BusinessCloud

DEMYSTIFYING TECH

IAN LIVINGSTONE CBE

GAMES LEGEND ON CREATING TECH LEGACY FOR UK

Fashion tech | **ZapGo investigation** | **Virtual events**
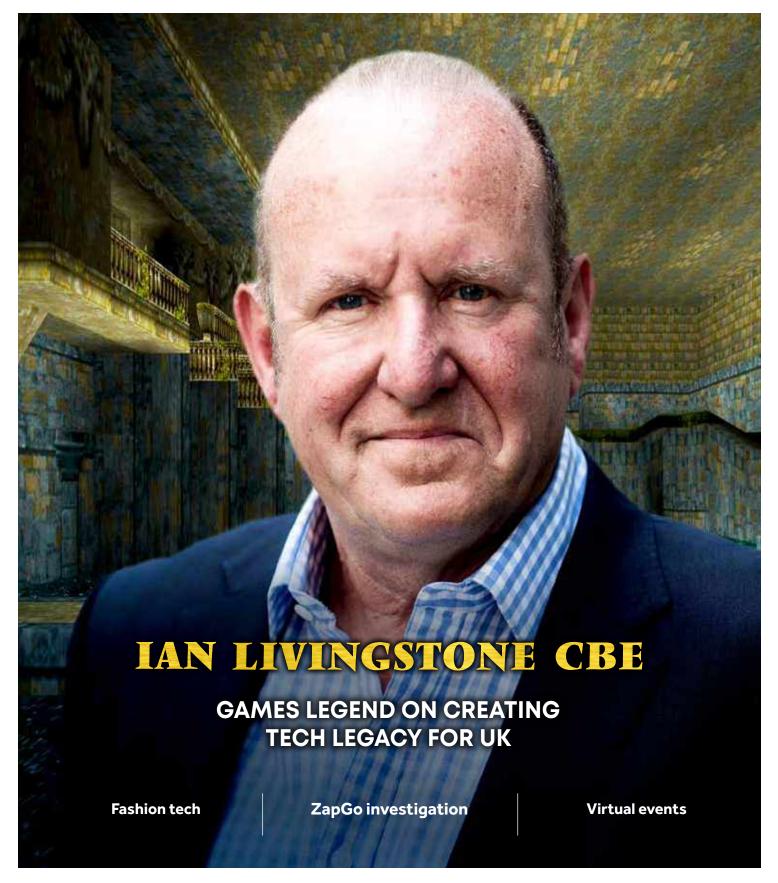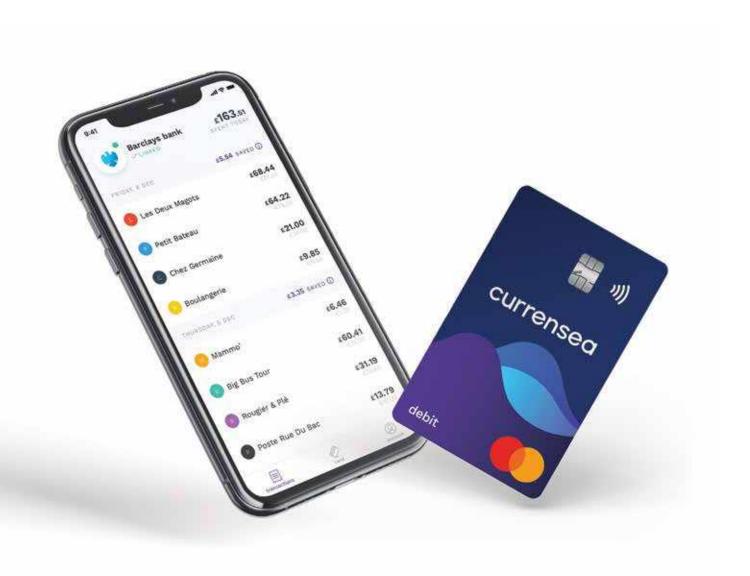
The smartest way to pay overseas

Our debit card connects directly to your existing bank account, without the hassle of inconvenient top-ups and different accounts.

Getting creative

I've interviewed many impressive entrepreneurs over the years, but few can match the CV of Games Workshop founder Ian Livingstone CBE.

I grew up reading his Fighting Fantasy books. The first example of branching narrative literature, they allowed you to choose your own path through an adventure via multiple choice and sold more than 20 million copies.

As Ian recounts (p4), they also provoked the ire of the Evangelical Alliance – and allegedly caused a child to levitate!

The concept of giving children agency in the learning process did not desert him throughout a stellar career in video games and ultimately saw him launch the computing curriculum in UK schools. Concerned that creativity and independent thinking is being stripped out of the education system, he is now opening a specialist academy using games as a contextual hub for learning.

This edition of BusinessCloud is packed with fascinating businesses from the creative tech scene. The ventures of Grammy-winning musician Imogen Heap (p24) come into focus, while start-up Andrson is harnessing machine learning to categorise unsigned artists' songs against existing hit records (p30).

On the audio side of things, Adelicious (p48) is looking to build the UK's premier podcasting advertising marketplace while Dap Dip founder Guy Kilty reveals the hardware and software you need to record a quality podcast at home in our new 'Tech Checklist' feature (p33).

High-end fashion is an industry slow to embrace technology despite the clear potential for improving supply chain, sales and sustainability. However our report (p36) highlights an industry now trying technology on for size.

The story behind the failure of battery cell technology firm ZapGo reads more like a Hollywood blockbuster than a business collapse. Executive editor Chris Maguire goes behind the scenes for a special investigation (p41).

In her first Insights column for BusinessCloud, FinTech leader Valerie Moran – the first black female to make the Sunday Times Rich List – discusses the importance of constantly looking to your next project (p29).

As Starling Bank tops the second annual 100 FinTech Disrupters ranking (p9), we take a look at how digital banks – the poster-children of the UK's FinTech scene – hope to eventually turn a profit (p21) in our interview with founder Anne Boden MBE.

We also have reports on payments tech (p64) and virtual events (p60), while our Tech Counsel advice feature (p74) highlights the tech crucial for working from home.

In our 'On the money' guest column (p69), Skymind Global Ventures' Adam Gibson ponders the pros and cons of UK chip-maker ARM's potential $40bn acquisition by Nvidia.

London's first chief digital officer Theo Blackwell MBE talks through the challenge of embedding smart technology into a 2,000-year-old city (p56); London Tech 50 winner HoloMe is beaming holographic catwalk models and musicians into people's homes (p52); and coding school Cypher (p71) has moved from the classroom to Zoom.

Finally, our first Under Review column takes cycling safety app Busby for a spin (p59) while Gadget Gavin (p76) says the trends accelerated by COVID-19 are here to stay.

Enjoy the magazine.

Jonathan Symcox
Editor, BusinessCloud

🏠 businesscloud.co.uk
📷 @jonsymcox
🐦 @jonathansymcox
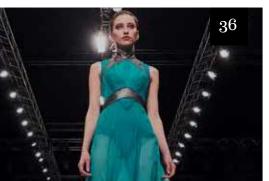
04

GAMES ARE GOOD FOR YOU

IAN LIVINGSTONE CBE HAS BLAZED A TRAIL IN THE UK GAMES INDUSTRY FOR MORE THAN 40 YEARS. AS DIGITAL INDUSTRIES BECOME INCREASINGLY CRUCIAL TO THE NATION'S PROSPERITY, HE SAYS IT'S TIME WE STOPPED STRIPPING CREATIVITY OUT OF THE NATIONAL CURRICULUM

Words: Jonathan Symcox

A crucial skill in the workplace is that of problem-solving: the ability to analyse an obstacle and figure out how to bypass it.

Many of us acquire this ability through years of experience. So why is it not taught as a fundamental part of our education?

It is a question Ian Livingstone CBE has pondered for many years. "Learning should be about empowering kids, not turning them into passive receptors able to regurgitate stuff that you've told them. It doesn't work: they'll forget that stuff," he tells BusinessCloud.

"When you're next flying across the Pond, think about how the pilot learned to fly. Would you prefer that they learn by reading a book, or using simulation software? Do you want them asking 'Now what was that I read on page 23 again?'

"Using simulation software - effectively a game without the scoring - is a way of using our hands to get an engagement, which is critical in learning. And that seems to have been forgotten about in traditional education."

As co-founder of Games Workshop in 1975, Livingstone launched the infamous Dungeons & Dragons and Warhammer board games in the UK. Also the author of 15 Fighting Fantasy gamebooks – which sold around 20 million copies worldwide – he has seen the value of 'learning through discovery' first-hand.

