CTOs & Tech Co-Founders

European Startups and the
Competition over Tech Talent

About us

Etinx is a venture studio that help startups build their product – and their company. We help founders understand what it takes to bring their idea to life.

Then we help them build it.

If we strongly believe that the products that we are helping to build aligns with our values and objectives in Ethical Innovation, we invest in it.

At the same time, we develop high-quality software developer talent from underserved markets through masterclasses and mentorship to sharpen their skills, gain experience, navigate their careers, and become tech leaders. Because we believe that while tech scales operations, people scale people.

Find out more at our website www.etinx.com

We empower the most ambitious startup ecosystems to solve the biggest challenges of our times.

The future tech ecosystem is transnational, driven by entrepreneurs, considerate of externalities and synergetic between all parts of society.

The Startup Heatmap has been mapping and analyzing the development of startup ecosystems since 5 years. The Heatmap platform launched in 2019 and reaches >400,000 readers annually. Our work was featured in leading publications like the New York Times, VentureBeat, Politico, the World Economic Forum Blog and many more. The Startup Ecosystem Accelerator was launched in late 2018 to turn research results into practical insights. In 7 editions over 160 participants have taken part in the multi-week program launching data-driven ecosystem interventions from Helsinki to Chile.

Learn more about us at: www.startupheatmap.com

CTOs & Tech Co-Founders
European Startups and the Competition over Tech Talent

Human talent with digital technology skills is one of the most important economic resources, as the digital transformation has become a central goal for nearly all sectors of society and businesses. Technological startups – new companies seeking to disrupt markets with new, technology-based products, services, and scalable business models – need access to that pool of valuable tech talent in order to thrive.

With a special focus on founders in Europe, we decided to find out more about how startups manage to compete over tech talent. Our guiding questions:

> ➔ Are startups in Europe able to attract the tech talent they need?
> ➔ Can founding teams build on relevant tech skills?
> ➔ What key challenges are startups facing?
> ➔ How skilled are startup founders in Europe?

To find answers, we analyzed the professional profiles of almost 3,000 startup founders from 35 European countries. We complement this data with series of interviews with startup founders and ecosystem builders, who shared their insights on the importance of tech-skills among founding teams.

Combining our findings, we discuss three key challenges for startups:

> ➔ **Challenge 1: Skillset** – What makes a good CTO?
> ➔ **Challenge 2: Cost** – How much does tech talent actually cost?
> ➔ **Challenge 3: Talent Source** – If affordability is an issue, what are some viable options?

Top challenges cited by startups in Europe

Concerns about team building and costs are widespread among startups in Europe.
Source: The Benchmark Report on the European Startup Ecosystems from the EU Startup Monitor.

Tech skills in European startups: The overall situation

We analyzed 2,998 professional profiles of startup founders and co-founders from 35 European countries.

➔ To identify relevant tech skills, we compiled a list of over 30 keywords, such as PHP, JavaScript, .js, Python, CSS, or Machine Learning.

➔ The result is that 1,036 or 34.56% state in their profile to have relevant digital tech skills.

➔ This means that about one third of startup founders possess programming, coding, or software developing skills.

➔ On the other hand, about two thirds of startup founders decide to launch their business without having "deep" digital tech skills.

➔ We classified the profiles by location (country and city).

Surprising result: 9 of the 10 major European startup cities are below the average of 34.56% tech-skilled founders.

➔ In the graph below, the 10 cites with the highest average annual investments in their startup ecosystems are highlighted in orange.

