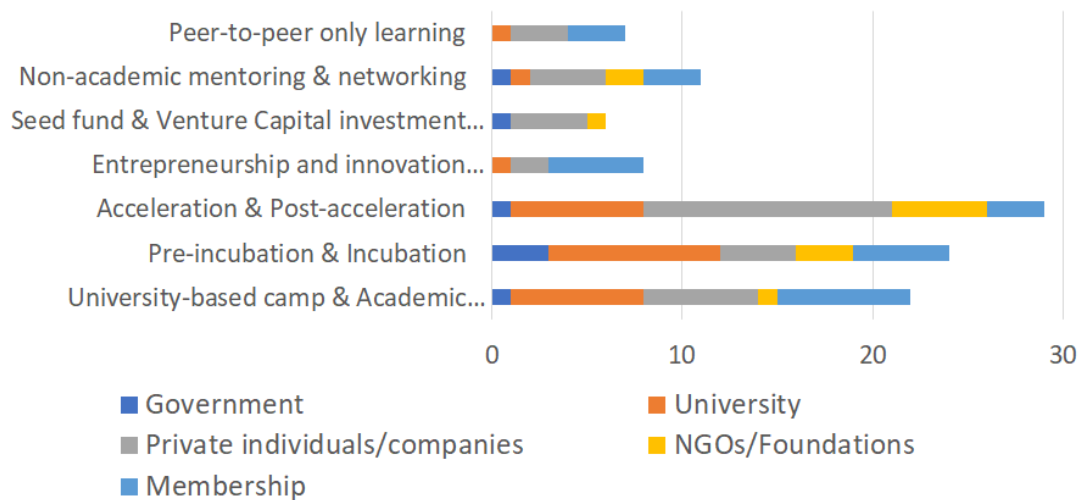
**Figure 8.** ETOs funding sources.

From our interviewed ETOs, 32 programs (65.31%) are non-profit and 9 (18.37%) for-profit. For the rest of the programs, we did not get clear data. The ETOs' financial relationship with startups per type of program is presented in Fig. 9.



**Figure 9.** ETOs' financial relationship with startups per program type.

The programs' and ETOs funding sources tend to be membership fees (14, 28.57%), grants from NGOs and foundations (12, 24.49%), funds from the government (7, 14.29%), private individuals or companies (26, 53.06%), or the universities (23, 46.94%) the ETOs are part of. Please note these percentages add up more than 100% since several programs get funding from more than one source, usually universities, the private sector and government (specially for public universities). The Programs funding information is shared in Fig. 10.



**Figure 10.** Programs funding sources.

### 3.10. The structure of the ETOs

As mentioned earlier, 68.4% of the interviewed organizations offer more than one program, spanning from incubation and acceleration programs to other training activities that include pre-incubation, post-acceleration, seed funds with specific mentoring, and peer-to-peer learning programs. From all the compiled information we found the following trends:

- **From incubation to acceleration and beyond:** the founder's learning journey follows a funnel between ideation and acceleration. There is a focus to connect the programs so founders progress along a training pipeline that connects pre-incubation, incubation, acceleration, post-acceleration, and internal venture capital offerings. This is clear in some ETOs that have as

selection criteria for their acceleration programs to have previously completed their incubation or pre-acceleration training (i.e. [ZeroTo510](#)); or that offer a post-acceleration program to the top graduates from their acceleration activities (i.e. [Startupbootcamp Scale](#), and [Centech's Propulsion program](#))

