



2018

MANUFACTURING TECH REPORT

A COMPARISON OF EUROPEAN & BELGIAN START- & SCALEUPS

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BEN VAN ROOSE



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While Europe might be a single market, it's definitely not a single tech scene. That fact makes it difficult to feel the pulse of the European tech. But if you take a close look, you'll quickly notice that there is interesting stuff happening in Europe.

With this report we want to provide a comprehensive review of investment in startups and high-growth technology companies across 31 countries in Europe and compare the position of Manufacturing Tech (ManuTech) in the Belgian Start- & Scaleup ecosystem. Our aim is to provide data-driven guidance, insights and inspiration to stakeholders in the European scaleup ecosystem.

We hope you find the 2018 edition of the report informative.

Sincerely,

Omar Mohout & Ben Van Roose

PARTNERS



ABOUT THIS REPORT



This report is part of a series of funding reports that are published on a quarterly basis. A yearly report will also summarize quarterly findings. Other reports complement the series, focusing on geographical markets and vertical industries such as the Manufacturing report that is written in collaboration with Agoria.



This report is a snapshot in time, aimed at analysing funding data, major trends within the industry and the regions.

Only deals of at least \$1M / € 750K are considered for this report.



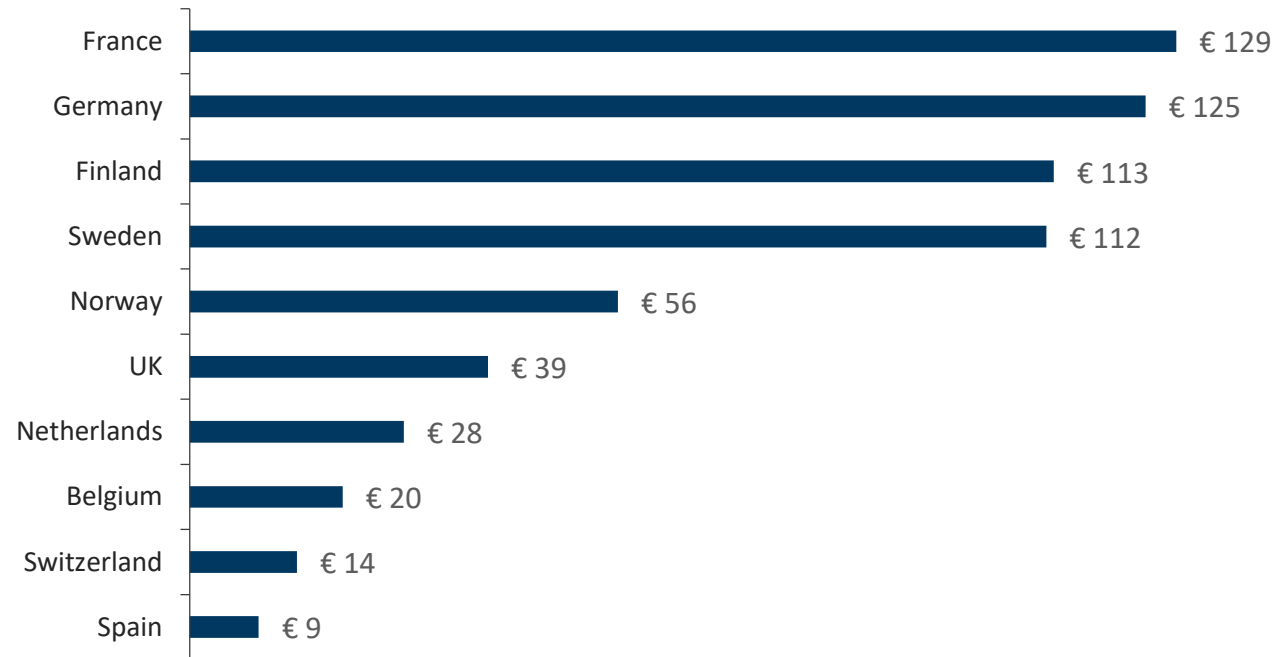
If you would like to provide your input for the report, signal an omission of data or have any other feedback, we would love to hear it. Just pop an email to omar.mohout@sirris.be or ben.vanroose@agoria.be

EUROPEAN MANUFACTURING TECH SCALEUPS

EUROPEAN HIGHLIGHTS 2016-18

- With **€ 129m** of capital raised, **France** is leading in terms of funding in a period of 2.5 y
- **German** companies closed the most deals (22) followed by **Sweden** (19) in that same period
- **Manufacturing Tech scale-ups** are almost **100% B2B** oriented
- 5 out of 6 IPO's (Initial Public Offering) are **Swedish** companies
- **IoT** is the leading technology for scale-ups (43%), **AI** is quickly filling the gap to become the future lead technology
- While **marketplace** is the dominant business model over all (with 22%), within Manufacturing Tech only 4% of scaleups follow this model.
- **Germany** is in the absolute lead of scale-up cities (Munich and Berlin switch top 2 positions in Number of deals or Amount raised)
- Most active **investors** are **German** or **Swedish**
- The **top 5** Scale-ups raised **€ 170m**, **Prodways (France)** in the absolute lead with **€ 66m**
- **5 out of 10** of the most active spin off institutes are of **Scandinavian** origin
- While Industry 4.0 is of paramount importance for Europe, **ManuTech is only number 15** in amount of investments, far behind not only leaders FinTech and HealthTech, but also e.g. HRTech, EdTech and Travel.

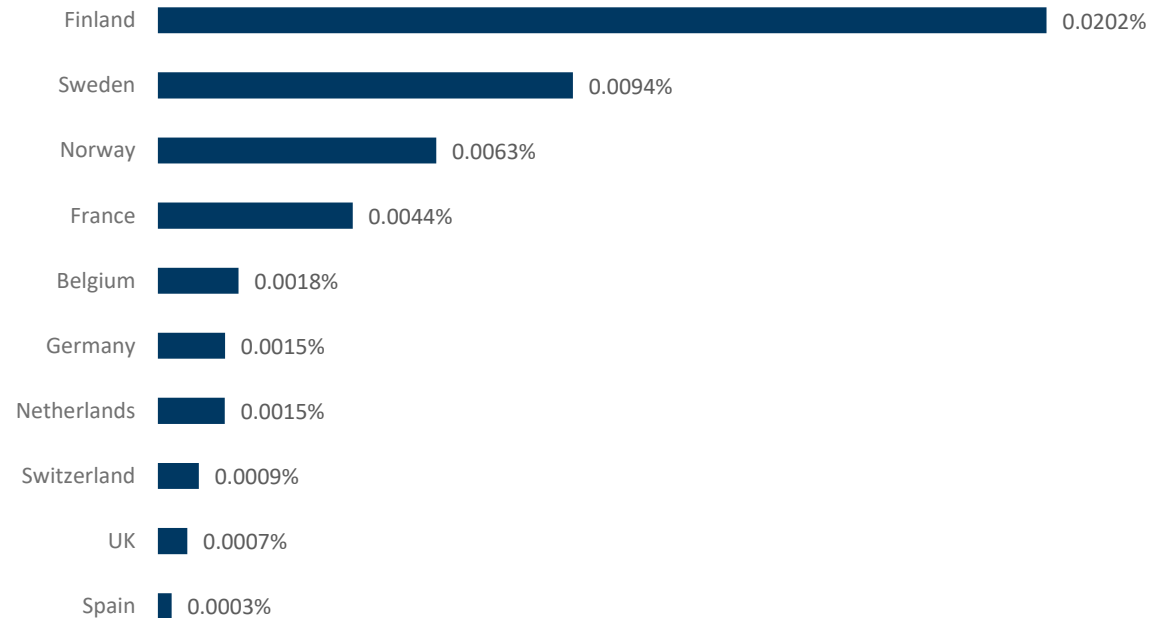
AMOUNT RAISED PER COUNTRY 2016-18*



France is leading in terms of funding in 2018. Germany is second best in terms of amount of capital raised.