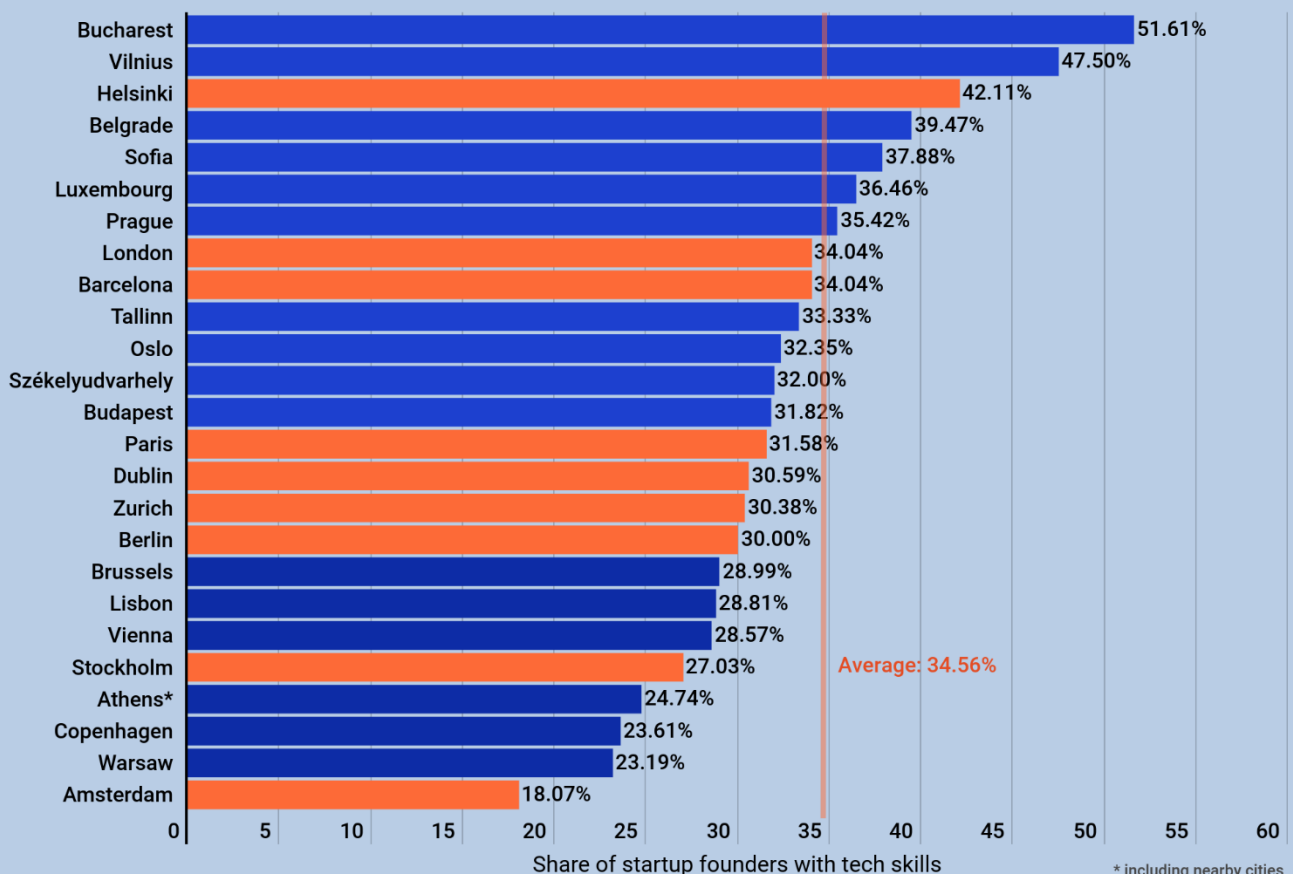➔ Among them, Helsinki is the only city above the average, with 42% tech-skilled startup founders.

34.56%
Of startup founders in Europe have tech skills

«Good tech talent is hard to find and usually expensive.»
Ibrahim Bashir | Founder and CEO
dillali.com | Vilnius

dillali

Top 25 cities: Startup founders with tech skills

City	Share
Bucharest	51.61%
Vilnius	47.50%
Helsinki	42.11%
Belgrade	39.47%
Sofia	37.88%
Luxembourg	36.46%
Prague	35.42%
London	34.04%
Barcelona	34.04%
Tallinn	33.33%
Oslo	32.35%
Székelyudvarhely	32.00%
Budapest	31.82%
Paris	31.58%
Dublin	30.59%
Zurich	30.38%
Berlin	30.00%
Brussels	28.99%
Lisbon	28.81%
Vienna	28.57%
Stockholm	27.03%
Athens*	24.74%
Copenhagen	23.61%
Warsaw	23.19%
Amsterdam	18.07%

Average: 34.56%

Share of startup founders with tech skills

* including nearby cities

Challenge 1: Skillset
What makes a good CTO?