- **From mentees to mentors:** Some ETOs invite their program graduates to become mentors of their future programs (i.e. [Pioneer Baltimore ETC](#)). This grows the ETOs' mentor network, reinforces the peer-to-peer learning process, and solidifies the ETOs relationship with their graduates.
- **Corporate innovation programs:** From the 49 programs, a total of 10 (20.4%) offer corporate innovation training. This trend is common on ETOs that offer consulting (4 out of 7 consulting programs, 57.1%, offer corporate innovation in their portfolio). These innovation programs are a more company-focused service aiming at developing new products, solving internal challenges, and overall promoting a community-based problem-solving culture. We find this as a growing source of revenue for institutions promoting classical incubation and acceleration programs wanting to diversify their income sources. Through these company-based programs the ETOs can discover talent that later could join their other programs. Finally, these activities are a great way for the ETOs to increase their network of mentors and partner companies. Examples of these corporate innovation programs are eFactory's [Corporate Accelerator](#) and 1Mby1M's [Incubator-in-a-box](#).
- **The value of peer-to-peer learning:** All executives highlighted the importance of peer-to-peer interactions. Some programs make more emphasis than others but, overall, it is clear the value of learning from other founders, sharing experiences as well and complementing their skills.
- **The program and the network:** Starting a company from an idea is a long road. As previously mentioned, a big proportion of startups do not last 10 years, so having the right network of resources is key. From ideation to scaling basic startup education is an invaluable tool to avoid basic future problems: founders may think they have a great idea, but not realize it does not solve a market problem. Many startup founders apply to ETO programs to surround themselves with the right people whether that be educators, industry leaders, field experts, mentors, venture capitalists (VCs), and a collaborative workspace. Industry leaders are a valuable connection as they have proven success and can be a potential partner. Field experts are also key when it comes to industry and government regulations. Founders who meet with mentors on a daily or weekly basis gain a hands-on leader who is present to help them solve their startups specific problems. VCs provide funds to startups they believe in, as getting your foot in the door can be the first step to gain funding. If a startup isn't funded instantly, recognition can lead to a future opportunity. Even with all of these resources, a chaotic workplace is often not productive compared to a shared space with other founders and startup leaders.

#### 4. Recommendations for the future

This focus paper presents a broad vision of the ETOs landscape, with organizations supporting the founders' learning journey as it shifts from the one offered by classical training models into a more personalized, agile and, on-point learning experience. This opens an opportunity for MIT OL to support these different programs to train their learners and mentors.

Future steps include our focus on "*Train the Trainer*" workshops, a model to train coaches and mentors so they better guide founders and facilitate their learning journey following the science of learning

principles as well as the years of experience MIT OL and Bootcamps have training the leaders of tomorrow.

We want to emphasize the importance for ETOs to provide founders with specific “*Professional Skills Training*”. These skills are transferable across industries and job positions, which allow learners to navigate the uncertainty of the job market and the rapid changes of technology. These skills include leadership, creative and ethical thinking, problem-discovery and problem-solving, teamwork, conflict resolution, and effective communication.

Finally, our interviewees pointed out the need for a hub populated with the right entrepreneurship lessons. Beyond programs with a concrete structure (usually those focused on academic training), founders tend to search for more specialized material, which tends to be poorly curated, from diverse sources, and in different formats. [Clean Energy Trust](#) managing director Ian Adams mentioned the need for a “*Entrepreneurship in a box*” hub that could provide centralized nuggets of information, in written format, and digestible so founders that are always on-the-go can easily consume trustworthy entrepreneurship educational material from ideation to running a profitable sustainable business.

Starting from the concepts *incubator* and *accelerator* we moved into a wider landscape of institutions that we call *Entrepreneurship and Innovation Training Organizations (ETOs)*. The traditional university instruction has been evolving at a slower pace than that of the world, its challenges, and opportunities; and these ETOs are emerging as educational organizations offering the specific training needed by the founders of startups. We value their innovative and agile approaches and will continue exploring the landscape of non-traditional educational organizations with a future focus paper on corporate universities, stay tuned.

## 5. Acknowledgements

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## 6. References

ANPROTEC. Associação Nacional de Entidades Promotoras de Empreendimentos Inovadores. *Estudo de impacto econômico: segmento de incubadoras de empresas do Brasil*. Brasília, DF: ANPROTEC: SEBRAE. 2016. (In Portuguese)

Bliemel M, Flores R. *Accelerate Australia Far: Exploring the Emergence of Seed Accelerators within the Innovation Ecosystem Down-under*. Proceedings of the Australian Centre for Entrepreneurship Research Exchange Conference 2014, 4-7 February, Sydney, Australia. 94-109 <https://citeseerx.ist.psu.edu/viewdoc/download?doi=10.1.1.657.8155&rep=rep1&type=pdf#page=94>

Bone J, Allen O, Haley C. *Business incubators and accelerators: The national picture*, BEIS Research Paper, No. 2017/7. UK Government, Department for Business, Energy & Industrial Strategy, London. 2017

