<table>
<thead>
<tr>
<th>From here</th>
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<td>Disruptive innovation</td>
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<tr>
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<td>Data, design, software and business models</td>
</tr>
<tr>
<td>Size of workforce and assets</td>
<td>Scale of networks and customer pools</td>
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<td>Physical infrastructure</td>
<td>Digital infrastructure</td>
</tr>
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<td>Western-centric innovation</td>
<td>The rise of Asia</td>
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<td>Standardisation</td>
<td>Customisation</td>
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<tr>
<td>Finite choices and effective anti-trust tools</td>
<td>Seemingly infinite choices, yet concentration limits competition</td>
</tr>
<tr>
<td>Services and products are perfected before launched</td>
<td>‘Beta’ and ‘pivot’ are the new business model</td>
</tr>
<tr>
<td>Innovation in labs and garages</td>
<td>Democratisation of innovation</td>
</tr>
<tr>
<td>Focus on early-stage start-up funding</td>
<td>Focus on scale-up growth capital</td>
</tr>
</tbody>
</table>

Source: European Political Strategy Centre
One of the defining characteristics of the digital age is the tremendous speed with which innovation is advancing.

In the post-war industrial age, innovation typically took place in incremental steps: Dedicated research teams, typically in long-established companies, would develop new products and services in a comparatively leisurely fashion – at least if one considers today’s frenetic pace of innovation. The innovation itself often consisted of an improvement or enhancement to an existing product or service.

Today, while incremental innovation is still valid, disruptive innovation – a phenomenon first described in the 1990s – has become the new norm of success. New players are entering existing markets more easily and gaining rapid dominance, challenging incumbents thanks to genuinely different innovative products or services.

In fact, many of the most successful recent innovations were developed not by the powerhouses of the 20th century, but by a new generation of data-driven tech firms that are creating or taking over the markets of the future.

Many have grown exponentially in size and reach, moving quickly into the top ten of the global corporate elite. In 2006, there was just one tech company among the world’s ten largest firms in terms of market capitalisation. Today there are seven and the top five are all digital. None are European.

While it is the B2C (business to consumer) markets that have today most noticeably been disrupted, this trend is now moving squarely into B2B (business to business) and also non-discretionary services, like health, education and transport.

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### Tech firms are the new powerhouses

Market valuation in billion US dollars

<table>
<thead>
<tr>
<th></th>
<th>Energy</th>
<th>Financials</th>
<th>Health care</th>
<th>Industrials</th>
<th>IT</th>
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<td>400</td>
<td>600</td>
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<td>Microsoft</td>
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<td>Citigroup</td>
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<tr>
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<td>Royal Dutch Shell</td>
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<td>HSBC</td>
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<td>600</td>
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<td></td>
</tr>
<tr>
<td>Alibaba Group</td>
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<td></td>
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<tr>
<td>Facebook</td>
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<tr>
<td>JPMorgan Chase</td>
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<td></td>
</tr>
<tr>
<td>Johnson &amp; Johnson</td>
<td></td>
<td></td>
<td></td>
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</tr>
</tbody>
</table>

Source: Bloomberg, ycharts

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**TREND 1**

**FROM INCREMENTAL TO DISRUPTIVE**

A new ‘incumbency’ is born, challenging legacy business
EUROPE’S INNOVATION DILEMMA

Firms on the global innovation and productivity frontier are typically younger, more global and digitally savvy. Their business models are built around the ability to leverage new technologies to reach into peoples’ lives, and better respond to their needs.

Many older companies struggle to do this because they are constrained by their own legacy ecosystems – whether it’s their internal processes for resource allocation; existing value chains; customer relation channels; technological infrastructure or investment strategies – all are set up to support existing business models; and they often conflict with the ability to embrace and excel at disruptive innovation.

This challenge is sometimes referred to as the ‘innovators dilemma’ and it is all too common in Europe, where a slower take-up of new technologies and business models has hindered the diffusion of innovation and led to a swelling population of ‘zombie firms’ that trap valuable resources like investment and talent, preventing them from flowing to more productive and innovative firms.

