

THE STATE OF EUROPEAN TECH

2016 EDITION

CONTENTS

- 1. EXECUTIVE SUMMARY**
- 2. WHO WE ARE**
- 3. REPORT PARTNERS**
- 4. A WORD ON THE REPORT**
- 5. TALENT**
- 6. TECH COMMUNITY**
- 7. CAPITAL FLOWS**
- 8. DEEP TECH**
- 9. CORPORATE EUROPE AWAKENS**
- 10. THE FUTURE**
- 11. FINAL THOUGHTS**

I. EXECUTIVE SUMMARY

Europe's tech ecosystem is ready. We have strong, established, tech hubs from London and Paris to Berlin, Stockholm and Helsinki — but we're now seeing talented European entrepreneurs building companies across European cities, even in places that might surprise you. This proliferation of talent, entrepreneurship, and ambition has sparked deep engagement in regions where there was previously only a minor tech presence. As it turns out, **Europe has many more developers than anyone thought**, and they are increasingly engaging with entrepreneurs or becoming entrepreneurs themselves.

While we might see a poor funding quarter here or there, the overarching trend in venture financing is a positive one: **deal volume and capital inflows remain at record levels in Europe** across major tech hubs as well as promising new hubs. Keep an eye on Munich, Zurich, Copenhagen and Lisbon for the next generation of innovators and disruptors. **Paris seems to be hitting its groove**, now seriously challenging the primacy of London and Berlin in VC capital invested and deal volume.

Much like the broader engagement across Europe, we are also seeing a **European renaissance of deep technology capabilities and innovation**. Innovators from across the world are turning to European excellence in artificial intelligence, Internet of Things, virtual and augmented reality, cryptography, robots and so on, to solve some of the world's hardest problems. This is attracting global interest in Europe's tech talent, but also in M&A. In November 2016 alone, Facebook and Google announced major expansions of their European engineering centres specifically citing the highly skilled talent found in the region.

As our tech ecosystem matures, European companies are growing and hitting new records: SAP reached a \$100 billion valuation, Softbank recently acquired ARM for \$32 billion, Tencent bought Supercell for over \$10 billion [making the Helsinki-based game maker Europe's first privately-owned decacorn]. And let us not forget the biggest deal of them all (making European history books!): NXP Semiconductors, a chip maker from The Netherlands, was bought by Qualcomm at a deal valued at \$47 billion. **Over the past 12 months, European deep tech has seen M&A deals worth \$88 billion.** Some may query the relevance of these larger deals to the early stage companies of today, **but these giants inspire and encourage the next generations of startups to succeed.**

This list of achievements would be great news for European tech in any given year, but for it all to happen in 2016 — let's all agree that this hasn't been any ordinary year — is particularly impressive. While Britain has not yet left the European Union, the associated uncertainty and potential political ramifications of a Brexit threatens our blossoming tech ecosystems. Nevertheless, entrepreneurs seem to be taking these risks in their stride, remaining optimistic and making ambitious plans for the future. *Meetup* shows us that there's been a major boost in tech-related networking events in Bucharest, Lisbon and Prague. Entrepreneurs are sharing their knowledge and experience, while skilled talent isn't just following the money — it's following other skilled workers to cities like Hamburg, Tallinn and Warsaw.

European tech presents an opportunity that's sparked interest from investors as well as an increasingly broad front of traditional and family-owned businesses. They're now actively engaging with so-called disruptors, acquiring the latest tech businesses in order to boost their own innovation

chops and to ensure they're one step ahead of their nimble challengers. **In fact, two thirds of Europe's largest corporations by market capital have invested in at least one tech company, while one third has acquired a tech business since 2015.** For example, German supermarket chain Lidl bought online grocery delivery service Kochzauber back in November 2015 in order to compete with ecommerce rival Amazon Fresh. This shows an awakening that will hopefully have a meaningful impact on the trajectory of traditional European enterprise, our tech ecosystem, as well as Europe's economy as a whole. **If these slumbering giants can fire up their innovation engines** — incorporating their centuries of experience, massive treasure troves of data, and vast customer bases — **tech ecosystems the world over could be in for a surprise.**

There are still areas for improvement: **we have failed to bridge the late-stage funding gap between Europe and the US**, and there's still a debate around whether European companies are selling too early in their lifecycles. **We're not putting enough effort into encouraging women into tech**, as entrepreneurs, developers and executives — or into supporting women in leadership roles. 80% of the companies that raise money in Europe were founded by an entirely-male team.

Risk aversion here remains high, and **pension funds are still unwilling to inject large amounts of capital into European tech.** Weighted for GDP, the funding gap between Europe and the US is equivalent to \$25.lbn, and is most apparent at later stages. Meanwhile, European pension funds manage just under \$4.1 trillion dollars, meaning that allocating just 0.6% of their resources to European tech would close this funding gap. If we want to build world-beating \$100B companies over the next decade, we need to correct that.

We hope that you'll find the insights in this report useful, however you may (or may not) be involved in Europe's vibrant tech scene! The positive trends we've identified and the challenges we've acknowledged should feed into a broader conversation around European tech, and have only served to reinforce our belief that **now is the best time in history to be an entrepreneur in Europe.**

Mattias Ljungman

Co-founder & Partner
Atomico



Marianne Vikkula

CEO
Slush



ATOMICO

Atomico is an international investment firm, focused on helping the world's most disruptive technology companies scale and become global leaders. Founded in 2006, Atomico has made over 75 investments with a particular focus on Europe – including Supercell and Klarna. Atomico's team of investors and advisors includes founders of six billion dollar companies, and operational leaders who were responsible for global expansion, hiring, user growth and marketing at companies from Skype and Google to Uber, Facebook and Spotify.

SLUSH

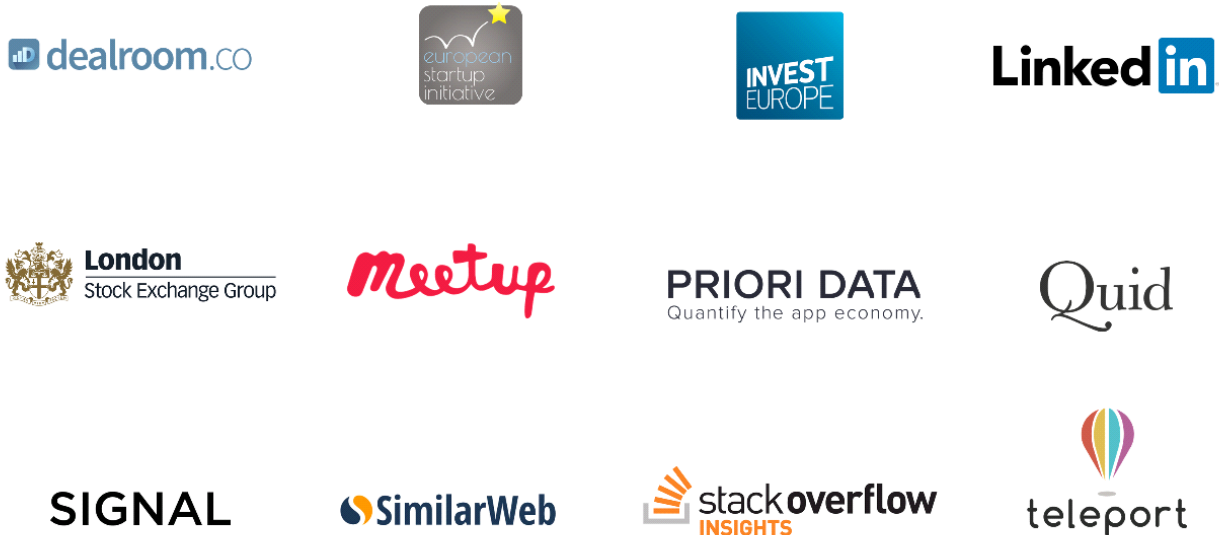
Slush is a non-profit student-led movement encouraging the next generation of founders forward. In 2016, Slush organized close to 40 events globally with more than 40,000 participants. The biggest events take place in Helsinki, Shanghai, Singapore and Tokyo. In 2016, the event in Helsinki brought together more than 15,000 attendees from 120 countries. Despite having grown from a 300-person assembly in 2008 to a world-renowned event, the philosophy behind Slush has remained the same: to help the next generation of great, world-conquering companies forward.





3. REPORT PARTNERS

OUR DATA PARTNERS



OUR DISTRIBUTION PARTNERS



4. A WORD ON THE REPORT

We're excited to share the second edition of The State of European Tech report with you all, and hope you'll find it to be a useful data-driven snapshot of Europe's tech ecosystem.

We've been ambitious in the data partners we've asked to work with this year — companies like LinkedIn, Meetup, Stack Overflow, Dealroom.co, the London Stock Exchange, to name a few, so that we can get both a bird's eye view of the European tech scene, as well as a deep dive into the granular details.

For instance, we looked to LinkedIn and Stack Overflow to answer our questions around skilled talent in Europe: where is it coming from and where is it going? Where do engineers want to live, and what cities are emerging as new talent hubs?

Like last year, we also sent out a survey to supplement our fact-finding data with some qualitative analysis. Our survey was conducted in September — October 2016 and we received responses from over 1,500 European founders, investors, tech employees and influencers. You can find the key insights from this community throughout the report.

You'll also find quotes from experts and influencers in the tech space, in each chapter of the report. This year, we focussed on interviewing the most plugged in techies that are talking about European tech — from software developers, to entrepreneurs, politicians, executives and investors.

Our data guides many of the editorial decisions we've made this year. For example, the breadth of statistics around the growth of deep tech in Europe enabled us to dedicate an entire chapter to the trend. However, we're aware that it's possible for personal bias to influence research projects, which is why we're dedicated to transparency this year. We will be sharing as much of our data as possible, so that you can see which figures have informed our editorial and content decisions. Unfortunately, due to commercial considerations and privacy protections with a few of our data partners, we cannot release our entire data set, but will look to improve this year on year.

We hope that this report inspires a number of much-needed conversations around the challenges and risk that Europe's tech ecosystem faces. We'll focus on creating an annual analysis that grows in depth and breadth each year, challenging assumptions while remaining underpinned by the strongest data we can get our hands on.











Reference it as needed, and feel free to build on our data as you see fit. Your insights, feedback and conclusions will be critical. Have we measured the right things? What have we missed? What, and who, would you like to see featured in next year's report? Please use our data in new and interesting ways, and let us know what you find. Write to us on Twitter, using the hashtag #InventedHere and enable us to continue the conversation!

5. TALENT

5 OF WORLD'S TOP 10 COMPUTER SCIENCE INSTITUTIONS ARE EUROPEAN

Europe's tech ecosystem is underpinned by world-class academic institutions

Global ranking of top-rated European Computer Science institutions

Global Rank	Institution	City	Example of Founder Alumni
1	 ETH ETH	Zurich	Georg Polzer, Teralytics
3	 Oxford	Oxford	Eamon Jubbawy, Onfido
7	 Imperial College London	London	Kiryl Trembovolski, Behavox
8	 EPFL	Lausanne	Daniel Yannis, Checkr
9	 TU Munich	Munich	Daniel Wiegand, Lilium Aviation
12	 UCL	London	Demis Hassabis, DeepMind
16	 Edinburgh	Edinburgh	Dr. Edward Challis, re:infer
26	 Karlsruhe Institute of Technology	Karlsruhe	Jodok Batlogg, Crate.io
29	 RWTH Aachen	Aachen	Oliver Thylmann, Giant Swarm
34	 École Polytechnique	Paris	Laurent Perrin, Front

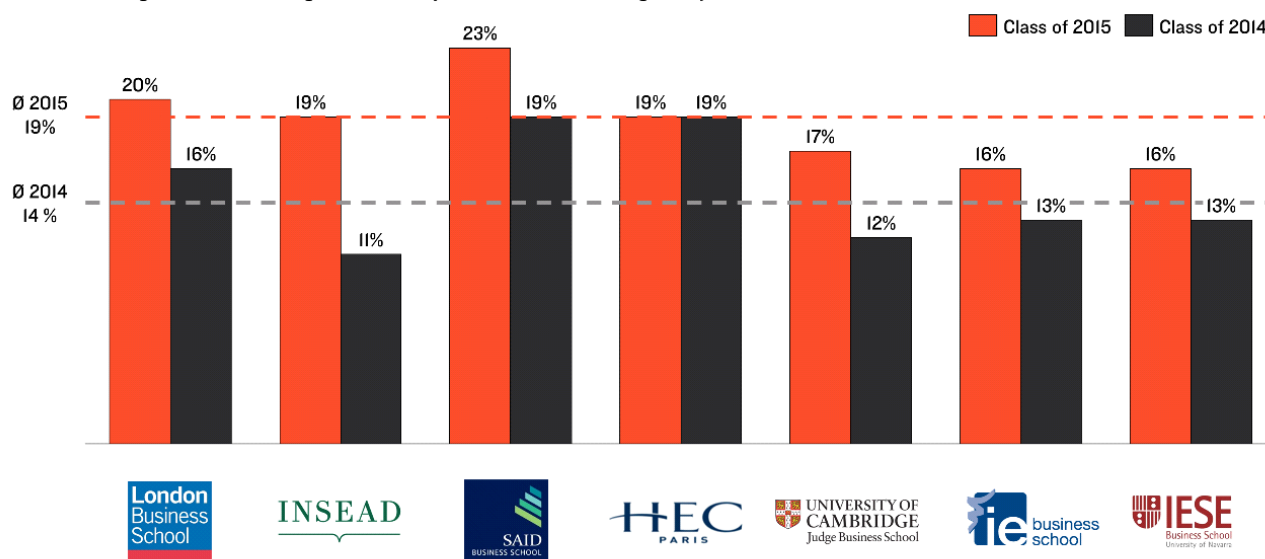
Note: Other European Institutes in the Top 50 Times Higher Education World University Rankings for Computer Science include Delft University of Technology, TU Berlin, École Normale Supérieure, Lomonosov Moscow State University, Vienna University of Technology, University of Manchester and University of Freiburg. University of Cambridge not covered by the Times Higher Education methodology.

Source: Times Higher Education World University Rankings for Computer Science 2016-2017, Atomico research

BUSINESS-MINDED TALENT IS ENTERING TECH TO HELP SCALE COMPANIES

One in five MBA graduates from top-ranked business schools are now entering tech

% of MBA graduates entering tech industry from selected leading European business schools



Source: Atomico research, Business School MBA Graduate Employment Reports

IT TURNS OUT THAT EUROPE HAS MORE PROFESSIONAL DEVELOPERS THAN ANYONE THOUGHT

There are more professional developers in Europe than the US, according to Stack Overflow Insights

According to Stack Overflow Insights, there are **4.7M professional developers in Europe** today, versus 4.1M in the US

SPOTLIGHT ON METHODOLOGY

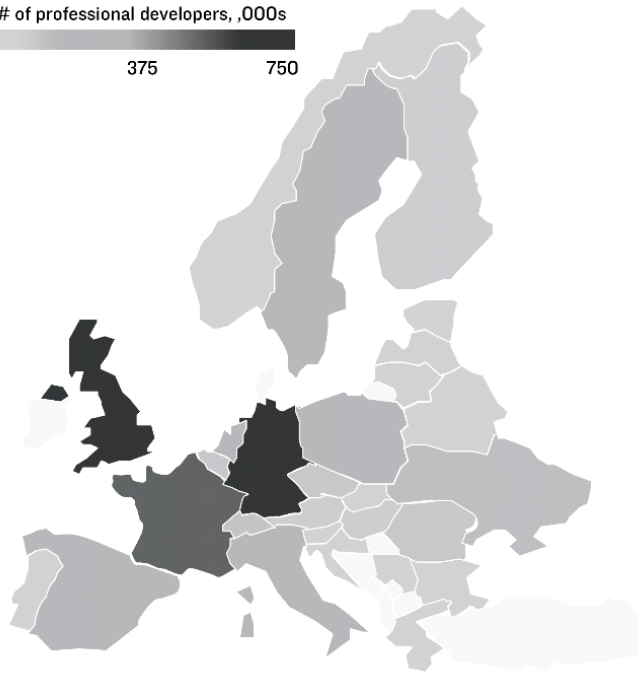
As a result of Stack Overflow Insights fine-tuning their data analysis platform, we can reveal there are actually an even larger number of developers in the world than reported in 2015. For more information visit: <https://stackoverflow.blog/engineering/>

Note: There are also 320,000 professional developers in Russia not displayed on map.

