fDi x TNW Tech Cities of the Future 2021 - Winners

LONDON HAS KEPT ITS TECH CITIES OF THE FUTURE TITLE IN 2021, WHILE PARIS AND DUBLIN HOLD ONTO SECOND AND THIRD PLACE RESPECTIVELY. **ALEX HAMILTON** REPORTS

Despite what has been a challenging period for the global economy and foreign direct investment (FDI), London has held onto its crown as the top European city in the **fDi** and TNW Tech Cities of the Future 2021.

European peers such as Paris and Dublin came in second and third respectively, as was the case in the 2020 iteration of the ranking. Other standout performers such as Berlin, Madrid and Stockholm have jumped multiple positions since the previous study.

The Tech Cities of the Future ranking is focused on finding those European cities with the most promising prospects for start-ups, technology and innovation investment.

For this ranking, data was collected, analysed and ranked for 76 cities across 31 European countries under five categories: Cost Effectiveness, Economic Potential, FDI Performance, Innovation & Attractiveness and Start-Up Environment.

Holding strong

London for the second year triumphed in the ranking, placing first in five out of the six categories. According to research from greenfield investment monitor **fDi** Markets, London remained the top global city for ▶

"THIS IS A REAL VOTE OF CONFIDENCE, AND PROOF THAT OUR GLOBAL STANDING CONTINUES TO RISE. OUR FINTECH, HEALTHTECH AND GREENTECH SECTORS IN PARTICULAR ARE SHOWING INCREDIBLE POTENTIAL FOR GROWTH"

COUNCILLOR KATE NICHOLL, LORD MAYOR OF BELFAST

fDi Intelligence tnw

TECH CITIES OF THE FUTURE

TOP 10 TECH CITIES OF THE FUTURE 2021 – ECONOMIC POTENTIAL

RANK	CITY	COUNTRY
1	London	UK
2	Paris	France
3	Dublin	Ireland
4	Zug	Switzerland
5	Luxembourg	Luxembourg
6	Cork	Ireland
7	Zurich	Switzerland
8	Frankfurt am Main	Germany
9	Istanbul	Turkey
10	Prague	Czech Republic

TOP 10 TECH CITIES OF THE FUTURE 2021 – FDI PERFORMANCE

RANK	CITY	COUNTRY
1	London	UK
2	Paris	France
3	Dublin	Ireland
4	Amsterdam	Netherlands
5	Barcelona	Spain
6	Berlin	Germany
7	Madrid	Spain
8	Vilnius	Lithuania
9	Belfast	UK
10	Sofiya	Bulgaria

TOP 10 TECH CITIES OF THE FUTURE 2021 – START-UP ENVIRONMENT

RANK	CITY	COUNTRY
1	London	UK
2	Berlin	Germany
3	Paris	France
4	Munich	Germany
5	Amsterdam	Netherlands
6	Moscow	Russia
7	Stockholm	Sweden
8	Cambridge	UK
9	Zurich	Switzerland
10	Helsinki	Finland

TOP 10 TECH CITIES OF THE FUTURE 2021 – INNOVATION AND ATTRACTIVENESS

RANK	CITY	COUNTRY
1	London	UK
2	Paris	France
3	Munich	Germany
4	Cambridge	UK
5	Berlin	Germany
6	Helsinki	Finland
7	Dublin	Ireland
8	Zurich	Switzerland
9	Stockholm	Sweden
10	Eindhoven	Netherlands

TOP 10 TECH CITIES OF THE FUTURE 2021 – COST-EFFECTIVENESS

RANK	CITY	COUNTRY
1	Skopje	Macedonia
2	Iasi	Romania
3	Kaunas	Lithuania
4	Cluj-Napoca	Romania
5	Sofiya	Bulgaria
6	Bucharest	Romania
7	Belgrade	Serbia
8	Riga	Latvia
9	Vilnius	Lithuania
10	Wroclaw	Poland