The result is a growing divide between frontier and non-frontier firms, which translates into lower levels of growth and employment, as well as wage discrepancies. Those who drive the technological frontier – or, at the very least, keep up with change – are at a natural advantage. Those who fall behind find it increasingly difficult to catch up because technology advances at such a fast pace. In the 2000s, productivity in firms at the global technological frontier rose on average 7 to 10 times faster than in non-frontier companies. This also explains much of Europe’s productivity gap with the US.

A growing gap between frontier and non-frontier firms

Index: 2001=100

Source: Organisation for Economic Co-operation and Development

EU home to rising number of ‘zombie’ firms

Source: Organisation for Economic Co-operation and Development
• Traditional levers of innovation, such as patents, number of researchers or R&D spending, continue to be important but have been complimented by other drivers.

• Often referred to as Knowledge-Based Capital, intangible assets have become the key ingredients of modern-day corporate success: design, software, data, business model and organisational innovation, firm-specific skills, branding and marketing, to name but a few. Copyright and links to entrepreneurial universities that facilitate knowledge transfer are also recognised as significant.

Intangible investments have overtaken tangibles
Share of GDP, US+EU11, whole economy

Note: The aggregated EU11 includes: Austria, Czech Republic, Germany, Denmark, Finland, Italy, Netherlands, Portugal, Slovenia, Sweden and the United Kingdom.


• Data, in particular, is emerging as the key resource for – and enabler of – innovation because it is necessary for the customisation of products and services that is increasingly expected by users. Data analytics allow organisations to quickly grasp patterns in user preferences or problems in the supply chain, thereby enabling more informed decision-making and, if necessary, targeted interventions that improve performance and productivity.

• Data is not like a typical resource; the more you have, the more it will generate. This ‘data generativity’ is what makes it so difficult for companies that have not invested in data to catch up with those that have made it central to their business models.

Global explosion of data fuels new innovation paradigm
Worldwide data storage in exabytes

Source: Internation Data Corporation Digital Universe Study
• **Data is also the main resource for Artificial Intelligence (AI), which is arguably the next innovation frontier**, as machines will increasingly match or even exceed human intelligence.

• **While scientists are still central to innovation, so are other talent profiles**, be they technologists, liberal arts graduates (‘fuzzies’), or business and marketing professionals.

• Evidence suggests that **diversity**, in terms of gender, ethnicity and age, contribute to better innovation performance. Against this backdrop, the dominance of middle-aged, white males in many established organisations is perceived as a hindrance to new ways of working and doing business. This also challenges established rules for advancement, especially in the public sector, where age or years in the job are often the determining factor for promotions.

• Partly as a response to the difficulty of changing the established order, some organisations now resort to **‘intrapreneurship’** involving teams of in-house staff with entrepreneurial mindsets that are kept within the boundaries of the organisation but are purposefully set up outside of existing structures to allow for maximum creativity, experimentation and business model innovation. Sometimes referred to as ‘skunkworks’, these groups enjoy a high degree of autonomy and are purposefully freed from bureaucracy, often with the goal of developing a new, advanced project or line of business.

• **Tapping into ‘flexible’ talent bases**, using online sourcing and freelancing services such as ‘Upwork’ is also increasingly popular, helping companies to access qualified talent and respond to in-house shortages, often in niche areas such as blockchain, machine learning, or data security.

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**Diversity fuels innovation**

Nation of origin for immigrant founders of billion-dollar start-ups (as of January 2016)

