

STARTUP BOOSTING IN AN INDUSTRY 4.0 CONTEXT

*by Alison Partridge
Ceri Batchelder*

1. INTRODUCTION

We hear a lot of hype about startups, and are familiar with many of the big names of 'unicorns' (private companies with a valuation of over \$1 billion). As of June 2022, there were [1,100 unicorns across the world](#). Well known former unicorns include Airbnb, Facebook, Google, Skyscanner and Spotify, and you may have heard of more recent examples like the design tool Canva and online events platform Hopin. These are fast growing, highly funded, [technology-enabled businesses](#). But why does this world of tech startups apply to our cities and how can they create the conditions for nurturing their own?

Like many cities across Europe, Bilbao has an industrial heritage and, in the process of reinventing its economy, has focused on how startups can play a role. Through [AS-FABRIK](#), an Urban Innovative Actions (UIA) project, the city received funding to develop a smart specialisation strategy for its advanced services or KIBS (Knowledge Intensive Business Services) companies - with the aim of increasing digital transformation across the manufacturing base. AS-FABRIK was successful in enabling Bilbao's Industry 4.0 ambitions, accelerating the digital convergence between industry and technology for 'connected manufacturing'. This led to Bilbao partnering with a network of cities through the URBACT Transfer Mechanism, which aims to share the learnings from UIA projects with other cities facing similar challenges. Through this network - AS TRANSFER - Bilbao is sharing many valuable lessons on [talent ecosystems](#), [partnership brokerage](#) and startup boosting, as they relate to Industry 4.0. This report is the third of three which explore each of these topics in turn. It reflects upon:

- Why startups matter to cities
- What makes up a startup ecosystem
- How to boost startup communities in your city
- Lessons from AS-FABRIK on startup boosting
- Learnings from a network meeting in Timișoara, Romania

The three cities exploring and applying aspects of the Bilbao AS-FABRIK Good Practice are Bielsko-Biala (Poland), Tartu (Estonia) and Timișoara (Romania). In May 2022, representatives from all the cities gathered in Timișoara to focus on the startup boosting theme.



The AS TRANSFER network meets in Timișoara - at Cowork and in the city

2. WHY DO STARTUPS MATTER TO CITIES?

In the global economic recession of 2008-9, many firms were hit hard and had to downsize their workforces. [Research by the OECD*](#) (Organisation for Economic Co-operation and Development) from 18 countries showed that in response to the crisis, job creation occurred in 'young' businesses that were founded in the previous 5 years, rather than in 'old' firms, established 6 or more years ago (see Figure below). This provided evidence to policymakers that supporting entrepreneurs and startups is a way to stimulate employment, helping to restore economic stability and growth.