Source:  stackoverflow insights

18 Slush & Atomico | The State of European Tech

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5 375 750



#InventedHere

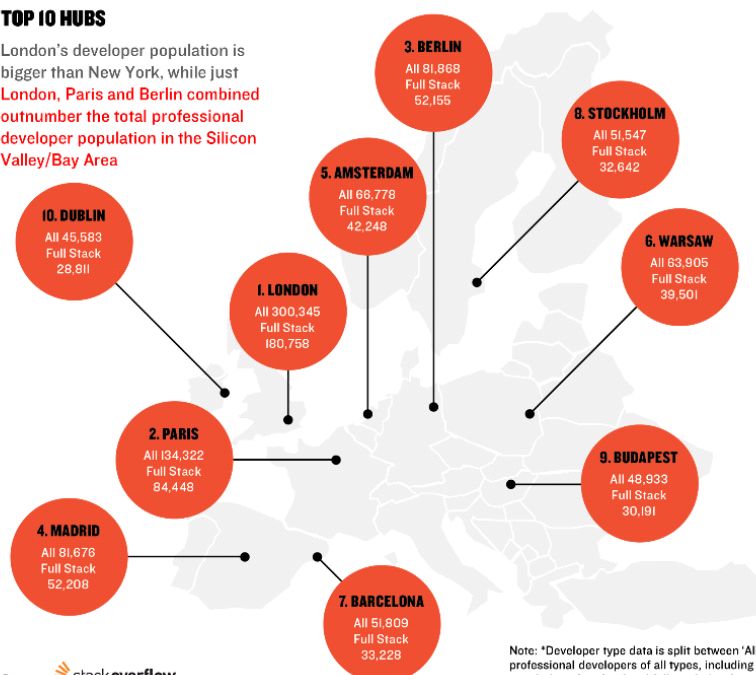
November 2016

DEVELOPERS ARE CLUSTERED IN HUBS ACROSS THE REGION

Europe's professional developer population, by hub and developer type

TOP 10 HUBS

London's developer population is bigger than New York, while just London, Paris and Berlin combined outnumber the total professional developer population in the Silicon Valley/Bay Area



Source:  stackoverflow insights

TOP 11-20 HUBS

RANK	CITY	DEVELOPERS	
		ALL	FULL STACK
11	Vienna	42,166	25,344
12	Prague	41,848	26,237
13	Zürich	39,623	22,552
14	Milan	39,114	23,613
15	Copenhagen	39,008	23,802
16	Oslo	31,292	19,186
17	Helsinki	29,208	18,162
18	Lisbon	28,292	17,598
19	Brussels	26,635	16,662
20	Cambridge	14,536	8,068

US COMPARISON	DEVELOPERS	
	ALL	FULL STACK
Silicon Valley / Bay Area	564,899	330,585
New York	250,448	151,182

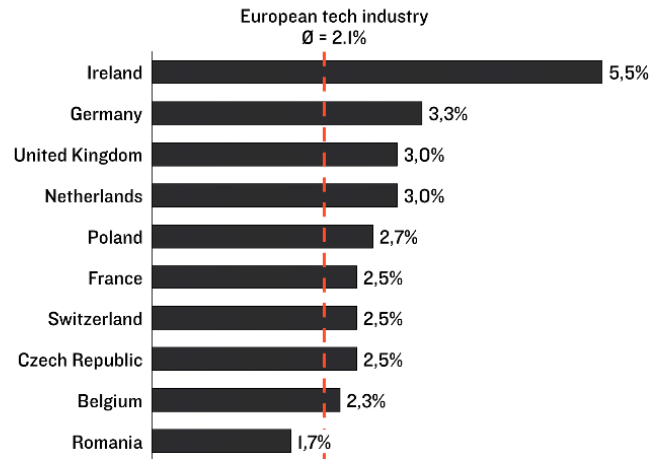
Note: "Developer type data is split between 'All' developers and 'Full Stack' developers. 'All' refers to the total sum of all professional developers of all types, including mobile, full-stack, back-end and front-end developers. 'Full Stack' refers to the population of professional full stack developers only

TECH IS CREATING JOBS FASTER THAN OTHER INDUSTRIES

LinkedIn study of European tech industry workforce growth in 2016 versus 2015

Tech industry is driving employment across Europe

Top 10 fastest growing tech worker populations, 2015 to 2016



For comparison, the European Commission's **forecast for total Employment Growth is 1.0% in 2016** for EU-28

SPOTLIGHT ON METHODOLOGY

- For the purpose of this analysis, LinkedIn created a pool of LinkedIn members for analysis to enable a comparison of professionals working in the European tech industry on 1 July 2016 and those working in the industry on 1 July 2015
- Using this analysis, a 'Joiner' is defined as a member who did not work in tech-software in 2015 but did so in 2016, while a 'Leaver' is defined as a member who did work in tech-software in 2015 but did not in 2016

Note: According to LinkedIn's classification, the 'tech (software)' industry is composed of workers from the following sub-categories: information services, information technology and services, internet, e-learning, computer software, computer and network security, computer games. Any LinkedIn member that indicates that they work for a company that classifies itself as tech is then included as tech industry worker. For the purpose of clarity, 'the term 'tech industry' is used in place of 'tech (software)' industry.

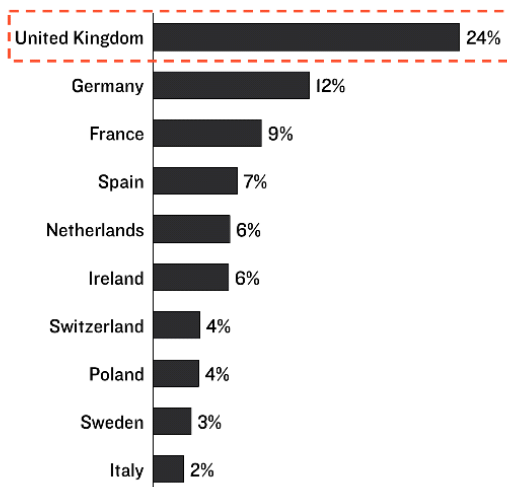
Source: [LinkedIn](#). Overall European employment growth from European Commission, European Economic Forecast, Winter 2016

UK IS THE #1 DESTINATION FOR INTERNATIONAL TECH TALENT...

Destination of workers in European tech industry that moved countries for their most recent job

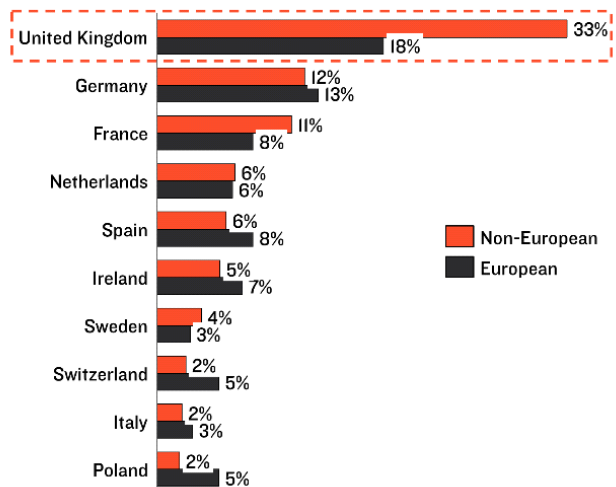
1/4 of all talent moving into Europe is destined for the UK...

Top 10 destinations for all international migrants* into European tech industry (blended across migrants from non-European and European sources)



...and is the #1 destination for talent from inside & outside Europe

Top 10 destinations for non- and intra-European migrants into European tech industry (split by migrants from non-European and European sources)



*Definition: A tech migrant is someone who is now working in the European tech industry, which is the primary employment they have and is listed as their most recently started employment, and who has come from a different country from the one they are working in now.

Note: For the purpose of clarity, the term 'tech industry' is used in place of 'tech (software)' industry on all slides referencing LinkedIn data.

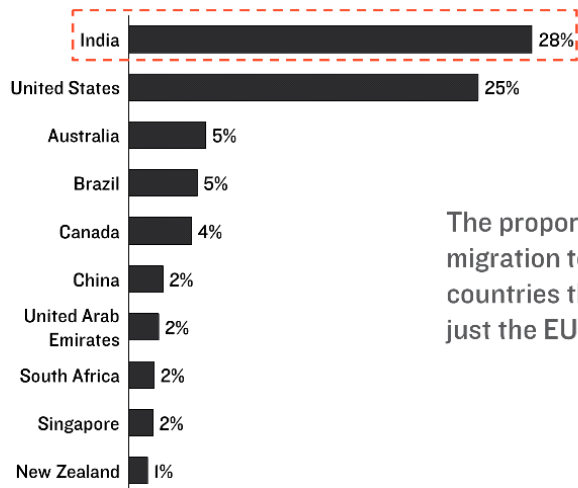
Source: [LinkedIn](#)

...AND THE UK IS ALSO EUROPE'S #1 SOURCE OF 'MOBILE' TECH TALENT

Sources of workers in European tech industry that moved countries for their most recent job

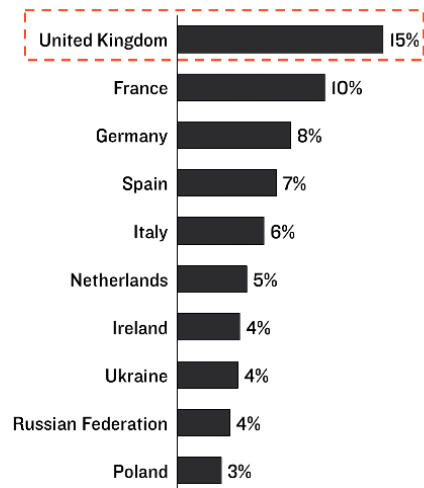
India & US account for >50% of all tech talent migrating into Europe from outside the region...

Top 10 non-European source countries for non-European migrants into European tech industry



...while the UK, interestingly, is a clear leader as largest source of intra-European tech-migrants

Top 10 European source countries for intra-European migrants within European tech industry



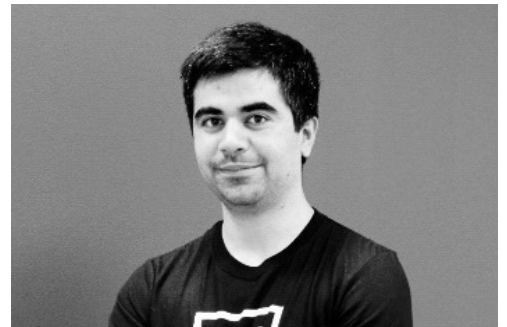
The proportion of inward migration to European countries that comes from just the EU-28 is 46.2%

Note: For the purpose of clarity, the term 'tech industry' is used in place of 'tech (software) industry' on all slides referencing LinkedIn data.
Source: [LinkedIn](#)

IN THEIR OWN WORDS

Herman Narula, Co-founder & CEO, Improbable

“Continuing to develop excellence in tech education, to create a larger and higher-quality talent pool, and making it easier for European startups to bring over the best talents from elsewhere are all important. But European startups need to have globally significant missions that inspire candidates to look beyond the spending power of major players, in Europe and elsewhere.”



Frédéric Mazzella, Founder, BlaBlaCar

“Our greatest strength has been the number and quality of our engineering schools. We have people who are very well educated and loyal. We have a real competitive advantage here compared to the US because in France you don’t overpay for people who will leave your company in 12 months because they get offered a better salary at the startup next door.”

Kathryn Mane, Managing Director, Horsley Bridge

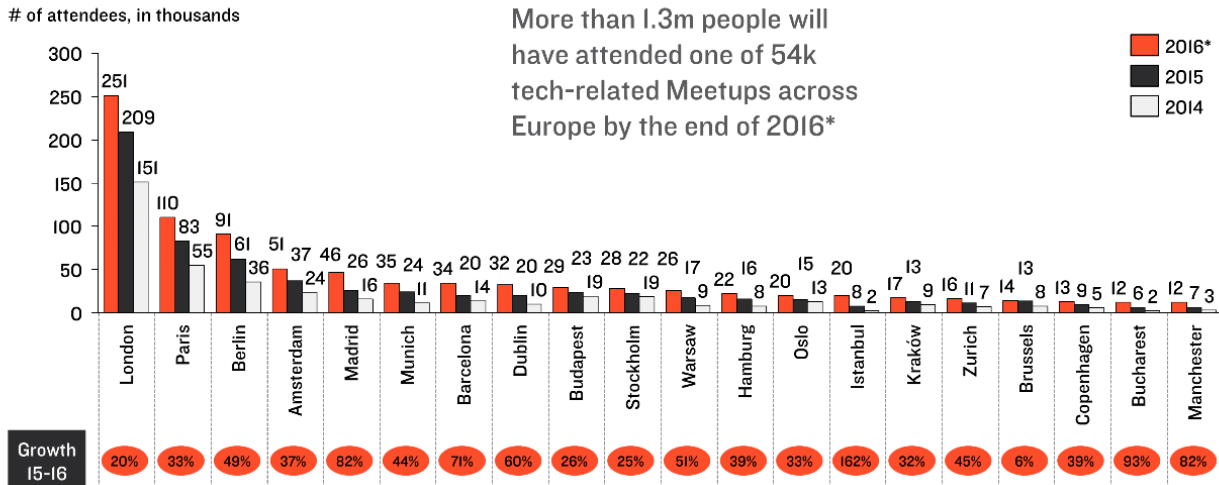
“The ecosystems here in Europe are developing really positively, and one of the most encouraging things is to see that really great talent, particularly young talent, wants to be part of the technology wave.”



6. TECH COMMUNITY

EUROPE'S TECH COMMUNITIES ARE GOING FROM STRENGTH TO STRENGTH

Top 20 hubs with tech-related Meetup communities in 2016, ranked by # of RSVPs at Meetup events

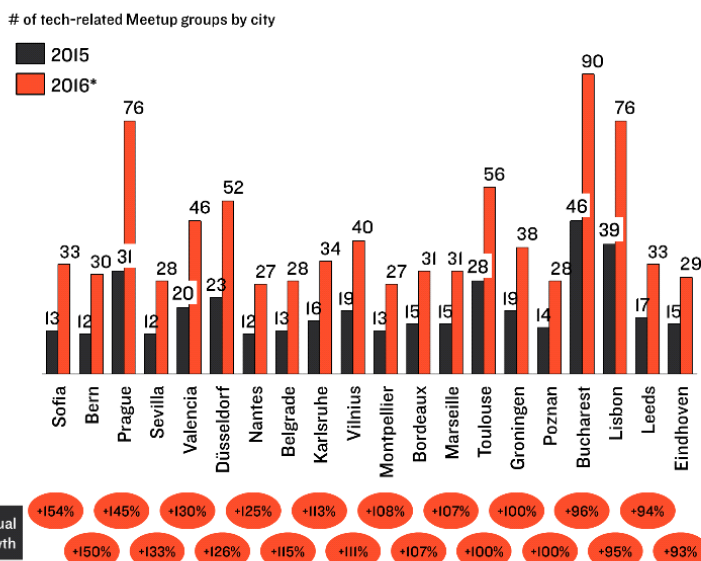


Source: * 2016 annualised for rest of year from July 2016

THERE IS A BOOM IN COMMUNITY ENGAGEMENT OUTSIDE THE TOP HUBS

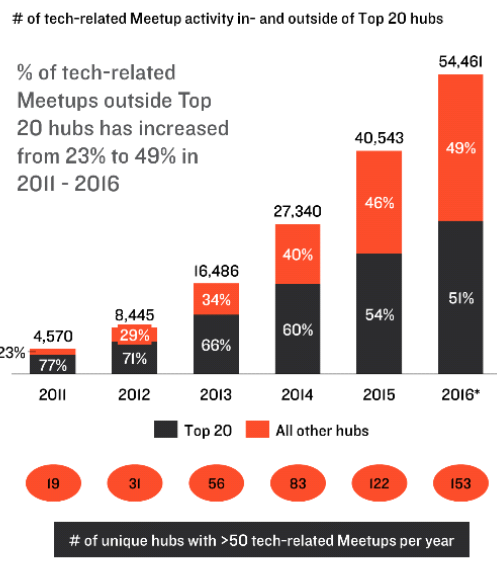
There are now 153 unique hubs with >50 tech-related Meetups per year (versus 19 in 2011)

Tech communities are flourishing all across Europe, including in many surprising locations