—

TAKING CONTROL

These 'choose your own adventure' books, which I devoured myself as a youngster, gave the reader the chance to choose their own destiny at every turn – which often led to their doom.

"I like the social interaction of games and to learn through solving problems," he explains. "After we launched the Workshop, we used to run 'games days'. A book editor at Penguin, Geraldine Cook, was amazed to see thousands of people playing D&D and asked if we would write a book about the hobby.

"Rather than doing that, we wrote 'The Warlock of Firetop Mountain': a book to give people that same feeling of playing the game. It was the very first branching narrative book, with a game system attached, and it didn't sell very well at first. Then we appeared on Radio One, reading out the options and encouraging children to phone in with their choices - and suddenly it went absolutely ballistic and sold out everywhere!

"Because they were interactive, they were empowering: they gave children agency. The multiple-choice system allowed them to play in many, many ways, and fail - but they would then want to start again."

He adds with a smile: "At first, they were criticised because they were called Fighting Fantasy 'gamebooks': the word game always sends people into an apoplectic frenzy because they think children are doing frivolous things rather than using their time constructively.

"There was an eight-page warning guide put out by the Evangelical Alliance which said that interacting with demons in the books was bound to see children become possessed by the devil! And a worried housewife in deepest suburbia phoned a local radio station to say that, having read one of my books, her child levitated. The kids were thinking, 'for £1.50, I can fly?'

"But teachers were beginning to understand the value of these books - they enabled critical thinking because children were trying to find the optimum way through the book. They increased literacy, they found later, by nearly 20%, because children really wanted to understand what each word meant, because it had a significance."

—

GODFATHER OF LARA CROFT

Livingstone then got in on the ground floor of the UK's video game industry, which witnessed a meteoric rise in the 1980s. He would serve as executive chairman of legendary developer Eidos from 1995-2002, launching the 75 million-selling Tomb Raider franchise.

"Through the whole period I've been in video games, there's always been the sense that games are in some way trivial at best and probably harmful for

parameters until you have a successful theme park.

"Anyone can become successful over time. There's no sense of feeling 'I'm a failure'; whereas an exam is an arbitrary moment in time where, if you don't answer a question right, you're less able than others. That sort of standardised metric used to assess children, to my mind, is wrong. Children develop at different speeds - so why not let everyone feel a sense of success rather than being judged as failures early on in life?

"We see Generation Z being bored or fidgety in class, and some of them suffering with anxiety, because they're taught in a very traditional way which goes back two centuries. Education has not kept abreast with technology."

—

NEXTGEN REPORT

In 2010 Livingstone was asked to act as a government skills champion for the video games sector by minister Ed Vaizey. Livingstone described his resulting 'NextGen' report, co-authored with Alex Hope of visual effects firm

children," he reflects. "It's now slowly beginning to dawn on people that games are not just entertainment; they're powerful and positive tools in multiple ways.

"You cannot get through a game without problem-solving – it's impossible. You learn the game intuitively, through trial and error. There's no such thing as failure – you're not punished for making a mistake, you're encouraged to try again.

"Minecraft, for example, is a wonderful creative tool, a kind of digital Lego, where children build these wonderful 3D architectural worlds and share them with their friends. RollerCoaster Tycoon is effectively a management simulation: design a theme park, understand the physics of the rides you construct, set the prices and staffing levels. If you do it right, the virtual customers will come to your theme park. If they don't, you're not wrong – you can just tweak the

A LIFE IN VIDEOGAMES

IAN LIVINGSTONE HAS BEEN MADE AN OBE AND CBE FOR SERVICES TO THE VIDEOGAME SECTOR. HOW DOES HE SEE THE INDUSTRY TODAY?

In 1984 Ian Livingstone designed Eureka, the first game published by software house Domark. It was the start of a stellar career in games.

When a merger saw the formation of legendary developer Eidos, he served as the listed firm's chairman from 1995-2002, launching the Tomb Raider and Hitman franchises. The business had moved away from the bedroom coders of the 80s and towards multidisciplinary teams working on 'triple A' titles.

"When we were making Tomb Raider, you had to spend millions developing the game and more millions building physical inventory and packaging to navigate the distribution – to eventually get to a consumer who may or may not like what you've created. If they didn't like it, it would all come back to you in returned stock," he says. This was not a problem suffered by Tomb Raider, a series which would go on to sell

75 million units, grossing an astonishing $3 billion. In 2009 its success prompted legendary Japanese developer Square Enix to acquire Eidos and make Livingstone its lifetime president, a position he resigned from in 2013.

"Today, no physical inventory needs to be built: you can go direct to the consumer and monetise them," he continues. "The service model means you can change the game over time, using metrics to analyse how your product is performing, and improve it."

Livingstone has invested personally in leading UK game developers Playdemic, Fusebox and Mediatonic. He is the non-executive chairman of Sumo Group, one of the largest independent video games developers in Europe and headquartered in Sheffield.

At $200 billion a year, global revenues in the games, eSports and digital sports sectors exceed those in music, video and Hollywood combined – yet just two per cent of the UK's games studios receive VC funding, a situation which prompted Livingstone to join games and eSports investor Hiro Capital's €100m fund in 2019.

"The UK happens to be very good at making games: there are over 1,000 game studios here and we've been responsible for

Double Negative, as a "complete bottom-up review of the whole education system relating to games". It led to the introduction of the computing curriculum in schools.

"We managed to convince the government to put computing on the curriculum to replace ICT, which was largely a strange hybrid of office skills – learning Word, PowerPoint and Excel - and gave children no insight into how to

actually create their own technology," he says.

"It's a bit like teaching how to read, but not how to write: children need to understand how code works. They don't necessarily have to write it - they could use middleware package, or Unity or Unreal to create content - but we wanted to put children into the driver's seat of technology, rather than in the passenger seat, moving them from consumption to creativity."

—

THE LIVINGSTONE ACADEMY

Far from satisfied, he is now putting his name to The Livingstone Academy in Bournemouth, part of the Aspirations Academies Trust which runs 15 schools across southern England. Set to be opened in September 2021, it is a science and technology academy for children aged 4-18.

Steve and Paula Kenning, CEOs of the Aspirations Academies Trust, are former headteachers who found a kindred spirit in Livingstone. "We've worked with more than 50 companies

and, invariably, they can't find young people with the right skills for jobs. They have good qualifications in standardised tests, but they can't think for themselves: collaboration isn't there, creativity isn't there, critical thinking isn't there," says Steve Kenning.

"We want our kids to work with employees at these companies as part of the learning process. We particularly want to speak with tech and video game companies about collaborating in this way.

"We are trying to develop more project-based learning, using computational thinking, to engage kids and challenge them. We're linking subjects together: when you make a game, you've got artists, musicians, entrepreneurs, game designers. There are a host of different disciplines.

"We want them to go into the world of work with a different mindset, as problem-solvers and really good citizens for the future, and also happy – because there are well over a million kids who are currently unemployed because they haven't got the right skills. It's a big issue."

some of the biggest blockbusters ever created, from Tomb Raider to Championship Manager, Total War, Grand Theft Auto and, more recently, Fall Guys," he says.

"You always see government ministers wandering around factories which make drainpipes or something for a photo opportunity, wearing hard hats, rather than going to a video game studio. Playdemic is able to produce a game like Golf Clash, generating $150m a year, with just 50 people – I don't know many other industries where that kind of revenue can be generated per person.

"If you're looking for an industry in the post-COVID world, video games tick all the right boxes. Revenue has risen throughout the pandemic, and the supply has not been affected as developers have been able to transition to working from home using cloud-based platforms. The industry is not dependent on London: it's regional, it's intellectual property creating, it's high-skilled, high tech – and the second you release it digitally, it has over 90% export value to the country. It is exactly the type of industry that should be getting good press. It's pretty much under the radar because, unlike film and TV and music, we don't have celebrity - but we're very good at what we do."

So which games does a bonafide legend of the UK games scene play in his spare time?

"I enjoy playing Civilization. I used to play Championship Manager a lot. I still enjoy the Dreamcast: Virtua Tennis is one of the best four-player games ever made. I also played quite a lot of Clash of Clans for a time – until I realised I was on a bit of a treadmill! When I was involved with Playdemic, I played an awful lot of Golf Clash.

"I never want to retire. Games have been my life. There is no difference between work and play."