Figure 21. During the crisis, old firms destroyed more jobs

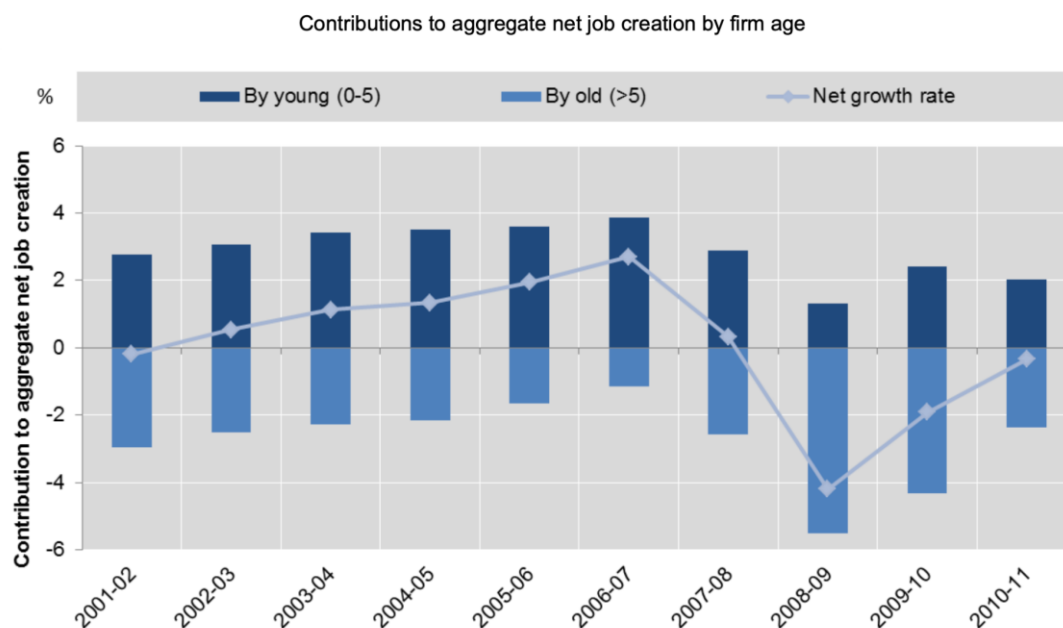


Figure: OECD Research on the origin of job creation post the global economic recession of 2008-9

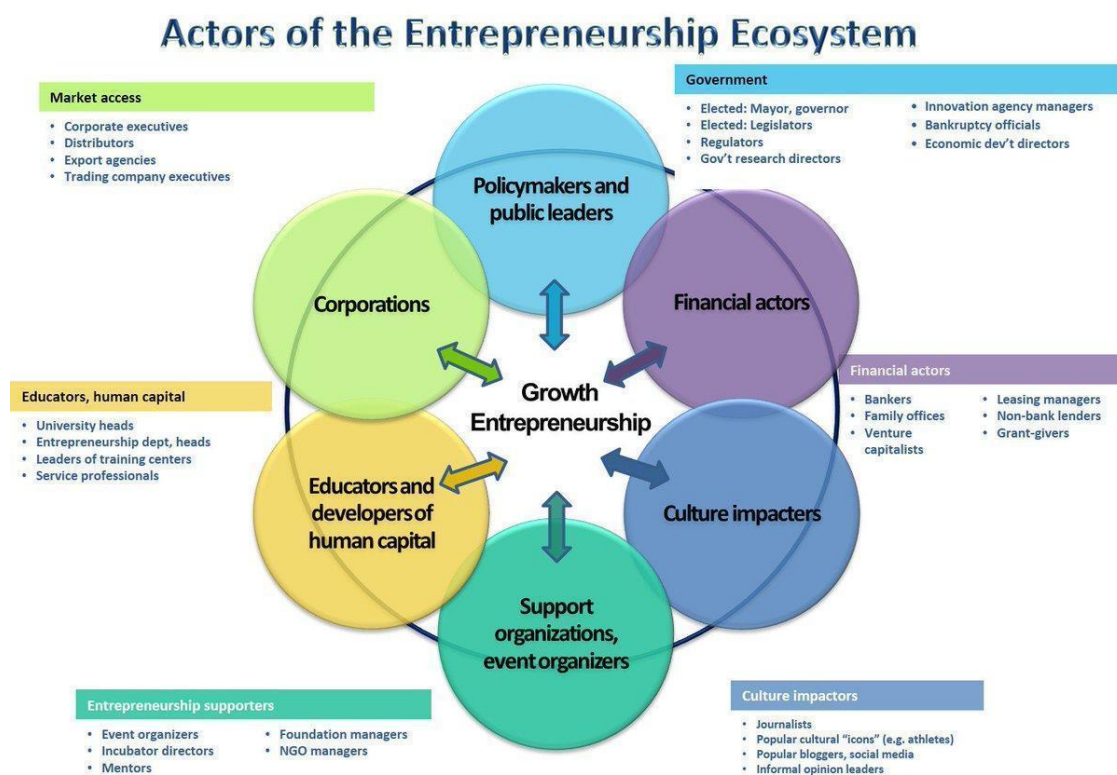
In the lead up to the World Economic Forum (WEF) in Davos, Switzerland in May 2022, startups were on the agenda. Writing in advance, the WEF's Managing Director stated that *"Startups are a catalyst for economic growth both globally and locally. The value that startups create is nearly on par with the GDP of a G7 economy and the amount of startup funding in 2021 surpassed \$600 billion, shattering funding records."*

Interestingly, the article also emphasises the role of startups in driving responsible economic growth, through operating fairly and sustainability. Ariel Katz, Chief Executive Officer and Co-Founder of H1, a healthcare information system, observed *"In this new world post-Covid, startups don't need to be based in San Francisco anymore and I think you will find wildly successful companies in new cities that will create this hope, community and ecosystem around it that will build the future."*

3.WHAT MAKES UP A STARTUP ECOSYSTEM?