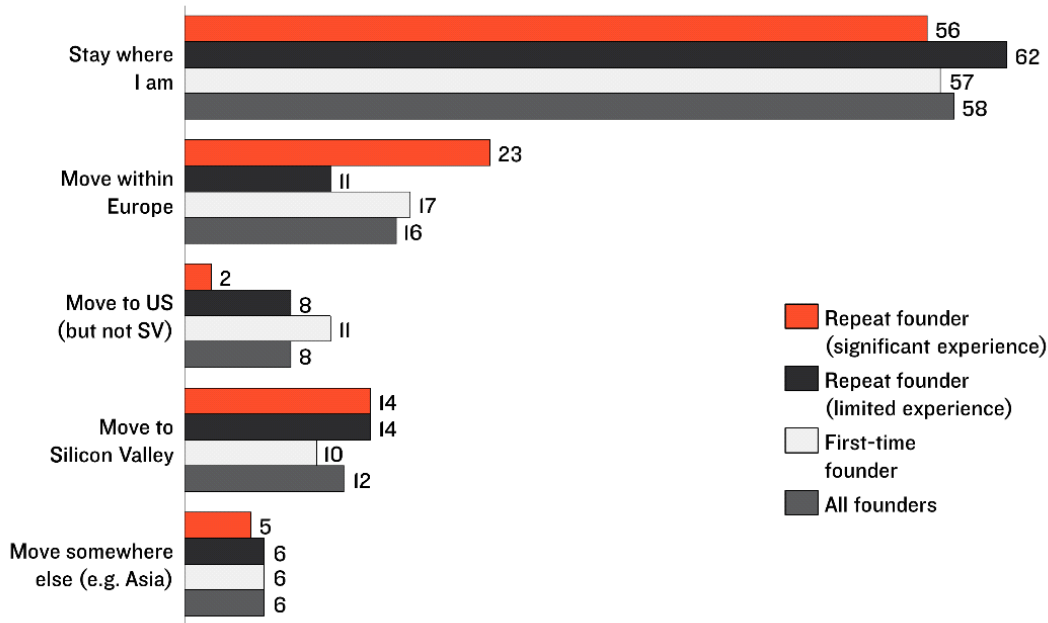
Source: * 2016 annualised for rest of year from July 2016

A growing share of all tech-related Meetup activity is happening outside the region's core hubs



MOST EUROPEAN FOUNDERS WANT TO BUILD FROM HOME

Q. If you were to start over, where would you choose to found and build your company?

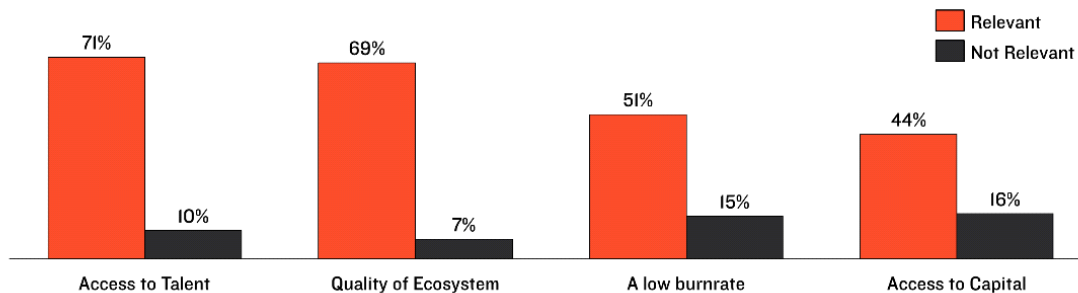


Source: Slush & Atomico Survey

FOUNDERS THAT MOVE FOLLOW THE TALENT, NOT THE MONEY

Entrepreneurs prioritize access to talent and a quality ecosystem above access to capital

Access to talent and a high quality ecosystem are key motivations behind founder mobility



- Access to capital was considered least important, a reasonable explanation is that the access to capital is not crucially linked to the location, as it is more mobile and can be more easily acquired by a startup across large distances and borders
- Access to talent and quality of ecosystem are the most important factors driving founder mobility. Entrepreneurs therefore don't have to follow the money if they can make sure that the money comes to them

Note: *The Startup Heatmap Europe (<http://www.startupheatmap.eu>) study is based on a survey of European founders asking them about their location preferences and mobility choices. The dataset included 702 responses collected from November 2015 until March 2016. The numbers do not even out due to the positive impact of migration into Europe from third countries, which leads to an overall surplus for the whole of Europe.

Source:  Startup Heatmap Europe, <http://www.startupheatmap.eu/>

IN THEIR OWN WORDS

Anna Ottosson, CEO & Co-founder, Greta

"In Sweden, a lot of people who don't have any previous startup experience find it difficult to get their foot in the door. In many ways it is a pretty closed ecosystem — until you're in. Once you become a part of it, there is a great willingness to share experiences and information amongst founders and in the ecosystem more broadly."



Filip Dames, Co-founder, Cherry Ventures

"We're actively building links between different hubs in the European ecosystem. I think these can always be stronger than they are today, but we're seeing European tech becoming much more international — London funds are investing in Berlin, and investors from the Nordics are coming here to look for ventures. We [Cherry Ventures] also invest across Europe, and usually co-invest with other local funds."

David Helgason, Founder, Unity Technologies

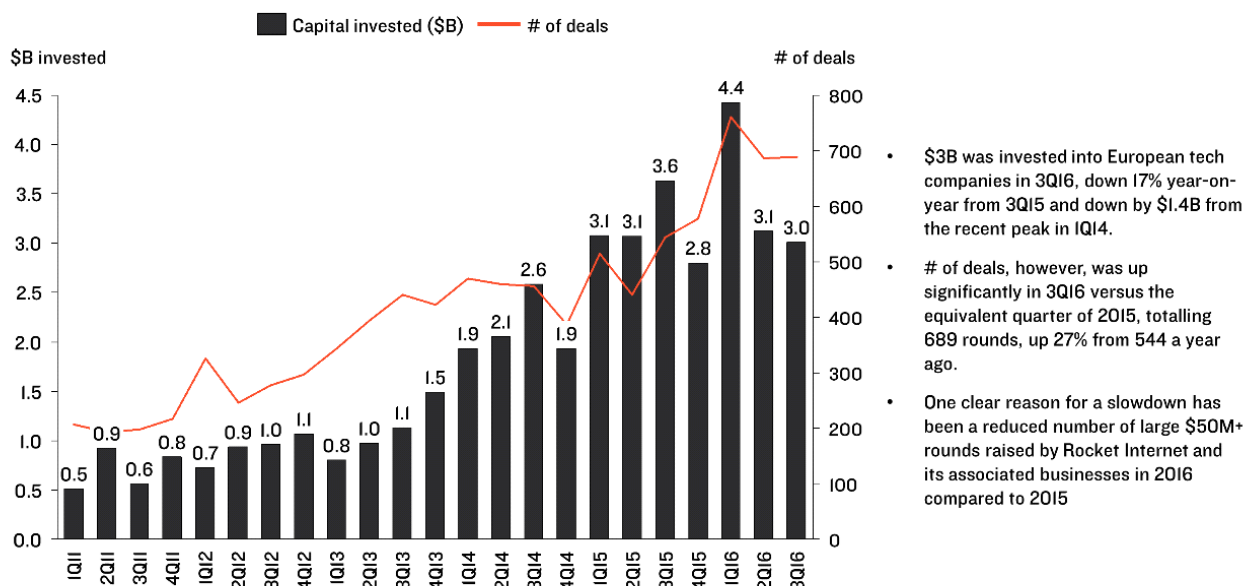
"If you're building a pure consumer product like Supercell or Spotify or even a deep tech firm, it's much easier to stay and build yourself in Europe these days. Overall, I'd say that the gravity pull of Silicon Valley seems lighter than it used to be. If anything there is more capital going from the Valley to other places these days and Europe is benefitting."



7. CAPITAL FLOWS

CAPITAL INVESTMENTS HAVE COOLED A LITTLE SINCE Q1 2016...

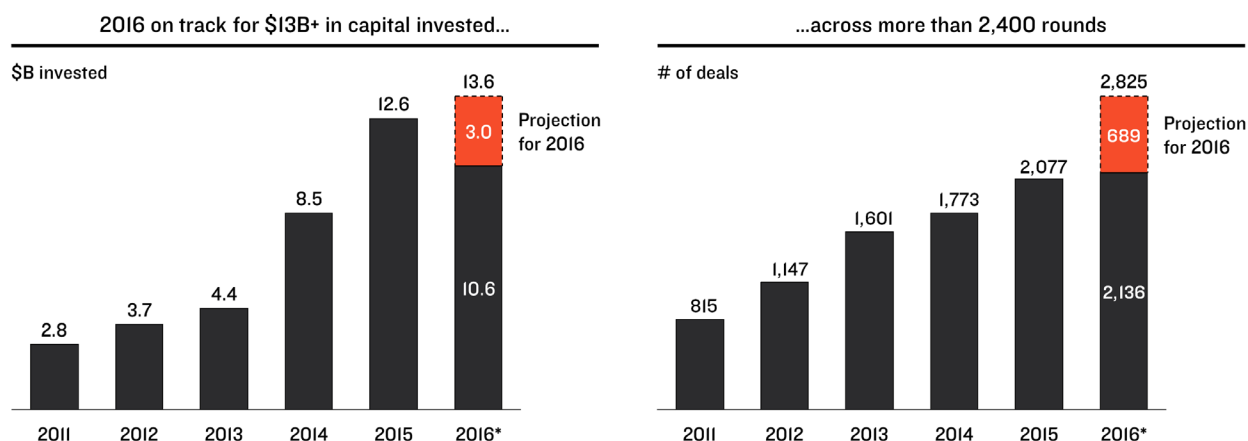
Capital invested (\$B) in and # of deals in European tech by quarter



Note: Excludes Israel, biotech, pharma, traditional telecom/satellites
Source: dealroom.co

...BUT CRAZY AS IT SEEMS, 2016 IS ON TRACK TO BE A RECORD YEAR

Capital invested (\$B) and # of deals in European tech by year

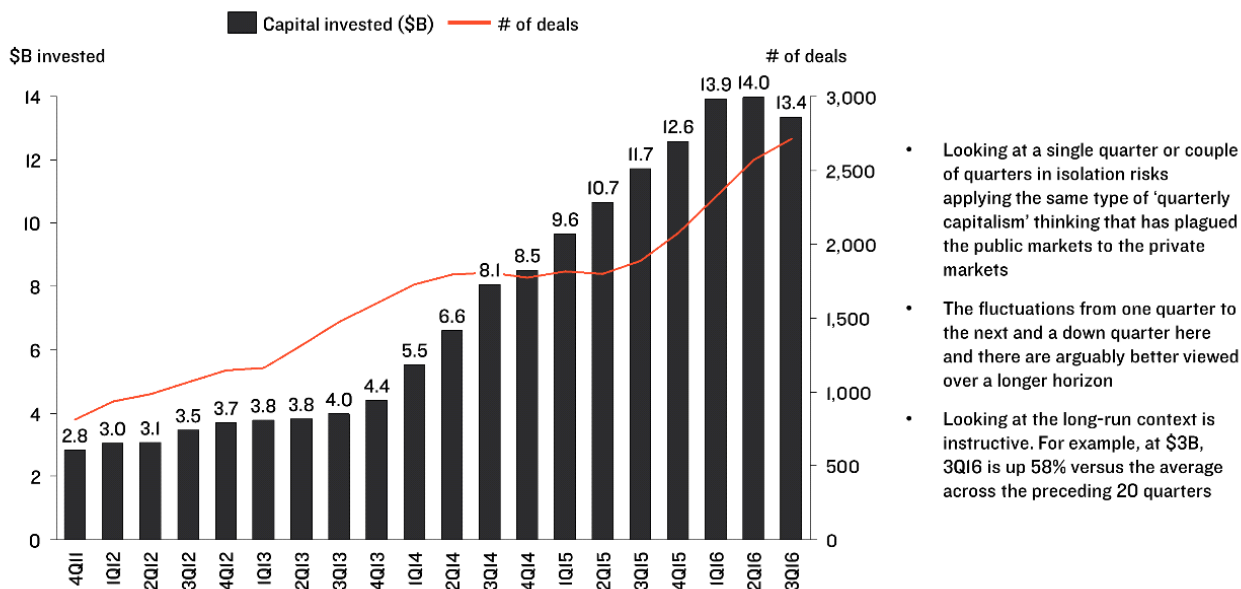


- Despite a recent cooling in 3Q16, if Europe delivers a 4Q that is anywhere above \$2B, it will exceed the total for 2015
- Capital is being deployed at a level that is nearly 5x higher versus 2011
- # of deals in 2016 is at record levels and by the end of 3Q had already exceed total # of deals in 2015
- Volume up 3.5x versus 2011; in 2016, approximately 250 rounds are closed per month on average

Note: *2016 based on 9 months to September 2016 and projection for Q4 based on Q3.
Source: dealroom.co

A DOWN QUARTER HERE AND THERE DOESN'T TELL THE FULL STORY

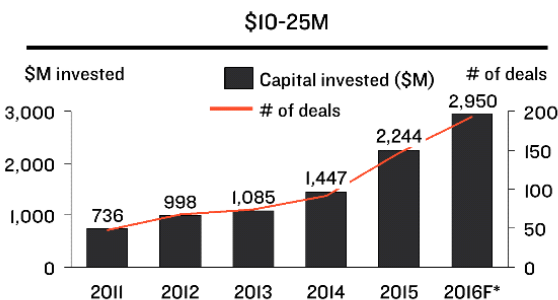
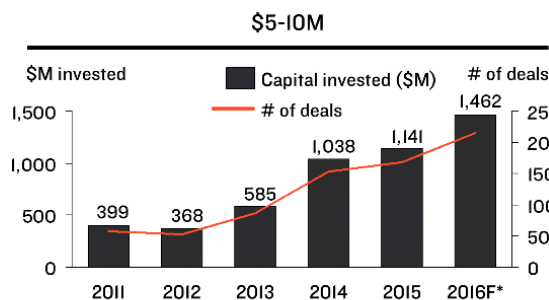
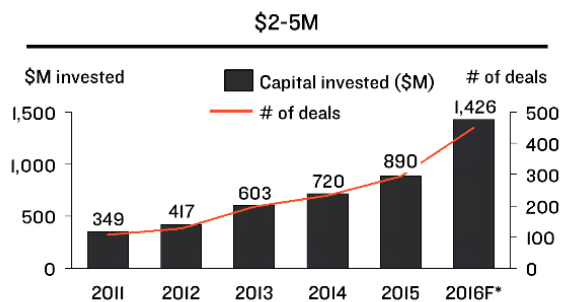
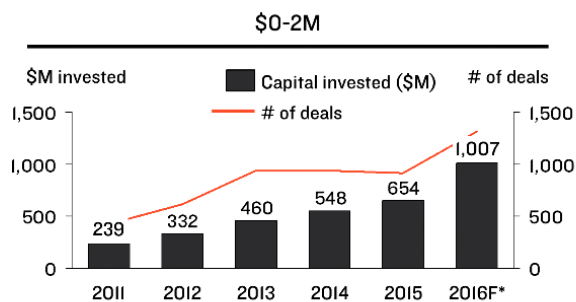
Trailing 12-month capital invested (\$B) and # of deals by quarter



Source: dealroom.co

EUROPE HAS A HEALTHY & GROWING PIPELINE OF EARLY-STAGE COMPANIES...