THE NEW LATIN

Livingstone adds: "[The students] will be using games as a contextual hub for learning. How can you gamify the curriculum through projects, computational thinking, computer science, to give children agency for fun, understanding and knowledge? A qualification is nice to have, but what I'm more interested in is your portfolio – what you're actually able to do.

"Digital literacy is almost on a par with literacy and numeracy. Computer science, you could argue, is the new Latin because it underpins the digital world in the way Latin underpinned the analogue world. For children to be citizens of the 21st Century, they need to know how this stuff works; otherwise they'll just fall further and further behind as the world is transformed beyond recognition by technology.

"If you get them thinking this way very early on, the [resulting] transferable skills will enable them to make a game; work against cybercrime; design a jet propulsion engine. Our creativity is the envy of the world. I cannot understand why the government is intent on judging one child against another and stripping creativity out of the curriculum - it's insane! What we have in the UK is an intangible asset that is world-beating. It would be a sad loss if we were not the most creative nation in the world any longer.

"I did badly in school. It was a pretty miserable experience – and I think learning should be a joy. If I can leave a legacy [to say that] learning can be fun and that games are actually good for you - the power of play beyond entertainment – I'll be very happy with that."

Ian Livingstone and Steve & Paula Kenning are interested in hearing from any tech or video game companies keen to collaborate and make a positive impact upon the curriculum. Please email stevekenning@ aspirationsacademies.org

LEARNING THROUGH PLAY

GAME DESIGNER TRISTAN HALL IS FEEDING IMAGINATIONS WITH FANTASY AND HISTORY GAMES WHICH ALSO STRIVE TO EDUCATE THOSE WHO PLAY THEM

As a child I would spend my summer days spinning epic tales of exploration and wonder with friends. My parents worried that I spent too much time 'dungeoneering' - but my teachers observed that role-playing had done wonders for my academic development.

When I had a son of my own, I saw his analytical and leftfield thinking develop exponentially through progressively more complex video games, card games and board games.

Having successfully crowdfunded my first board game, Gloom of Kilforth: A Fantasy Quest Game – my love letter to D&D and Fighting Fantasy – I wondered whether I could deliver a game that actually taught kids something while they played.

My second game, 1066, Tears to Many Mothers, was focused on the Battle of Hastings. Every one of its hundreds of gorgeous images was based on a real person or event; its popularity has enabled sequels detailing the Great Siege of Malta and the Battle of Waterloo.

I'd love to see more gaming introduced into mainstream education. Albert Einstein said: "If you want your children to be intelligent, read them fairy tales. If you want them to be more intelligent, read them more fairy tales."

Between fairy stories and academia is an incredibly fertile ground for the evolving imaginations of children and adults alike – and a golden opportunity to awaken and inspire the gamer in all of us.

Website/shop: **hallornothingproductions.co.uk**

Contact: **tristan@ hallornothingproductions.co.uk**

100 2020
FINTECH
DISRUPTERS

The open banking revolution following the 2008 financial crisis led to a flourishing UK FinTech scene which is the envy of the world. This innovation ranking showcases the pioneering companies who are transforming banking, personal finance, payments, insurance, investments, charitable donations, accountancy and compliance. It was compiled from a combination of reader votes and an independent judging panel.

Many thanks to the judges, listed below.

Hugo Rousseau, financial services programme leader, techUK
Kristy Duncan, founder & CEO, Women in Payments
David Brear, CEO, 11:FS
Dawn Dunn, cluster manager for FinTech/data, Dynamo
Steve Chown, FinTech accelerator manager, NatWest
Tribeni Chougule, head of change management, Visa
Julian Wells, director, Whitecap Consulting, FinTech North & FinTech West
Linda Saye, founder, The Diverse Agenda
Gavin Brown, senior lecturer in financial technology, University of Liverpool
Jonathan Symcox, editor, BusinessCloud

1 STARLING BANK ▲

Challenger bank Starling holds 1.6m current and business accounts. Its customers have a larger deposit base than its rivals, with the result that the London firm expects to break even by the end of the year. Recently launched a debit card for children.

2 CURVE =

Curve consolidates multiple cards and accounts into one 'smart card', with an accompanying app to help people manage their money. The London-based business is now adding loyalty card support to this for retailers including Boots, Costa Coffee and IKEA.

3 CURRENSEA 🔆

A debit card for overseas payments. London-based Currensea links directly to bank accounts and automatically saves travellers 85 percent on bank charges anywhere in the world. **See full profile on following page.**

4 REVOLUT ▲

Revolut

London-based Revolut is a payments and banking app designed to help its 13 million customers manage their money, spend abroad, trade stocks and exchange cryptocurrency. A $500m funding round from US investors in February, before COVID-19 reached the UK, saw its valuation hit £4.3bn and become the UK's most valuable FinTech. However losses almost trebled last year as it pursued a policy of geographical and product expansion.

5 SNOOP 🟠NEW

Financial Conduct Authority-approved app that connects to a customer's bank accounts and, using a mix of artificial intelligence and human expertise, gives tailored insights into how they might be able to save money. Suggestions range from swapping home insurance or energy provider to supermarket food deals and entertainment services.

6 HONCHO 🟠NEW

Reverse insurance auction site where insurers bid for your custom. The Durham company recently launched a van insurance marketplace following the launch of its car product in 2019. **See full profile on opposite page.**

7 SAMUEL & CO. TRADING 🟠NEW

Self-made millionaire Samuel Leach is the CEO of Watford-based Samuel & Co. Trading. Its automated algorithms trade the financial markets on behalf of clients, while the team also offer training services.

8 CLEARBANK ▼

In 2015, ClearBank became the first payments clearing bank to launch in the UK in 250 years. The London firm transforms the ability for financial institutions to provide current accounts to their customers, resulting in faster and more efficient payments. Ranked as our No.1 FinTech Disrupter in 2019, it is set to provide multi-currency bank accounts.

9 COUNTINGUP 🟠NEW

Automated accounting app Countingup has more than 20,000 customers and processed almost £1bn in transactions since launching two years ago. The London firm combines accounting and banking into one solution for SMEs and claims to be more accurate than traditional digital bookkeeping software.

10 ORDO 🟠NEW

Real-time bank transfer app Ordo allows customers to request and receive payments immediately and securely for a small fee. Having

3 CURRENSEA

currensea

International payments debit card Currensea offers small businesses and consumers zero foreign exchange fees on overseas card payments, all without the hassle of inconvenient top-ups and multiple bank accounts.

Founded in 2018 by JPMorgan and Barclays alumni, Currensea is built on Open Banking technology, and is the world's first Card Based Payment Instrument Issuer (CBPII), making it the only debit card that connects directly to your existing bank account.

Launching in January of 2020, Currensea offers businesses and consumers:

- • 0% FX charge, compared to the average 3.25% bank charge
- • 24/7 interbank exchange rates
- • Zero ATM withdrawal fee up to £500/month
- • No hidden charges

Thanks to these benefits, the average Currensea consumer will save over 85%, or £200 annually for a UK family, while the average business could save over £300 per $10,000 spent vs high street banks and online payment providers; Currensea also offers savings compared to the most popular challenger banks on the market, too.

Since launching in January it has achieved outstanding quarter-on-quarter cardholder growth of over 230% and month-on-month transaction growth of 255%, onboarding 5,000 customers in Q1 alone.

Currensea is also environmentally conscious, establishing a partnership with One Tree Planted, which enables customers to donate some of the savings they make on FX fees to planting trees. To date, 10% of customers have used some of their FX savings to plant trees, with 90,000 trees to be planted based on achieving 2020 targets.

🏠 www.currensea.com
🐦 @Currensea

integrated with accounting packages, Xero, Sage and QuickBooks, it includes invoice tracking. Based in London. **See full profile on p12.**

11 FISKL 🆕

Mobile invoicing and cashflow management app Fiskl allows clients to take payments and create and send customised invoices from any device. The London firm's tech also allows them to track the time spent on tasks, create business reports and manage staff.

12 LUMIO 🆕

Another example of an API-first FinTech, Lumio's personal finance app automatically finds ways for users to grow their money. Its Lumio Mentor algorithm enables them to switch to the best-suited financial products in the market by auto-scanning financial accounts, goals and values against the market every day, highlighting improvements that can be made.
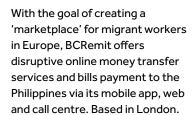
13 MY DIGITAL ACCOUNTS 🆕

Based in Wilmslow, My Digital Accounts' cloud-based contractor payroll and accounting software processes transactions for 20,000 contractors in industries including construction every week, also taking care of taxation. Its API can connect to popular CRM systems Zoho and Salesforce, as well as Sage.