What tech skills matter for startups?

➔ Technological and digital skills required to design and implement scalable, technology-based business models of startups.
➔ Typically, digital skills are required for big data analysis, coding, and software programming.

Why do startups need a good CTO? Many say that the primary reasons are cost effectiveness and gaining credibility with investors in their technical team. This is certainly not wrong but, in our opinion, somewhat a myopic view and a common fallacy in mindset. We believe that good CTOs are not about their technical knowledge – It's "hygiene" to be a CTO.

A good CTO in our definition also has a strong business acumen. This is a unicorn, not a horse for you to make work for you. A good CTO is one that enables your business model with technology. An awesome CTO is one that envisions a future business model – not yet enabled – but has a very real sense of how and works with you to make it reality.

A good tech co-founder is like any good co-founder – someone who aligns with you in purpose, vision, values, and chemistry. More importantly, they're a person who gets stuff done. Building a startup is going to be one rocky boat. Who do you want with you when you're trying not to drown?

«CTOs can save you time by saying "it only works like that in sci-fi movies" or "adding a messenger to the app will cost us extra 100K, do we really need it?"»

Olga Pantchenko |Founder and Ecosystem Builder Wiyo | Amsterdam

What makes a good CTO: What do founder say?

|	
What makes a good CTO or tech co-founder?	➔ Must be a team player. ➔ Needs leadership and management skills with great communication. ➔ Must understand the technology and be able to build the pilot. ➔ A sparring partner who can provide an instant reality check. ➔ Must be able to see things not just from a technical perspective, but from a pragmatic point of view.
They have an important role in product development.	➔ Saves time and money during MVP development. ➔ Startups with a good CTO make better progress. ➔ A tech co-founder sets expectations and helps plan an effective product development. ➔ Without a tech co-founder, startups might need to hire external software companies.
You need a CTO to convince investors.	➔ Investors prefer startups with tech co-founders.

Challenge 2: Cost
How much does tech talent actually cost?

With tech skills in high demand in corporations, fast-growing tech companies, and even the public sector, startup founders face an immense challenge to compete and ensure to have the right talent available. To ensure technical feasibility, validate business models and complete their MVP, startup founders tend to have a great advantage if they can rely on a good CTO or tech-skilled co-founders.

A digital skills gap?

The demand for digital technology professionals has grown by 4% annually in the

Share of STEM graduates

Percentage of graduates from STEM programs in tertiary education (2018 or latest; no data available for China). UNESCO, 2018.

past decade. Europe is in a good position to meet that demand: It has a higher share of graduates from STEM university programs than the US and is home to top computer science departments. Yet many businesses struggle to hire digital experts.
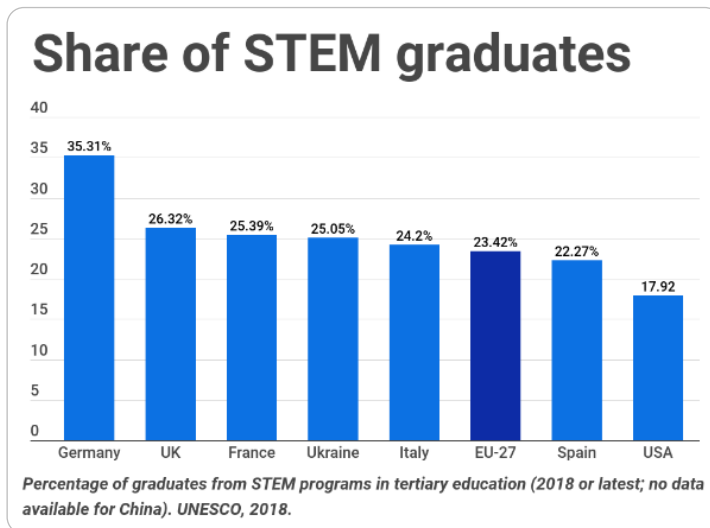
"Good tech talent is hard to find and expensive"

The job market for people with digital developing skills is very competitive. The European Commission found that 53% of companies looking for ICT specialists report difficulties. Consequently, salaries for software engineers are high, making it hard for early-stage startups with tight budgets and short runways to hire and keep them. This is even more evident in the main European startup hubs, where high investments and expanding businesses drive the demand of tech talent.