Compared to our neighbouring countries with whom we are often in competition when it concerns manufacturing as a whole (Fr/D/Nl), **Belgium** has the lowest amount of money raised and is seriously lagging behind other smaller countries. Finland counting only half the inhabitants of Belgium raises more than six times the amount. **The Netherlands** succeeded in raising 40% (€ 8m) more capital over the same period.

% AMOUNT RAISED IN 2017 COMPARED TO GDP

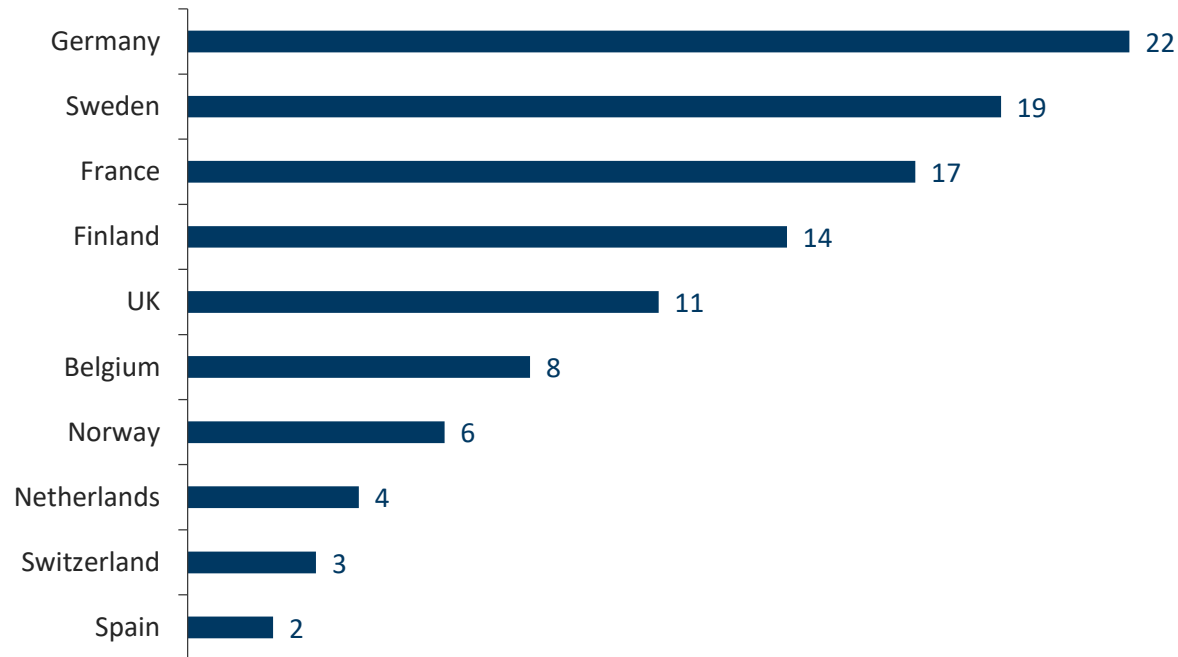


When we compare the figures of the average amount raised over the last 2.5 years with the GDP in 2017 then we discover some interesting conclusions.

The Scandinavian countries are in the overall lead and takes top 3 places followed closely by France.

Belgium enters top 5

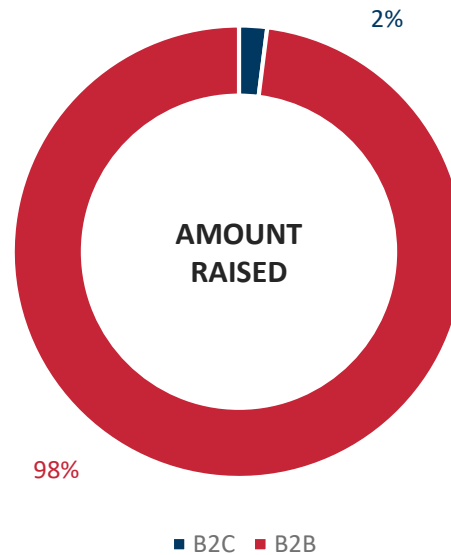
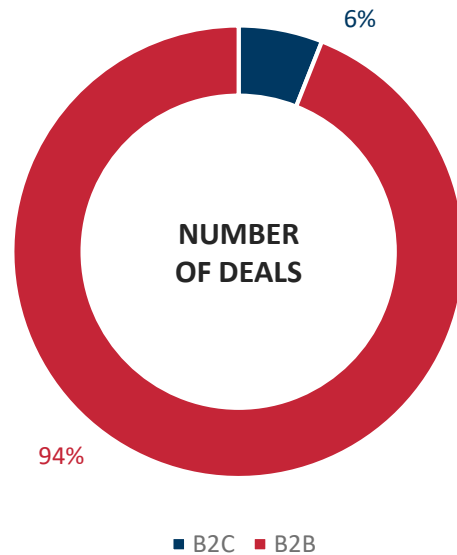
DEALS PER COUNTRY 2016-18



Belgian Scaleups succeeded in closing twice as much deals compared to **The Netherlands**. **Germany** leads far out. **Sweden**, size and amount of habitants comparable with Belgium, closed more than double the deals of Belgium and takes second place in this list.

This confirms the perception that Belgian investments are smaller than average

B2B VS B2C COMPARISON



Not surprisingly, Manufacturing Tech scaleups are B2B oriented. The only exception are scaleups that create 3D printing devices for the consumer market.

Same situation on the **Belgian** ecosystem where almost 100% of the known Scaleups in Manufacturing digital technologies are B2B oriented.