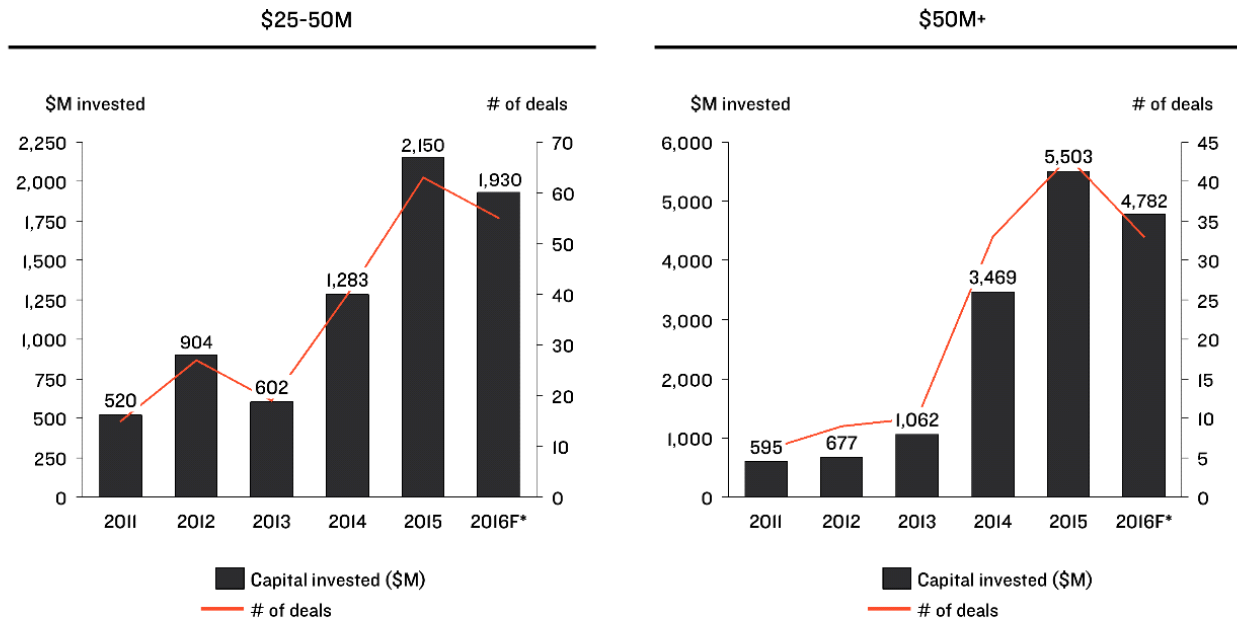
Capital invested (\$M) and # of deals by stage



Note: *2016F based on 9 months to September 2016 and projection for Q4 based on Q3.
Source: dealroom.co

...BUT HAS SEEN A REDUCED NUMBER OF \$25M+ ROUNDS

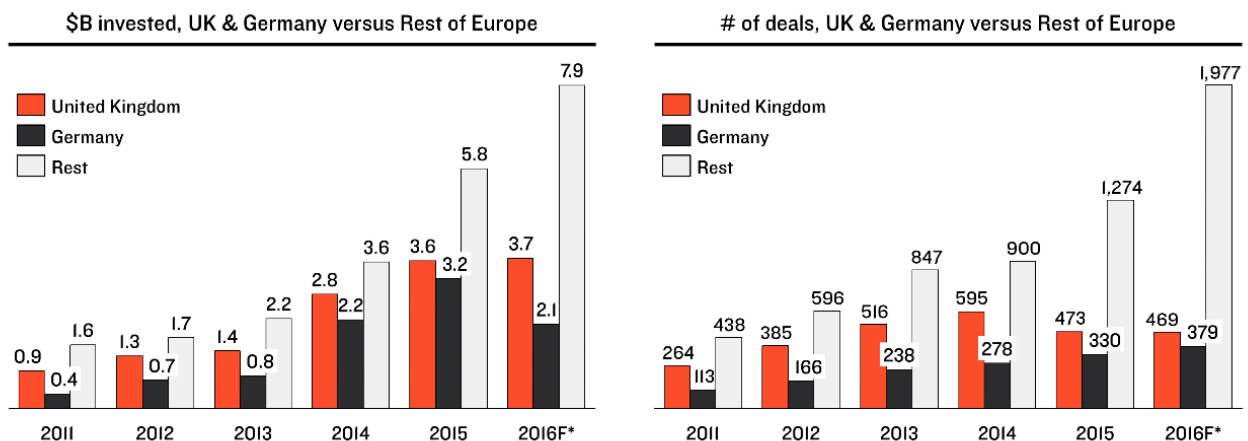
Capital invested (\$M) and # of deals by stage



Note: *2016F based on 9 months to September 2016 and projection for Q4 based on Q3.
Source: dealroom.co

CAPITAL IS FOLLOWING COMPANIES FROM MORE DIVERSE GEOGRAPHIES

Capital invested (\$B) and # of deals by country



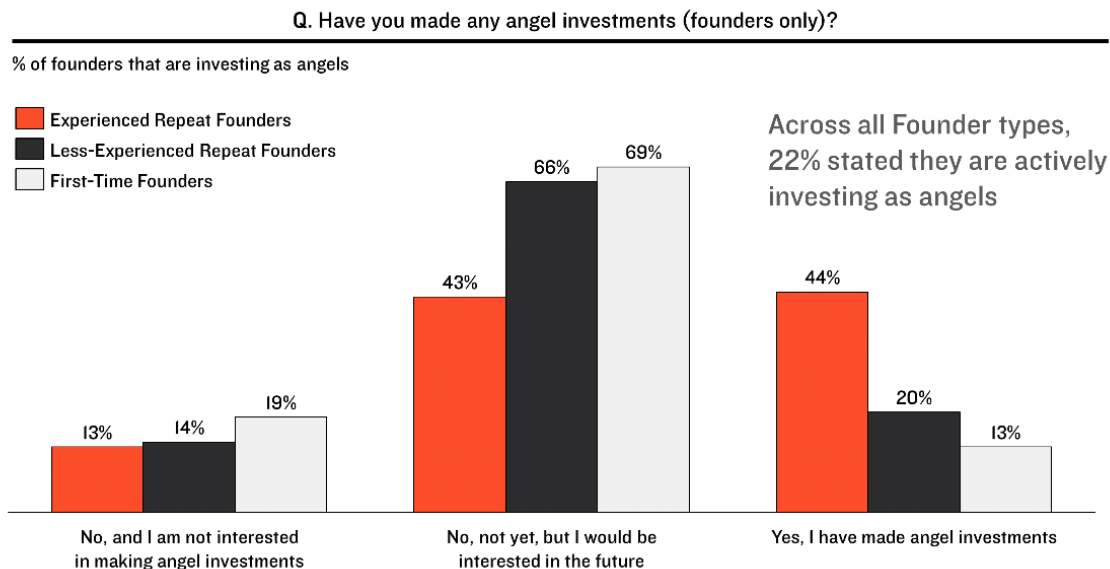
- 2016 has been a story of the rise of Europe outside of the UK and Germany
- Based on the runrate to 3Q16, almost \$8B will be invested outside the UK and Germany, equal to 58% of the total

- # of deals in the UK and Germany is up 2.2x since 2011, but has grown 4.5x in that period outside those markets
- The total number of completed rounds outside the UK and Germany is on track to hit nearly 2,000 for the full year

Note: The slowdown in funding in Germany is primarily driven by a steep decline in capital raising by Rocket Internet-backed companies based in the country in 2016 versus 2015.
*2016F based on 9 months to September 2016 and projection for Q4 based on Q3.
Source: dealroom.co

44% OF EXPERIENCED REPEAT ENTREPRENEURS ARE INVESTING AS ANGELS

22% of all Founders are investing as angels, with repeat entrepreneurs more active than first-time founders

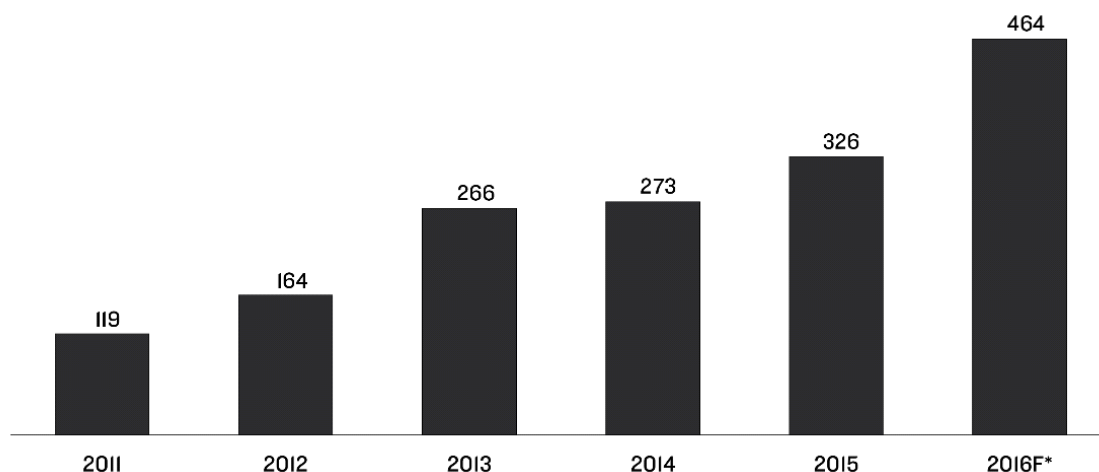


Note: May not sum to 100% due to rounding
Source: Slush & Atomico Survey

ENTREPRENEUR-LED INVESTING HAS GROWN 4x SINCE 2011

The number of transactions involving entrepreneur-led VCs is at record levels

of deals involving Founder Funders



Note: Founder Funder is a collection of nearly 1,000 identified European founders who actively invest in European startups. Each Founder Funder has founded at least one company that's VC-backed and/or successfully exited, and has participated into at least one funding round, either as an Angel investor or as an Investment Partner at an institutional fund.

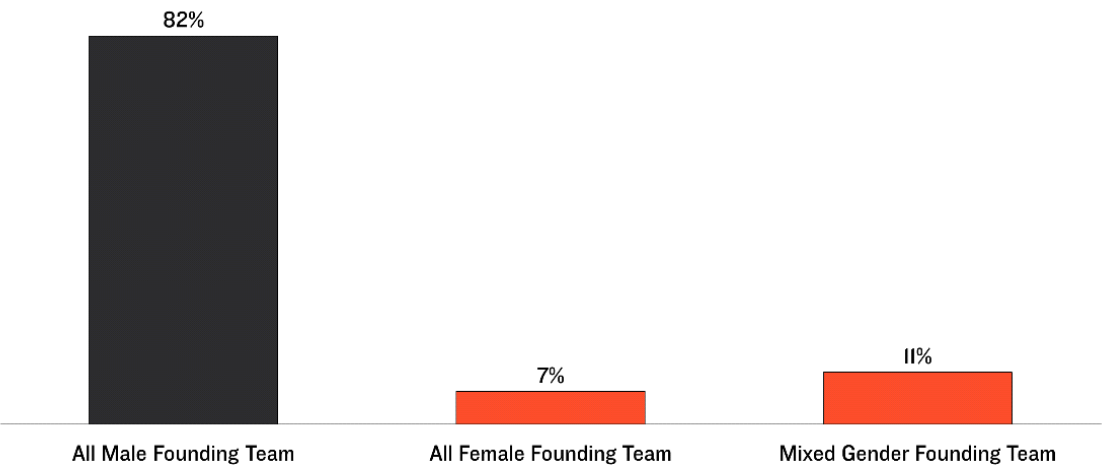
*2016F based on 9 months to September 2016 and projection for Q4 based on Q3

Source: dealroom.co

80%+ OF COMPANIES THAT RAISE FUNDING HAVE ALL-MALE FOUNDING TEAMS

Composition of founding teams by gender

% of companies raising a round by gender of founding team



Note: To derive gender, Dealroom built a custom classifier using a training corpus of known male and female names. Various features were used like ending character, initial character, ending character pair etc that are turn out to be good predictors for the gender of a name. This was applied to more than 1,000 founding teams that raised a funding round between 1 January 2014 and 30 September 2016. The algorithms accuracy is 79.8%.

Source: dealroom.co

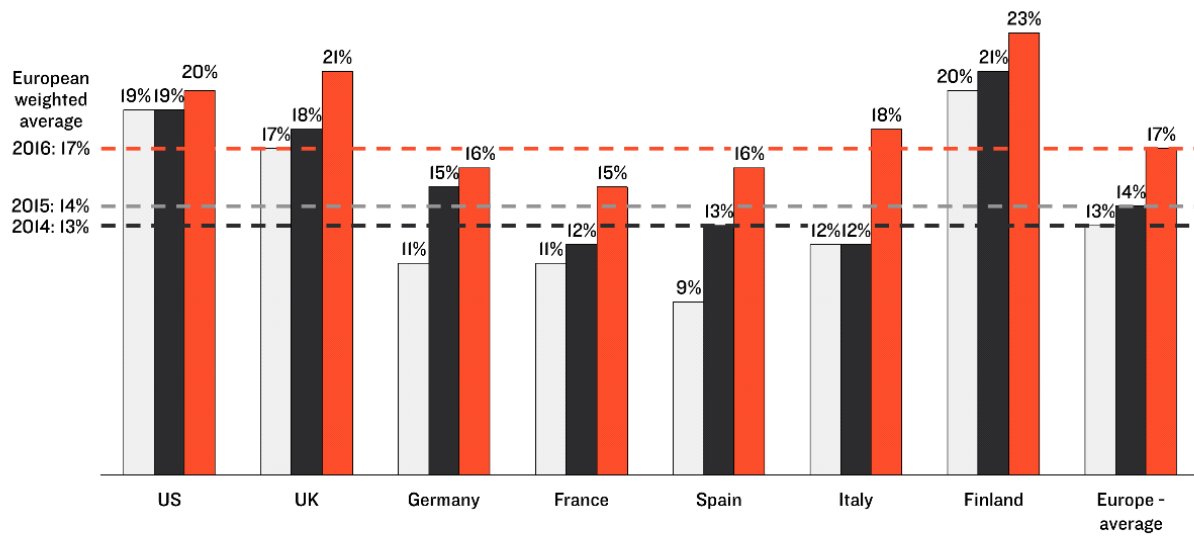


WOMEN ARE INCREASINGLY DRIVING COMMUNITY ENGAGEMENT

% of organisers of tech-related Meetups that are women, by country

% of organisers of tech-related Meetups that are women, by country

2014 2015 2016



Source: 



Slush 2015

TENTATIVE SIGNS THAT EUROPE IS BRIDGING ITS LATE-STAGE FUNDING GAP

Number of funds closed and capital raised by European VCs by fund size

Europe saw a smaller number of funds closed in 2015 versus previous years...

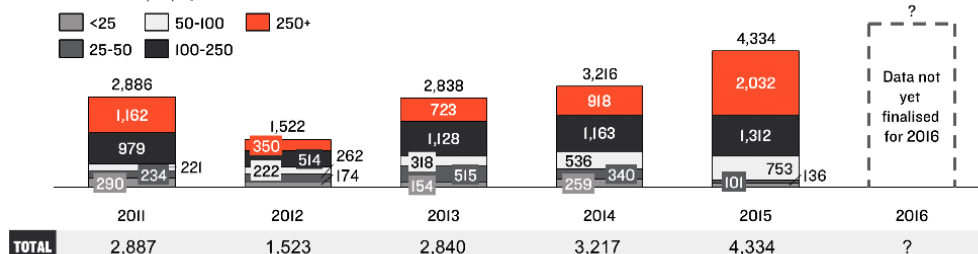
of funds closed by fund size (€M)

FUND SIZE	2011	2012	2013	2014	2015	2016
<25	29	18	13	22	12	Data not yet finalised for 2016
25-50	7	7	15	9	3	
50-100	4	3	5	8	11	
100-250	7	3	8	8	9	
250+	3	1	2	3	5	
TOTAL	50	32	43	50	40	

- 40 funds closed in 2015, a 20% drop versus 2014, driven by a smaller number of micro funds of <€25M
- Positively, 5 €250M+ funds closed in 2015; a small number, but an improvement on previous years

...but significant step-ups in fund sizes saw a 35% increase in total capital raised

Funds raised (€M) by fund size



- Total funds closed by VCs in 2015 hit €4.3B, up 35% yoy
- €2B+ raised by funds greater €250M+ in 2015, more than 2.5x the average for previous four years

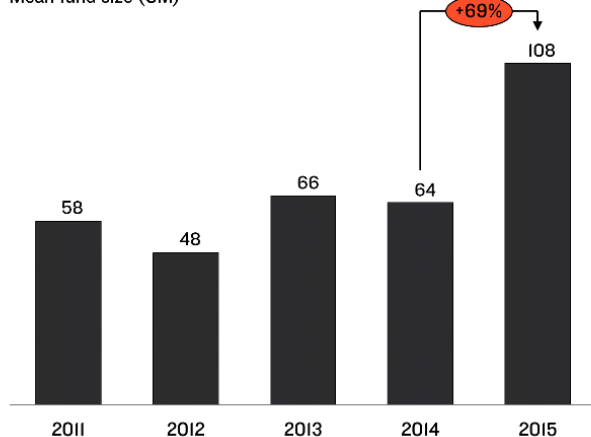
Source: / PEREP_Analytics, National Venture Capital Association, IMF

MEAN AND MEDIAN FUND SIZES HAVE STEPPED UP SIGNIFICANTLY

2015 saw fund sizes increase significantly with median fund size jumping 91% in 2015 versus 2014

Mean fund sizes are increasing...