Bundesverband Deutscher Innovationszentren (BVIZ), German Association of Innovation, Technology and Business Incubation Centres, info page. Retrieved on November 2020 from <https://www.innovationszentren.de/41-0-English-Information.html>

- Chandra A, He W, Fealey T. *Business Incubators in China: A Financial Services Perspective*. Asia Pacific Business Review. Vol. 13, No. 1, 79–94. 2007
- Chandra A, Chao CA. *Growth and evolution of high-technology business incubation in China*. Human Systems Management 30, 55-69. 2011
- Clarysse B, Wright, M, Hove JV. *A Look Inside Accelerators: Building Business*. NESTA Research Report for the UK National Endowment for Science, Technology and the Arts. 2015 [https://media.nesta.org.uk/documents/a\\_look\\_inside\\_accelerators.pdf](https://media.nesta.org.uk/documents/a_look_inside_accelerators.pdf)
- Chordá IM. *Towards the Maturity Stage: an insight into the performance of French technopoles*. Technovation 16 (3), 143–152. 1996
- David T. *A general inductive approach for qualitative data analysis*. School of Population Health. 2003. Retrieved on December 2020 from <http://www.frankumstein.com/PDF/Psychology/Inductive%20Content%20Analysis.pdf>
- European Commission Enterprise Directorate General, Centre for Strategy and Evaluation Services. *Final Report: Benchmarking of Business Incubators*. Brussels: 2002. Retrieved on January 2021 from <https://businessincubation.com.au/wp-content/uploads/benchmarking-incubators.pdf>
- Farhan J, Kamariah I, Muhammad S, Muhammad M K, Abdul GK, Muhammd IQ. *Business Incubators in Asian Developing Countries*. International Review of Management and Marketing, Special Issue for the Asia International Conference (AIC 2015), 5-6 December 2015. Universiti Teknologi Malaysia, Kuala Lumpur, Malaysia. 6(S4) 291-295. 2016
- Fowle M. *Critical success factors for business accelerators: A theoretical context*. British Academy of Management 2017 Conference, 1-23
- Gust. *Global Accelerator Report 2016*. Retrieved on December 2020 from [http://gust.com/accelerator\\_reports/2016/global/](http://gust.com/accelerator_reports/2016/global/)
- Hausberg PJ, Korreck S. *Business incubators and accelerators: a co-citation analysis-based, systematic literature review*. J. Technol Transf., 45:151–176. 2020. <https://doi.org/10.1007/s10961-018-9651-y>
- Isabelle D, Westerlund M. *Business incubation and business model innovation*. Proceedings of the 4th International Conference on Innovation and Entrepreneurship (ICIE 2016), Toronto, Canada. 95–102
- Knopp L. *2012 State of the Business Incubation Industry*. NBIA Research Series. Athens, Ohio, National Business Incubation Association. 2012. ISBN: 978-1-887183-72-7
- Lewis DA, Harper-Anderson E, Molnar LA. *Incubating Success. Incubation best practices that lead to successful new ventures*. Institute for Research on Labor, Employment, and the Economy. University of Michigan, Ann Arbor, Michigan. 2011. Retrieved on November 2020 <https://www.nist.gov/system/files/documents/ineap/Incubating-Success-Report.pdf>
- Malairaja C, Zawdie G. *Science parks and university–industry collaboration in Malaysia*. Technology Analysis & Strategic Management. Vol. 20, No. 6, 727–739. 2008. <https://doi.org/10.1080/09537320802426432>