AVERAGE FOUNDING YEAR

2010

France

Sweden

Ireland

Finland

2011

The Netherlands

Denmark

Switzerland

Norway

Italy

2012

Spain

Portugal

2013

Belgium

Germany

Iceland

2014

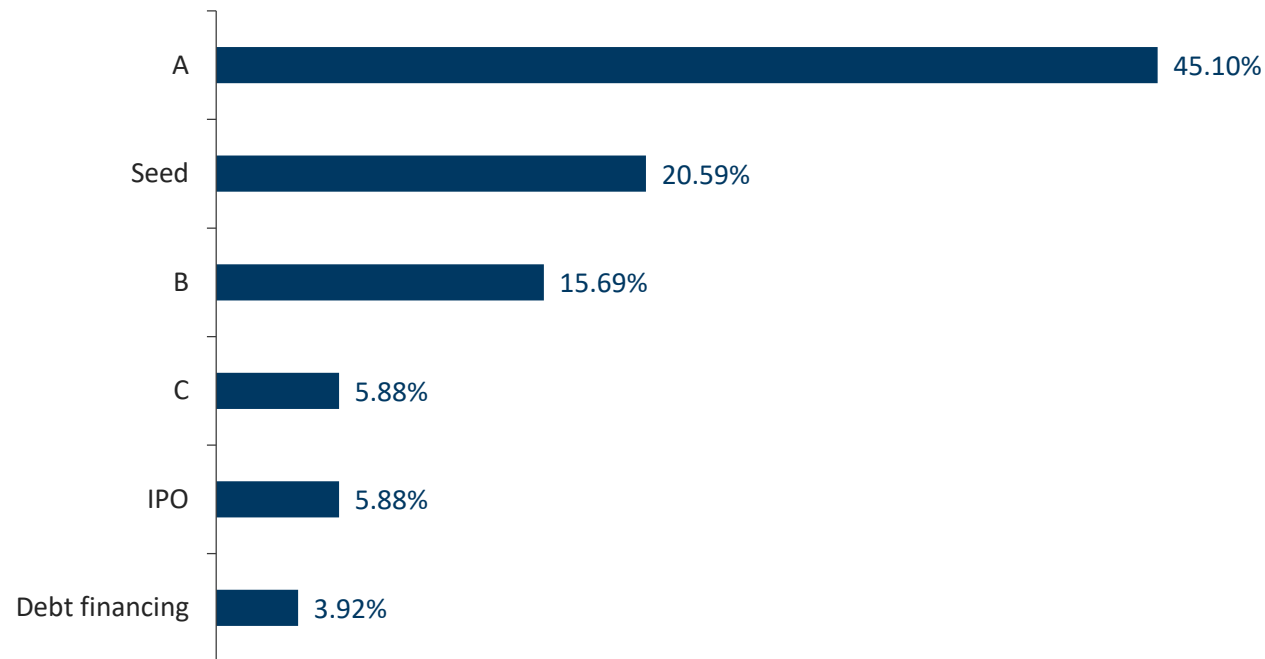
UK

To raise a series A in Europe, a company needs to be founded in 2012.

In average startups need to bridge 5 years before getting a Series A.

It's a long journey in a death valley.

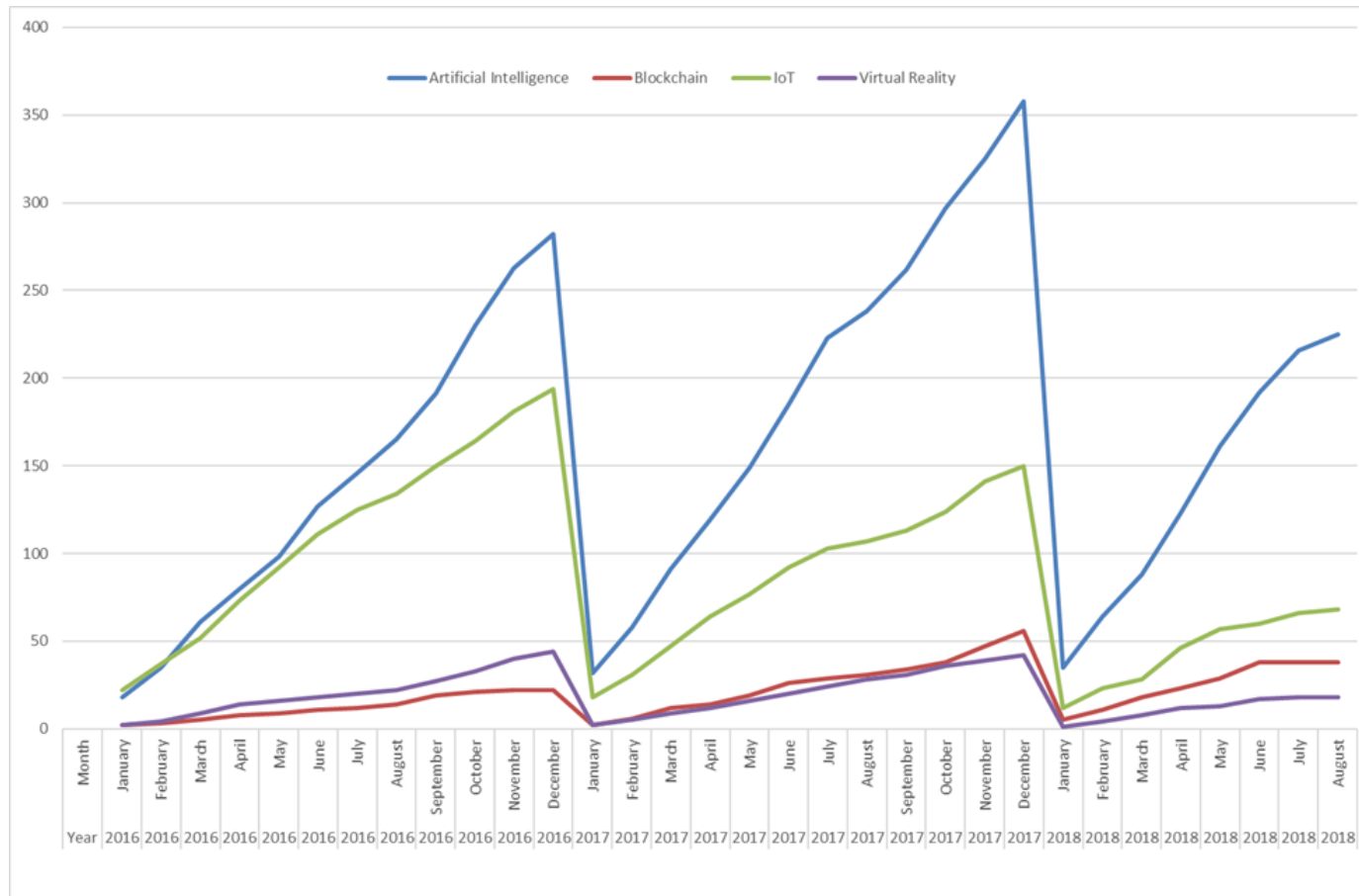
DEAL TYPE 2016-18



Given the threshold of € 750K/\$ 1M, it's not surprising that the majority of deals are series A.

Out of 6 IPOs; Crunchfish, Acosense, Unibap, XMReality, Prodways and Bioservo Technologies all companies are Swedish except for French Podways!