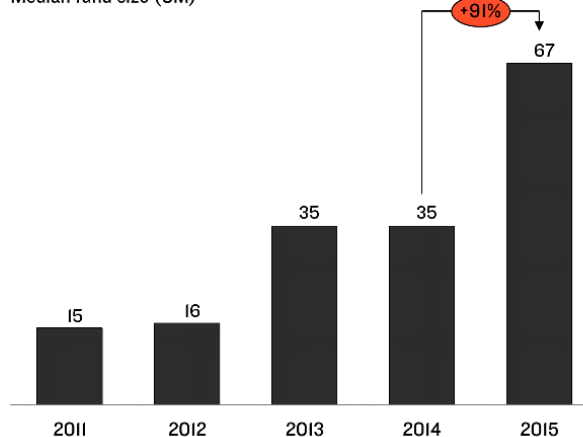
Mean fund size (€M)



- Overall average fund size is up to €108M, up from €60M
- Mean fund size in the US, by comparison, was €187M in 2015

...as are median fund sizes

Median fund size (€M)



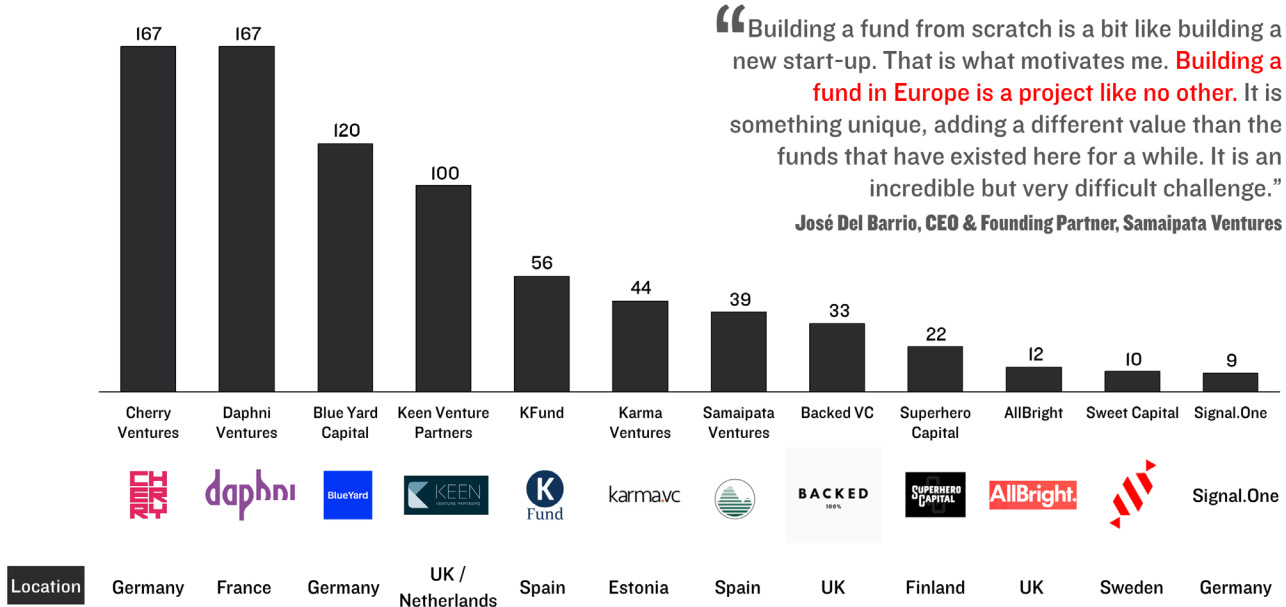
- Median fund size grew significantly in 2015 to €67M/\$72M, more than doubling on median fund size for four previous years
- This is still significantly lower than in the US, where median funds sizes are 1.5x higher (\$110M)

Source: / PEREP_Analytics, National Venture Capital Association

EUROPE'S NEXT GENERATION OF VCS IS EMERGING...

First-time VC funds closed by new firms since November 2015

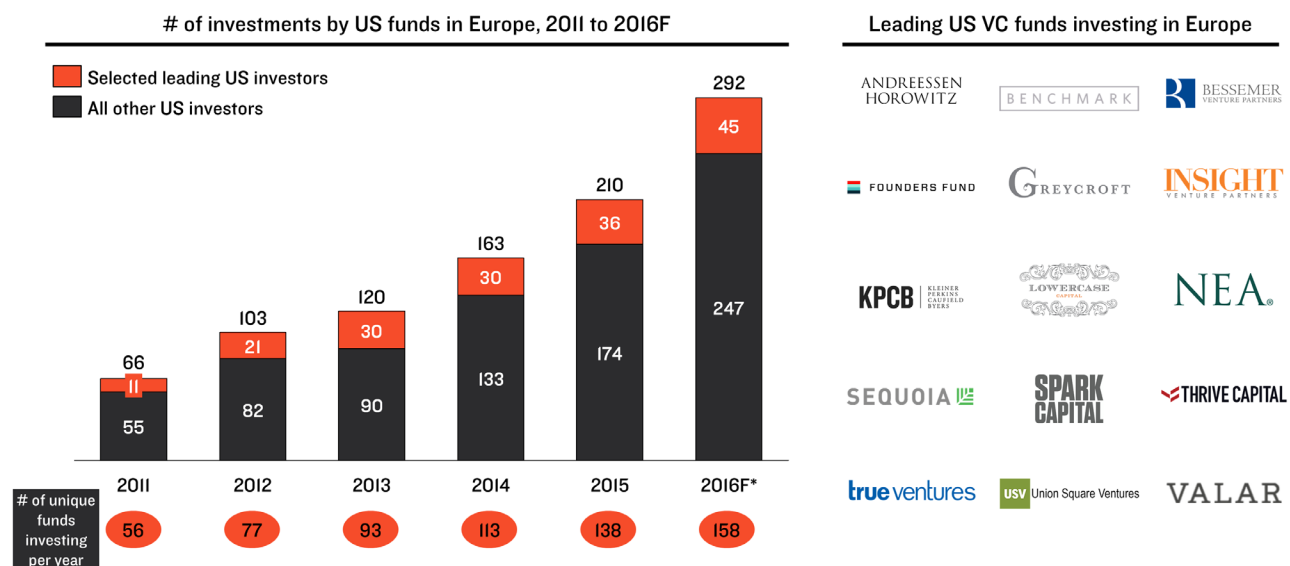
Size of the new fund (\$M)



Note: First-time funds raised by new firms only. Does not include spin-off funds raised by established firms.
Source: Atomico research

...WHILE TOP US FUNDS AND A GROWING LONG-TAIL OF OTHER US FUNDS ARE INCREASING INVESTMENT IN EUROPE...

Over 150 unique US funds have invested in Europe in 2016



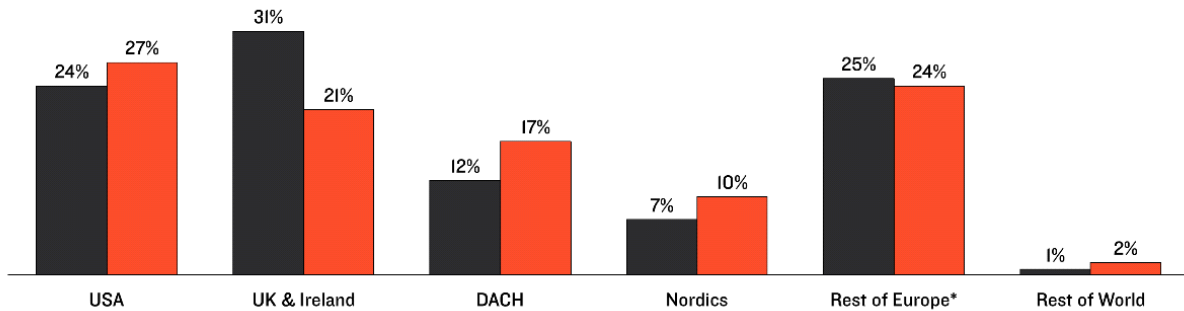
Note: This is based on investments made by 15 leading US VC funds. If two investors participated in the same deal, this is included as two investments. The list of US investors is composed of: Andreessen Horowitz, Benchmark, Bessemer Venture Partners, Founders Fund, Greycroft Partners, Insight Venture Partners, Kleiner Perkins, Lowercase Capital, New Enterprise Associates, Sequoia Capital, Spark Capital, Thrive Capital, True Ventures, Union Square Ventures and Valar Ventures
*2016F based on 9 months to September 2015 and projection for Q4 based on Q3.
Source: dealroom.co

...DRIVING THE DIVERSIFICATION OF THE GEOGRAPHIC SOURCES OF CAPITAL

Distribution of source of capital from investors participating in European deals, by location of fund HQ

% of distribution

■ 2011 ■ 2016F



\$M	USA	UK & IRELAND	DACH	NORDICS	REST OF EUROPE	REST OF WORLD
2011	676	887	349	200	706	19
2016F	3,605	2,780	2,288	1,366	3,299	218

Note: Source of capital calculations are based on the country HQ location of each participating investor in a round. Rounds with >1 investor are assumed to have proportionate allocation, as an indicative approximation given the absence of disclosures of exact allocations per investor per round. For example, a \$100M round with 4 participating funds, of which 3 from London and 1 from Paris, would be allocated as \$75M from London and \$25M from Paris.

*Rest of Europe includes Southern Europe, Eastern Europe and Benelux.

Source: dealroom.co

Philipp Magin, Founder, Quandoo; Co-founder CityDeal/Groupon

“Yes, there is an emergence of founder led funds. The reason for this seems to be pretty clear — founders aim to invest proceeds from previous successful entrepreneurial activities in the area where they have high expertise and institutional as well as private or corporate investors trust their experience-based assessment and join as LPs. I believe such funds have a higher likelihood to succeed, and even outperform non founder-led funds, if they manage to smartly combine the expertise brought in by previous entrepreneurs with expertise from professional VC investors and potentially also experts who worked on the monetization side of digital ventures.”



IN THEIR OWN



Fred Destin, General Partner, Accel

"It took a while but we've finally broken through the glass ceiling. I see no limits to the ambitions of young founders in Europe today."



Albert Wenger, Managing Partner, Union Square Ventures

"At USV we take a thesis driven approach to investing. We are increasingly finding companies that are a fit for our investment theses in Europe. These days there are many more original startups in Europe than historically. Much as the copycat startups had been derided they helped seed the ecosystem for what we are now seeing!"

Mood Rowghani, General Partner, Kleiner Perkins

"Europe is rife with cities that have urban density, cultural diversity, and an abundance of creative talent. These are precisely the markets where consumer innovations can be rapidly tested and validated. As a globally-focused investor based in the U.S., we look to European markets as the ultimate test-bed for products and platforms that inspire new modes of consumer behavior and can proliferate on an international scale."



OWN WORDS

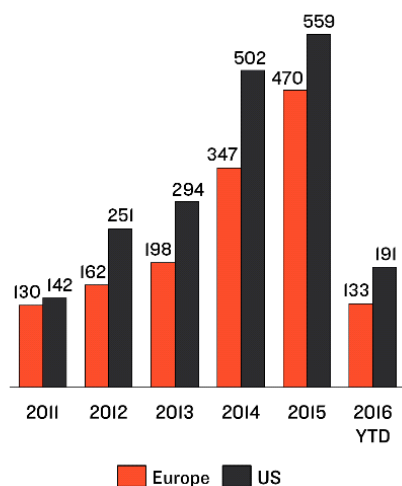
8. DEEP TECH

EUROPE HAS A VIBRANT DEEP TECH STARTUP ECOSYSTEM

of active deep tech companies founded since 2011, Europe versus US

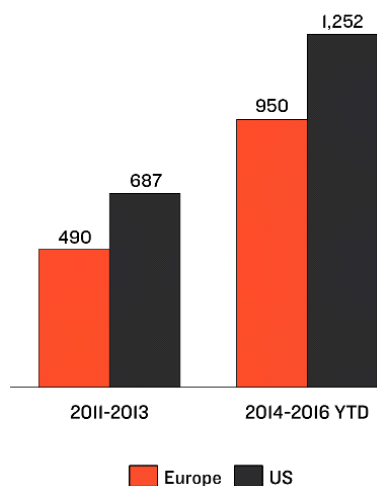
Deep tech startup formation is happening at record levels...

of deep tech startups founded per year, 2011 to 2016



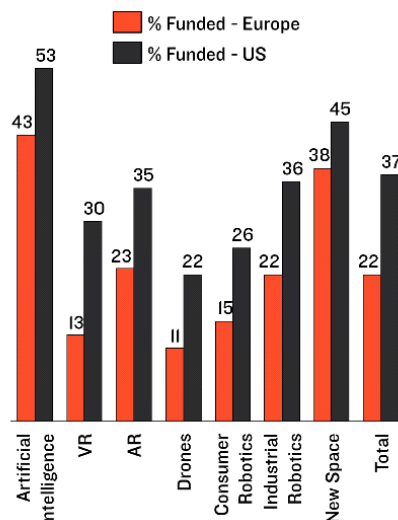
...meaning close to 1,000 deep tech startups founded in Europe since 2014...

Cumulative # of deep tech startups founded since 2011



...but Europe's deep tech startups have not yet been funded at US levels

Number of funded deep tech companies, Europe versus US



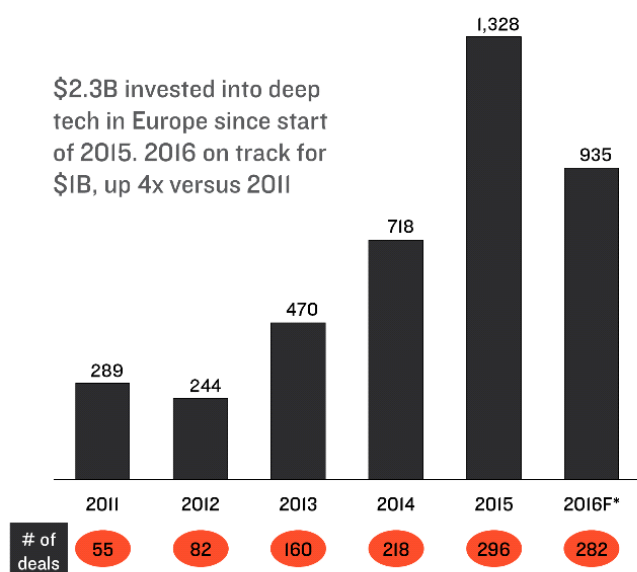
Note: 2016 YTD based on 9 months to September 2016. Please note that there is lag between a company being founded and it being officially tracked, resulting in a lag that is reflected in the 2016 data.
Source: [Tracxn](#)

DEEP TECH STARTUPS ARE ATTRACTING SIGNIFICANT INVESTMENT

Capital invested (\$M) and # of deals in deep tech companies

Capital invested (\$M)

\$2.3B invested into deep tech in Europe since start of 2015. 2016 on track for \$1B, up 4x versus 2011



Deep tech categories included in analysis

Artificial Intelligence

- AI
- Machine learning
- Speech recognition
- Data mining
- Big data
- Deep learning
- NLP
- Computer vision
- Etc

Internet of things

- Wearables
- Smart home
- Smart city

VR & AR

- Virtual reality
- Augmented reality
- 3D technology

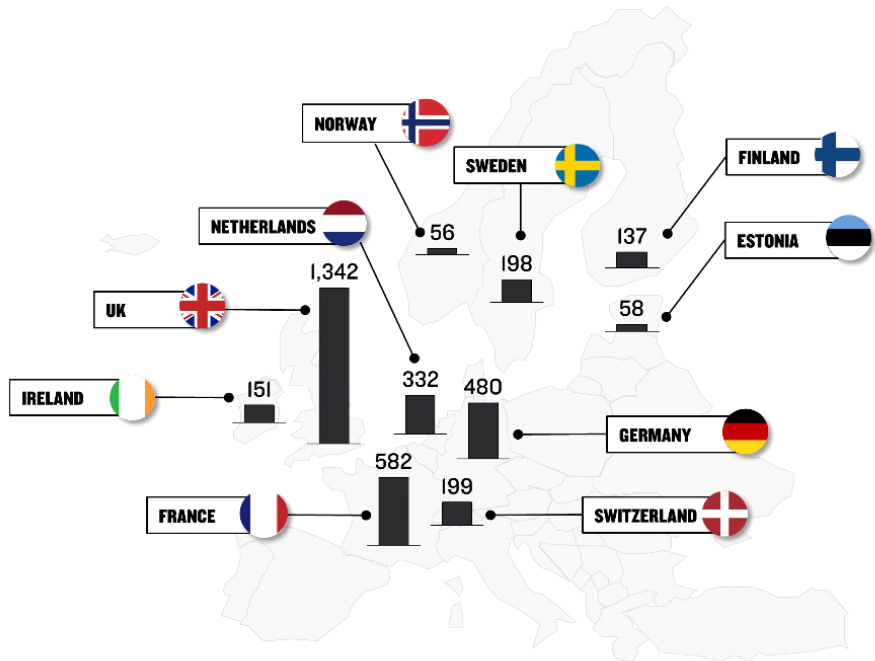
Frontier hardware

- Drones
- Robotics
- Radar
- 3D printing
- Nanosatellites
- New space

Note: *2016F based on 9 months to September 2015 and projection for Q4 based on Q3.
Source: [dealroom.co](#)