Number of entrepreneurs

<table>
<thead>
<tr>
<th>Country</th>
<th>Number of Entrepreneurs</th>
</tr>
</thead>
<tbody>
<tr>
<td>India</td>
<td>14</td>
</tr>
<tr>
<td>Canada</td>
<td>8</td>
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<tr>
<td>UK</td>
<td>8</td>
</tr>
<tr>
<td>Israel</td>
<td>7</td>
</tr>
<tr>
<td>Germany</td>
<td>4</td>
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<tr>
<td>China</td>
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<td>France</td>
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</tr>
<tr>
<td>Ireland</td>
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<td>Argentina</td>
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<td>Egypt</td>
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<td>Netherlands</td>
<td>1</td>
</tr>
<tr>
<td>Israel</td>
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</tr>
<tr>
<td>Norway</td>
<td>1</td>
</tr>
<tr>
<td>Russia</td>
<td>1</td>
</tr>
<tr>
<td>Singapore</td>
<td>1</td>
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<tr>
<td>South Africa</td>
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<tr>
<td>South Korea</td>
<td>1</td>
</tr>
<tr>
<td>Uzbekistan</td>
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</tr>
</tbody>
</table>

Note: The term ‘unicorn’ refers to start-ups valued at over one billion US dollars

In the digital economy, companies that are able to capture the highest number of users set the *de facto* ‘standard’ for their sector. Thus, it is not surprising that many of today’s most successful businesses – such as Google, Facebook or Amazon – were more concerned with gaining users rather than developing commercially viable business models in the early years of their existence.

Put simply, the ‘network effect’ reflects the fact that users are more likely to go to the platforms where the rest of their social network can be found. As such, the value of a product or a service increases for the user as the size of the user pool expands. This has been an innovation game changer, and one of the reasons why many companies that are good at inventing have nevertheless lost out. A holistic ‘innovation value chain’ today relies at least as much on having users for a new product or service as it does on having a new idea or clever invention.

As such, today’s most innovative companies are no longer necessarily the largest ones. Gone are the days when the market value of a company largely corresponded to the size of its workforce or of its physical assets. Today, the size of the user pool can be just as important – or even more so. Companies like Uber, which enable their users to harness the same service using the same platform worldwide, are concrete examples of modern-day business success stories without significant physical assets. This ‘scale without mass’ is a genuinely new phenomenon that has proven highly disruptive to incumbent firms, as well as labour markets.

Network effects are estimated to be responsible for 70% of the value created by tech companies since the birth of the Internet in 1994.\(^6\)

Fragmented markets, regulatory divergence and linguistic barriers significantly slow down adoption and hinder network effects. This goes a long way to explaining why Europe has not developed sizable platforms of its own and why integrated and largely monolingual markets like the United States and China are in the lead.

At the same time, companies that combine scales – across customers, investment, data, talent and markets – can substantially change the innovation landscape.
NETWORK EFFECTS AT THE HEART OF TECH GIANTS’ BUSINESS STRATEGIES

In 2014, Facebook cashed out 17.5 billion euro (22 billion US dollars) to acquire mobile messaging service WhatsApp – a company offering pretty much the same functionalities as Facebook already had within its Messenger service. At the time, WhatsApp employed just 55 staff members and had been posting net losses worth millions of euro over the three previous years.

Just what was the appeal? In short: an incredibly fast-growing audience, which, to cap it off, would enable Facebook to expand its international presence and curtail a formidable competitor.

While the price paid seemed grossly over-valued at the time, WhatsApp has since more than tripled its user base, today boasting more than 1.5 billion users, easily outpacing Facebook’s own Messenger.

WhatsApp’s exponential popularity

Facebook’s acquisition of WhatsApp leaves it controlling 48% of online messaging apps

% of monthly active users, April 2018
Many of Europe’s largest tech companies were born in Sweden. The country is the second most prolific tech hub in the world on a per capita basis, producing 6.3 billion-dollar companies per million people, compared to Silicon Valley’s 8.1. Early and substantial public investments in digital infrastructure are cited as one of the key reasons for this outcome. Sweden’s average internet speed today is the third highest in the world and fourth in super-fast broadband. More than 60% of the country has access to a speedy fibre-optic broadband that was funded by the government in rural areas and largely subsidised elsewhere. As early as the 1990s, the government subsidised household purchases of personal computers, enabling a rapid proliferation of IT skills and digital literacy. Spotify founder and CEO Daniel Ek maintains that early availability of super-fast broadband in Stockholm – before it even arrived in New York – gave him a key advantage in setting up his leading music streaming service. Stockholm’s far-sighted policy resulted in one of the most vibrant digital ecosystems in the world, a hub for leading ICT companies and tech-savvy entrepreneurs, and a pole of attraction for jobs requiring advanced digital skills.