There is a substantial body of research around what policy factors give rise to the right conditions for a successful startup environment. Daniel Isenberg, Professor of Entrepreneurship Practice at Babson College, Massachusetts, USA, has been a key contributor and developed an evolving model of an [entrepreneurship ecosystem strategy for economic development](#) (see Figure below, 'Actors of the Entrepreneurship Ecosystem').

This quote from [Mason & Brown \(2014\)](#) captures the approach well, "An entrepreneurial ecosystem is a set of interconnected entrepreneurial actors, entrepreneurial organisations, institutions and entrepreneurial processes which formally and informally coalesce to connect, mediate, and govern the performance within the local entrepreneurial environment."



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Figure: Daniel Isenberg's Actors of the Entrepreneurship Ecosystem

Two important aspects to pull out are startups' need for funding and trained staff. Fast-growing tech startups often require significant equity investment, from pre-seed to larger venture capital raises. This means that people and organisations with the necessary understanding and money ('risk finance') must be part of the ecosystem. Similarly, there is a global demand for tech talent, and a corresponding shortage of supply, so companies are having to spend a lot of time recruiting and developing their staff, and pay increasingly high salaries.

Alison Partridge has written about this recently for URBACT, "[Entrepreneurship Ecosystems – a few pieces do not a jigsaw make...](#)", including our colleague [Laura Bennett](#)'s expert input, so we refer you here for more information.

4. HOW TO BOOST STARTUP COMMUNITIES IN YOUR CITY?

Denislav Ivanov, a startup community champion, joined the meeting in Timișoara. Denis talked about the importance of building a startup community around the entrepreneur and their needs - placing them at the centre. He said a good way to make rapid progress was to follow best practice from elsewhere, such as from [Singapore](#), [Copenhagen](#) and [Tartu](#), and apply it locally.

Denis shared how he was supporting a startup community on the ground in Sheffield, UK. He identified 4 key areas of development.



Denis Ivanov's talk on important elements for startup boosting

a) Learning entrepreneurship

People enter the startup world from diverse backgrounds, culturally, educationally and technically. They don't know how to build a startup, so they need to be taught skills, like a problem-solving mindset and how to run a business. Reflecting this, is the fact that [the average age of a successful startup founder is 45](#). Entrepreneurial training can happen in a number of ways, for example through entrepreneurship courses at colleges and universities, such as [Enactus](#), the [Techstars Startup Weekend](#) programme or local business support initiatives. Denis also helps connect new founders with an expert pool of mentors with startup experience. For workplaces, a greater focus on enabling intrapreneurship (entrepreneurship within an established organisation) could bring innovation and productivity benefits.

b) Increasing Connectedness

In the startup world, everything happens between people, so it's important to create opportunities for people to connect and collaborate - such as through meetups and social media channels. Cities can support the existing startup communities and activities, they don't need to re-invent them, or lead them even, but they can enable them, e.g. by offering small amounts of funding for pilot actions or venues for meetups. In parallel, an ecosystem map can increase visibility and help people find the right support and contacts. These approaches can facilitate identifying co-founders and early adopters to work together on shared problems and develop common solutions. Crucially, engineering serendipity is key - many life changing events come from chance interactions!

c) Giving a platform

How do we learn about startup communities? Ensuring that startups have a voice in the local community can greatly enhance the profile of individual businesses and the community. Denis ran a successful podcast series in which he interviewed founders to hear their stories and ask what they needed to grow, and listeners responded.