14 PLEDJAR 🆕

Pledjar is a Milton Keynes-based app which connects to bank accounts via open banking to allow people to donate their spare change to a charity of their choice. Authorised and regulated by the Financial Conduct Authority.

15 BCREMIT 🆕

With the goal of creating a 'marketplace' for migrant workers in Europe, BCRemit offers disruptive online money transfer services and bills payment to the Philippines via its mobile app, web and call centre. Based in London.

16 PENNIES 🔺

London-based Pennies is a digital charity box enabling shoppers to donate small change when they make purchases. It has raised more than £25 million for 600+ charities via 100m+ donations, including £1m from Travelodge customers who pledged 50p at booking towards the British Heart Foundation, Macmillan Cancer Support and Cancer Research UK.

6 HONCHO

Honcho is the Durham-based fintech innovator that are on a mission to transform the world of insurance distribution.

Across the global fintech landscape few innovators are focussing specifically on insurance distribution. Honcho are on a mission to redefine how insurers distribute their products, creating an alternative to the old fashioned price comparison website model that for so long has focussed solely on price and which has ultimately delivered a poor experience for both providers and consumers.

Honcho is the world's first reverse auction marketplace for financial services. Honcho brings buyers and sellers of insurance together to help consumers to specify the exact product features that they need, and insurance providers to compete against each other in real time via a reverse auction to try to win the business that makes sense to them.

The Honcho apps help consumers to identify their requirements for car or van insurance, and then Honcho broadcast this out to their marketplace of providers. Over a 30 second period insurance providers have 3 opportunities to price and re-price (downwards only) to try to win that business with the knowledge of how everyone else in the market is pricing that risk. It is totally unique.

Honcho has a fundamental commercial difference too. Unlike aggregators' outdated commission model, Honcho charges providers just £1 to bid for consumers' business. And that's it.

With £3.8m in capital funding raised from 1,800 crowd investors plus VCs Maven Capital Partners and Insurtech Gateway, Honcho are one to watch closely.

🏠 www.gethoncho.com

🐦 @GetHonchoUK

17 KANI PAYMENTS ▲

Kani Payments, based in Newcastle, is a software as a service platform offering payment reporting and reconciliation services to large banks and other financial services businesses. A Tech Nation Rising Stars finalist in 2019, it also has sites in London and Spain.

18 OVAL MONEY ▲

Oval Money's app links accounts so customers can track their spending, save and invest automatically. Launched by the former chief executive of Uber Italy, the London tech business features individual savings plans tailored to users' needs.

19 CHETWOOD FINANCIAL

NEW

Wrexham-based digital bank Chetwood Financial uses data and advanced analytics to produce personalised, dynamic and accurately priced products. Its LiveLend Reward Loan is the first loan that lowers customers' interest rates as they improve their

credit score. **See full profile on opposite page.**

20 CHECKOUT ▲

Online payment solutions unicorn Checkout is worth more than $5 billion following a $150m fundraise this year. Based in London, it allows customers to accept more payments around the world. Serving around 1,200 enterprise clients, it has been profitable since 2012.

21 BLUE MOTOR FINANCE ▲

Based in Sundridge, Kent, Blue Motor Finance is a car finance company that transformed into a FinTech business, offering competitive finance packages, quick decisions and reduced administration time. After achieving

astonishing revenue growth of 51,000 per cent in 2017, it has ranked highly on the FT1000 list of Europe's fastest -growing companies for the last two years.

22 PLANIXS **NEW**

Manchester firm Planixs has developed real-time cloud-based liquidity management software to power treasuries including the Swiss Stock Exchange. It offers instant insight, rapid analytics, intraday control and agile liquidity.

23 DOZENS ▲

FinTech Project Imagine's consumer brand, Dozens is a current account containing tools to help with savings and investments. Since launching in 2019, the London company has grown

10 ORDO

Ordo takes the hassle and headache out of collecting payments….and makes getting paid easy.

We're a market leading, FCA authorised (FRN 836070) encrypted request-for-payment service. We use the Competition and Markets Authority's and Government's Open Banking technology to connect businesses with their customers, making processes efficient and customer relationships profitable. Ordo allows your business to request, make and receive payments, instantly and irrevocably.

Using Ordo means reduced costs, immediate money transfer, automatically reconciled payments, improved invoice security, and happy customers. Read about how you can get these benefits here **https://ordohq.com/info/**

Ordo is for all businesses, big and small; whether you need API system integration, invoice bulk upload capability, or connectivity with Sage, QuickBooks or Xero, we have a solution for you. With instant notifications, and immediate bank to bank payments, everyone has control over their finances.

Ordo was established in 2018 by the former Faster Payments Scheme leadership team, have investment from Nationwide Building Society are partnering with CGI. If you'd like to become a channel partner with us, get in touch here **https://ordohq.com/enterprise/**

We are connected with the following banks and building societies: Allied Irish, Bank of Scotland, Barclays, Cash Plus, Danske Bank, First Direct, HSBC, Halifax, Lloyds, Monzo, Nationwide, Natwest, Revolt, Royal Bank of Scotland, Santander, TSB, Ulster Bank, with more banks being added every week.

Ordo is putting payments where they belong – directly into your bank account without delay. We make you a simple promise – our solution enables you to transform how you process your payments. Try us for free at **https://www.myordo.com/landingPage** , learn more at **https://ordohq.com/about-us/** or get in touch **https://ordohq.com/enterprise/** if you'd like to partner with us.

🏠 ordohq.com

🐦 @OrdoHq

its customer base to nearly 50,000, processing more than £1m.

24 SATAGO ⬢

London-based Satago is an online platform facilitating cash management for businesses and their accountants. It syncs with accounting software to cover cashflow gaps, manage debtors and predict credit risks.

25 VIBEPAY ⬢

VibePay is an API-driven app which connects to a bank account to make and receive payments. Based in London, it processes transactions instantly whether at retail checkout or just sending money between friends.

26 STREEVA ⬢

Based in Guildford, Streeva's aim is to automate everyday processes by making transactions smarter. Its first product, Swiftaid, automates gift aid - a UK tax benefit that boosts charitable

donations by 25 per cent at no extra cost to the donor - on contactless donations.

27 LOQBOX ▲

Bristol-based LOQBOX allows users to improve their credit history by saving a set amount every year, which they pay off like a loan. It means users don't have to get into debt to prove they are good with money and works with banks including TSB, RBS and NatWest.

28 GALA TECHNOLOGY ⬢

Gala Technology, based in Wath-upon-Dearne in South Yorkshire, is behind the SOTpay 'pay-by-link' solution. It protects merchants against fraud risks by ensuring transactions are authenticated, shifting liability and often lowering acquiring processing costs.

29 FUNDING OPTIONS ▲

Credit broker Funding Options asks businesses a number of questions – which take just five minutes – then matches them to funding options from more than 200 lenders. The London firm works with government-owned lender British Business Bank to finance companies.

30 MONZO ▼

Monzo is another London-based challenger bank and poster-child for the UK FinTech scene. Allows its four million users to track their spending, set budgets and get instant notifications for purchases. Has dropped down the ranking this year after expressing doubts over its ability to continue following mounting losses.

31 FISC ⬢

Sheffield-based FISC is a finance and insurance software provider to the motor industry including manufacturers, finance companies

19 CHETWOOD FINANCIAL

🏠 www.chetwood.co

🐦 @ChetwoodFL

Chetwood Financial is a new kind of bank. Based in North Wales, the digitally native financial services company uses data and advanced analytics to produce personalised products that make customers better off.

Founded in January 2016 by Andy Mielczarek, a former HSBC senior banker, and former Partner at Capco, technology strategist Mark Jenkinson, Chetwood was granted a full UK banking license at the end of 2018, the only new retail bank to obtain a license that year.

Determined to challenge every aspect of how financial services firms operate, Chetwood has focused on building a sustainable business model; keeping costs low, with state-of-the-art, cloud-based technology and digital distribution partners. They have achieved this by adopting the latest technologies to support extreme digital journeys, offering pre-approved, real rate journeys with digital customer contact. They do this for other sectors and companies, offering them white-labelled products with no upfront investment.

Unlike traditional banks, they aren't looking to cross-sell to their customers. Instead, they focus on distinct customer segments that are underserved by the market, creating innovative products to meet their needs. Chetwood's first two consumer-led brands, LiveLend and SmartSave have achieved a Trustpilot rating of 'Excellent' for customer satisfaction.