### Sweden’s super-fast broadband is a major innovation asset

Share of fast (>100 Mbps) broadband as a % of total broadband, December 2016

Source: Organisation for Economic Co-operation and Development
• If the industrial age was marked by standardisation, the digital era is about customisation. The consumer and user is ever more central to innovation, by virtue of being more active and responsive, hence shaping the value chain and leading the way towards more tailor-made, personalised, on-demand products and services.

• The extensive data trails that people leave online and offline are facilitating this trend, with more and more companies across sectors able to anticipate customer expectations with precision – or even trigger them.

• Brands that create personalised experiences are already seeing average revenue increase by 6% to 10%, while also growing their loyalty base. The NikeID platform for example, which enables customers to personalise their sportswear, has contributed to a sharp rise in Nike’s overall profits, with direct-to-customer sales rising from 17% to 28% of the company’s – overall expanding – revenues between 2013 and 2017.

• Possibly one of the largest drivers of mass customisation is 3D printing – enabling the production of personalised products at near mass production prices and speeds. Previously a niche and prohibitively priced tool, 3D printing is entering a phase of exponential growth. The additive manufacturing industry is expected to grow from 4.3 billion euro in 2015 to 17.5 billion euro in 2020, while the number of 3D printers sold globally could reach 6.7 million units by 2020.

• As the innovation frontier shifts increasingly towards the intersection of customer-company interaction, innovation manifests itself not only in patents, but also in new relationships with customers, supply chains and even competitors.

• Demand is increasingly met at an individual scale and modes of delivery matter more than ever. Sharing platforms are further erasing the distinction between consumer and producer, giving rise to a new generation of ‘prosumers’ and reducing distance between supply and demand to a mere click.

• Direct-to-consumer products, services and discounts, increasingly aiming for a ‘segment-of-one’, are transforming traditional business practices. Some companies are tightening their business models and even re-shoring production where closer proximity to demand coupled with high-tech manufacturing can offer a faster response rate to customer preferences.

• While customisation is already rife in the private sector, the trend is spilling over in the public sector, with a more visible shift in areas such as personalised healthcare as well as individualised education and learning schemes. While governments are trying to make public service provision more effective in general, they often continue to lack the necessary data and tools to leapfrog beyond general targeting into real customisation.
Once considered primarily as a low-cost producer and copy-maker, China is now often leading the innovation wave, buoyed by large-scale government investments in the domestic tech industry, an innovation-friendly regulatory framework and a massively expanding consumer market, as the Chinese middle and upper classes grow rapidly.

The country has seen an extraordinary increase in R&D investment over the past two decades. China is today the world’s second largest R&D spender, accounting for 20% of total global R&D expenditure in 2015 – against just 5% in 2000.

Success in transforming R&D into innovations has also led to a surge in China’s patent applications, with start-ups sprouting at a rapid pace.

There are today more than 50 Chinese unicorns, companies with valuations above 1 billion US dollars. Ant Financial Services Group, formerly known as Alipay, the affiliate company of the Chinese Alibaba Group, is now the most valuable fintech company in the world and leads the global unicorn index, with a valuation of 150 billion US dollars. Indeed, there are 4 more Chinese companies in the top 10 of global unicorns.

China is investing in R&D at a rate that eclipses both the EU and US
R&D spending in billions of dollars (current, in purchasing power parity terms)

And its rate of new patent applications is surging accordingly
International patent applications (in thousands)

Source: Veugelers, R., The challenge of China’s rise as science and technology powerhouse, Bruegel, Policy Contribution, Issue no 19, July 2017

Source: World Intellectual Property Organization
• A more permissive approach to new technologies and data availability has facilitated advances in new areas such as Artificial Intelligence – where data is the quintessential ingredient – as well as technology-enabled transportation, drones or online payments.