For example, [Four Jaw Manufacturing Analytics](#), a new Industry 4.0 startup bringing data capture and analysis to manufacturers, mentioned they were looking for some new members of staff, and after the podcast, they received some job applications. Extending the reach through local media (newspapers and social media) can also help, as well as a regular ecosystem newsletter. Lastly, raising the profile of entrepreneurship by appointing experienced entrepreneurs as mentors in residence in universities, incubators and accelerators, can help new founders to see role models.

d) Accelerating growth

Denis is Marketing & Community Manager at [Entrepreneurial Spark](#), an open accelerator for entrepreneurs. He is currently delivering an accelerator programme called [Transform SY](#) across South Yorkshire, UK, which focuses on developing entrepreneurial mindset and behaviours over 6 month cohorts. The programme has recently supported 18 entrepreneurs who have made great strides and are raising funding, creating jobs and winning contracts. Transform SY is one of 15 acceleration and investment readiness programmes on the ERDF funded [TEAM SY](#) project. Through these structured programmes, run by experienced staff, the intent is to raise the bar for entrepreneurship support, giving rise to more robust companies, thereby strengthening the startup ecosystem. Importantly, support needs to be provided at every stage of development - from very early to scaling businesses - to help sustain and retain them in the region.

5. LESSONS FROM AS-FABRIK ON STARTUP BOOSTING

Strategically, Bilbao wanted its manufacturing sector to become more productive and competitive and to have a place on the international stage for Industry 4.0 capability. As a result, AS-FABRIK's approach to startup boosting was focused on stimulating Industry 4.0 take-up in the traditional manufacturing base. It concentrated less on young people starting businesses from scratch, as you might find in Silicon Valley, and more on 'intrapreneurship' through accelerating the development of existing small tech and knowledge-based businesses (5-6 people). These KIBS companies contained the right expertise and ideas, but needed help to scale. The AS-FABRIK team set out to create a programme to help them grow, so they in turn were better positioned to influence the manufacturing firms.

Eduardo Castellano, Executive Director of the Business School Management Research Centre at Mondragon University, joined the transnational meeting to share the startup boosting learnings from AS-FABRIK. Eduardo described the 5 stage process, starting with a discovery phase carried out by the Bilbao AS-FABRIK Observatory, which identified the needs of manufacturers. The projects selected were those that had the most opportunity to be exploited. Although this was resource intensive, it allowed the KIBS businesses to realise where they needed to direct their efforts, and produce robust value propositions to capture their understanding.

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I. Startup Boosting stages

1. FIRST-CUT VALUE PROPOSITIONS AND VALUE & GROWTH HYPOTHESES ELICITATION
2. LOW-FIDELITY MINIMUM VIABLE PRODUCTS (LO-FI MVP) DEVELOPMENT FOR PROBLEM-SOLUTION VALIDATION
3. HIGH-FIDELITY MINIMUM VIABLE PRODUCTS (HI-FI MVP) DEVELOPMENT FOR PRODUCT-MARKET FIT VALIDATION
4. NEAR-MARKET EXPERIMENTS DESIGN & ANALYSIS
5. BUSINESS INCUBATION


[250 h mentoring / venture + Toolkits]

Eduardo Castellano's talk on the stages for startup boosting in AS-FABRIK

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II. Interlink/leverage with the other Bilbao AS FABRIK (BAF) processes

1. **BAF OBSERVATORY 4.0**
 - Annual 4.0 Report on Tech & Business Application Trends/Opportunities
 - Bilbao potential Promoters mapping [+50/500]
 - Roadmap (4helix): Co-designed Opportunity Spaces >> Linked with Stage 1. FIRST-CUT VALUE PROPOSITIONS
2. **BAF PARTNERSHIP BROKERING**
 - Linked with Stage 3. HI-FI MVP and Stage 4. NEAR-MARKET EXPERIMENTS
3. **BAF TRAININGS**
 - Business 4.0 >> Linked with Stage 1. FIRST-CUT VALUE PROPOSITIONS and Stage 2. LO-FI MVP
 - Tech 4.0 >> Connected with Stage 3. HI-FI MVP and Stage 4. NEAR-MARKET EXPERIMENTS
 - Venture Capital >> Connected with Stage 5. BUSINESS INCUBATION



How startup boosting inter-connected with other themes in AS-FABRIK

Bespoke training from AS-FABRIK experts enabled the KIBS companies to develop early (low fidelity) and later (high fidelity) stage prototype products and services. Following work to validate the market fit of the prototypes, the next steps involved piloting, assessing the potential scalability and business incubation. The partnership brokering support connected them to the wider Industry 4.0 community, increasing the access to the market for their products and services. Eduardo emphasised that if not all the elements are present, there are a lot of difficulties. Improving mutual understanding and connectivity through 'filling gaps', 'connecting dots' and linking the AS-FABRIK activities were found to be really important. Here, the startup boosting theme of AS TRANSFER connects with the partnership brokering theme.