DEEP TECH INVESTMENT IS FLOWING ACROSS EUROPE

Cumulative deep tech investments by country, 2011 to 2016 (9M), \$M

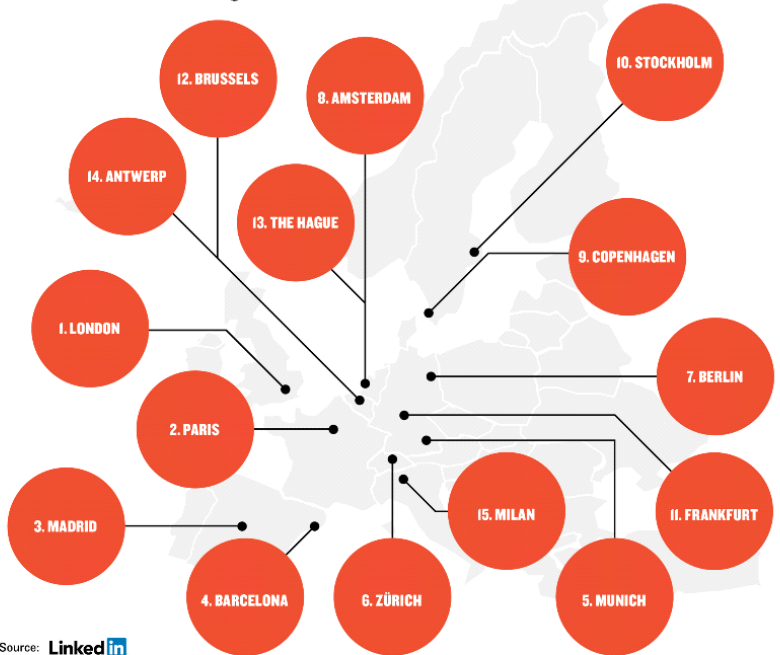


Source: [dealroom.co](#)

ARTIFICIAL INTELLIGENCE TALENT IS CLUSTERED WHERE YOU'D EXPECT TO FIND IT, BUT ALSO WHERE YOU MIGHT NOT

Top 15 hubs of Artificial Intelligence talent in Europe

Cities with highest amount of LinkedIn members with artificial intelligence skills



Source: [LinkedIn](#)

51 Slush & Atomico | The State of European Tech

#InventedHere

Cities with highest proportion of LinkedIn members with artificial intelligence skills as a proportion of local members

RANK	CITY
1	Berlin , Germany
2	Munich , Germany
3	Zürich , Switzerland
4	Stockholm*, Sweden
5	Frankfurt, Germany
6	Copenhagen*, Denmark
7	London, United Kingdom
8	Barcelona , Spain
9	Paris , France
10	The Hague , Netherlands
11	Amsterdam , Netherlands
12	Antwerp , Belgium
13	Lisbon , Portugal
14	Cologne , Germany
15	Madrid , Spain

*Stockholm includes city and country, Copenhagen incl. capital region

SPOTLIGHT ON	
12	Cambridge, United Kingdom
22	Oxford, United Kingdom

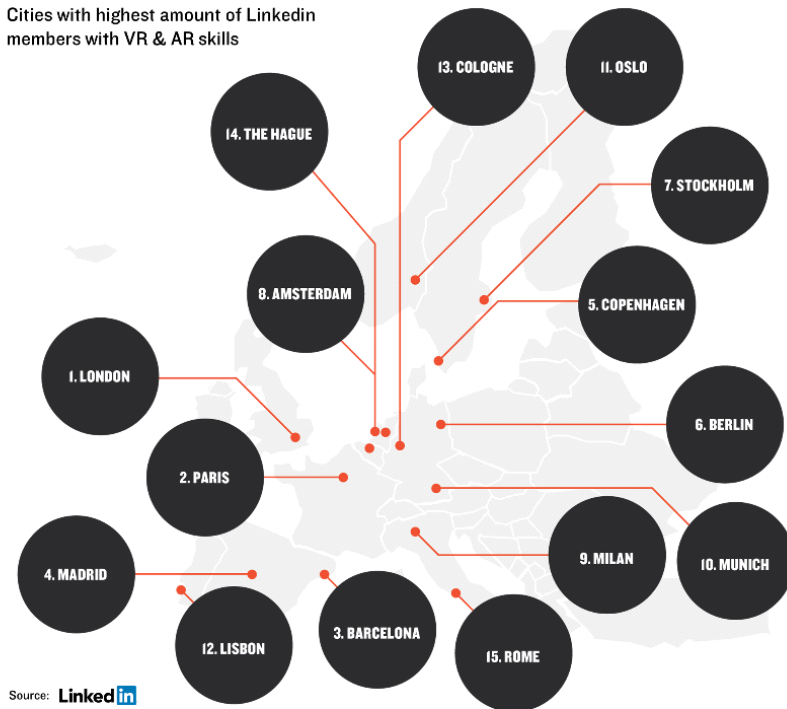
Note: The Artificial Intelligence skillset is based on member holding any of the following skills: Artificial Intelligence, Machine Learning, Computer Vision, Deep Learning, Neural Networks, Natural Language Processing. Based on this, LinkedIn first calculated the total number of members holding each of the identified skills in each city and, secondly, the number of members holding these skills per member in the city/region. Only sub-national regions/cities with over 450,000 members were included in the analysis. For the spotlight analysis, Oxford and Cambridge were treated as if they exceeded 450,000 members. LinkedIn unfortunately is unable to break out Helsinki as a distinct city or sub-region.

November 2016

THE DISTRIBUTION OF VR & AR TALENT IS ALSO SURPRISING

Top 15 hubs of Virtual Reality and Augmented Reality talent in Europe

Cities with highest amount of LinkedIn members with VR & AR skills



Source: LinkedIn

Cities with highest proportion of LinkedIn members with VR & AR skills as a proportion of local members

RANK	CITY
1	Berlin , Germany
2	Stockholm*, Sweden
3	Munich , Germany
4	Copenhagen*, Denmark
5	Barcelona , Spain
6	London, United Kingdom
7	Oslo , Norway
8	Lisbon , Portugal
9	Birmingham, United Kingdom
10	Milan , Italy
11	The Hague , Netherlands
12	Cologne , Germany
13	Madrid , Spain
14	Paris , France
15	Utrecht , Netherlands

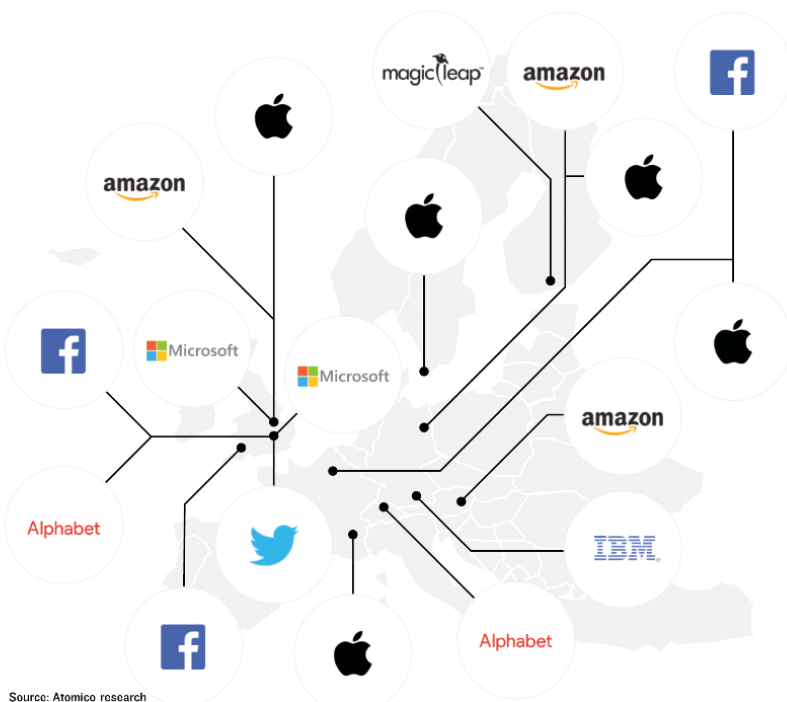
*Stockholm includes city and county, Copenhagen incl. capital region

SPOTLIGHT ON	
1	Cambridge, United Kingdom
4	Oxford, United Kingdom

Note: The Augmented and Virtual Reality skillset is based on member holding any of the following skills: Virtual Reality, Augmented Reality, Mixed Reality, Unity 3D, 3D Modelling. Based on this, LinkedIn first calculated the total number of members holding each of the identified skills in each city and, secondly, the number of members holding these skills per member in the city/region. Only sub-national regions/cities with over 450,000 members were included in the analysis. For the spotlight analysis, Oxford and Cambridge were treated as if they exceeded 450,000 members. LinkedIn unfortunately is unable to break out Helsinki as a distinct city or sub-region.

INVENTED HERE: TECH GIANTS ARE PLUGGING INTO EUROPE'S DEEP TECH EXPERTISE

Location and focus areas of deep tech engineering centres of US tech companies in Europe



Source: Atomico research

COMPANY	CITY	COUNTRY	FOCUS AREAS
ALPHABET	Zurich	Switzerland	AI
	London	UK	AI
AMAZON	Cambridge	UK	AI, Drones
	Berlin	Germany	AI
	Graz	Austria	AI
APPLE	Grenoble	France	Computer Vision
	Berlin	Germany	Mapping
	Lund	Sweden	3D Mapping
	Cambridge	UK	AI
FACEBOOK	Paris	France	AI, Robotics
	Bridgwater	UK	Drones
	London	UK	VR, AI
IBM	Munich	Germany	AI, IoT
MAGIC LEAP	Helsinki	Finland	AR, VR
MICROSOFT	Cambridge	UK	AI
	London	UK	AI
TWITTER	London	UK	AI

US TECH TITANS ARE ACQUIRING EUROPEAN TECH COMPANIES

53 acquisitions by Top 5 US tech titans (AMZN, AAPL, GOOGL, MSFT, FB) from 2011 to 2016

amazon	Apple	Alphabet	Microsoft	Facebook
Cloud9IDE (2016)	LinX Imaging (2015)	Moodstocks (2016)	Solair (2016)	Two Big Ears (2016)
Colis Prive (2016)	Faceshift (2015)	Hark (2016)	MinecraftEDU (2016)	MSQRD (2016)
NICE (2016)	VocalIQ (2015)	Digisfera (2015)	SwiftKey (2016)	Pebbles Interfaces (2015)
Liquavista(2013)	Semetric (2015)	Thrive Audio (2015)	6Wunderkinder (2015)	Surreal Vision (2015)
Evi (2013)	Metaio (2015)	DeepMind (2014)	Secure Islands (2015)	Moves App (2014)
Ivona Software (2013)	Carnel Audio (2015)	Rangespan (2014)	Mojang (2014)	I3 th Lab (2014)
Pushbutton (2011)	Novauris (2014)	drawElements (2014)	HockeyApp (2014)	Pryte (2014)
	Acunu (2013)	spider.io (2014)	Captain (2014)	Monoidics (2013)
	AlgoTrim (2013)	Bitspin (2014)	SyntaxTree (2014)	Face.com (2012)
	C3 Technologies (2011)	Dark Blue Labs (2014)	Netbreeze (2013)	Lightbox (2012)
		Vision Factory (2014)	Skype (2011)	
		FlexyCore (2013)		
		Channel Intelligence (2013)		
		VirusTotal (2012)		
		Sparrow (2012)		

37 acquisitions have been made since 1 January 2014, meaning more than one deal per month on average to September 2016

Note: Deep tech companies acquired highlighted in red
Source: [dealroom.co](#)

54 Slush & Atomico | The State of European Tech

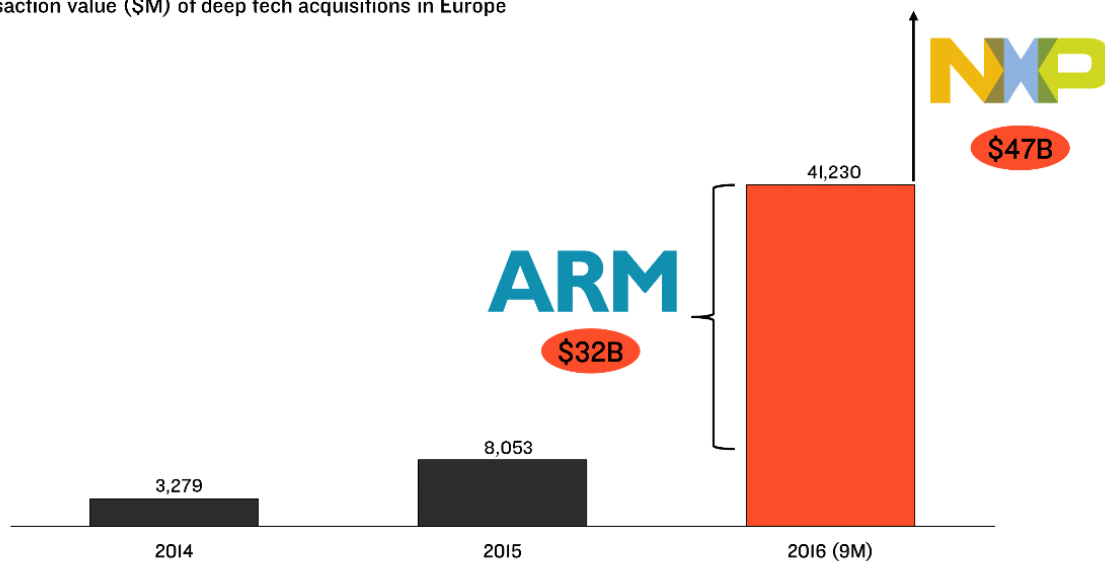
#InventedHere

November 2016

M&A IN EUROPEAN DEEP TECH HAS HAD A RECORD YEAR, WITH TRANSACTIONS WORTH \$88B+

Deep tech M&A, 2011 to 2016 (9M)

Transaction value (\$M) of deep tech acquisitions in Europe



Source: Slush & Atomico Survey

IN THEIR OWN WORDS

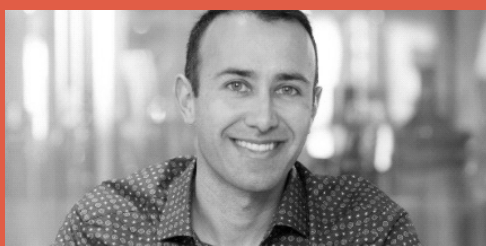


Jane Walerud, Serial entrepreneur and very early stage investor

"I'm pretty damn sure that we are going to develop some successful deep tech companies in Europe. We have the talent and we can afford to pay them good salaries. I believe we possess sustainable advantages in deep tech as opposed to consumer tech."

Georg Polzer, Co-founder & CEO, Teralytics

"Zurich definitely has built a strong position in AI/VR/Big Data on the academia and research side thanks to ETH Zurich (which also includes a dedicated research chair on visual computing funded by Disney). In the last few years this started to translate into a number of new companies being started, mostly by Alumni of ETH. Besides Teralytics, there is for example Climeworks (CO2 captured from air), Dacuda (VR) or Scandit (high-speed scanning)."