• **Not only is China the global leader in the construction of commercial drones with Da-Jiang Innovations, it now also boasts the world’s most valuable AI startup**: SenseTime Group Ltd, a company specialising in systems for image and facial recognition, reached a valuation of more than 3 billion US dollars in April 2018, with an average revenue growth of 400%. The company plans to build at least five supercomputers in top-tier cities over the coming year.

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**AFRICA ALSO LEAPFROGGING INTO THE WORLD OF INNOVATION**

Driven by necessity – and perhaps facilitated by its lack of legacy infrastructure in areas such as telecoms, transport or energy – **Africa is embracing technological disruption at full speed** and becoming home to a number of game-changing innovations.

One of the most-known innovations to come out of Africa is the mobile money transfer, which has transformed business and service provision across the continent. Mobile money accounts have today surpassed bank accounts in sub-Saharan Africa and the technology behind it has been exported to the West.16 Thanks to this development, people who previously had no access to bank accounts, particularly in rural areas, can now use the technology to make transfers and pay their taxes and utility bills – or even receive remittances, government support or humanitarian assistance.

New digital-based financing mechanisms, such as crowdfunding and cryptocurrencies, are also opening up new opportunities for under-served finance markets. Combined with other innovations, such as off-grid energy solutions, African countries can now leapfrog to pioneer pay-as-you-go models that combine the leasing of solar panels with digital payments – something that would arguably be harder to do in countries with centralised grid models and established banking systems.

Drone technologies also promise to be a major vector of innovation, helping to overcome infrastructure gaps, while the continent is also seeing a rapid rise of e-health and online education services.
In a world of disruptive innovation, the nature of competition is changing.

- The emergence of the new digital paradigm has created a world of contrasts in which competition has both multiplied exponentially and shrunk at the same time.
- On the one hand, customers have access to unprecedented levels of choice to satisfy their needs as firms harvest data to tailor goods and services to user preferences and needs. Any company with a good idea can hit the jackpot. Niche markets, which would hardly have been profitable in the past, have become viable thanks to the possibility of aggregating demand at the global level. In fact, tech start-ups are now challenging the status quo in areas ranging from financial and consumer services, to automotive, the hospitality sector or health.
- On the other hand, extremely strong network effects and economies of scale in the digital space mean that established online platforms are actually subject to very low competitive pressures from new entrants. This is all the more true as access to vast amounts of customer data becomes the key parameter of competition – most of which is controlled by a mere handful of companies, able to ensure a certain degree of user lock-in due to high ‘social’ costs for those wanting to switch to another platform.
- In this context, the pressure for incumbents to innovate comes from the users themselves, rather than from other players per se. There is constant need to innovate, upgrade and expand so as to maintain customer satisfaction and discourage users from switching to other services.
- As a result, while many large platforms were at first mainly active in a specific digital sector (e.g. Google as a search engine, Amazon as an online book ordering platform), they are continuously moving into new areas – increasingly also into the physical world – producing high-tech gadgets and services that range from e-books and smartphones, to electric or self-driving cars and drone delivery, and moving into the retail and health sectors.
- In this environment, start-ups are being seen in a new light – as a means of completing service offerings with exciting new features, and a source of entrepreneurial vigour, providing novel insights into innovative technology solutions and lean management. This explains why online behemoths such as Google, Amazon, Baidu, Intel, Apple and others have been racing to snap up promising new start-ups. This is particularly true in the AI space, where expertise is a rare commodity.
- This type of platform consolidation is today ranked as a top barrier to innovation by start-ups themselves. Yet, although these types of acquisitions may have a significant impact on competition, they currently frequently skip the scrutiny of competition authorities because they do not fit within the definitions of traditional notification turnover thresholds.

### Artificial Intelligence start-up acquisitions rose by 44% in 2017

Number of merger and acquisitions per year

<table>
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<th>Year</th>
<th>Mergers</th>
<th>Acquisitions</th>
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<td>10</td>
<td>20</td>
</tr>
<tr>
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<td>80</td>
<td>120</td>
</tr>
<tr>
<td>2017</td>
<td>120</td>
<td>240</td>
</tr>
</tbody>
</table>

Source: CB Insights
The race to acquire top Artificial Intelligence start-ups is heating up

Dates of acquisition (only includes first exits of companies)
In a world where competition is fiercer than ever and speed is ever more of the essence, entrepreneurs are no longer content to wait around for the ‘perfect’ product or service to commercialise.