The bank continues to build new digital products with the belief that it's only by rethinking everything - from the product strategy to the smallest details - that they can take better products to market and challenge their competitors for the long term.

Visit **www.chetwood.co** to learn more about how they're using technology to make customers better off.

and dealerships. Its tools maximise customer retention, increase finance renewals, sell more vehicles and increase margins.

32 ONE UTILITY BILL [NEW]

Newcastle-based start-up One Utility Bill consolidates household bills – including utilities, broadband and media – into a monthly payment, which can be split equally between housemates. Uses 100 per cent renewable energy as standard.

33 RIPE THINKING [NEW]

InsurTech offering niche insurance products such as sports, photography or drone. The Manchester firm uses data analytics to drive down prices and claims more than 220,000

policyholders have chosen to buy insurance through its platform.

34 CURRENCYCLOUD [NEW]

Global payments platform based in London. Currencycloud's multi-currency accounts allow for foreign exchange and international money transfers. Its API connects with several major digital banks.

35 FLOAT [NEW]

Edinburgh FinTech Float provides cashflow forecasting software to businesses, accountants and bookkeepers. It connects with accounting software and automatically updates, giving clients a real-time view of their cash position and forecast of that to come.

36 10X FUTURE TECHNOLOGIES ▲

London-based 10x Future Technologies develops the tech platforms underpinning digital banking

operations. Its client banks can engage their customers with more timely, relevant and personalised experiences when it comes to managing money.

37 SEEDRS [NEW]

Equity crowdfunding platform allowing start-ups to raise seed and angel investment. Recently launched a secondary market offering to all private businesses. Its most notable exits include Pod Point, Wealthify and FreeAgent.

38 PENSIONBEE ▲

Online pension manager PensionBee allows users to consolidate old pensions into one plan accessible from smartphones. It has tripled its customer numbers to 100,000 and

---

55 CYBERTONICA

Cybertonica is an award-winning platform managing risk, AML, compliance and fraud detection. The product is provided as a platform engine or installed as an integrated solution bringing together the fraud and risk analysis and authentication support needed for Paytech, Fintech and Online or Neo-Banking.

Everything is possible, including CRM cross-insights with real-time and other internal and third-party data enrichment.

· AnomalyticsTM - Large scale fraud protection, AML and compliance across all channels for financial institutions and fintechs. Operating in major banks, mid-tier and neo-banking.

· GoFrictionlessTM - Customer, merchant and paytech monitoring solution increasing the efficiency of Fraud & Risk teams, enabling higher conversion and profits for gateways, acquirers, merchants.

· ScreenWiZeTM – Stand-alone Behavioural Biometrics that integrates continuous monitoring of device security simply with existing systems and increases accuracy for fraud, on-boarding and other regulatory requirements meeting SCA.

Benefits

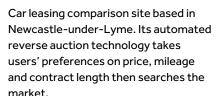Cybertonica eliminates friction from your customer experience while satisfying PSD2 and SCA regulations.

· Banks: reduce your AML, fraud and risk management costs
· Increase insights from big data in your payments and behavioural data
· Merchants and Acquirers: Increase sales by up to 25% by reducing cart drop-off
· Improve user experience & conversion by reducing the need for 70 – 90% of high-friction secondary authentication
· Cut false positives by up to 80%
· Online sales: Decrease fraud and chargebacks by up to 70%
· Merchants: Save up to 80% on fraud losses while increasing conversion
· Cut down risk related OPEX by up to 40%
· 100% customer privacy as no personal data is captured

🏠 www.cybertonica.com

✉ info@cybertonica.com

🐦 CybertonicaLtd

assets under administration to £1 billion in the past 20 months.

39 OPENWRKS

Nottingham's OpenWrks creates open banking applications with connectivity to over 3,000 banks. Its suite, including the MyBudget affordability app, helps customers better manage their money.

40 MONEYSHAKE

Car leasing comparison site based in Newcastle-under-Lyme. Its automated reverse auction technology takes users' preferences on price, mileage and contract length then searches the market.

41 COINFIRM

Coinfirm is a global leader in anti-money laundering and risk analytics for blockchains and cryptocurrencies. More than 1,400 cryptocurrencies are supported and the London company's solutions are used by more than 140 global clients ranging from crypto exchanges and protocols to major financial institutions.

42 NUGGETS

Based in London, Nuggets provides login, payment and verification ID tech for eCommerce. It stores users' data in the blockchain, meaning it isn't shared – even with Nuggets.

43 MOJO MORTGAGES

Macclesfield-based Mojo Mortgages is an online mortgage broker. Offering deals from more than 90 lenders, it submits the application and keeps the buyer updated until their mortgage completes.

44 QUOTEONSITE

Swansea-based technology start-up QuoteOnSite streamlines the quote management process for businesses of all sizes, from start-ups to established enterprises. It solves the problem of the lack of visibility, traceability and analytics that form an integral part of a successful sales process.

45 STEELEYE

Compliance technology provider SteelEye enables hedge fund clients to meet their regulatory obligations through a single platform. In doing so, the London RegTech saves them money, frees up time and gains new value from their data.

46 TIDE

Tide enables small and medium-sized business owners to open a mobile-first business banking account within minutes. One in 12 business current accounts opened in the UK was with Tide within a year of its launch.

47 BLACKBULLION

Blackbullion is an EdTech company transforming students' lives through financial literacy. Based in London, it partners with universities to offer free financial education, including

budgeting and risk management, and reaches more than 700,000 students worldwide.

48 YAPILY

Open banking platform Yapily aims to help enterprises, such as financial service providers and merchants, better connect to banks. The London company helps them retrieve financial data and initiate payments. Its customers include Fortune 500 companies and fast-growth FinTechs, including Intuit QuickBooks and GoCardless.

49 CREDIT KUDOS

Challenger credit referencing agency based in London which uses financial data sourced via open banking to provide a more accurate picture of someone's financial health. Credit Kudos enables lenders to make faster and more informed credit decisions, while reducing defaults, at lower cost.

50 CLAUSEMATCH

RegTech ClauseMatch works with banks and financial institutions to enable compliance, legal, finance, operations and risk departments to collaborate in real-time on policy documents. The London firm's compliance automation platform applies machine learning to workflows across teams.

51 WEALTH WIZARDS 🟠

Leamington Spa-based robo-advisor Wealth Wizards was the first technology of its kind in the UK. Its clients are financial services organisations and those who wish to improve the financial wellbeing of their employees as part of their engagement and benefits programmes. The platform provides holistic financial healthchecks, guidance on everyday finances and financial planning and advice in investments, pensions and retirement.

52 WHITEHALL FINANCE 🟠

Supply chain finance provider Whitehall Finance is based in Reading. Its additional products include treasury management software while it also provides marketing data to clients as well as risk management solutions.

53 PREVISE 🔻

Previse helps suppliers get paid instantly. The London-based company's smart technology analyses the data of a large company to predict the few invoices that are unlikely to get paid so the rest can be paid instantly. Suppliers who want instant payment pay a one per cent fee, which is then shared between the buyer, the funder and Previse.

54 CLEARGLASS 🟠

London-based ClearGlass acts as a digital intermediary between asset managers and pension funds. Its pensions cost transparency platform is used by more than 220 pension scheme clients, representing more than £250 billion in assets.

55 CYBERTONICA 🟠

Cybertonica's platform uses machine learning and AI for delivering authentication, risk analytics and fraud prevention to the payments and FinTech sectors. It increases conversion and sales by up to 25 per cent. **See full profile on p14.**

56 NIVO 🔻

Secure instant messaging and identity verification platform Nivo is designed to prevent people from ever having to phone service providers such as banks, lenders, insurance firms, utilities, telecoms and healthcare providers. The Manchester-based business was Barclays' first technology spin-out.

57 OPENPAYD 🟠

API-led FinTech which combines multi-currency accounts, payments, FX and card processing solutions. Allows businesses to expand into international markets quickly by connecting to its banking and payments infrastructure. Also offers these solutions for digital currency businesses.

58 AKONI 🔼

Akoni automates the process of finding banks for SMEs. Based in London, it is run by a group of senior business and bank directors who became frustrated that they couldn't access the best market products and interest rates quickly and easily.

59 DELIO 🟠

The technology of Cardiff firm Delio connects high net-worth individuals with private deal flow. It works with a diverse range of financial institutions across the UK and abroad, including top-tier banks and angel networks such as Barclays, ING, Coutts and the UK Business Angels Association.