EVOLUTION OF TECHNOLOGIES

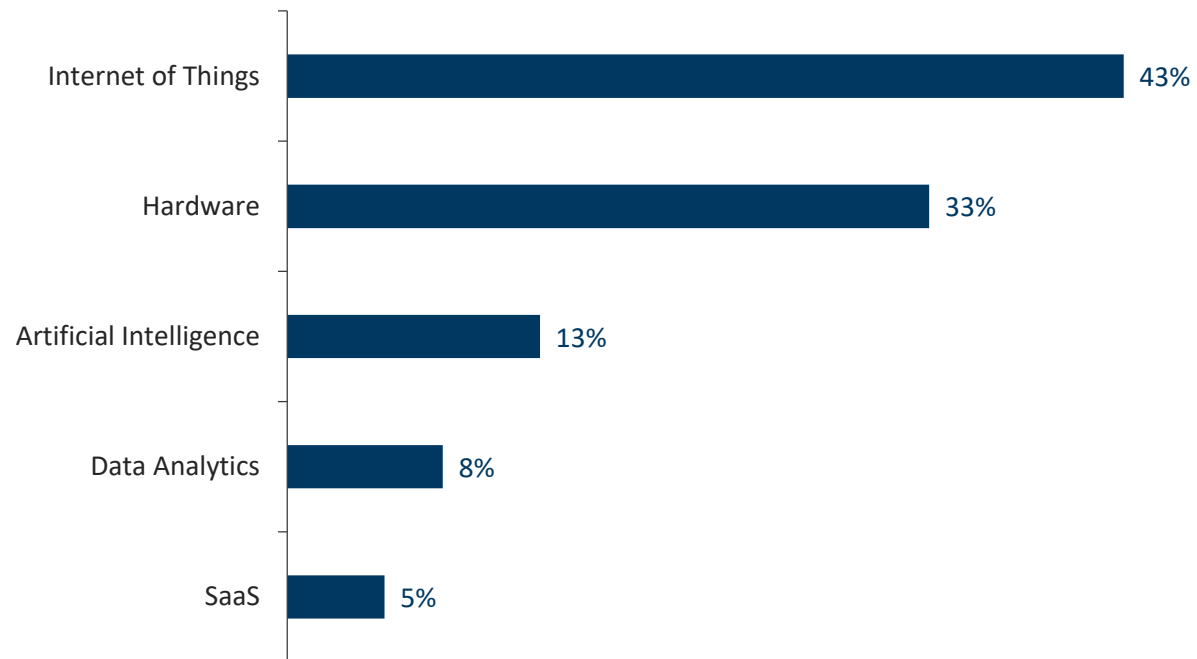


When looking at the number of deals investing in different technologies over the **total population of scaleups**, we see that IoT reached its peak in 2016 and is slowing down, suggesting that the technology is becoming mainstream.

Blockchain is not a big contender yet, and virtual reality remains a niche technology.

However, more deals were made in companies building on **Artificial Intelligence** than in the 3 other technologies combined!

TYPE OF TECHNOLOGY 2016-18 (IN MANUTECH SCALEUPS)



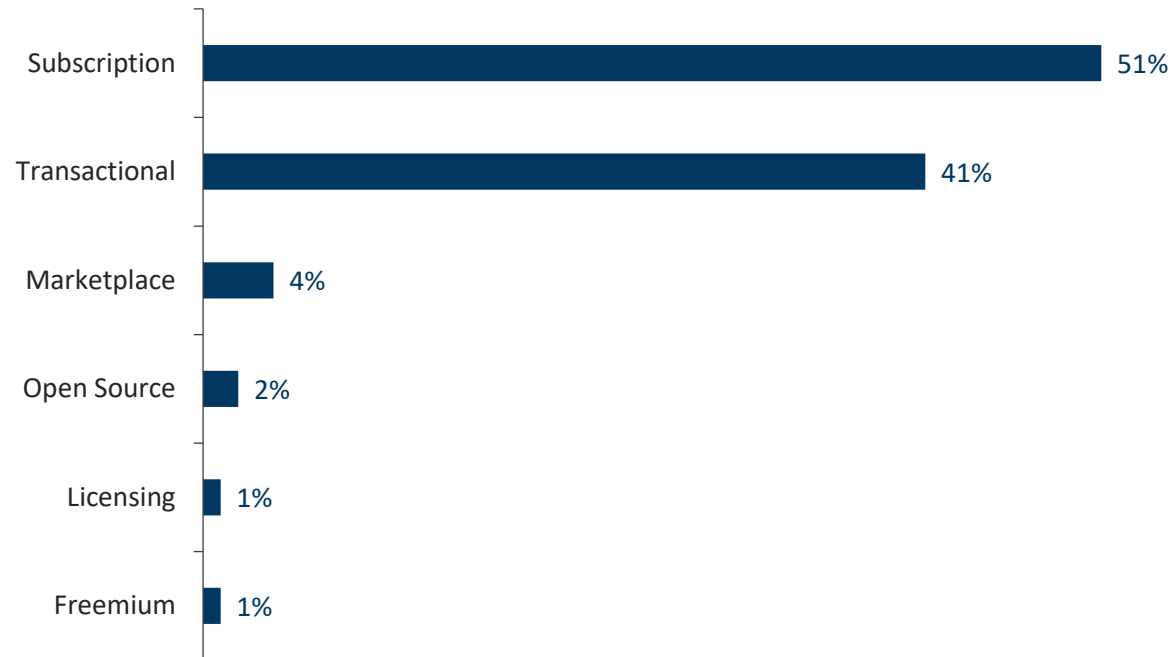
When considering only the manufacturing tech scaleups (ManuTech), not surprisingly, **Internet of Things is the leading technology**, counting for 43% of the total deals.

France is leading in IoT, while hardware is dominated by Sweden.

Based on the trends on the total population however, we can expect that **Artificial Intelligence and Data Analytics** will also become the new star on the horizon in this area.

SaaS is becoming the standard, and no longer an innovative technology.