Instead, **start-ups are increasingly ‘trial and erroring’ their way to market penetration**, making new releases on a regular basis. By walking before they can crawl, they may risk getting it wrong – but more importantly, they gain access to honest customer feedback and can build a valuable bond as a first mover with early adopters and prospective customers.

In fact, ‘beta’ launching of products and services is increasingly common among many of today’s corporate giants. Most of Google’s products are today launched in beta with bugs fixed and improvements made based on user data analytics.

As such, **experimentation, exploration, risk-taking and uncertainty are even more inherent to the innovation process – as are bugs, missteps and failure**.

The ability to innovate quickly and cheaply, continuously refining, correcting or modifying products or even business models, drawing on lessons from earlier experiments – a term coined as ‘pivoting’ in Silicon Valley – are key.

**To achieve the required agility, businesses are increasingly swapping hierarchies for networks.** This means flattening organisational structures and pushing the decision-making process beyond the comfort of in-house, and out to market, where customers and partners can provide direct feedback and shape outcomes more responsively than through a traditional chain of command.

In this context, **acceptance of failure also plays a central role as it is sometimes seen as a precondition for success. It is not without reason that the mantra ‘fail often, fail fast’ is deeply embedded in Silicon Valley and see as a badge of honour rather than a reputational stain.**

**SOME OF THE WORLD’S BEST ‘FAILURES’**

**3M**’s attempt at inventing glue was a flop because it did not stick, but it became the basis for the Post-it note, which can now be found on everyone’s desk.

**YouTube** was launched as a video dating site, without much success. Then users started uploading funny videos, taking the project into a completely new direction.

**Twitter** began as a podcasting platform. However, with fierce competition from iTunes, the team started working on a side project that evolved into Twitter, one of the largest social media platforms.

**PayPal** started as a cryptography company designed for exchanging money over Palm Pilots. Without much success, it pivoted to the market of enabling people to make secure on-line payments.

**Nokia** was founded in 1865 as a pulp mill company and has reinvented itself more than once. After leading the mobile phone revolution in the 1990s, it rapidly fell into irrelevance with the rise of the smart phone. When its mobile phone business was acquired by Microsoft, Nokia managed to reinvent itself once again as a successful player in the telecommunication infrastructure and Internet of Things market.
EUROPEAN BANKRUPTCY LAWS HAVE CREATED A CULTURE OF RISK-AVERSION

Even though Europe is home to firms famous for being able to pivot and reinvent themselves, half of Europeans say they would not start a business because of fear of failure. This fear is undoubtedly connected with the substantial costs associated with failure in many Member States. In the US, ‘chapter 11’ bankruptcy rules allow companies to restructure their debts and obligations and begin afresh. In Europe, many businesses enter protracted liquidation processes when early restructuring could have saved them.

Across Europe there is a growing effort to facilitate pathways towards a second chance at doing business. Partly expedited by the financial crisis, new insolvency and resolution laws have been introduced with a view to limiting discharge periods to a maximum of three years to help entrepreneurs who do fail to get back on their feet quicker.

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**Insolvency laws in some Member States have amounted to a ‘life sentence’**

Period of time to obtain full discharge from debts (number of months), 2014

Source: Ecorys
For a long time, innovation was confined to labs – or sometimes garages. Today, it happens everywhere. Unprecedented access to knowledge via the Internet, coupled with ever cheaper and more accessible technology, makes anyone a potential innovator.

In 2017, the European Patent Office granted 105,635 patents – a new record high, and twice as many as it did only a decade ago. More than one third of applications came from smaller entities – i.e. individual inventors, SMEs, universities and research institutes – a 3% increase on the previous year.

