

UK tech startups' time has come



Old Street Roundabout in London, dubbed Silicon Roundabout. A Saïd business school professor issued a warning about funding that prioritises new technology over market need. *Bloomberg*

News analysis

But there are risks the momentum will fizzle and concerns over short-termism, writes **Sally Davies**

Unlike in Silicon Valley, UK tech start-ups rarely ascend to the heights of multibillion-dollar valuations.

But with Google's acquisition this month of London-based artificial intelligence group DeepMind for £400m, followed by Zynga's swoop on graphics company NaturalMotion for more than \$500m, UK techies are talking about the country's next unsung heroes.

"The quality of raw engineering talent you get in Europe, especially in London and Cambridge, is on a par with the best in the Valley," says Debu Purkayastha, an ex-Google M&A executive who has joined venture capital group Octopus Ventures.

The UK's start-ups can have "the DNA of a consumer-savvy Swedish product manager, an Israeli data scientist, a Cambridge or Finnish engineer, a commercially astute London marketer".

The five companies below are examples of early stage companies in areas of strength for the UK.

"Clusters reflect the local economy and the universities," says Joanna Shields, chairman of public body Tech City UK and a non-executive director at the London Stock Exchange. She says financial technology is an area where London is poised to excel.

There are risks that the momentum will fizzle. Hiram Samel, a professor at Oxford university's Saïd business school, warns that *laissez-faire* venture capital markets, and funding which prioritises new technology over market need, can promote short-termism.

"This overstimulates short-term innovation – so we get thousands of app builders – but does less for the long-term, more complex innovation that yields national competitive advantage and local employment and growth."

Silicon-centration of web talent

Oxbridge	Big data	Health tech	Fintech	Arts
Aqdot	Anomaly42	Touch Surgery	Moni	ROLI
Founded 2012	Founded 2013	Founded 2013	Founded 2013	Founded 2009
Founders Roger Coulston and Jing Zhang	Founders Laurence Shaw, Mark Jones, Doug Brown	Founders Jean Nehme, Andre Chow, Advait Gandhe, Sanjay Purkayastha	Founders Laurence Aderemi, Fernando Saturno	Founder Roland Lamb
What they do Make capsules for storing and releasing chemicals	What they do Data archaeology	What they do Surgeon training	What they do Remittances	What they do Make smart musical hardware
Who they want to be The next Bayer	Who they want to be Sherlock Holmes meets big data	Who they want to be An interactive Gray's Anatomy	Who they want to be Western Union for mobile	Who they want to be Steinway & Sons for the digital age
Employees 10	Employees 12	Employees 15	Employees 8	Employees 35

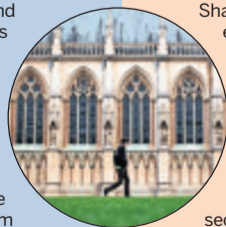
When you swallow a pill you probably care more about the ingredients that are inside than the casing that holds them in. But such "encapsulation" is a \$40bn market, say the founders of Aqdot – a group founded by researchers at Cambridge university.

Aqdot's technology consists of making tiny droplets for carrying chemicals that can then be released in response to specific triggers – including temperature, pressure, water and acidity. The end result is like "many different knots that you can untie one by one," says co-founder and chemist Roger Coulston.

The applications for Aqdot's capsules range from agriculture to pharmaceuticals. Mr Coulston gives the example of "smart pesticides" that can be scattered over a field but only be activated in response to light and temperature conditions that are favourable to particular weeds – which would avoid the problem of overdosing crops.

Aqdot's approach involves "shrink-wrapping" a substance over chemicals at room temperature, which lets the capsule capture a greater range of active ingredients, use far less material and deliver more concentrated doses.

Mr Coulston founded the group in 2012 with his wife and fellow chemist Jing Zhang. They were working in different research labs under two senior academics.



If Sherlock Holmes and a Google web-crawler had a baby, it might look something like Anomaly 42 – a new set of software applications that are all about finding unexpected connections between big bundles of information.