TOP 25 TECH CITIES OF THE FUTURE 2021 – OVERALL

RANK	CITY	COUNTRY
1	London	UK
2	Paris	France
3	Dublin	Ireland
4	Berlin	Germany
5	Amsterdam	Netherlands
6	Madrid	Spain
7	Barcelona	Spain
8	Munich	Germany
9	Stockholm	Sweden
10	Bucharest	Romania
11	Belfast	UK
12	Helsinki	Finland
13	Zurich	Switzerland
14	Moscow	Russia
15	Frankfurt am Main	Germany
16	Warsaw	Poland
17	Vilnius	Lithuania
18	Milan	Italy
19	Sofiya	Bulgaria
20	Cambridge	UK
21	Eindhoven	Netherlands
22	Tallinn	Estonia
23	Edinburgh	UK
24	Prague	Czech Republic
25	Copenhagen	Denmark

FDI projects in 2020, attracting 366 projects during the year.

In a record-setting year for venture capital funding, according to Dealroom.com, London tech firms raised $10.5bn in 2020, which accounted for a quarter of all European tech funding for the year. Beneficiaries include Revolut, Monzo, Arrival and Deliveroo. The latter also chose London for its initial public offering in March 2021.

The UK capital continues to be a world-class hub for innovation, taking first place in the Innovation & Attractiveness category. Within this category, according to data from the US Patent and Trademark Office, London shone with nearly 7000 patents in software and more than 150 in artificial intelligence registered in the city between 2003 and 2020, more than any other city in the ranking.

Moreover, the UK capital also hosts more than 370,000 students and seven of the top 500 universities in computer science and engineering, according to the QS World University Rankings, highlighting London's attractiveness as a city for skilled talent.

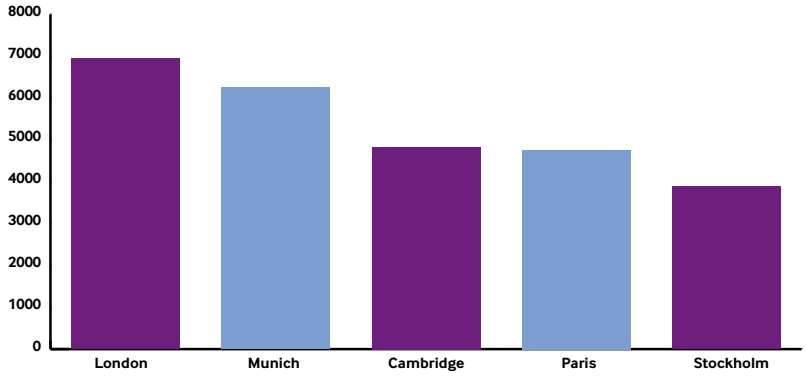
60

THE NUMBER OF JOBS CREATED BY DELL TECHNOLOGIES' EXPANSION OF ITS PARIS R&D OPERATIONS

As a global financial centre, London offers start-ups a host of financing options, ranging from venture capital funds and angel investors to crowdfunding platforms and banks.

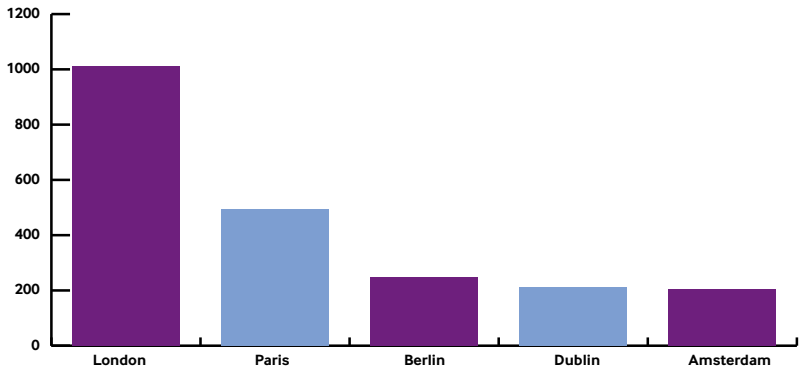
London reflected this with a remarkable performance in the Start-up Environment category. Figures from Dun & Bradstreet show the city boasts more than 80,000 companies in software and IT services, nearly double the number of companies found in any other European location in the ranking.