60 EVERLEDGER 🔼

Everledger uses blockchain to address real-world challenges that aim to deliver a positive social, economic and environmental impact. The London-based business' tech can be used in a variety of industries from diamonds and coloured gemstones to luxury goods and insurance.

61 GOCARDLESS 🔻

GoCardless has built a platform enabling businesses to take online direct debit payments. Founded in 2011, it offers tech for optimising cashflow and collecting recurring and one-off payments in the UK and worldwide.
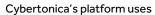
62 CHIP 🟠

Chip, an app which automatically saves up money for its users, has broken several crowdfunding records. In 2020 it raised the largest convertible round in UK crowdfunding history, reaching almost £11 million in less than 48 hours. The London FinTech has processed more than £165m in savings.

63 FIDEL

An API for linking bank cards to loyalty applications, Fidel counts British Airways and buy-now-pay-later provider Klarna among its partners. More than 1,000 developers are building applications on top of London-based Fidel's APIs.

64 GOODBOX ▼

Goodbox's contactless technology allows charities to collect cashless donations. The tech for good company, based in Manchester, rents and sells contactless hardware and delivers purpose-built solutions for museums, art galleries, places of worship and hospitals.

65 COBALT

Cobalt is re-engineering the foreign exchange market through a centralised, post-trade infrastructure and the standardisation of data. Another London-based company, it is backed by Citi and Standard Chartered.

66 FLOODFLASH

Sensor technology-based flood insurance provider FloodFlash paid out claims just one day after the devastating Storm Ciara struck in February. It provides fast and flexible cover by using the latest in data modelling and connected technology.

67 NUCORO

London-based Nucoro provides automated investment solutions to the wealth management sector. Its Exo Investing system is a white-labelled technology used by banks, insurance providers and wealth management firms to gain returns on investment and make savings for their clients.

68 FORM3 ▼

Form3 is a payments as a service technology provider based in London. Its cloud-native, real-time payment platform helps banks, FinTechs, financial institutions, eCommerce gateways and card providers process a wide range of payments quickly, simply and cost effectively.

69 FLUX

London-based Flux, founded by former employees of Revolut, is working to swap paper receipts for automated digital versions that live inside banking apps. Customers also receive loyalty coupons and rewards from retailers including Just Eat, Papa John's, schuh, KFC and Itsu.

70 SOAR

Based in Glasgow, Soar provides mobile apps and digital technology to ethical and responsible financial services including credit unions, building societies and community banks. Counts Experian among its partners.

71 VOXSMART

London firm VoxSmart is focused on maintaining compliance on corporate-issued mobile devices. Its communications surveillance products are designed to capture, analyse and monitor all electronic and voice communications related to trading activity, including mobile phone, instant messaging and email.

72 FREEAGENT

Edinburgh-based FreeAgent provides cloud-based accounting software, allowing customers to push through expenses and invoices, as well as remain on top of cashflow and tax, wherever they are.

73 OAKBROOK FINANCE

Based in Nottingham, Oakbrook Finance is a consumer lending business which uses data analytics to help people who might be turned away elsewhere to access loans.

74 GOLD-I

Trading technology creator based in Guildford. Gold-i has transformed the operations of hundreds of multi-asset brokers worldwide, managing their risk more effectively and becoming more profitable.

75 MONEYBOX ▼

Moneybox is an app that rounds up spare change from purchases and invests it in well-known companies such as Netflix and Tesla via tracker funds.

So far it has helped a community of 450,000 investors, who can open an account with as little as £1. The London firm recently launched a pension tracking service.

76 THOUGHT MACHINE ▼

Also based in London, Thought Machine is building technology to revolutionise banking. Its Vault product is a next-generation banking platform that uses the cloud as an alternative to legacy systems, while its Labs team is dedicated to experimenting with the Vault technologies, with the result of producing money-saving games, mortgage-reducing apps and connected physical products.

77 BUD ▼

Open banking firm Bud creates high-quality APIs for high street banks, including HSBC, and other FinTechs. The London firm is now taking its technology into other sectors.

78 COINCOVER 🆕

Cardiff-based Coincover is at the leading edge of the nascent digital asset insurance sector. Its compliance, security and insurance product has been built for the blockchain infrastructure which underpins cryptocurrencies. Helps protect customers' crypto investments against being lost or stolen.

79 ACCESSPAY ▼

Manchester-based AccessPay enables finance teams to achieve efficiency savings and security improvements around global payments. Harnessing the power of open banking, the API economy and secure financial messaging channels, it integrates back-office systems, connects banks and financial services.

80 PREPAID FINANCIAL SERVICES 🆕

Prepaid Financial Services provides prepaid cards and e-money payments technology. Its partners include national governments, mobile network operators, banks and global blue-chip organisations. The London-headquartered firm recently launched a 'world-first' COVID-19 stimulus payments programme in Jersey, issuing 105,000 prepaid Mastercards, each containing £100, to residents.

81 AIRTIME REWARDS 🆕

Free loyalty app headquartered in Manchester. Airtime Rewards incentivises its almost one million members to shop at participating merchants including Waitrose, Topshop, PizzaExpress, Argos, Nike, Wilko and Holland & Barrett. When they do so, they save money on their mobile bill.

82 FREETRADE ▼

Freetrade, based in London, is a free stock exchanging app that allows users to explore thousands of US and UK stocks and exchange-traded funds.

83 DONR ▼

Donr's technology allows people to support more than 3,000 charities using just their mobile number, removing the need to fill in lengthy forms. Based in Newcastle, the tech for good business charges a fair fee, which is invested in its platform and tools to lower the cost of fundraising for the charities it supports.

84 TRUNARRATIVE ▼

Leeds-based TruNarrative offers detection and management of financial crime to companies of all sizes, spanning industries including banking, insurance, online gambling, eCommerce, payments, lending and trading.

85 PLUM ▼

Plum is an AI assistant which analyses transactions to learn about a person's income and spending. It then transfers the optimum amount from your account into savings. The London business, used by more than a million people, also offers investment and switching services for household bills.

86 PRODIGY FINANCE 🆕

London-based student finance provider assesses candidates on their future earning potential and allows it to ignore their lack of credit history, guarantor or co-signer. More than $1 billion has been funded to 19,000 masters students in 150 countries to date.

87 ATOM BANK ▼

Britain's first app-only bank, Atom Bank is based in Blyth, Northumberland, and offers savings, mortgages and business loans. Launched in 2016, the UK digital-only bank has taken £1.8 billion in customer deposits and lent £2.4bn.

88 TICKR ▼

Tickr is an investment app allowing users to back causes for social good. The London-based business' portfolios of companies are split into four themes addressing global issues – climate change, disruptive technology, equality, or a combination of all three.

89 CAPDESK [NEW]

Capdesk provides digital tools for equity management and reporting. Its cap table management platform enables private companies to keep a clear overview of ownership and to manage employee option pools. The company currently serves around 1,000 companies around Europe.

90 FINASTRA [NEW]

The third-largest FinTech company in the world due to acquisitions, Finastra creates intelligent software for financial institutions. Its product set covers lending, payments, treasury and retail banking. Headquartered in London, it also has an open developer platform.

91 THYNGS ▼

Norwich-based Thyngs specialises in 'tap and go' technology for cashless payments, turning physical branded objects into a point of sale. Utilises near-field communication (NFC), QR codes and Apple Pay.

92 ONFIDO ▼

Onfido makes identification technology that is used by some of the world's best-known FinTech firms to allow their users to set up an account in minutes. It uses machine learning to scan a passport, driving licence or government ID for authenticity, before matching a user's face to a photo on that ID. Based in London.

93 CASPIAN [NEW]

Newcastle-based Caspian's automated risk investigation technology helps global banks fight money laundering and financial crime. Nasdaq Ventures, the investment arm of electronic exchange Nasdaq, purchased a minority stake in the firm in 2020.

94 COMPLYADVANTAGE ▼

London-based ComplyAdvantage is a data intelligence firm that aims to neutralise the risk of money laundering, terrorist financing, corruption and other financial crime. It has more than 500 enterprise customers in 75 countries.

95 BOUGHT BY MANY ▼

Bought by Many launched insurance for cats and dogs in 2017 and now insures more than 200,000 pets. Based in London, it is expanding around Europe after taking on investment from the continent.

96 ANNA MONEY [NEW]

Based in Cardiff, ANNA Money is a business account and tax app for SMEs. It takes care of invoice chasing, tracks expenses and organises company taxes.

97 CAPITALISE [NEW]

A finance comparison platform for accountants. Capitalise scours 100 banks, alternative providers and independents to make intelligent funding and insurance matches and allows applications to up to four at once.