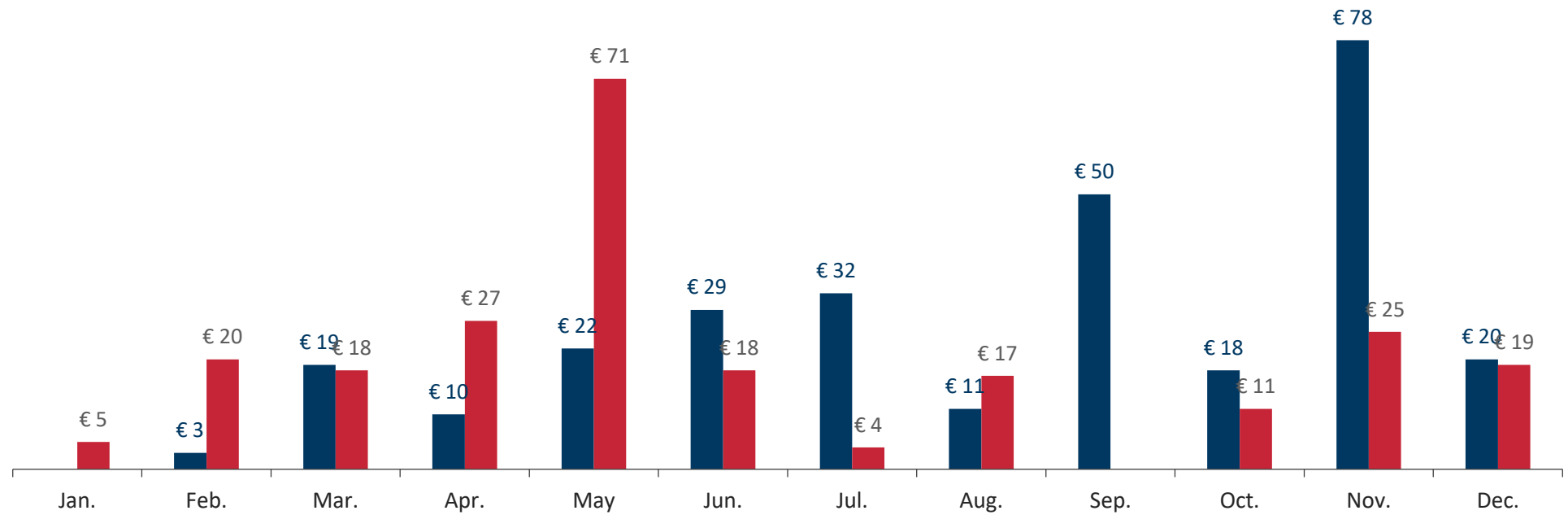
TYPE OF BUSINESS MODELS 2016-18



While the **marketplace** approach is the leading business model for European scaleups in general with 22%, this is clearly not the case for Manufacturing Tech scaleups, where **barely 4%** follow this model.

This confirms the observation that digitization efforts in Manufacturing Industries have up until now been focused a lot on internal operations and efficiency. The shift to a more **platform-oriented economy** is only just starting in this area.

CAPITAL RAISED 2016-17*



The total capital raised in this area seems to be rather stable over the years 2016-2018. ManuTech is **only just within the top 15 topics**, while Industry 4.0 is a very important theme for Europe.

It is also notable that of the **1100 funds** investing in European Scaleups, only 1 US fund is purely dedicated to Industry 4.0 (robotics), while there are dedicated funds e.g. for AgriTech, InsurTech and Travel.

MANUFACTURING TECH SCALEUP CITIES 2016-18

NUMBER OF DEALS

1. Berlin
2. Munich
3. Stockholm
4. Oulu
5. Oslo
6. London
7. Helsinki
8. Antwerp
9. Uppsala
10. Paris

AMOUNT RAISED

1. Munich
2. Berlin
3. Oslo
4. Oulu
5. Malmö
6. Stockholm
7. Helsinki
8. London
9. Lappeenranta
10. Paris

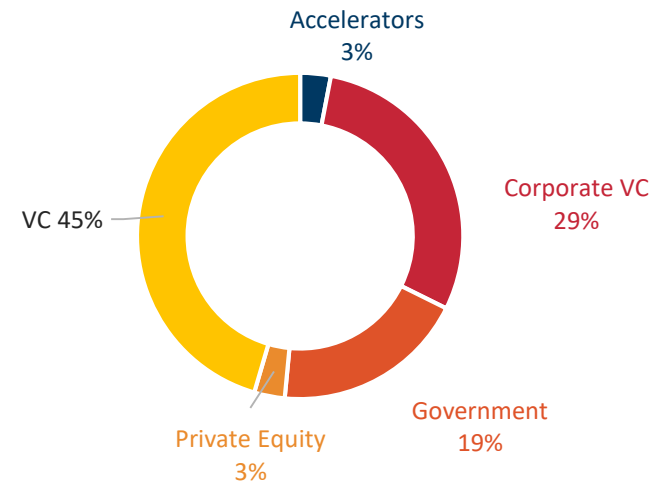
Not surprisingly this slide confirms the figures per country. The ranking of the Number of Deals as well as Amount raised is led by **German** Scaleups (top 2 Berlin/Munich or vice versa). Top 5 on both lists only show German and Scandinavian cities. With Oslo (**Norway**) appearing in top 5 of both lists.

Positive note: **Antwerp (B)** appearing in the top 10 list (8th position) of the number of deals.

MOST ACTIVE INVESTORS

1. Unternehmertum Venture Capital Partners (Germany)
2. EQT Ventures (Sweden)
3. Bayern Kapital (Germany)
4. Almi Invest (Sweden)

BREAKDOWN OF INVESTORS



xyz

TOP 5 BIGGEST INVESTMENTS*

PRODWAYS
THE NEW WAY OF PRODUCING

€ 66M

#01

crunchfish

€ 46M

#02

relayr.

€ 21M

#03

ARUNDO
ANALYTICS

€ 20M

#04

NORSK
TITANIUM

€ 17M

#05

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*In amount raised

MOST ACTIVE SPIN OFF INSTITUTES 2016-18

1. VTT (Finland)
2. Swedish Defence Research Agency (Sweden)
3. Mälardalen University (Sweden)
4. Rutherford Appleton Laboratory (UK)
5. KU Leuven (Belgium)
6. TU Berlin (Germany)
7. Institute for Nanoscience and Cryogenics (FR)
8. École Polytechnique Fédérale de Lausanne (CH)
9. Aalto University (FI)
10. Karolinska Institutet (Sweden)

33% of European Manufacturing Tech scaleups are spin-offs or spin-outs. That's more than **three times** as much compared to the other industries (9% average). **In Belgium that figure is 24% for ManuTech.**

KU Leuven (**Belgium**) enters the Top 5 of the most active spin offs

Note the excellent performance of the universities in Sweden.

ACCELERATORS, BY NUMBER OF FUNDED SCALEUPS 2016-18

1. ESA Business Incubation Centre (multiple countries)
2. EIT Digital (multiple countries)
3. GettyLab (Germany)
4. DB mindbox (Germany)
5. StartX (US)
6. Entrepreneur First (UK)
7. Paris&Co (France)

29% of the European Manufacturing Tech scaleups graduated from an acceleration program. That's above the 23% of industry average.

Program alumni don't necessarily raise more money, **but they are two years younger on average when they raise money.** It might well be that they can start to scale earlier or have better access to investors thanks to the programs.

MOST ACTIVE CORPORATE VENTURE CAPITAL 2016-18

1. Intel
2. Faurecia
3. Robert Bosch
4. Asahi Kasei
5. Essenscia Innovation Funds
6. Renault
7. SNCF
8. Klöckner & Co

Corporate Venture Capital is involved in 23% of all European deals.

Essenscia Innovation Funds results in a successful story.

EUROPEAN VENTURE CAPITAL

Click on the above link to access the full dataset

BELGIAN MANUFACTURING TECH START- & SCALEUPS

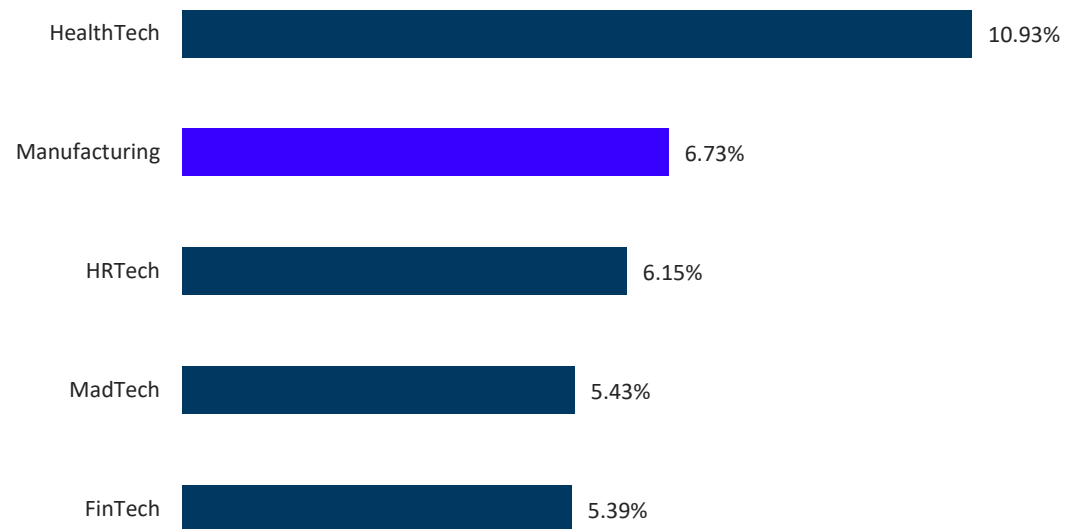
BELGIAN HIGHLIGHTS 2018

From here on we focus purely on Belgian companies, taking not only scaleups, but also startups into account.