«Because of the demand for technically skilled founders, one of my tech co-founders was poached by a weapons company for 10x the salary and price. No startup can afford to pay that much and still run their operations.»

Ina von Turow | Founder and CEO FNDR | London

FNDR

«We had the good luck to have a tech co-founder on board who was able to guide us during the first steps. It is easier to complete an MVP in a cost-effective way and to avoid unnecessary traps consuming money, team energy, and time.»

Sandor Bekasi | Co-Founder & CPO Fitpuli Digital Health | Budapest

Fitpuli

Salary levels for software engineers
In the ten largest European startup hubs

Median salary for software engineers

| 25k € | 50k € | 75k € | 90k € |

Having a tech-skilled team member among the founders of a startup can significantly reduce costs, especially in the early stage. Our interview partners confirmed that there is a fierce competition over tech talent, making it hard for startups to attract tech talent.

What do founders say about the costs of tech talent?

Having a tech-killed co-founder saves money and time.	➔ You don't waste time on exploring business opportunities with the idea that is technically not feasible. ➔ You don't waste time on building the wrong product. ➔ A tech co-founder enables the team to rapidly develop and test a product in the market. ➔ Having a tech co-founder is cheaper and faster than outsourcing product development.
There is an affordability challenge due to a competitive job market for tech talent.	➔ The demand for tech talent and people has grown exponentially. ➔ Startups experience "talent poaching", where team members get enticed to join established companies with higher salaries. Retaining the best people is often challenging. ➔ Startups, especially at early stage, do not have the money to compete with larger companies on salaries.

«A key benefit of having a good tech co-founder is owning the IP at the founder's level. This guarantees that key tech knowledge is retained and understood by the startup.»

Pedro Castro Henriques
CEO, Co-Founder & DPO | Strongstep | Porto

«The ideal tech co-founder has good tech skills, promotes a product-driven company, knows and keeps learning about all tools available and good for us, experiments a lot, does lots of user experience, listens to their feedback, and is also business-minded.»

Beatrice Zatorska | CEO & Cofounder
Smart Tribe | London

Challenge 3: Talent Source
If affordability is an issue, what are some viable options?

Startups know about the importance of having a tech co-founder in the team. Looking at the number of professional software developers in Europe, it is evident that there is a sizable talent pool available.

Europe´s tech talent pool

Number of professional developers by city

100.000   200.000   300.000   400.000   500.000

*Source: Atomico, State of European Tech 2019*

Attracting this existent and growing tech talent pool across Europe to join their teams is difficult due to the affordability challenge. It would therefore make sense to aim at widening the audience.

Diversity & inclusion: Startups and their supporting ecosystems can seek to tap into an underused talent pool or improve inclusion of groups who are less represented:

➔ 34.56% of startup founders in Europe have tech skills. Among them, only 32.1% are women.

➔ There are two factors at play: The share of women with tech skills is lower than that of men (evident in the lower share of female STEM graduates, or in the fact that only about 18% of ICT specialists in the EU are women), and only 15.5% of startup founders are female (see also our report on "Women Entrepreneurs in Europe").

➔ There is a missed opportunity: Increasing the number and share of female founders with tech skills will help startups to improve access to needed tech talent.