TOP FIVE EUROPEAN DESTINATION CITIES BY NUMBER OF PATENTS IN SOFTWARE (2003-2020)



Source: US Patent and Trademark Office

TOP FIVE EUROPEAN DESTINATION CITIES BY NUMBER OF SOFTWARE & IT SERVICE FDI PROJECTS, 2016-2020



Source: **fDi** Markets

R&D Hub (Paris)

Paris ranked second overall in **fDi** x TNW Tech Cities of the Future 2021 ranking. Once again, the French capital demonstrated a strong performance across multiple categories. Paris fared particularly well in the FDI Performance category. According to **fDi** Markets data, the city attracted 495 projects in the software and IT services sector between January 2016 and December 2020, second only to London in Europe in the period.

These projects included the likes of Ericsson, which opened its first R&D centre in the Paris region, with the aims of accelerating 5G dynamics within Europe, and Dell Technologies, which expanded its R&D operations into the French capital, creating 60 jobs in the process.

Paris also excelled in the Innovation & Attractiveness category. According to the QS World University Rankings, the French capital hosts four of the top 500 universities in electrical and electronic engineering and five universities in the top 500 universities for computer science and engineering.

The World Bank Doing Business Report states that France provides minimal start-up obstacles, with only four days required to start a business. Along with the multitude of incentives and support schemes in place to assist businesses, Paris remains a desirable proposition for European entrepreneurs and tech start-ups.

Continued Potential and Performance (Dublin)

Dublin places third in the study for a second consecutive year. The Irish capital ranked third in the Economic Potential category, with Ireland ▶

excelling in various country-level data points, including the 2021 Index of Economic Freedom.

Dublin's strengths were also seen in the FDI Performance category, with more than 6500 outward FDI jobs created by start-up companies between 2016 and 2020, which was second highest of all European cities ranked after London.

Dublin continues to be a thriving hotspot in the start-up space, thanks in part to Enterprise Ireland, which doubled the funding provided against 2019, investing $56.5m in 2020 across 125 new start-ups.

Furthermore, larger companies have also announced FDI projects into the Irish capital. These include Mastercard, which launched a new campus in Dublin, creating 1500 jobs, and Microsoft, which announced plans to create a $31m engineering hub in the Irish capital, creating 200 jobs.

SPOTLIGHT ON...

Stockholm

Stockholm placed ninth, up three places from last year's ranking, after performing exceptionally well in the Innovation & Attractiveness and Start-Up Environment categories. The Swedish capital has developed a flourishing fintech ecosystem around homegrown sensation Klarna. It also benefitted from a series of country-level data points. Sweden ranked second in the World Intellectual Property Organisation's 2020 Global Innovation Index and was ranked the top European country in Huawei's Global Connectivity Index.

Madrid

Madrid achieved sixth place, up five positions on the previous year's ranking. The Spanish capital continued to excel in the FDI Performance category and performed well in the Start-Up Environment category, as home to more than 300 start-ups and 100 co-working spaces. Furthermore, according to data published by Dun & Bradstreet, Madrid has the second-highest number of companies in communications from all the cities within the ranking.

Berlin

The German capital ranked fourth overall, moving up one place on the previous year, thanks to a strong performance in the Start-Up Environment category. Due in part to long-standing partnerships and support from private and public organisations in the city, Berlin received more than $900m in venture capital funding in 2020, according to Pitchbook, second only to London for the year.