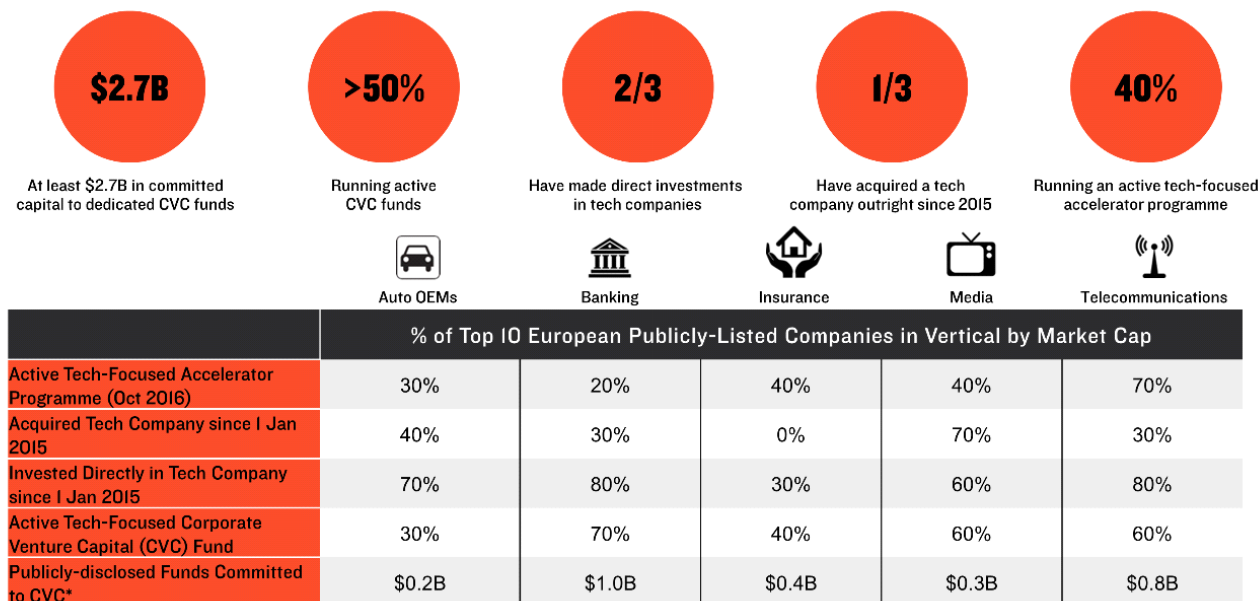
Siraj Khaliq, Partner, Atomico

"We have some tremendous universities here, producing really great talent, but that's not enough by itself. A few things have happened I would say that have really turbocharged the system in Europe, and the creation of Deepmind is the main one."

9. CORPORATE EUROPE AWAKENS

CORPORATE EUROPE IS INCREASINGLY ACTIVE IN TECH

Overview of selected active corporates in tech by industry vertical

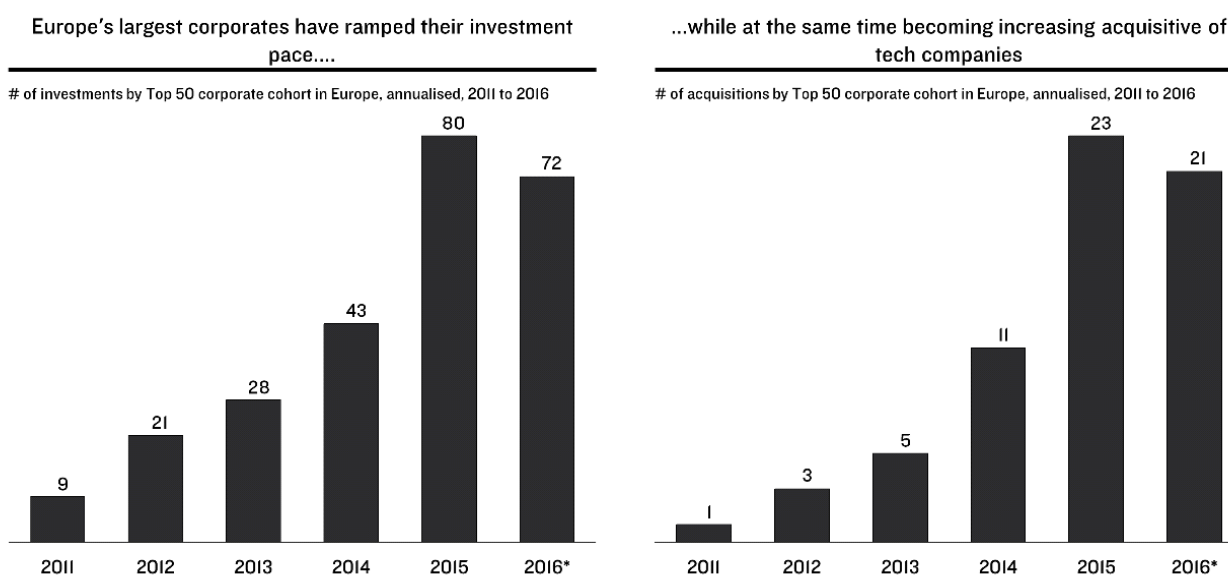


Note: Several funds do not disclose committed funds amount so the totals underestimate the total available funds available to active CVCs. The following companies were included in the analysis: Allianz, Altice, Aon, Audi, Aviva, AXA, Barclays, BBVA, BMW, BNP Paribas, BT, Chubb, Daimler, Deutsche Telekom, Ferrari, Fiat Chrysler, HSBC, ING, Intesa Sanpaolo, ITV, KPN, KTM, Liberty Global, Munich Re, Nordea, Orange, Porsche, ProSiebenSat.1, Prudential, PSA Group, Publicis, Renault, RTL, Sampo, Santander, Sberbank, SES, Sky, Societe Generale, Swiss Re, Swisscom, Telecom Italia, Telefonica, Telenor, Telia, Vivendi, Vodafone, Volkswagen, WPP, Zurich Insurance

Source: Atomico research, dealroom.co

EUROPE'S LARGEST CORPORATIONS FROM TRADITIONAL INDUSTRIES HAVE MADE 250+ TECH INVESTMENTS & 50+ TECH ACQUISITIONS SINCE 2011

Tech investment and M&A activity of top 10 largest companies by market cap across five key industries



Note: The following companies were included in the analysis: Allianz, Altice, Aon, Audi, Aviva, AXA, Barclays, BBVA, BMW, BNP Paribas, BT, Chubb, Daimler, Deutsche Telekom, Ferrari, Fiat Chrysler, HSBC, ING, Intesa Sanpaolo, ITV, KPN, KTM, Liberty Global, Munich Re, Nordea, Orange, Porsche, ProSiebenSat.1, Prudential, PSA Group, Publicis, Renault, RTL, Sampo, Santander, Sberbank, SES, Sky, Societe Generale, Swiss Re, Swisscom, Telecom Italia, Telefonica, Telenor, Telia, Vivendi, Vodafone, Volkswagen, WPP, Zurich Insurance

*2016 annualized based on 9 months to September 2016 and projection for Q4 based on Q3.

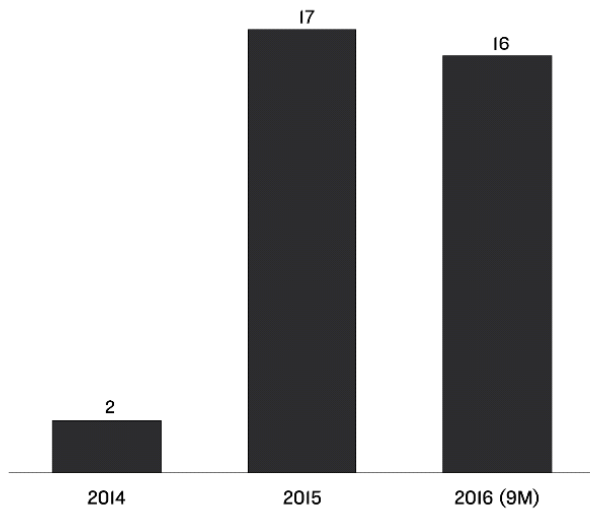
Source: dealroom.co

NON-TECH INCUMBENTS FROM A DIVERSE SET OF INDUSTRIES ARE BUYING UP EUROPEAN TECH COMPANIES

of acquisitions of European tech companies by non-tech companies, 2014 to 2016

Non-tech companies have ramped M&A of tech companies...

of acquisitions



Note: Includes acquisitions of European tech companies only.
Source: dealroom.co

...with acquirors from a diverse set of traditional industries

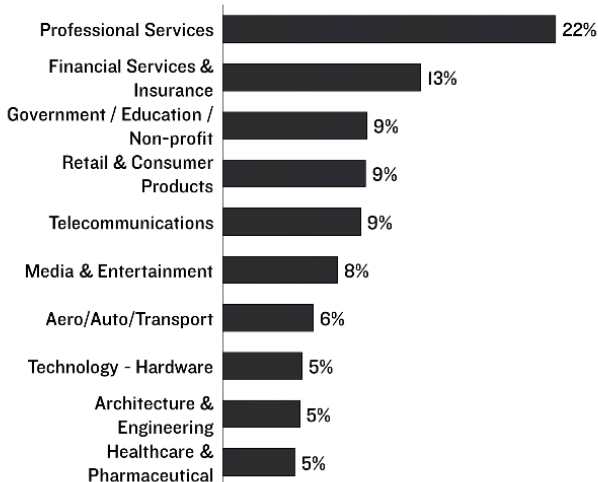
Acquiror	Target	Date
ESSILOR <small>SEEKING THE WORLD BETTER</small>	MyOptiqueGroup	8/2016
PSA <small>BRUNNEN</small>	auto24	7/2016
ACCOR	onefinestay	4/2016
BAYER	proPlant	2/2016
LIDL	kochzauber	11/2015
DAIMLER	here	8/2015
adidas	runtastic	8/2015
Carrefour	RUE DU COMMERCE	8/2015
LVMH	Luxola	7/2015
MICHELIN	blackcircles.com <small>click & fit® tyres</small>	5/2015

THE BATTLE FOR TECH TALENT: TRADITIONAL INDUSTRIES ARE FIGHTING BACK

10% of workers joined the European tech industry from other industries in 2016, but 8% left

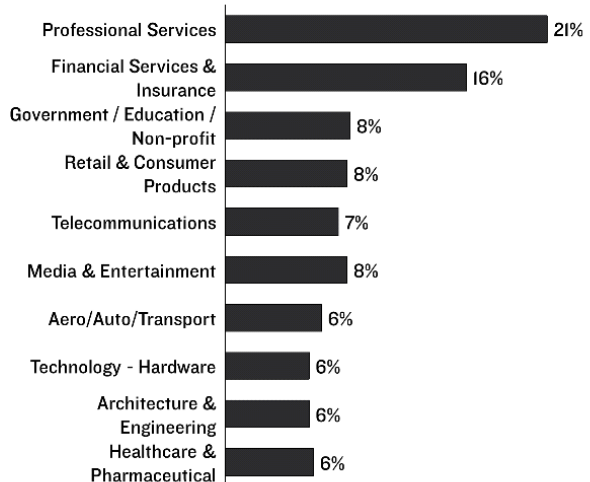
Tech is absorbing talent from a wide range of industries...

Top 10 sources of inbound tech talent ('joiners') by industry



...but talent flows are far from being one-way traffic

Top 10 destinations of outbound tech talent ('leavers') by industry



Definition: For the purpose of this analysis, LinkedIn created a pool of LinkedIn members for analysis to enable a comparison of professionals working in the European tech industry on 1 July 2016 and those working in the industry on 1 July 2015. Using this analysis, a Joiner is defined as a member who did not work in tech-software in 2015 but did so in 2016, while a Leaver is defined as a member who did work in tech-software in 2015 but did not in 2016.

Note: For all slides referencing LinkedIn data, the term 'tech industry' is used in place of 'tech (software) industry'

Source: [LinkedIn](https://www.linkedin.com)

IN THEIR OWN WORDS



José Del Barrio, CEO & Founding Partner, Samaipata Ventures

“Incumbents have started to take some action. It may not work, but at least it is a start. Every big company in Spain, particularly banks, now has an accelerator. Everyone wants an accelerator because it seems to say: ‘I am innovating.’ This is currently the main thing they are doing. But the next step has to be corporate venture funds. And starting to do M&As — otherwise, they will be eaten alive by younger, more innovative firms. If corporates get more involved and start to pour money into M&A, it will make the market much more liquid. They cannot innovate themselves, so they will outsource innovation. Outsource it to startups.”



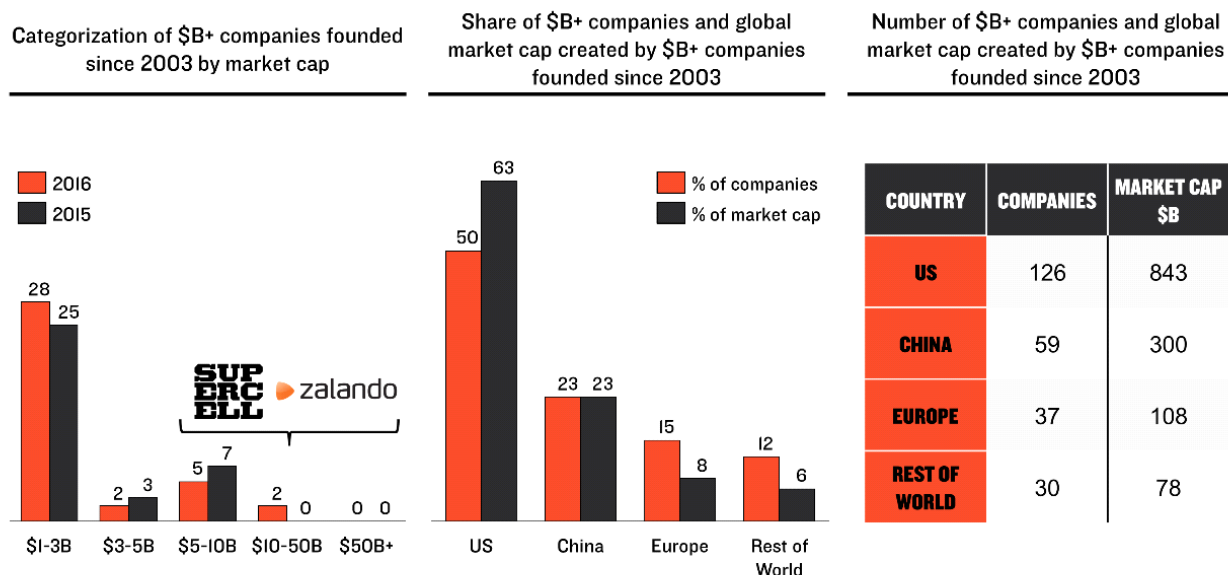
Azeem Azhar, VP, Venture & Foresight, Schibsted Media Group & Founder, Exponential View

“Incumbents will need to go through this transformation where they start to see tech as a driver of value in their businesses as opposed to a cost. They will start to understand that getting involved in the incubation network of a start-up factory will help them build that capability. But I think they need to be more disciplined about whether they are outsourcing the most important part of their business to some bright young things because they are nervous about making a cultural change themselves centrally. You can’t just take five million dollars off the balance sheet and dump it into an incubator and then report to the board that we are now in tech. That is not a reasonable strategy.”