So what results did the AS-FABRIK team see? They started with 36 venture projects, 90% of which were examples of intrapreneurship in KIBS firms. From these, they saw a 33% startup success rate, a significant increase on the normal 7-10% rate. The sense is that the higher rate was due to the nature of the process, the positive outputs coming from starting with clearly defined needs (from the Observatory support) and linking with the other processes. Another good outcome is that the university is now completely aligned with the needs of industry.

6. STARTUP BOOSTING: NETWORK MEETING IN TIMISOARA

Startup boosting was the thematic focus of AS TRANSFER's transnational meeting in Timișoara, Romania in May 2022. This section of the report showcases some of the initiatives and activities discussed at this meeting.

6.1 A Timișoara based startup's perspective

Paul Druta is Co-founder and Managing Partner at [Lineo](#), an engineering services company for electronic products. Trained as a mechanical engineer, Paul previously worked for Continental as a Technical Project Manager, with large global clients.

In his spare time, he would work with friends and colleagues to try and solve engineering problems together. Their activities gained visibility online, so Paul was able to leave his job, initially freelancing and then running Lineo as a startup.



Paul Druta, Co-founder and Managing Partner at Lineo Engineering

Almost all Lineo's projects have an electronics integration component. They build prototypes and produce designs for injection moulding. Their services span the entire product life-cycle. Examples include a wireless disinfectant dispenser, an electrical mug, an IoT device for a drone, and the thermal expansion control for a bread oven, where the client is based in California!

As a startup with a technical background, Lineo has needed to acquire business understanding and skills, and is now focused on widening their international client base. Asked how local partners could help, Paul said they were keen to form links with advanced Research & Development collaborators for validation, prototyping and testing, and for introductions to trusted professional services firms who appreciate startups and their journey.

6.2 University InoHub

Dr Silviu Vert, Politehnica University Timișoara, gave a flavour of his work in his talk 'From student to startup'. He is instrumental in running the entrepreneurship offer, [InoHub](#), which has trained over 300 students. It is an active service and students can subscribe to an app to start getting involved. They have two physical spaces and run events and 'pretotyping' workshops, making mock-ups to test market appetite.

Silviu and colleagues run startup bootcamps in collaboration with other universities. They offer ideation workshops, hackathons to build products, pitching competitions (with excellence awards for the most promising startup) and help forge links with experienced mentors and industry. For commercial challenge setters, it's important to make decision-makers aware of the project from an early stage to ensure buy-in (not just on an operational level). They are starting to see startups

emerge, such as two AI startups in healthcare, a form-builder company that gathers and processes data and a number of mobile app development projects.

Since there are more jobs than students in Timișoara, there is a lot of competition for graduate tech talent. They need to have incentives to attract students to the route of entrepreneurship and generate more startups. Prizes come in the form of internships and funding. An important project is a financing programme for engineering students, where €40-50k is available to those who want to create their own startup. One method they've seen in the US is that sometimes students with entrepreneurial potential are offered a discount on tuition fees. Another issue holding back the number of potential startups is lack of staff time, as the staff's teaching time takes priority, plus staff can also be attracted away from the university by bigger commercial salaries, creating staff shortages.



Dr Silviu Vert's talk 'From student to startup'

6.3 Cowork - space for startups

[Andrei Cosmin Munteanu](#), Co-Founder & Community, realised they needed a physical space to support startups in Timișoara, so they set up Cowork in 2013. The space has a building and garden with a relaxed and creative feel where entrepreneurs can work, meet and connect with other people.