"MADRID STANDS OUT AS ONE OF THE TOP ENTREPRENEUR HUBS IN EUROPE AND HAS ESTABLISHED ITSELF IN RECENT YEARS AS A REGION PARTICULARLY ATTRACTIVE, BOTH TO INTERNATIONAL CAPITAL AND TO ENTREPRENEURS FROM OTHER COUNTRIES"

MANUEL LLAMAS, DEPUTY MINISTER FOR ECONOMY IN THE GOVERNMENT OF THE REGION OF MADRID

Methodology

To create a shortlist for **fDi** x TNW Tech Cities of the Future 2021, the fDi Intelligence division of the Financial Times collected data using the specialist online FDI tools fDi Benchmark and **fDi** Markets, as well as other sources.

Data was collected for 76 locations across Europe, under five categories: Economic Potential, Innovation & Attractiveness, FDI Performance, Cost Effectiveness and Start-up Environment.

Locations scored up to a maximum of 10 points for each data point, weighted by importance to the FDI decision-making process to compile the subcategory rankings. In addition, surveys were collected under a sixth category, FDI Strategy, for which there were 32 submissions.

Locations that ranked in the top 20 in this category were given bonus points, contributing to their overall score. Together, the data subcategory rankings and the FDI Strategy ranking make up the overall **fDi** and TNW Tech Cities of the Future 2021 ranking. ■

FDI Strategy

LONDON TOPS THE FDI STRATEGY CATEGORY IN FDI X TNW TECH CITIES OF THE FUTURE 2021 STUDY FOR A SECOND YEAR, FOLLOWED BY BERLIN AND NEWCOMER PARIS. **ALEX HAMILTON** REPORTS

London has taken top honours in the FDI Strategy category of **fDi** x TNW Tech Cities of the Future 2021 study, followed by Berlin and Paris respectively.

The FDI Strategy category included 32 submissions from cities across Europe. Each submission addressed 10 questions concerning the start-up ecosystem and the current strategies offered to potential start-up investors in the respective cities. Each question was then reviewed by a panel of judges from **fDi** and TNW.

TOP 20 TECH CITIES OF THE FUTURE 2021 – FDI STRATEGY

RANK	CITY	COUNTRY
1	London	UK
2	Berlin	Germany
3	Paris Region	France
4	Madrid	Spain
5	Helsinki	Finland
6	Moscow	Russia
7	Barcelona-Catalonia	Spain
8	Milan	Italy
9	Zurich	Switzerland
10	Vilnius	Lithuania
11	Greater Manchester	UK
12	Tricity (Gdansk, Sopot, Gdynia)	Poland
13	Belfast	UK
14	Glasgow	UK
15	Riga	Latvia
16	Kaunas	Lithuania
17	Sofia	Bulgaria
18	Birmingham	UK
19	Hamburg	Germany
20	Frankfurt Rhein-Main	Germany

Source: **fDi** Markets

London

London is once again the judges' favourite in this year's FDI Strategy category. Led by its economic development agency London & Partners, the UK capital has used its strengths in capital availability, talent resources and well-developed infrastructure to maintain its position as the European home of the most private companies valued above $1bn.

London & Partners offer an array of programmes and initiatives aimed at supporting and stimulating investment in the city.

These include the Business Growth Programme which, since 2017, has supported more than 400 companies in expanding their teams, creating jobs, raising finance through investment and strengthening management talent and teams.

Furthermore, the UK's Tech Nation initiative provides a strong support network for entrepreneurs in London and across the country, as well as visas to international digital talent.

Companies in London can also apply for the wide range of financial funding and tax incentive schemes on offer such as the Seed Enterprise Investment Scheme, Enterprise Investment Scheme and, as of May 2020, the £40m ($55m) Clean Growth Fund, which aims to supercharge green start-ups across London and the UK.

Berlin

Berlin has climbed to second place from third in the previous ranking. Working closely, Berlin Partner for Business and Technology and the Chamber of Commerce and Industry of Berlin aim to provide investors with the support, resources and incentives needed to thrive in the technology industry.

Platforms such as the Berlin Partner for Business and Technology and the city's 'Gründen in Berlin' network ensure that businesses in the city have sufficient support, knowledge and resources to reach their full potential.