- Mian S, Lamine W, Fayolle A. *Technology Business Incubation: An overview of the state of knowledge*. Technovation. (50-51), 1-12. 2016. <http://dx.doi.org/10.1016/j.technovation.2016.02.005>
- Miller P, Bound K. *The Startup Factories - The rise of accelerator programmes to support new technology ventures*. NESTA Discussion paper for the UK National Endowment for Science, Technology and the Arts. 2011. Retrieved on November 2020. <https://www.eban.org/wp-content/uploads/2014/09/14.-StartupFactories-The-Rise-of-Accelerator-Programmes.pdf>
- Padrão LC, Andreassi T. *O Desempenho de Startups de Base Tecnológica: Um Estudo Comparativo em Regiões Geográficas Brasileiras*. Revista da micro e pequena empresa. Vol.7 (2), p.66. May 2013 (In Portuguese)
- Ratinho T, Henriques E. *The role of science parks and business incubators in converging countries: Evidence from Portugal*. Technovation 30, 278–290. 2010
- Social Innovation Monitor (SIM). *The Impact of Incubators and Accelerators in Germany. Public Report*. 2019. Retrieved on December 2020 from <https://socialinnovationmonitor.com/en/germany-incubators/>
- Sofouli E, Vonortas N. *S&T Parks and business incubators in middle-sized countries: the case of Greece*. The Journal of Technology Transfer 32(5), 525–544. 2007
- UBI global. Meyer H, Sowah J. *UBI Global World Rankings 19/20 Report*. Retrieved on September 2020. <https://resources.ubi-global.com/hubfs/Publications/Rankings/UBI%20Global%20-%20Rankings%201920%20v2.pdf>
- Ursache M. *Metabeta Discipline Accelerators report*. Retrieved on September 2020 from <https://www.metabeta.com/articles/disciplined-accelerators/disciplined-accelerators-study/>
- U.S. Bureau of Labor Statistics (USBLS). Table 7, Survival of private sector establishments by opening year (period 1994-2020). Retrieved on December 2020 from <https://www.bls.gov/bdm/bdimage.htm#Total>
- Wayra. *The rise of the UK accelerator and incubator ecosystem*. Telefónica O2 Wayra Report, 2014. Retrieved on December 2020 from [https://cdn.news.o2.co.uk.s3.amazonaws.com/wp-content/uploads/2014/12/O2\\_WAYRA\\_Report\\_121214.pdf](https://cdn.news.o2.co.uk.s3.amazonaws.com/wp-content/uploads/2014/12/O2_WAYRA_Report_121214.pdf)
- Wiggins J, Gibson DV. *Overview of US incubators and the case of the Austin Technology Incubator*. Int. J. Entrepreneurship and Innovation Management, Vol. 3, Nos. 1/2, 2003

## Appendix: Initiatives grown at MIT

As previously mentioned, MIT supports several initiatives focused on incubating and accelerating ideas and startups that serve students, faculty and staff by putting at their service MIT's resources, networks, and partners. In the side bars you can find a short description of some of the most important ones, including [MIT delta v](#) , [Solve](#), [The Engine](#), [MIT Sandbox Innovation Fund](#), [MIT Bootcamps](#), [MITdesignX](#), [MIT Global Startup Labs](#), and [E14 Fund](#).

- **Sandbox Innovation Fund**

[MIT Sandbox](#) is an incubator that provides seed funding for student initiated entrepreneurship ideas, mentoring from within MIT and from a broad network of committed partners, and tailored educational experiences. This program is accessible to all MIT graduate and undergraduate students and is designed to fit within the traditional university experience while also helping students pursue entrepreneurial ideas around classwork and research activities. Students are matched with mentors and given personalized curriculum to best support their ideas moving forward. Each student learns by doing, gaining real world experience in moving their ideas from concept to impact.

- **The Engine**

[The Engine](#) invests in tough tech. It backs founders solving the world's biggest challenges - -from climate, health, computing, and more-- through the convergence of breakthrough science, engineering, and leadership. Its mission is to accelerate the path from ideation to commercialization for Tough Tech companies through access to a unique combination of investment, infrastructure, and a vibrant ecosystem. It provides *long-term capital* (for startups that need time to make an impact, prioritizing breakthrough ideas over early return); *labs, equipment, tools and space* (with access to specialized equipment on-site and through partners to use resources efficiently and economically); and *connections* (through a network that facilitates the creation of long-term mutually beneficial relationships between founders, startups, corporates, government, strategic partners, and others).

- **Solve**

[Solve](#) It is an MIT initiative with a mission to solve world challenges. Solve is a marketplace for social impact innovation. Through open innovation Challenges, Solve finds incredible tech-based social entrepreneurs all around the world. Solve then brings together MIT's innovation ecosystem and a community of Members to fund and support these entrepreneurs to help them drive lasting, transformational impact. Amongst the global challenges it includes Good jobs & inclusive entrepreneurship, Health security & pandemics, Learning for girls & women, Maternal & newborn health, Sustainable food systems. In the last three years, Solve has brokered \$25 million in funding commitments and 200+ partnerships for Solver teams and social entrepreneurs.