Gender Mix
Among Tech-Skilled Startup Founders

Female 32.1%

Male 67.9%
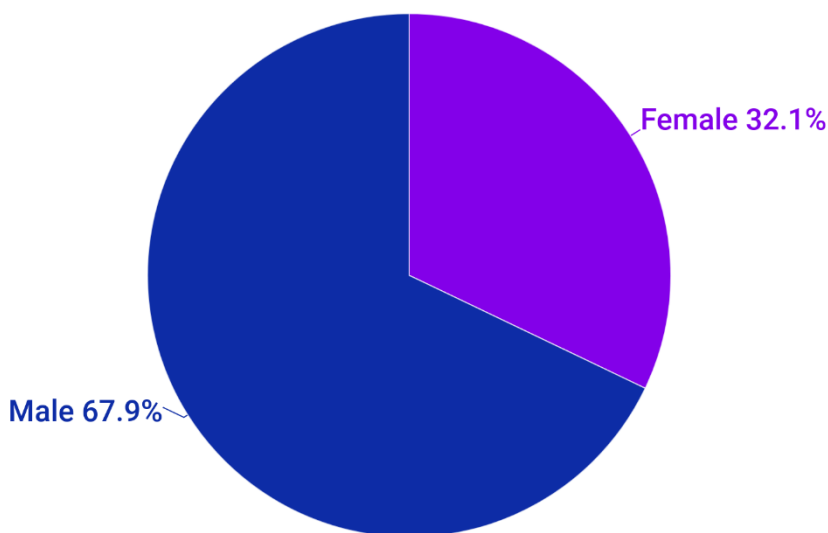
% of female startup founders with tech skills	
Bulgaria	33.33%
Finland	31.58%
Turkey	27.27%
Estonia	27.27%
Belgium	23.53%
Germany	23.53%
Ireland	23.08%
Luxembourg	22.73%
Italy	22.22%
Ukraine	21.74%
United Kingdom	20.83%
Netherlands	20.59%
Romania, Switzerland, France, Spain, Norway, Hungary	15-20%
Austria, Sweden, Israel, Denmark, Greece, Poland, Portugal	5-15%
Slovakia, Lithuania, Czech Republic	<5%

«In the majority of our investment at Seed Camp, we see startups with a technical founder in the founding team.»

Natasha Lytton | Head of Brand & Marketing | Seedcamp | London

Seedcamp

«Ecosystems can organize mentorship programs to support girls and women in their career transition to IT.»

Uldis Žeidurs | Geek Officer Startup Wise Guys

STARTUP WISE GUYS

Concluding thoughts

What does our research tell us and what can we do about it?

34.56%

Of startup founders in Europe have tech skills

➔ Tech startups need digital skills.
➔ Overall, only a third of founders have relevant tech skills.
➔ Our data suggests that some leading European startup hubs are witnessing a shortage of tech talent.
➔ Startups are at a disadvantage, given a very competitive market of tech-skilled people.
➔ Improving skill sets and numbers of female startup founders is a huge opportunity for startup ecosystems.

Against this background, founders seem to have the following options:

A.	Go "Co-founder-Tinder" and hope somebody will work 'for free' in return for equity in your great idea.
B.	Outsource.
C.	Raise some money and hire a CTO.
D.	Learn some coding yourself and hopefully that's enough to get to where you need to be.

None of these are invalid or bad choices, though certainly they come with pros and cons. The question is your situation, and your strengths and weaknesses. In a nutshell, it's a question of strategy. What typically determines whether it's a good or bad strategy though is whether or not you can execute – more often than not, it's a question of what you can execute *Better* compared to the options.

So – Are these your only options?

Etinx, co-author of this report, is a transnational venture studio that help startups develop their product and build their company. They shared with us their simplified worldview of the innovation entities in the startup ecosystem, based on what the entities offer startups:

«Traditional outsourcing is not a long-term solution for a startup. Working with a venture studio like Etinx provides startups with the strategic and technical know-how that they may lack in their early stages. »

Gianpaolo De Biase | Founder
Etinx | Rome

etinx
Ethical Innovation

	no funding	funding
Product Development	Example: • Outsourcing houses • Freelance development	Example: • Venture studio/builder
Mentorship/ Network / office services	Example:: • Incubator	Example:: • Accelerator
Entrepreneurship Program	Example: • Innovation programs • Ideation validation workshops • Academic exercises	Example: • Venture studio/builder • Incubator
No services or network support	*A very lonely and hard place for an entrepreneur!*	Example: • Venture capital • Angel investors

Based on this view, Etinx firmly set up their principles to develop an Option E:

➔ Create a venture studio that not just advises – but builds.
➔ Create a venture fund that invests consciously and ethically, instead of taking a spray-paint approach.
➔ Create a coding academy that builds relevant experience, not just develop skills.