- Historically, comparing all **investments over more than 35 years**, **ManuTech takes the 2nd position** in Belgium with 6.73% of the total investments.
- However when considering investments **over the last 5 years** ManuTech doesn't even reach the stage and is **only ranked 4th** with less than 5% of the investments .
- When we make a segmentation according to the **Industry 4.0 competences**, **First Time Right Production** and **Transparency Solutions** cover almost 50% of the market.
- Not surprisingly, and in line with the European analyses, **Internet of Things is the leading technology for scaleups** in Belgium, although not as significant with only 20% compared to 43% in Europe.
- **24% of Belgian Manufacturing Tech scaleups are spin-offs or spin-outs**. That's more than **double** compared to other industries (9% average). KU Leuven is the European number 5 of most active spin- offs
- Almost **100%** of the known Startups in Manufacturing digital technologies is **B2B oriented**.

MANUTECH POSITIONING IN START- & SCALEUP ECOSYSTEM

Since 1980's overall in **Belgium**

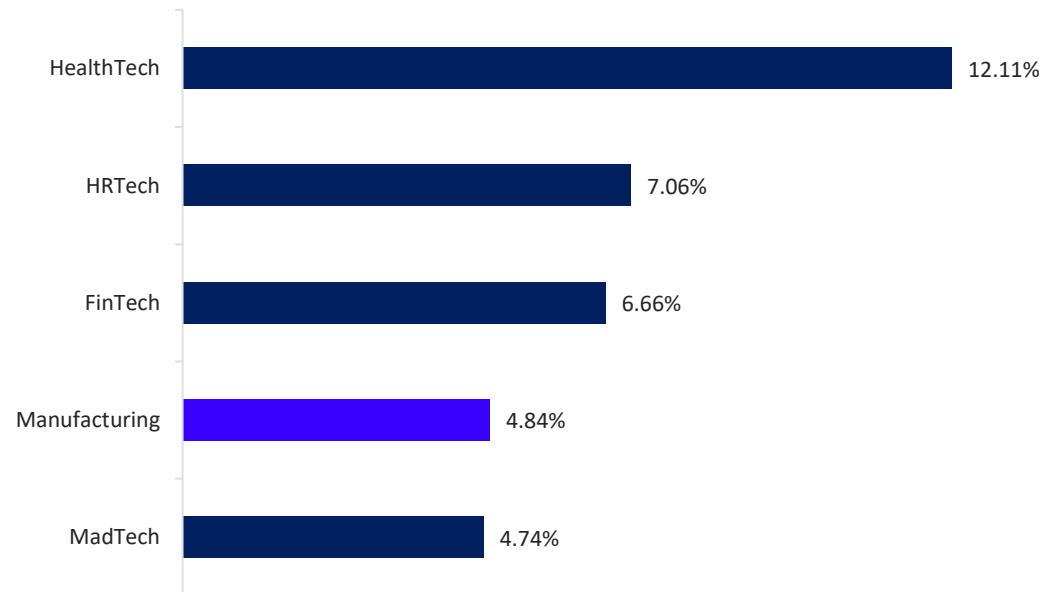


Since the 1980's Manufacturing Tech covers **the second position overall in Belgium** in the Start- & Scaleup ecosystem.

Healthtech is clearly in the lead.

MANUTECH POSITIONING IN START- & SCALEUP ECOSYSTEM

Over the last 5 years in **Belgium**

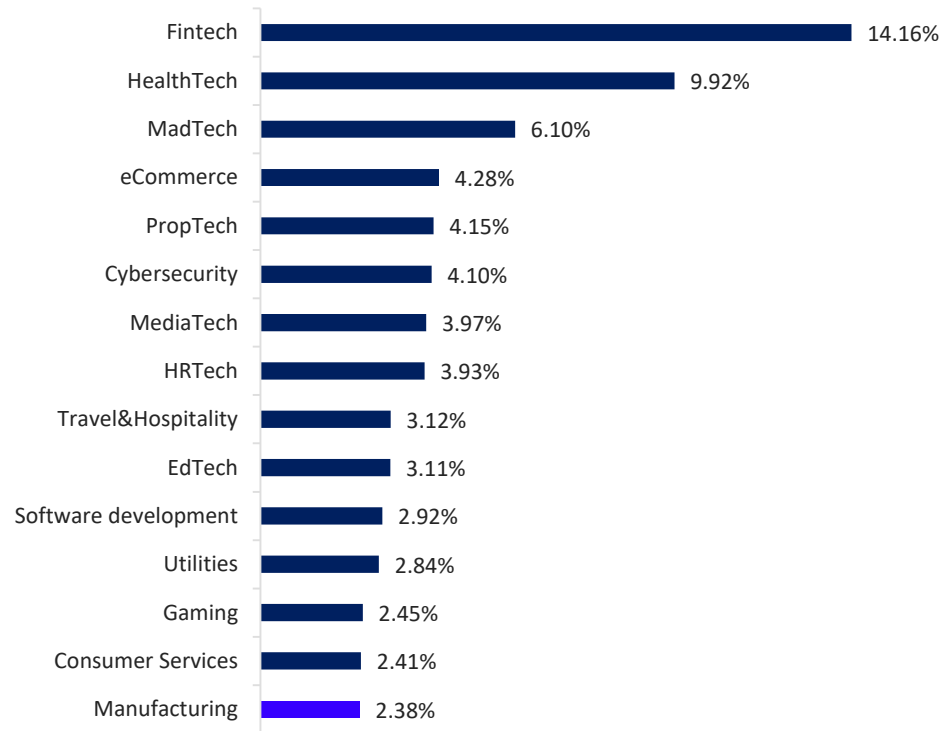


When we analyse the investments over the last **5 years**, **HealthTech** is still clearly in the lead with **12.11%**

Compared to overall investments since 1980 **ManuTech** lowers to only **4th place** with an amount of **2.762K€**, where historically ManuTech covers second place.

MANUTECH POSITIONING IN START-& SCALEUP ECOSYSTEM

In Europe over the last 2.5 years



ManuTech in Belgium (4th place) is doing much better compared to the figures concerning the investments over the **last two and a half years in Europe**, where investments in ManuTech only take **15th place**, with less than **2.5% of the investments (EU 5442 K€)**.