Founded by a group of fraud investigators and technology consultants, Anomaly 42 claims to allow "organisations to understand the archaeology of their data", says chief executive Laurence Shaw. He is also a partner of FusionAI, the private equity group that funded the start-up.

The company recently ran a test of the payday loan market for the Financial Conduct Authority by connecting data in company filings and other internal documents with information in the public domain. "We found some shocking revelations," says Mr Shaw. His team found examples of a major UK high street bank being indirect shareholders of payday loan groups, to the order of owning 5 to 7 per cent of those payday loan companies via shell companies, securitised instruments and complex agency agreements.

Anomaly 42's technology will let a company dump files – from PDFs to spreadsheets to SAP databases – into a big pool. Algorithms sift through and find links within that pool, and match them against 160 external data sources, including the FBI's most-wanted list.

There is a first time for everything – including performing an appendectomy, fixing a cleft palate or reconstructing a breast. It is a discomfiting thought for anyone who has been under the knife.

"There's an old adage in surgery, which is 'see one, do one and teach one'," says 29-year-old Jean Nehme, a London-based plastic surgeon. "But it's not really the best way to train."

Thankfully, as in so many areas of life, there is an app for that. Last year Mr Nehme and his co-founders launched Touch Surgery, a smartphone and tablet app which helps doctors learn the steps for procedures using 3D visualisations of the human body.

While most people think of surgery as being about the deft use of one's hands, Mr Nehme says 75 per cent of the skills required are cognitive, such as visual and pattern recognition. Touch Surgery's app can help new and practised doctors acquire these skills, and the data collected from surgeons using the app will allow Touch Surgery to improve the training. With a few swipes, the user is guided where to make incisions and how to remove organs. They can test themselves at each step against a choice of tools and parts of the body.

Hospital budget cuts and the need for doctors to keep abreast of a rapidly advancing medical technology prompted Mr Nehme and his co-founders to start Touch Surgery, which has been downloaded 160,000 times since it was launched last year.

It was just before 2pm. Laurence Aderemi was standing in the driving rain in "crack alley" – the nickname of a sketchy street in central London – with £1,000.

He was waiting to enter a cybercafé to use a money transfer service to send money back to his mother in Nigeria, who had recently had a stroke.

It was the closest spot that he could find to Google's London headquarters, where he worked. This was the moment, Mr Aderemi says, when he came up with the idea for his business, which he has subsequently left Google to work on.

Immigrants who globally sent back \$529bn worth of remittances in 2012 have had to endure similar hardships.

Mr Aderemi's app, called Moni, aims to help them transfer money quickly and cheaply using a mobile phone.

Moni Technologies, which is part of the TechStars accelerator programme and launches in March, has developed relationships with cross-border payment providers to let people transfer money across 100 countries.

Because the company does not have to siphon off funds to players in a retail network, it is able to charge approximately one-third of the amount that is charged by banks and money transfer companies.

"I realised for big companies, they're not incentivised to reduce cost," says Mr Aderemi.

"Even if we had one per cent of the market, we would still be a small fly on a big elephant's back."

It looks like a squishy grey piano, with keys that curve up smoothly like short-bread wafers lying side by side under a sheet. But the ethos of the Seaboard, the first product from east London start-up Roli, is more complex than it first seems, says founder Roland Lamb.

"Both our minds and computers are incredibly fast, but what connects the two is very problematic," says Mr Lamb. He points to the contrast between typing on a keypad, on the one hand, with how a violinist uses their instrument. "We want to apply those principles of muscle memory and subconscious computation to speed up how we input information into computers," he says.

From a converted space under two railway arches in Haggerston, Roli's team of engineers, materials scientists and musicians have designed and manufactured soft sensors made from polymers. When integrated as keys on the Seaboard, these devices let musicians control features of sound – such as loudness – using pressure and finger movement.

Before founding the company in 2009, Mr Lamb, an accomplished pianist, studied Chinese and Sanskrit philosophy at Harvard, lived in a Buddhist monastery and completed a design degree at Royal College of Art. He thinks Roli's technology has applications beyond music, in areas such as mobile technology and robotics.