In light of the pandemic, the German capital provided a range of "corona funding programmes" for start-ups to handle the turbulent period, including grant, loan and equity options, ensuring that the city's start-up community had financial options available during the economic hardships of 2020.

Paris

Paris reached third place in the FDI Strategy ranking.

Choose Paris Region has provided excellent support via the Global Open Innovation Network, which gathers well-established corporate groups that want to stay ahead of innovation and disruptive technologies and engage with fellow innovators.

Infrastructure, including more than 200 co-working spaces and shared offices, world-renowned universities and business schools such as the Ecole Polytechnique, Paris Saclay University, and PSB Paris School of Business, boost Paris's attractiveness to international tech companies.

Paris supported its start-up ecosystem during the pandemic with a "Resilience fund" and "Bounce funds" made available by the Regional Council of Île-de-France, which provided businesses with cashflow support to safeguard their businesses through the pandemic. ■

How tech ecosystems led the charge against Covid-19

ACROSS SECTORS AND INDUSTRIES, THE TECH COMMUNITY MOBILISED TO CREATE A UNITED FRONT. **ANDREA HAK** REPORTS

The Covid-19 pandemic hit the global economy with a sudden and unexpected jolt. Governments scrambled to put strategies in place, companies suddenly transitioned to remote working, and people quickly adjusted as best as possible to the uncertainty of pandemic life.

Following the release of **fDi**'s 2020/2021 European Cities and Regions of the Future report, we spoke about how vital tech cities are to national economies. The past year has put this statement to the test, and went beyond expectations with stories of tech communities not only helping to keep national economies afloat, but also quickly pivoting to provide solutions to challenges facing society at large.

Collaborating was key

The strongest Covid-19 responses came from collaborations between the tech community, universities and governmental bodies. Tech cities that had invested in medtech start-ups and research and development (R&D) were able to quickly develop and test new solutions.

For example, Zürich's tech ecosystem has long been centred around investments in university-led R&D programmes. By providing guidance, research facilities and investment opportunities, these programmes have produced several successful spin-offs. During the pandemic, this strategy really paid off.

The public research university ETH Zürich's spin-off HeiQ developed textiles resistant to the coronavirus. Diaxxo, another ETH spin-off, developed an ultra-fast polymerase chain reaction testing device. Meanwhile, Molecular Partners — spin-off of the University of Zürich, developed a coronavirus vaccine candidate.

Governments and large tech companies also joined forces to develop much-needed medical equipment.

In Barcelona, a project promoted by the Free Trade Zone Consortium of Barcelona, Leitat technology centre and tech companies HP, Navantia and Airbus, created the first industrially-produced field respirator prepared to support intensive care units using a 3D printing production process.

Cross-border collaborations within the medtech community were not just helpful, they were essential to quickly roll out solutions across the EU.

GeneMe, a biotech start-up based in Gdansk, Poland, developed and patented a universal protein that allows for the production of highly accurate, rapid, molecular genetic Covid-19 tests. Their flagship test, Frankd, can be completed on-premises in 13–25 minutes with no laboratory involvement. At only £10, the solution has the potential to provide much needed relief to businesses needing to start back up their operations.

But to quickly bring this new advancement to market, GeneMe needed to partner with UK-based health app, Yoti. With the app, which is now available in English, Portuguese, Spanish, French, German and Polish, they have been able to roll their solution out to other countries across Europe.

Mobilising the tech community in Porto

It was not just medtech start-ups that provided much needed support. Across sectors and industries, the tech community mobilised to create a united front.

Perhaps one of the most impressive examples was Porto's Tech4Covid19 initiative. Launched by a small group of entrepreneurs and start-ups, they were able to get more than 120 companies and 2500 people to join in finding solutions to 20 different Covid-19 related problems the city was facing within just six days.

This included making medical appointments available online, developing a contact-tracing app, facilitating grocery deliveries and raising more than Ð100,000 to buy hospital materials.

Tech4Covid19 has since turned into a national movement of more than 5000 engineers, designers, marketers and health professionals, among many others.