Fintech takes a clear lead, HealthTech is still on top.

SEGMENTATION ACCORDING TO I 4.0 COMPETENCES

1. Complexity Management
2. Fast Response
3. First Time Right Production
4. Operator Support
5. Production Network
6. Transparency

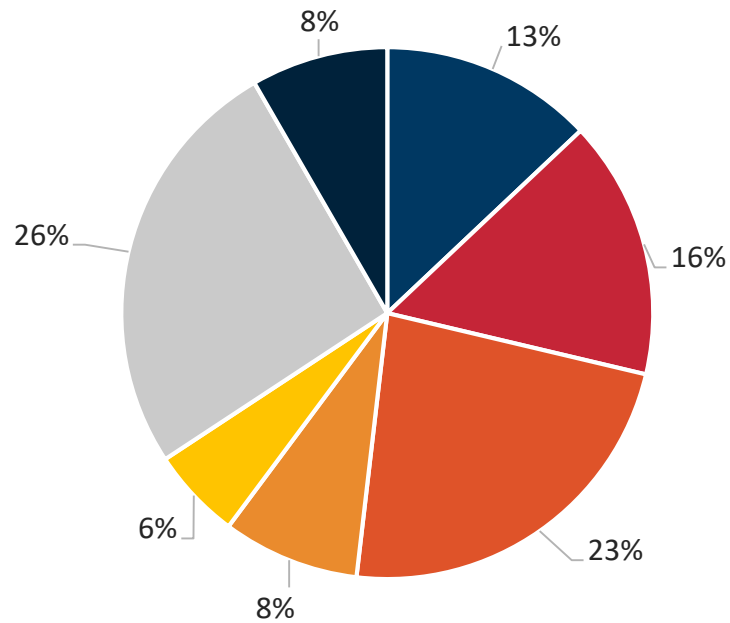
Industry 4.0 is segmented into these **6 competences**.

Manufacturing Industries need to overcome those competence-related challenges and master new skills and capabilities related to them.

ManuTech Start- & Scaleups use various technologies to tackle those challenges and are segmented accordingly in this report.

See attached definitions below.

SEGMENTATION ACCORDING TO I 4.0 COMPETENCES



- Complexity management
- Fast Response
- First time right production
- Operator support
- Production network
- Transparency
- Other

108 Start-ups are known being active in providing Manufacturing Tech related solutions. **First Time Right Production and Transparency solutions** are far out in the lead and cover almost 50% of the market.

Most used technologies for these competences are **AI, IoT and Connected Hardware.**

CONCLUSIONS

There is an urgent need for a revival of ManuTech in the European and Belgian Start- & Scaleup ecosystem. (Manufacturing) Industries remain the backbone of a strong economical tissue. It is important that this type of industries stay in Belgium. We cope with a lot of challenges (amongst them labour cost...) compared to neighbouring, but most of all southern and eastern (European), countries. Industry 4.0 and the Made Different program resulted in Factories of the Future which succeeded in keeping the business in Belgium and even growing stronger than ever. Digitisation of Manufacturing Industries and Manufacturing processes is one of the top challenges starting from now, for every Manufacturing Company. Technologies used in manufacturing evolve with the speed of light; Internet of Things is becoming mainstream, Blockchain is not the big contender as we expected, Artificial Intelligence is happening today, Augmented & Virtual reality are rather niche.

Although Manufacturing Industries need to be considered as part of the backbone of a strong economy, it is disturbing to determine that ManuTech only takes 15th place, representing only 2.5% of the investments in Europe over the last 2.5 years.

Compared to the investments in ManuTech over the last 5 years in Belgium we could conclude that 4th place is not that bad. But maybe we should only consider this as a good base. Historically, total investments over the last 35 years, ManuTech was only lead by HealtTech and covers second place overall since the 1980's.

For that reason we strongly appeal to young entrepreneurs to keep developing ManuTech Solutions and to Stakeholders, Ventures and Funds to augment their investments in ManuTech Solutions.

METHODOLOGY

Scaleups, not startups, are generating added value, create jobs, expand international and create economic value for stakeholders and society. This group is attracting the lion share of (venture) capital, in some countries of up to 90% of all capital. In other words, we use the Pareto distribution rule to create an accurate view on the venturing landscape. Only deals of at least \$1M / € 750K are considered.

We use a data-driven approach to track financing activity for European tech companies.

Companies includes web, app, mobile, digital products and services, software, marketplace, connected hardware, data-driven and HardTech companies. Companies that have their HQ or launched in Europe are considered. LifeScience and BioTech (except software solutions targeting this industry), non digital CleanTech (such as solar panel producers etc), eCommerce (such as Hellofresh, Zalando etc), research institutes and consultancy companies are excluded.

We encourage you to review the methodology to better understand the numbers presented in this report.

For the second part of this report we only considered Belgian Start- & Scaleup with a focus on development of solutions supporting Manufacturing Industries (ManuTech) and related to following technologies; Additive Manufacturing, Internet of Things, Software as a Service, Artificial Intelligence, Robotics & Dronebots, Data Analytics, Connected Hardware, Augmented & Virtual Reality, Security & Safety.

All solutions are related to the Industry 4.0 competences as described in the chapter definitions.

Deals with a non-disclosed value or lacking value indication are not counted. If an amount is described as a seven-figure number, the lowest possible value has been counted. Funding is registered based on announcement date. All currencies (USD, GBP, CHF, SEK etc) are converted to Euro using aonda.com. The number of employees is captured on the moment of fund raising and based on the press release, LinkedIn, Xing, Viadeo or the company's website.

The founding year and location is based on information in press releases, company website, Crunchbase, LinkedIn or Xing. If deal information is being detected or corrected after closing the month, quarter or year, it will be included in future reports. Funding of both private and public companies are considered. Debt financing, IPOs, media for equity, crowdfunding, Initial Coin Offering, private placements, post IPO equity, private equity, grants and convertible loans are included.

THE COUNTRIES ARE:

Albania, Austria, Belgium, Bulgaria, Croatia, Czech Republic, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Latvia, Luxembourg, Malta, Netherlands, Norway, Poland, Portugal, Romania, Serbia, Slovakia, Slovenia, Spain, Sweden, Switzerland and UK. Data of Turkey and Israel is being used as a benchmark for Europe.

OMAR MOHOUT

Omar Mohout is a former technology entrepreneur currently active as Entrepreneurship Fellow at Sirris. Mohout is a widely published technology author, C-level advisor to high growth startups as well as Fortune 500 companies and Professor of Entrepreneurship at Antwerp Management School. He is author of 'Pricing Strategies for Startups', 'The Belgian startup landscape', 'Crowdfunding in Belgium' and the popular 'Startup Master Class series'. A contributing author to the '100 Days Digital Marketing Plan' and 'The Future of Business' books.

Mohout is a columnist; Co-chair of the Circle Of Growth, Organizer of the Growth Hacking Meetup, Co-founder of the #BeTech Community and Member of the Board of Directors at Startups.be, Teamleader and Aproplan. He is also a mentor at Founder Institute, IdeaLabs, Startathlon, Virtuology Academy, Flanders DC, Nexxworks and Belgium Ambassador at World Startup Report.