98 CDL GROUP [NEW]

Stockport-based software house CDL creates technology for the retail insurance sector.

99 MONEY DASHBOARD [NEW]

Personal finance and budgeting app. Based in Edinburgh, it allows more than 500,000 customers to see multiple accounts in one place.

100 SUMUP [NEW]

Payment card readers which pair with mobile devices, allowing for sending of links to pay. The London firm also facilitates digital gift cards.

Ordo

Fancy saving 90%* on your payment costs?

Getting paid made easy

Ordo allows you to receive payments from your clients, **immediately, for a single flat fee of 20p, no matter the amount**

Supercharge your cashflow

Get payment straight from your customer's bank account direct to yours

Automatic reconciliation

Effortless reconciling with payments into your account just as you referenced them

Happy customers

Make it easy for customers to pay — hassle free, straight from their phone

How do I get it?

1 Go to **OrdoHQ.com/Enterprise**

2 Connect with **Ordo at the Smart Payments Summit**

Start saving now!

No commitment • No contract • No new equipment

*Case study: corporate client using Stripe, 35k transactions / annum, average transaction amount of £256, paying card processing fees of £83k, Ordo cost is £7k, saving of £76k by switching to Ordo or 90% per annum
Ordo is the trading name of The Smart Request Comany Ltd, regulated by the FCA (FRN 836070)

OrdoHQ.com

BREAKING EVEN

Digital challenger banks are the poster-children for the UK's FinTech scene, but several are suffering mounting losses. After Starling Bank topped our 100 FinTech Disrupters ranking and revealed it is close to breaking even, we asked founder and CEO Anne Boden MBE about the challenges of turning a profit

Interview: Jonathan Symcox

WHAT LED YOU TO START UP A BANK?

Technology has changed everything, from the way we shop, to the way we communicate with one another. After the 2008 financial crisis, it became clear to me that banking hadn't progressed technologically in the way other sectors had. This frustrated me, so I launched Starling.

HOW DOES STARLING'S OFFER DIFFER FROM OTHER BANKS?

Because Starling works in an agile manner, with collaboration in multidisciplinary teams and a flat organisational structure, we are able to adapt quickly to change. This makes us quite different from traditional banks, which tend to be highly bureaucratic, hierarchical and process-driven.

Starling has an established SME bank and toolkit and we have done more than £1 billion of lending. This puts us on a path to profitability and means we expect to break even by December 2020. We do not just rely on interchange.

Also, our customer base is older, with an average age of 37, more mature than at other digital banks. And a lower proportion of our transactions are overseas - so we are not just a 'holiday card'.

We're not stuck in a London bubble; in fact, just 22% of customers are in London and our growth remains strong right across the UK.

DOES THE COMPANY TODAY HOLD TRUE TO YOUR ORIGINAL VISION?

Yes. My vision was and still is to transform the way people manage their money and serve customers in a way that traditional banks hadn't. We do this by listening to our customers and providing them with products and services which are constantly evolving to meet their needs.

We launched cheque imaging during full lockdown, so people could process cheques without leaving the house. We have also just launched a child account as parents told us they wanted an alternative solution to cash when funding their kids' spending money.

WHAT IS KEY TO A NEOBANK ACHIEVING PROFITABILITY?

To build a successful digital bank from scratch, you must first lay firm foundations, with a proper regulatory framework, a strong technology architecture and a clear product roadmap. It may seem to slow down growth, but it means that when a storm hits, you can be ready to go in whatever direction you need to.

When coronavirus hit, we were already working on unsecured lending and were able to become part of the government-backed lending schemes, the Bounce Back Loan Scheme and the Coronavirus Business Interruption Loan Scheme. We're committed to £1 billion of this lending.

Modern technology and a low-cost base [are also important]. Incumbent banks rely on outsourced expertise, legacy systems or a mosaic of vendor packages and their own data centres. Starling has in-house engineering teams and its own core banking software running in the cloud. So while the incumbent banks may well be able to copy some of our features, they can't copy our cost base.

We were uniquely positioned when lockdown was imposed to ensure business continuity and resilience, to move to remote working and to continue to support our customers 24/7.

NEOBANKS COMPARED

WE CRUNCH THE STATS ON THE UK'S ESTABLISHED DIGITAL BANKS

	Number of customers	Average age	2019 revenue	2019 losses
STARLING BANK	1.6m	37	£80m	£52m
Revolut	13m	34	£162.7m	£106.5m
monzo	4m	32	£67.2m	£113.8m
TANDEM	800,000	38	£21.2m	£26.7m
Atom bank	65,000 (as of 2018)	-	£36.5m	£66.5m

WOULD YOU SAY IT IS CRUCIAL TO SIGN UP CUSTOMERS OF A CERTAIN PROFILE, RATHER THAN CHASE AS MANY CUSTOMERS AS POSSIBLE?

At £3.3 billion, our deposit base is significantly higher than other digital banks in the UK, even though we have fewer customers. Our customers hold much higher average balances, suggesting that more of them use us as their primary bank account.

We have found that customers on average maintain higher deposit balances the longer their Starling account is open and newer cohorts of customers open accounts with higher balances.

HOW IMPORTANT HAS PROVIDING BUSINESS ACCOUNTS BEEN TO YOUR SUCCESS?

It's very important. We hold a more than 3% share of the UK's SME banking market. This is a cohort which was in desperate need for help, they needed the option to bank with a company which was tech-savvy, saves them time and makes money management easier. I feel we have touched the tip of the iceberg by offering them services such as the Business Toolkit - a suite of accounting and bookkeeping features which can help them with invoicing, bill payments, expense management and VAT returns. We also have our growing Marketplace which offers up a range of complementary services, which customers can link to their Starling account to manage their finances more easily.

HOW DO YOU CONVINCE CUSTOMERS TO USE STARLING AS THEIR MAIN BANK ACCOUNT, HOLDING INCOME AND SAVINGS?

We don't need to convince them. A typical active retail customer credit and debits their account by more than £1,500 per month and people tend to switch to Starling being their main account quite quickly once they have experienced our offering.

DESCRIBE THE IMPORTANCE OF APIS TO YOUR BUSINESS.

Open API integrations help data move between the different tools which customers use, improving transparency of payments flow, which can often be another source of uncertainty for business customers for whom managing cash flow is so important.

At Starling, we're such big advocates of API integrations that we actively offer our customers a range of these in our in-app Marketplace, from accountancy software to legal support and insurance. With one in three of our business customers connecting one third party product this way, it's a great example of how APIs can help businesses manage their money more easily.

HOW DO YOU DRIVE UP LOYALTY IN YOUR CLIENT BASE WHEN IT'S EASIER TO SWITCH BANKING PROVIDER IN THIS TECH-ENABLED WORLD?

Loyalty stems from giving customers a bank account and smart money tools that are relevant and useful to the way they live their lives – especially when the average person spends three hours a day on their phone. Loyalty also comes from reliability – the app works. We are very resilient operationally with minimal service disruption.

Annual revenue per customer	Average customer deposit rate	Funding	In summary
£21	£999	£313m	On-boarding high-value customers is paying off as it eyes path to profitability
£24	£236	£628m	Biggest market share but struggling to monetise customers after losses trebled
£20	£357	£373m	Has expressed doubts about continuing as a going concern after losses doubled
£20	-	£130m	Undergoing restructure as it winds down costly credit card arm
-	-	£429m	Cut losses and plans to re-enter mortgage market despite collapse of major backer

These are all full-service digital banks: we haven't included business-only banks or current accounts linked to apps (examples of these can be found in the 100 FinTech Disrupters ranking)

THE GRAMMY-WINNING MUSIC DISRUPTER

'HIDE AND SEEK' SINGER IMOGEN HEAP HAS TENS OF MILLIONS OF PLAYS. HER TECH VENTURES, INCLUDING THE CREATIVE PASSPORT, ARE SET TO DISRUPT HOW MUSIC IS MADE, SOLD AND PERFORMED

Words: Alistair Hardaker

I

mogen Heap is best-known as the artist behind hit song 'Hide and Seek'.

Since its release in 2005, the track has racked up 28 million views on YouTube and 87 million plays on Spotify alone.

Comparatively less well-known is her investments into music technology. The British songwriter, who more recently wrote the music for Harry Potter and the Cursed Child in the West End, is an advocate of using technology to interact and collaborate with her fans, regularly streaming on YouTube and even taking requests.