- **E14 fund**

The [E14 Fund](#) was launched in collaboration with the MIT Media Lab to build and invest in the Media Labs venture community. It supports companies at the intersection of technology, design, biology, engineering, and more; in areas such as bitcoin, wearable computing, tangible interfaces, smart cities, and genomics. E14 Fund serves the Media Lab community of students, faculty, members and alumni. It focuses on spending time with founders and future founders wherever they are in their entrepreneurial journey: mentoring and coaching students as they complete their academic pursuits and weigh their career options, hosting regular events and workshops, advising founders as they start to build their teams and develop commercial prototypes, and at the right time, providing first outside capital, with a typical check of between \$500K-1M. The E14 Fund began in 2013 and has supported 66 startups to date.



- **MIT Global Startup Labs**

[MIT Global Startup Labs](#) (GSL) has sent over 300 MIT instructors to teach over 2500 students in 28 countries, resulting in the creation of businesses and the addition of course offerings at our partner universities. GSL is a program of [MISTI](#) (MIT International Science and Technology Initiatives) that promotes development in emerging regions by cultivating young technology entrepreneurs. GSL courses focus on mobile and Internet technologies, and are structured so that our students are awakened to the commercial possibilities of the technologies. Components of the course include detailed technical curriculum, business competitions, guest lectures, and networking events, all to help our students develop and realize their ideas. Concurrent to its courses, MIT Global Startup Labs scales its impact by transferring teaching expertise to our partner universities so that they can incorporate components of our courses with little intervention.

- **Delta v**

[MIT delta v](#) is an educational accelerator for MIT student entrepreneurs to accelerate and build viable, sustainable ventures. The [MIT delta v accelerator](#) is a capstone program run by the Martin Trust Center for MIT Entrepreneurship for three months over the summer both on the MIT campus and, for students looking to take advantage of the unique entrepreneurial community in Manhattan and vicinity, the [NYC Startup Studio](#).

Teams with at least one MIT student founder can apply to participate in the fully immersive accelerator, which features several critical aspects:

- teams are assigned a mock board of directors made up of business executives, domain experts, faculty, and former delta v participants who evaluate their performance each month based upon rubrics;
- the team's journey is focused on team building as well as organization development and dynamics;

- **DesignX**

[MITdesignX](#) is an academic program and entrepreneurial accelerator in the MIT School of Architecture and Planning (SA+P) dedicated to design innovation and entrepreneurship. It empowers students, faculty and researchers to build new business ventures and forward-thinking solutions designed to address critical challenges facing the future of cities and the human environment. DesignX “turns ideas into actions”. DesignX tailors a series of design and business classes, provides academic credits, grants, workspace and a wide network of dedicated mentors, business, institutional and government contacts and funding specialists to build new ventures. The teams create a vision, “masterplan” – outlining key actions and strategies, business model, pitch deck, and build a prototype that explores the feasibility and function of their ideas and solutions. The accelerator program ends with a pitch night for teams to introduce their ventures to hundreds of investors, stakeholders, civic and industry partners.

- **MIT Bootcamp**

[MIT Bootcamps](#) is a pre-incubator from Open Learning that offers intense learn-by-doing, blended, programs leading participants (Bootcampers) through the innovation framework and curriculum taught in core entrepreneurship and innovation classes at MIT. MIT Bootcamps are first focused on asynchronous online content that is followed by an in-person or synchronous online experience guided by trained MIT coaches/innovators. It promotes a young entrepreneurship community built by entrepreneurs and innovators from around the world.

In addition to the innovation framework, participants learn and practice critical skills required to be leaders and drive innovation and collaboration: teamwork, leading a team, communication, mutual goal reinforcement, and giving feedback. MIT Bootcampers are selected based on the following four criteria: open and critical thinking, initiative with follow through, capacity for calculated risk, and focus on community. Bootcamps alumni have launched hundreds of ventures worth billions of dollars,

- an emphasis on understanding the target market, customers, and users;
  - teaching students the mechanics of venture creation; and
  - providing our student-entrepreneurs with tools for self-awareness.
- have promoted innovation within companies, and created social impact around the globe.

MIT delta v takes the best entrepreneurs with an interesting idea or proof of concept and focuses on creating impactful, innovation-driven startups that are ready for launch upon the completion of the program.