Mohout is a keynote speaker and panellist on technology, entrepreneurship and innovation topics at leading conferences.

BEN VAN ROOSE

Ben is Head Manufacturing Industries at Agoria and has +30 years experience related to Manufacturing Industries. He is, amongst others, Member of the Board of Directors at CLEPA and CLCCR.

Ben coordinates the work of an enthusiastic and inspiring team at Agoria which focuses on Boosting Belgian Manufacturing Industry and start- & scaleups through various activities and tools. Taking Manufacturing Industries on a journey through Industry 4.0. Connecting Manufacturing Industries and Stakeholders, offering a link between Manufacturing Industries and Start- & Scaleups, supporting learning networks and roadshows...



Together, we turn innovation into success

How to make your product, factory and business futureproof? The 150 experts of Sirris, the collective centre of the technology industry, help each year about 1,300 companies to make the right technological choices and to realise their innovation projects successfully, enabling them to strengthen their competitive position over the long-term. Our people combined with our exclusive, high-tech infrastructure on different sites over the country and our extensive network of (inter)national partners give us a unique position in industrial technological innovation in Belgium. The aim is always to find applicable solutions to the real challenges faced by technology entrepreneurs and startups.

For more information on how Sirris can help your company success, please visit www.sirris.be.



.AGORIA

Agoria paves the way for all technology-inspired companies in Belgium that increase our quality of life through the development and application of technological innovations. "**Improving quality of life**", that's our main objective.

These +1.900 companies employ +300,000 people.

Agoria's **unique position**, special **know-how** and extensive **network** form the basis on which we help create the context to strengthen the dream marriage between entrepreneurial drive and technology.

Agoria's services are built on three pillars: **consultancy services to entrepreneurs, business development** and the **creation of an optimal business environment**.

You'll find more information on how Agoria can help accelerate your digital manufacturing transformation journey on www.agoria.be & [#ManufacturingCommunity](https://twitter.com/ManufacturingCommunity)

2018 MANUFACTURING TECH REPORT SOURCES

SPECIAL THANKS

Serkan Ünsal, startups.watch for covering Turkey and Tech.eu for the most detailed coverage of Europe

WEBSITES & NEWSLETTERS

150sec, agfundernews.com, allbrain.org, alliancy.fr, alloweb.org, angellist, arcticstartup, avoltapartners, barcinno, beahurst, breakit.se, businessinsider.com, calaofinance.com, cbinsights, cityam.com, cmuportugal.org, coindesk, companisto.com, computable.nl, computable.be, datafox, datanews.be, dealroom, derbrutkasten, deutsche-startups.de, digital.di.se, dn.no, dublinglobe.com, e52.nl, economyup.it, emeasstartups.com, enterprise.cam.ac.uk, eu-startups, feedsquared.com, finanznachrichten.de, finsmes, fora.ie, frenchweb.fr, funderbeam.com, geektime.com, gigaom.com, GIMV, globalcorporateeventuring.com, noah conference, go4venture.com, goaleurope.com, goodnewsfinland.com, gruenderszene.de, high-tech-gruenderfonds.de, ideospace.cam.ac.uk, Index.co, itespresso.fr, ivca.ie, ivc-online.com, journaldunet.com, jvpvc.com, labsoflatvia.com, lesechos.fr, lightwaveonline, linkis.com, loogic, maddyness.com, marketwatch, mattermark, myfrenchstartup.com, nocamels.com, nordurskautid.is, oresundstartups.com, palico.com, Pando.com, parisandco.com, parkwalkadvisors.com, pehub, pitchbook, portugalstartups.com, privateequitywire.co.uk, prnewswire, regional-it.be, rudebaguette.com, scotsman.com, seedrs.com, shifter.no, siliconcanals, siliconrepublic.com, spotfolio.com, sprout.nl, startabliish.at, startupitalia.eu, startupjunction, startups.be, startups.co.uk, startups.watch, startupticker, swedishstartupspace.com, syncni.com, syndicatoroom.com, tech.eu, techberlin.com, techcitynews, techCrunch.com, techsite.io, theheureka.com, thetechportal.com, toftecompany.com, trendingtopics.at, trendsonline.dk, unquote, usine-digitale, vc-europe, voltassocies.com, wall-street.ro, webcapitalriesgo.com, webrazzi, websummit, widoobiz

SOCIAL MEDIA

Abyssinia, amaigre, atizo, AudingaJa, Audingajar, austrianstartup, Barcinno, BeTech_, blpoland, boostturku, bot_innovation, Brainport_regio, breakit_se, BridgeBudapest, cdixon, chrysalis leap, chulu, ClujHub, CowboyGamedevBt, cphftw, csdeptucy, CyprusInno, davidcohen, Digital_Magics, dinaistwitting, DStartups, dublin_startups, dziennik, El_Startupero, Emerce, EndeavorGr, ericries, etohum, festivaluprise, frontiersci, goodnewsfinland, growthfunders, gruenderszene, health_xl, HelloPirates, hightechcampus, how_to_web, HUB13_Helsinki, hubvilnius, ICTSpring, ID_GC, ImpactHubBA, ImpactHubRO, impacthubzurich, ineshaeufler, InkubatorStart, inkubatorypl, Innovaspain, InnovAthens, InternetWeekLJ, istanbulstartup, iTXFROM, joonathan, JouveSud, Kbinkubators, KBinkubators, keskkyla,

2018 MANUFACTURING TECH REPORT SOURCES

SOCIAL MEDIA (CONT.)

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DEFINITIONS

COMPLEXITY MANAGEMENT

Managing increased complexity: Shifting from large series to small series or even unique products will generate more complexity for companies. This complexity can be seen in the product development and engineering process, front office, production, and so on. Companies need digital tools to manage this complexity.

FAST RESPONSE

Enabling a fast response: Companies that target (ultra-)short lead times need to rethink their processes, both in terms of the front end (fast responses to customer demands) and production (short production lead times). This requires organisational changes, extensively supported by digital tools.

FIRST TIME RIGHT PRODUCTION

Enabling first time right production: Companies that produce (small series) of unique highly-personalised products need to ensure that the products they make are fault-free. The product development and production processes both need to be adapted to enable first-time-right production.

OPERATOR SUPPORT

Assisting operators with their tasks: The increasing complexity, shift towards unique products (small series) and demand for ultra-short lead times increases operators' cognitive load. Digital support tools are needed to facilitate their tasks, with the main goal being to provide operators with correct, up-to-date and 'operator-tailored' information at the right time, and gather input from operators so as to facilitate new developments and production processes.

PRODUCTION NETWORK

Creating a production network: Manufacturing is becoming more complex and is spread across various (global) factories and dynamic supply chains. Linking the different factories (and supply chains) presents certain challenges when digital technologies play a key role.

TRANSPARENCY

Making the shop floor transparent: In an interconnected production environment (Industry 4.0), available information/data will be used to optimise the various processes (e.g. planning, logistics). This requires an accurate (real or near-time) overview of the shop floor status. Making the shop floor transparent is an important first step.

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