The ‘democratisation of innovation’ also means that the biggest game-changers no longer necessarily come from peer-to-peer competition, but often from ‘outsiders’. In the digital era, taxi drivers and hotel owners compete with ordinary citizens following the boom of sharing platforms and applications such as Uber and Airbnb. Similarly, the online search engine came from Google, not AOL; the electric car was rolled out by Tesla, not Daimler; a global on-line social network was created by Facebook, not Microsoft.

The shift toward ‘open source’ and idea-sharing has supported this democratisation, leading to new co-creation models and fast-paced innovation communities. By making resources and intellectual property accessible, open innovation lowers the cost of experimentation and allows new actors – such as freelance developers – to participate in the innovation chain on more flexible terms.

Open innovation is happening everywhere. Large companies are opening up their coveted ideas to competition, targeting start-ups and individuals with a view to bring in fresh inspiration. Open innovation is also becoming a business as such, with platforms such as Kaggle crowd-sourcing competing input from about half a million statisticians and data scientists with a view to producing the best models for predicting and describing datasets uploaded by companies and users.

What is more, humans are no longer alone in innovating. A hybrid innovation workforce is emerging, comprised of robots or smart machines and humans working together in order to achieve greater results in comparison to what either group could accomplish working alone. Machines allow scientists and researchers to engage in idea generation and a series of ‘what-ifs’ on a completely new scale, triggering better analytics, learning and anticipation. This in turn can lead to innovations that would hitherto have been unattainable.
INNOVATION SPACES SPROUT AS ECONOMIES REALISE THE VALUE OF NURTURING INNOVATORS

Over the past decade, the number of start-up incubators, accelerators and co-working hubs has seen a rapid rise around the world and across Europe. In 2017, Station F, the world’s largest start-up campus opened in Paris. Its aim is to support start-ups with potentially disruptive ideas at an early stage by offering working spaces, lab facilities, financing for a fixed-period of time, or offering mentorship aimed at accelerating the life-cycle of young innovative companies, compressing years’ worth of learning-by-doing into just a few months. Companies such as Airbnb, Reddit, or Dropbox all came out of incubators and accelerators.

The measurable impact such spaces have on the performance of start-ups varies, but early evidence suggests that they may have a positive impact on regional entrepreneurial ecosystems, particularly with regard to the financing environment. Metropolitan areas where an accelerator is established have subsequently more seed and early-stage entrepreneurial financing activity. This appears not to be restricted to start-ups in accelerators, but seems to also spill over to ‘non-accelerated’ companies – primarily thanks to the increase in investors.

Countries and cities around the world have also set up innovation councils to facilitate access to funds, synergies and networks. In this vein, the European Innovation Council is being piloted as part of a targeted strategy to focus on empowering innovators and unleashing the potential of scale-ups, while making EU programmes less complex to access and more interdisciplinary in nature.

Accelerator and incubator programmes are on the rise in Europe

Surveys conducted across ten European countries found that the compound annual growth rate of incubator and accelerator programmes increased much faster after the financial crisis.

Source: Wagner and Watch, Brookings Institution (2017), based on Telefonica Global Affairs and New Ventures
European venture capital has increased threefold between 2012 and 2017, from roughly 4 billion euro to 14.7 billion euro. However, there has been an even bigger increase in other advanced regions of the world, like the United States or Asia. In fact, venture capital in Asia was slightly lower than in Europe back in 2012 but now exceeds Europe by a factor of 4 – or more than 40 billion euro annually.

Europe has made real advances in narrowing the gap to the US with regards to seed and early-stage funding, unleashing a wave of entrepreneurial activity and giving birth to promising start-ups, from Helsinki and Lisbon to Warsaw and Paris.

A large gap remains, however, in the later-stage funding of companies once they have become mid-caps (enterprises with a market capitalisation between 2 and 10 billion US dollars) or unicorns (privately-held start-up companies valued at over 1 billion US dollars).

In 2016, growth capital represented just 5% of the overall funding in Europe, with 3.9 billion euro, against 73.8 billion euro of total private equity raised. This low share of growth capital in Europe partly reflects the heavy reliance of the European economy on bank finance, which tends to be risk-averse and is therefore notoriously difficult to access for start-ups and scale-ups.