**9 of the top 10** major European startup cities have a **below-average** share of **tech-skilled founders**

In essence, Etinx provides startups with tech talent and co-invests in their selected startups. As an example: Etinx offers to build an MVP for which 1/2 or 2/3 of the costs may be paid in equity, and the rest in cash. They strongly believe that traditional outsourcing is not a long-term solution for a startup. At the same time, they seek founders who reflect strong commitment to their own ideas.

In this manner, Etinx's relationship with startups does not stop at building the product; they provide a CTO co-founder. Passionate about facilitating entrepreneurship, Etinx fill in the shoes of your "sparring partner," and will deliberate your go-to market strategy and circulate the startups they work with to their network of investors for potential future investments.

«Having a tech co-founder helps in getting funding for the startup because investors look for startups with tech co-founders.»

Ovidiu Stan | Program Manager Innovation Labs | Cluj-Napoca
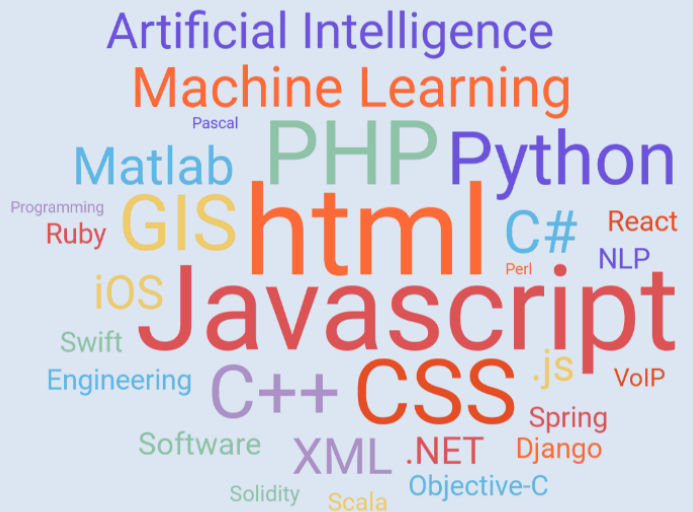
Technology that enables the business model

Founder Gianpaolo De Biase has developed over 20 ventures over 17 years of experience around the world and leads the senior leadership team based in Silicon Valley, Italy, and Australia. Together with his senior team, they work towards not only solving a startup´s technological problem, but also strategize on how the technology would enable the business model.

A venture studio with a social impact mission, Etinx also seeks to provide software developers from underserved communities with opportunities to work with innovative startups. They pair these software developers with their own highly experienced CTOs, so that together they form the tech team that the startup needs.

32.1%
of tech-skilled startup founders are women

Gianpaolo strongly believes in the need to create access to better, "cooler" opportunities for aspiring coders from underserved communities. At the same time, there's a great hunt for talent in the tech sector with high demand for skills in many of the world's tech hubs. Etinx brings these two needs together.

CTOs & Tech Co-Founders: European Startups and the Competition over Tech Talent

Again, none of the above are bad choices. Our key message is: Explore your options – there are many, and do not be discouraged. We hope this report gives founders, aspiring founders, and their supporting ecosystems a good overview on how they may master the competition over tech talent – which is only one of the more difficult challenges in building a startup.

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Join major European cities in our Ecosystem Data Club and get quarterly insights on your ecosystem to identify data points to inspire your brand story or prepare for answers on weak spots.

- Quarterly "Signals"-Report with all relevant data on investments, tech trends, job growth, international connections, local ecosystem activities and brand visibility, etc.
- Joint analytics team to maintain continuous monitoring and execute specific on-demand analysis
- Quarterly calls with community of peers to advance understanding of ecosystem trajectories
- Quarterly development of data-driven marketing material in form of social media bits including data visualizations as well as embeddable graphs for your website
- Access to ecosystem data experts when you need quick answers
- Annual analysis of survey data on reputation and connectivity of your hub among founders

Contact us: info@europeanstartupinitiative.eu