The main activities of the team of 7 are:

- Running the coworking facilities
- Delivering events, on average an event every 3 days - about 130 per year with 5000 people attending
- Supporting anyone who wants to run a tech-enabled business
- Helping businesses to both start and scale (Andrei talked about the challenges of scaling)
- Facilitating a coach-driven approach to grow the entrepreneurs themselves

Romania is good at tech, and Timișoara has lots of technically capable people, but becoming experienced in business is harder, as founders don't have much entrepreneurial training. The types of companies emerging in Industry 4.0 include those focused on prototyping, 3D printing and software, and they are now gaining international clients.

In terms of startup champions, Andrei is a prime example. From leaving a well-paying job in a scaling tech company to help set up the Timișoara startup community, he is now working with established names like [TechStars](#) and [Startup Grind](#) and several accelerators. Being highly connected, he wants to bring his large network of entrepreneurs, universities and businesses to work together with the public sector to endorse and fund Cowork's activities. All actors need to take part to create the right conditions and start telling the story of a thriving Timișoara ecosystem.

Andrei thinks the future is bright for entrepreneurship. He's seeing a shift to startups with a more mission-driven/sustainable focus, and thinks this will make young people more open to exploring different career paths.

What is Andrei looking for from all this hard work? Well of course his goal is "5 Unicorns from Timisoara"!



Cowork, Timisoara

6.4 INCUBOXX, regional business incubator

We also made a visit to INCUBOXX which is the largest business incubator in Romania for information and communications technology startups. Owned by Timișoara City Hall, it was funded by the ERDF and completed in 2017. The building has 54 offices at rental prices that are staged as the businesses grow. We met companies in IT consulting, web design and development, smart home devices and 3D printing.

7. LESSONS FOR STARTUP BOOSTING AND NEXT STEPS

At the end of the network meeting in Timișoara, the AS TRANSFER cities came together to capture their learnings.

Lessons for startup boosting

- Find your startup champions who can help you amplify your activities
- Make sure the champions are visible and direct people to them
- Start with the entrepreneur in the centre – build resources around their needs
- Build an evidence base to help explain to other actors why startups are important
- Ensure that you involve the main stakeholder groups: entrepreneurs, local government universities, larger businesses and funders ([MIT REAP](#))
- Establish selection criteria for who receives support
- Connect with people at an operational level in larger businesses who understand the ecosystem
- Importance of peer mentoring from experienced people
- Prioritise connectedness, perhaps through a relatively low cost initial approach. Where are the gaps?
- Run more specific meetups, both technical and business related
- Get incubators and accelerators talking together
- Make sure you're sufficiently involved to take the 'pulse' of the community

As we've seen above, startups and startup support activities need the power of our municipalities behind them, to help create the conditions to enable their growth, add value to the traditional business community and build thriving startup ecosystems. Get it right and cities will see their startup communities generate economic growth and jobs, and support the drive to net zero.

In Timișoara, Raluca Cibu-Buza and Mariana Nagy from consultancy Luminspino are supporting the City Hall team to develop the plans for startup boosting in the city. Working closely with stakeholders in the URBACT Local Group, they are using URBACT methodologies and tools such as a Strategy Chessboard to collectively inform the next steps.

All the planning will be collated in an Investment Plan for Timișoara, and similarly for Bielsko-Biała, and Tartu, to ensure that the Good Practice from Bilbao is well applied and underpins future Industry 4.0 adoption across our European cities. Potentially creating a few unicorns in the process!



Raluca Cibu-Buzac explaining how to apply the Strategy Chessboard tool

Authors:

Ceri Batchelder and Alison Partridge
Ad Hoc Experts, AS TRANSFER

Footnote:

In April 2022, the UK's Coalition for a Digital Economy (Coadec), an organisation dedicated to policy on tech startups and scaleups, published "[An introductory guide to how local policymakers can create the right climatic conditions for tech start-ups](#)", for further reference.

Reference:

*See p.46. of Criscuolo, C., P. Gal and C. Menon (2014), "[The Dynamics of Employment Growth: New Evidence from 18 Countries](#)", OECD Science, Technology and Industry Policy Papers, No. 14, OECD Publishing, Paris.

As referenced in "[Differentiating Small Enterprises in the Innovation Economy: Start-ups, new SMEs & other Growth Ventures](#)" - Dr. Phil Budden, Prof. Fiona Murray and Ogbogu Ukuku, MIT Sloan School of Management Working Paper, January 2021.