This trend is worrisome for Europe because it means these promising, high-growth companies – which have all made it through the first funding rounds and have tried-and-tested business models – are often unable to secure the necessary follow-up finance. This prevents them from scaling up and turning into truly global players, and at least partly explains Europe’s dearth of major companies in the global digital economy.

### European Venture Capital has grown 3x over the last 5 years but remains minute in global comparison

<table>
<thead>
<tr>
<th>Year</th>
<th>VC funding in Europe</th>
<th>VC funding in US</th>
<th>VC funding in Asia</th>
</tr>
</thead>
<tbody>
<tr>
<td>2012</td>
<td>5.2</td>
<td>32.6</td>
<td>7.3</td>
</tr>
<tr>
<td>2013</td>
<td>6.4</td>
<td>36.1</td>
<td>7.3</td>
</tr>
<tr>
<td>2014</td>
<td>9.6</td>
<td>59.4</td>
<td>21.6</td>
</tr>
<tr>
<td>2015</td>
<td>13.6</td>
<td>76.8</td>
<td>42.5</td>
</tr>
<tr>
<td>2016</td>
<td>12.6</td>
<td>61.4</td>
<td>32.7</td>
</tr>
<tr>
<td>2017</td>
<td>17.6</td>
<td>71.9</td>
<td>70.8</td>
</tr>
</tbody>
</table>

Source: PwC, CB Insights MoneyTree, Report Q4 2017
• European unicorns like Delivery Hero and Spotify, for example, had to **turn to foreign investors to gain access to the capital they needed to scale up and become globally competitive**. This may be part of the reason why Spotify chose not to go public in Europe but list on the New York Stock Exchange instead.

• **Another aspect of the lack of European growth finance is that many of the best companies become attractive targets for acquisitions by non-European venture funds or investors.** China is able to leverage its considerable state-backed funds for acquisitions and investment in innovative firms, while Japan and the US are battling it out to create the world’s biggest superfund. Japan’s Soft Bank Vision Fund has managed to leverage 100 billion US dollars (83 billion euro) to invest in tech companies, with 30 billion US dollars (25 billion euro) already invested – almost on par with 33 billion US dollars (27 billion euro) raised by the entire American VC industry in 2017. As a response, Silicon Valley’s Sequoia Capital is putting together its biggest-ever fund.

• The emergence of these superfunds helps innovation funding flow to places – both countries and industries – where VC funding has so far been scarce, a trend that will likely accelerate the **redrawing of the geography of innovation**.

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**Non-European investors are filling the void in later European rounds**

European company financing rounds

<table>
<thead>
<tr>
<th></th>
<th>European rounds with European and Non-European investors</th>
<th>European rounds only with European investors</th>
</tr>
</thead>
<tbody>
<tr>
<td>Early (Series A and earlier)</td>
<td>17%</td>
<td>83%</td>
</tr>
<tr>
<td>Later (Series B and later)</td>
<td>70%</td>
<td>30%</td>
</tr>
</tbody>
</table>

Source: CB Insights

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**Funding gap between the US and Europe is widening in later stages**

Investments in Europe and US by stage focus in 2017, in billion US dollars

<table>
<thead>
<tr>
<th></th>
<th>Investment in Europe-based companies</th>
<th>Investment in US-based companies</th>
</tr>
</thead>
<tbody>
<tr>
<td>Equity financing</td>
<td>2.9x &lt; 3.2x &lt; 3.8x &lt; 5.8x</td>
<td></td>
</tr>
<tr>
<td>VC-backed companies</td>
<td>0.4 1.3 3.5 11.4 3.5 13.2 6.7</td>
<td>38.3</td>
</tr>
</tbody>
</table>

Source: Dow Jones VentureSource
The Problem with Legacy Ecosystems

Notes

13. Diamandis, P. (2018), 3 Major Shifts Are About to Transform Manufacturing as We Know It, SingularityHub
25. Wired (2017), Station F, the world’s largest startup campus opens in Paris, http://www.wired.co.uk/article/station-f
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