10. FUTURE

THE FIRST \$10B+ COMPANIES ARE EMERGING, BUT THE GIANTS ARE STILL FROM OUTSIDE EUROPE

Distribution of \$B+ companies by size by region

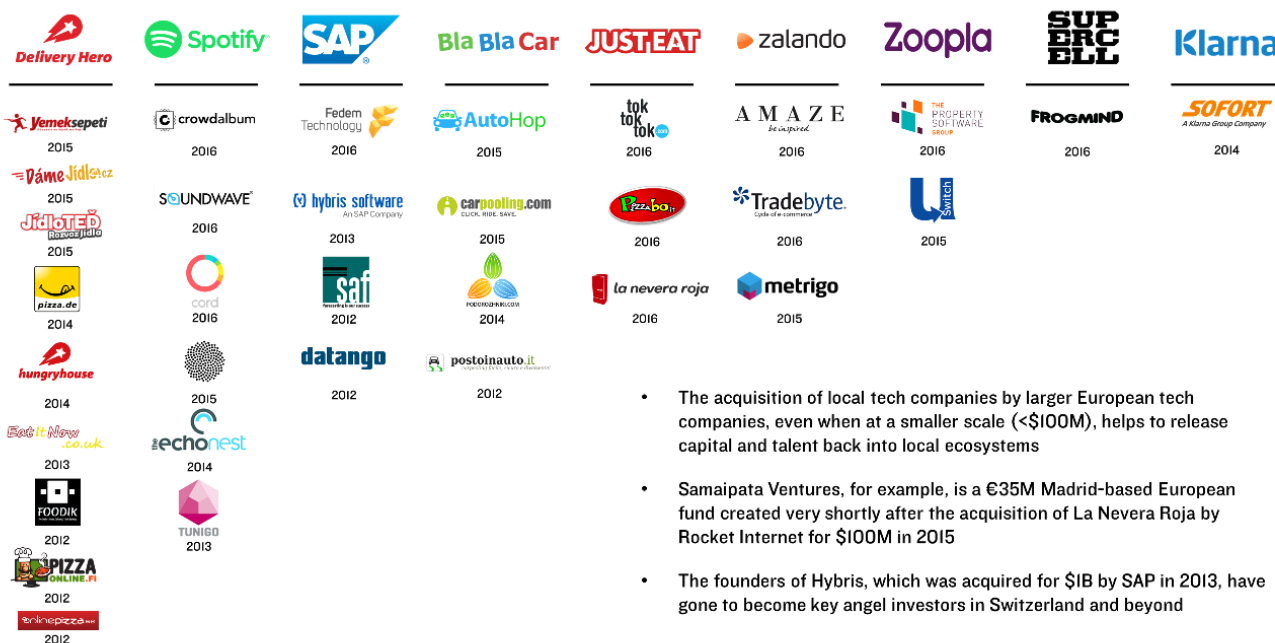


Note: *No single other country greater than the smallest shown single country
Source: dealroom.co

EUROPEAN TECH COMPANIES ARE MAKING MORE ACQUISITIONS

Europe-initiated M&A is helping to drive a virtuous cycle by helping release talent & capital back into hubs

Selection of acquisitions of European tech companies by larger European tech companies

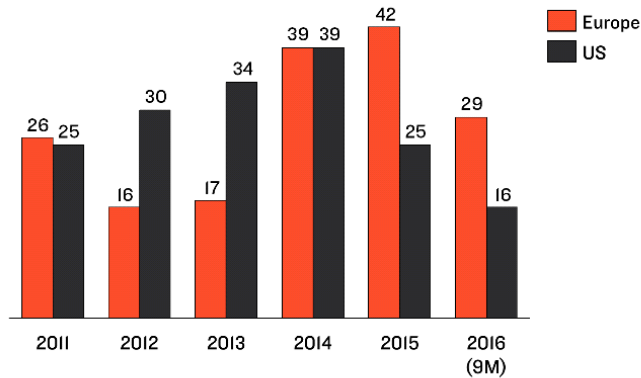


Source: Atomico research

EUROPE AND US EXHIBIT DIFFERENT LISTING ENVIRONMENTS

2016 was a slow year for tech IPOs in US and Europe offers greater pricing certainty

All tech IPOs by region of issuer nationality

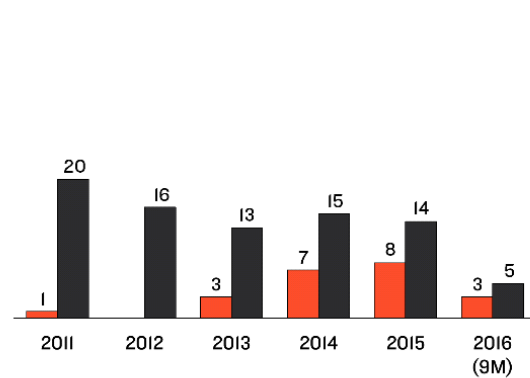


- So far in 2016 there have been more tech IPOs in Europe than in the US, a continuation of the same trend from 2015
- The slowdown in total tech IPO volume witnessed in the US since mid-2015 has been less pronounced in Europe

Methodology: Sponsor-backed IPOs are defined as IPOs where there is a specific financial sponsor of the listing, such as a venture capital fund or a private-equity fund. Sponsor-backed IPOs have historically lagged in Europe versus the US, although 2014 and 2015 were stronger years.

Source: London Stock Exchange Group

Sponsor-backed IPOs



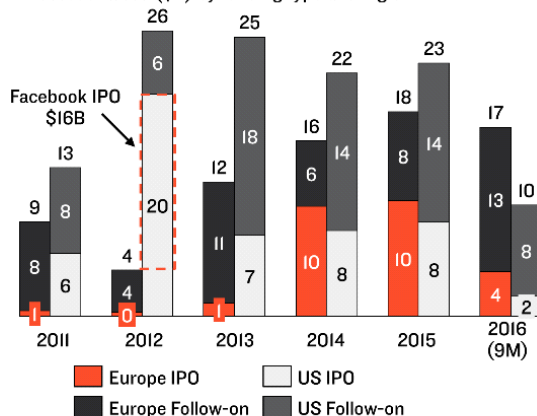
- There are many paths to reaching the public markets and in both Europe and the US, a large number of companies IPO without specific financial sponsors (VCs or PEs)
- This underlines that many companies are able to scale to a level that open up the possibility of a public offering without needing to take financing from traditional sources of capital

BUT LARGE TECH IPOs ARE POSSIBLE, AND ARE HAPPENING IN EUROPE

Proceeds raised by tech public market offerings (initial and follow-on) by funding type and region

Europe performs strongly as measured by total proceeds raised...

Proceeds raised (\$B) by funding type and region



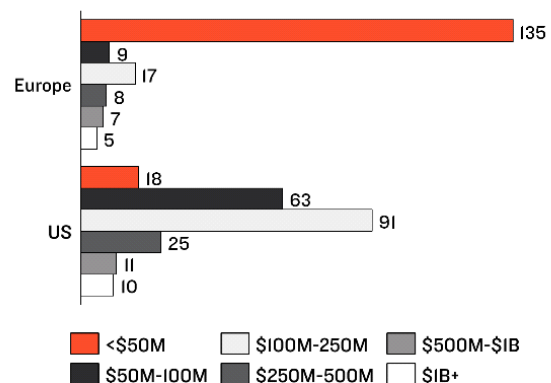
- European public tech companies have raised \$17B in initial and follow-on offerings in the first 9 months of 2016
- This compares to \$18B in 2015 and to \$10.6B invested into private tech in Europe in 2016 until September.

Note: *IPOs backed by a financial institutions sponsor (i.e. VC)

Source: London Stock Exchange Group

...and although small raises dominate, large offerings of \$500M+ are possible and happening in Europe

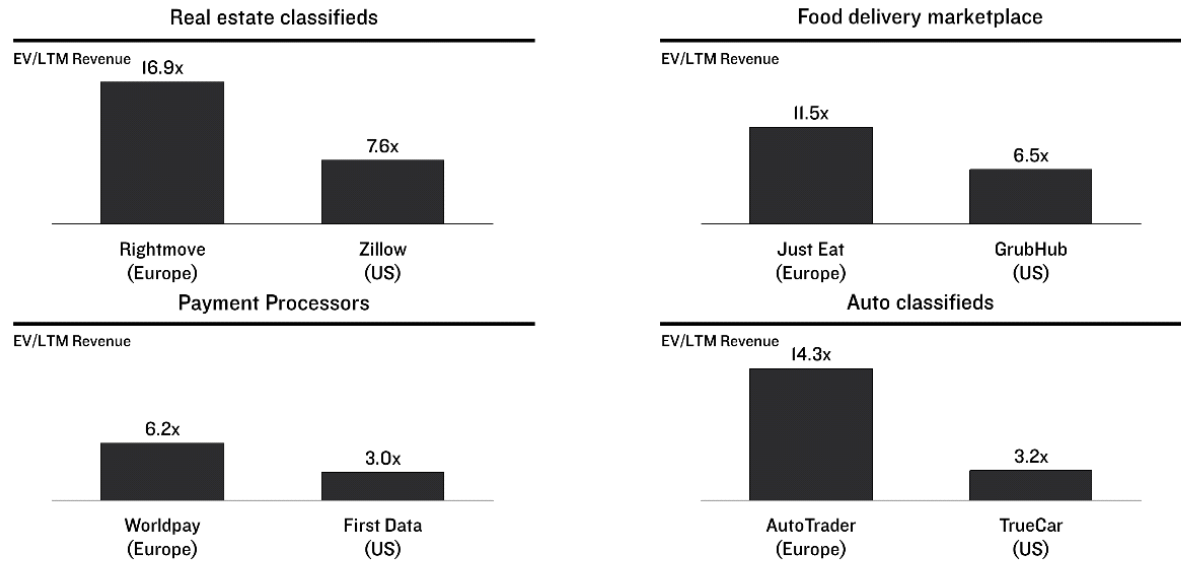
Distribution of tech IPOs by proceeds raised (\$M)



- Europe is a more supportive environment for small cap offerings (<\$50M): 135 since 2011 versus 18 in US
- But Europe is also able to support giant IPOs and has hosted 12 \$500M+ offerings since 2011, compared to 21 in the US

MULTIPLES ARE DRIVEN BY COMPANY FUNDAMENTALS, NOT LISTING VENUE

Valuation multiples for selected analogous category-leading public companies



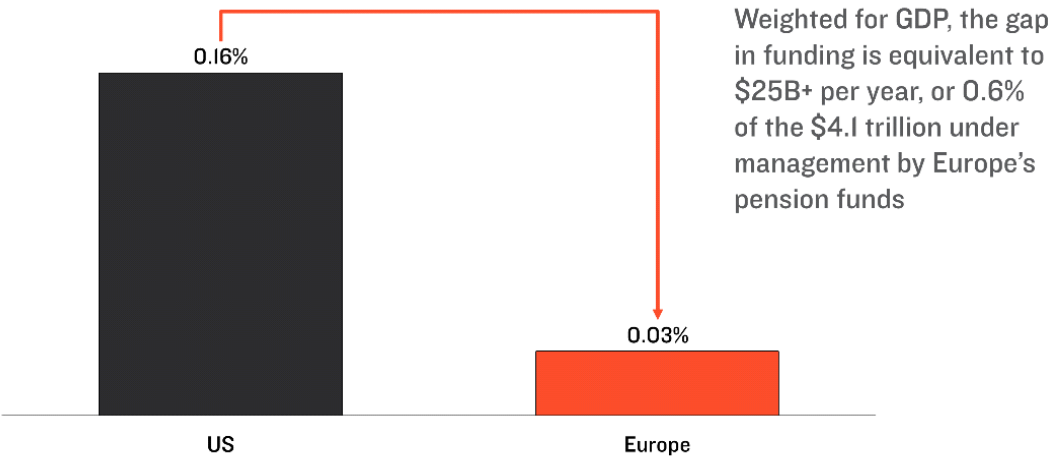
Where historically valuation multiples in tech may have varied between regions, today it is clear that multiples are driven by the attractiveness of the company, its performance and strategy and not by the listing venue.

Source: London Stock Exchange Group

0.6% OF INCREMENTAL ALLOCATION FROM EUROPE'S PENSION FUNDS WOULD ELIMINATE A \$25B+ FUNDING GAP VERSUS US

On a GDP-adjusted basis, US VCs raise 5.3x more than European VCs

Annual VC funds raised as percentage of GDP (based on 2015 data)



Source: MIST / PEREP_Analytics, NVCA, IMF

69 Slush & Atomico | The State of European Tech

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November 2016

IN THEIR OWN WORDS

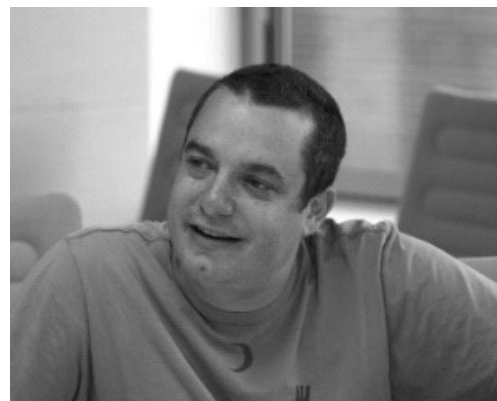


Ilkka Paananen, Co-founder & CEO, Supercell

“European tech companies can achieve great things. We’re still a small team of around 200 people, mostly in Helsinki, but we’ve been able to make games that are played by 100 million people all over the world every day. I am proud and humbled that we were able to build the first European \$10bn tech company here in Finland, because we’ve been very lucky and benefitted greatly from being in Helsinki. I’m also sure there will be plenty more to come from all over Europe.”

Saul Klein, Co-founder & Partner, LocalGlobe

“ There’s never been a better time to build a technology company in Europe. There are huge opportunities to disrupt public companies and massive multi-billion dollar markets for enterprise technology. Founders just need to make sure they raise enough capital to last because it takes a long time to build a successful business in any business climate. The internet continues to be a fundamental part of the global GDP and where we’ll see the most growth.”



Taavet Hinrikus, Founder & CEO, Transferwise

“Seeing increasing investment from big Silicon Valley firms like Andreessen Horowitz, Sequoia and Kleiner Perkins just proves what we Europeans have known for a long time. That it is not only possible to build and scale world beating companies from Europe, but that we’ve already been doing it for some time and every year we get better and better at it”

11. FINAL THOUGHTS

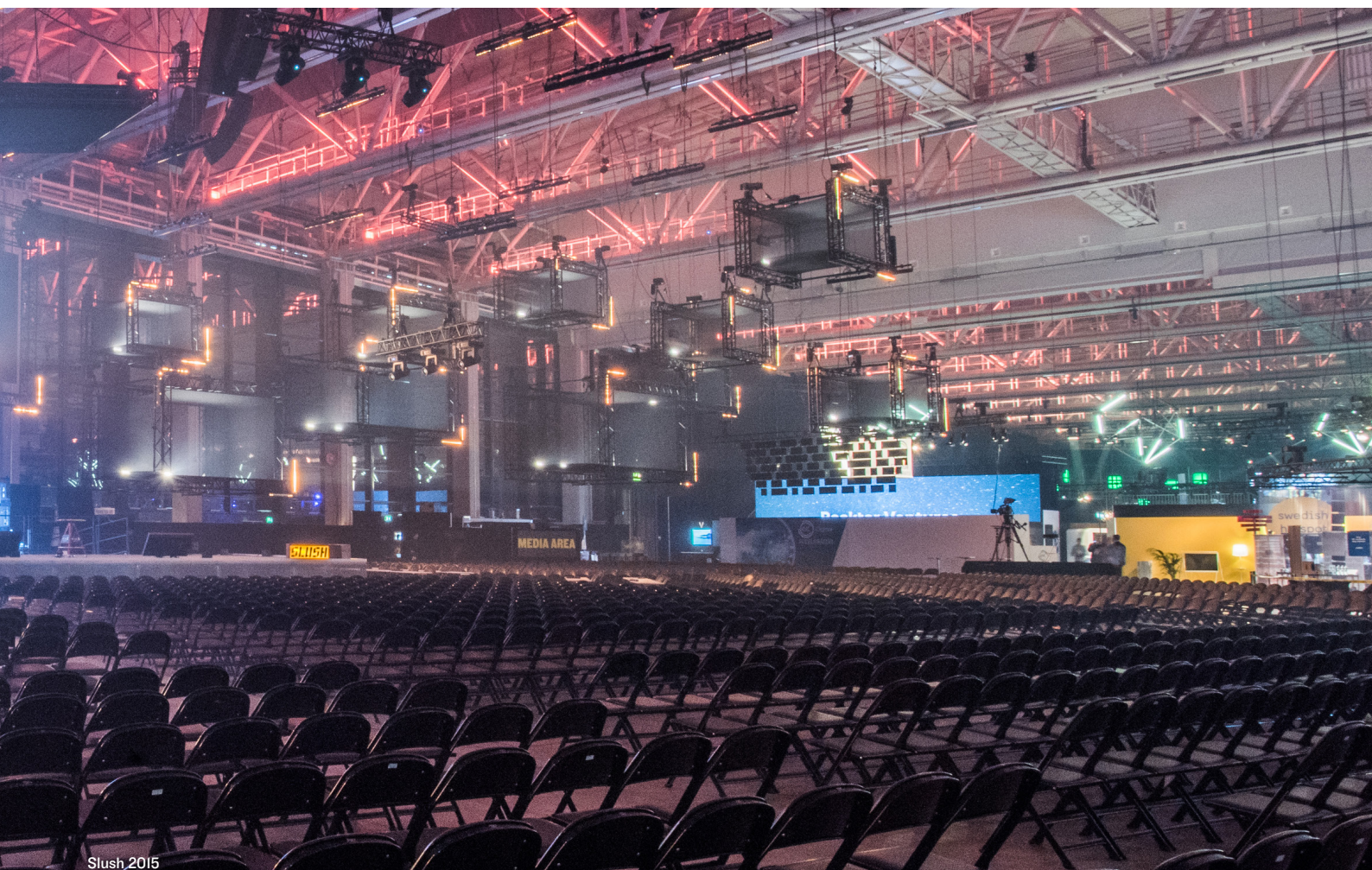




ANDRUS ANSIP

Vice-President for the Digital Single Market, European Commission

“You cannot look at the State of European Tech as a series of individual hubs or successful entrepreneurs, or assess its health based upon isolated quarters of capital rounds. You need to identify a series of signals over time to analyse the health of an ecosystem, and that is why this report is so important. It gives you the ability to look across the funding, talent and tech hub landscape in Europe and draw your own conclusions. My conclusions are simple: European tech is strengthening, it’s diversifying across the continent and it’s going deep, and we should welcome all three.”



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