Shortening medical supply chains in Paris

With high demand for supplies and the added challenge of social distancing, logistics during the pandemic was a nightmare. Many hospitals found themselves running low on basics such as masks, hand sanitisers and surgical gowns.

In Paris, Mirakl, a start-up specialising in e-commerce and marketplace solutions, answered this call by creating a B2B platform called StopCovid19.fr. Operated free of charge and supported by the Ministry of Economics and Finance, the platform was a marketplace for healthcare professionals to place their orders for gel, masks, gowns and other essential products directly with manufacturers, wholesalers, subcontractors and retailers.

By centralising supply and demand in one secure platform, the city was able to shorten medical supply chains and meet demand at an accelerated rate.

Easing unemployment and supporting local businesses

Beyond the fight against Covid-19, the pandemic caused a global economic crisis with heavy social implications. Rapid surges of unemployment, struggling local businesses and increasing poverty were some of the biggest challenges governments had to face.

The UN estimates that the economic crisis caused by the pandemic could push global unemployment to

more than 200 million in 2022. Thanks to employee-retention schemes, unemployment rates within the EU were not as severely affected as in other regions. However, a study by the insurance company Euler Hermes found that the vast majority of workers who lost their jobs in early 2020, or were already unemployed, will struggle to find employment as furloughed workers will be the first to be reabsorbed into companies.

To address rising unemployment, the city of Gothenburg, Sweden, launched the Competence+ project with the help of its tech community. This is centred on reskilling workers who have been laid off due to the pandemic, and finding employment for them within start-ups and scale-ups.

Small and medium-sized enterprises also faced significant challenges when social distancing meant going digital or going bust — a group that, according to a study by McKinsey, accounts for more than two-thirds of the workforce and more than half of the economic value added in Europe.

To help these small local businesses, the London-based crowdfunding platform Crowdfunder partnered with the mayor of London's office to launch the Pay It Forward London initiative. This supported businesses who sell directly to the public by making it possible to pre-sell their goods and services to deliver in the future, ensuring vital cash flow during the crisis.

Finding solutions to the most pressing social issues

The transition to remote working was perhaps even more abrupt for schools than it was for businesses. To help teachers transition their students to remote schooling, Helsinki's Koulu.me developed a database of edtech solutions.

Loneliness brought on by life in quarantine was another issue that permeated throughout society. And the group most affected by this was the elderly who, in many cases, were completely isolated for their own safety. Yet another Helsinki based start-up, Fiksari, created a solution to connect pensioners with students, providing much needed social contact.

Supporting tech communities

If start-ups were a major source of innovation during the pandemic, many also experienced massive drops in revenue. Venture capital (VC) investment boomed in sectors such as medtech and reached record highs, while many were wary to invest large sums into industries that were facing a downturn. With low growth rates and few investment opportunities, many start-ups faced difficulties making ends meet.

To keep these struggling start-ups afloat, the EU and local governments introduced a raft of new schemes and loans. The city of Berlin developed a broad funding programme in 2020 to support start-ups during the pandemic. It includes a matching facility for private investors to mirror the investment amount provided via government funds. As per March 2021, 48 VCs and business angels and more than 100 start-ups took part in the matching process.

Meanwhile Copenhagen launched the first-ever union dedicated to tech start-ups, the Association of Tech Startups in Denmark, to advocate for better business support packages for start-ups that saw heavy losses due to Covid-19.

Building back better with tech

Although there are signs of recovery, it will take time to get back on track. And it is not just the economy — the pandemic has exposed several vulnerabilities that need to be addressed, such as supply chain efficiency and new societal challenges, including long-term unemployment and mental health issues.

But, based on what we have seen over this past year, those cities that take this moment to create more opportunities for collaboration between start-ups, governments and universities could build a more resilient infrastructure for the future. ■

Andrea Hak is an editor and writer at TNW.

> THE STRONGEST COVID-19 RESPONSES CAME FROM COLLABORATIONS BETWEEN TECH, UNIVERSITIES AND GOVERNMENTS