She is the creative director at MiMu, which creates gloves used by Heap - and more recently Ariana Grande - to manipulate live sound through hand gestures. The Grammy-winning recording artist is also the founder of Mycelia, a non-profit with a focus on enabling a fair and sustainable music industry ecosystem through new technology.

Carlotta De Ninni is CEO (right) of new Mycelia spin-out The Creative Passport, bringing specific skills in the implementation of blockchain technology in the music industry.

A musician herself, she met Heap after moving to London from Italy to continue her studies into business management. After becoming head of research and operations for Mycelia, she specialised in music copyright and licensing, blockchain technology, smart contracts and mixed reality.

Currently in the proof of concept and testing stage with the music-making community, Creative Passport is aiming to improve musical collaboration, democratise data ownership, cut down on old-fashioned admin and speed up ID verification.

"Music-makers are always first to invest in their own careers and the last ones being paid," De Ninni explains to BusinessCloud.

— DATABASE

The goal of The Creative Passport is to replace the numerous databases of artists' information held separately by record labels, streaming services and performance rights organisations with one 'decentralised' database owned by the artist. It is

designed to hold a mixture of private and public data on an artist, from biographies, press photos and genres to ISNI, IPI and IPN data which is used by the industry to pay musicians.

The passport can be shared with other musicians to foster collaborations, and just as easily is shared with journalists as "almost an electronic press kit". It can also hold song data or 'metadata', including the correct lyrics and tempo.

Despite the encyclopaedic possibilities, the plan is not to build yet another source of data which artists must keep updated. "We're not building something that resembles Wikipedia," De Ninni clarifies. The platform is not designed to crowdsource data, but to ensure data only ever comes directly from one, authoritative source.

Once a musician is authorised on the platform, the data they add to their Creative Passport stays on their device, and is editable and retractable.

"Privacy is a right, and musicians shouldn't be paying for better privacy and to improve the industry which capitalises upon them," says De Ninni.

CRYPTOCURRENCY WINDFALL

In October of 2015, Heap released her single 'Tiny Human' on the Mycelia platform and charged buyers in Ethereum cryptocurrency. While the song reached around 150 downloads - a fairly small figure in the pop industry - De Ninni calls it one of the most successful experiments they conducted.

In 2015 each download cost one Ether, equivalent to about £1 at the time. She said critics of the experiment were quick to point out that 150 downloads was "pretty much nothing". But the cryptocurrency saw a boom.

"The Ether appreciated so much that it rose to £2,000 per Ether. We ended up having a bunch of money that was unexpected. We had more than £150,000 without even realising it," says De Ninni.

Heap reinvested the money into more experiments, including a research project into where the revenue created from Heap's 'Hide and Seek' song actually went. De Ninni, head of research at Mycelia at the time, spent a year investigating the income from that song with a group of students from Westminster University.

They spoke to record labels and performance rights organisations, and created an interactive visualisation of how revenue created by the song was divided. It was this which led to the creation and ultimate spin-out of Creative Passport.

Also garnered from the research was a feeling in the music industry that artists are bad at keeping their information up-to-date, and so the administration falls to the industry. "That's not true," says De Ninni. "Music makers are creative entrepreneurs. They are not just singers; they are business entrepreneurs."

In July last year the firm received a grant from the Finnish government to investigate digital identities in different sectors, with its pilot programme representing the music sector. The firm is now developing what De Ninni calls a research portal, which will offer a way for fans and artists to type in keywords and skills to find collaborators - all open to the public and free to use.
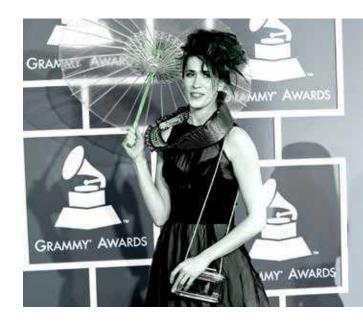
De Ninni said the portal may lead to a revenue stream in future, with a B2B model possibly offering a way for businesses to find musical influencers for their projects.

"Something that is fundamental to what we are doing is user consent and privacy by design," says De Ninni. "The B2B option of the business models we are offering is that the music maker decides what is public and what is private. They can decide who they share their information with."

MAJOR LABELS

While grants and unexpected cryptocurrency windfalls have helped to power the project to date, the real business proposition is not artist privacy but administration savings. The company is in conversation with major labels and independents.

"[The receiving firms] do not have to go find updated information because they are getting it from the authoritative source," says De Ninni. "Part of the interest [at the labels] is about increasing efficiency and decreasing admin costs on the verified artist's information.

"The second interest, which is less sexy, is the costs of identity verification. Right now, PROs (the collection agencies and societies which actually pay music-makers for radio play) and record labels need to manually verify identity. You literally need to send a picture of your passport. Signing up, everything is sorted with physical copies. It's an admin burden which is very expensive."

With large record labels showing interest, and the potential for the infrastructure of the music industry to be turned on its head, the firm is now working on features for larger artists. For example, while unsigned acts can use Creative Passport to bolster their profile, they may not be updating the information themselves once their career has taken off.

In the next year Creative Passport is adding a managers' portal to allow big names – people such as Heap, who have a team behind them – to give access and control to a specific person.

THE GLOVES ARE ON

How Imogen Heap developed 'human' instrument Mi.Mu

Mi.Mu gloves transform movements into sounds, allowing artists to create music in a more 'human' way.

Using a range of sensors and AI, the gloves pick up finger, hand and arm movements and translate them into real-time sound effects by connecting over Wi-Fi with a software programme.

For example, an artist might decide to kickstart a drumbeat by throwing up a fist or fade out their voice with a wave of their arm.

Following a decade of scientific development and use by selected artists, they will soon be made available to the public.

Ariana Grande used the gloves in her 2015 world tour performance while Kris Halpin – a singer-songwriter whose cerebral palsy has affected his ability to play traditional instruments – has also used them.

Become green and self-sufficient

HIT Energy Services

Join HIT Energy Services as we lead the U.K. in a solar revolution

While coal was the dominant form of energy for most of the 20th century, our mission is to help ensure solar power is at the forefront of the mix for the next 100 years or more.

It ticks all of the boxes in terms of being green and environmentally-friendly.

And more importantly than that, thanks to our multi award-winning innovation, it can be reliable and help ensure any business or organisation is self-sufficient.

Who can benefit?

From universities to social enterprises, farmers, landowners, homeowners and social landlords aiming to provide power to tenants on tight budgets, it is capable of generating as much clean, free power as any organisation needs 24 months a year.

We are now working with hundreds of business owners around the U.K. and Ireland who have over £16.5m of assets between them, generating enough energy to power around 3,500 homes.

More and more are coming on board each month as they see the benefits renewable energy can provide them with.

What is the history?

Solar power was very much en vogue around ten years ago, when incentives for feeding into the National Grid meant panels began appearing in fields and on barn roofs across the U.K.

This is where our skills were honed, helping to construct some of the biggest projects in the U.K.

But in the rush to install them and take advantage of these incentives, no thought was given to their performance and maintenance into the future.

Fast forward a decade and many had aged, malfunctioned or even stopped working completely, with system owners having nobody to turn to.

What do we do?

We have filled that gap, offering free health checks that get panels up to speed again. In some cases, we are saving businesses thousands of pounds a month in what they were losing in lost generation.

But we have gone a step further and future-proofed the industry by developing a piece of technology called the HIT Energy Guard.

This monitors Solar PV systems every hour of every day, all year round. If energy generation ever drops, we are instantly made aware of it, meaning we can fix the problem before any money is lost.

Why solar power?

"There are many uncertain things about the world right now - but one certainty is the sun will keep shining," said Simon Hopkins of HIT Energy Service.

"The beauty of solar energy is that it will keep generating all year round, even when it's cloudy or even snowing.

"We can make sure it can be reliable, green and supply an unlimited amount of free energy for any business or organisation."

The future

Recently, we moved into our new base at Lincoln University.

It means we can continue innovating with some of its most creative minds, further developing our technology and helping to keep the U.K. solar powered.

If you already have panels and would like a free health from one of our team or want to find out more about using green energy to become self-sufficient, find out more here:

https://hit-es.com

Never rest on your laurels

Valerie Moran, head of operations at FinTech Prepaid Financial Services, on the importance of always looking to your next project

I was born in Zimbabwe to a family of five children. My mother was a beautician and my father ran several businesses simultaneously: a butcher's, bakery, school uniform factory and property investments.

When I was growing up, he worked extremely hard - and this work ethic passed to me. My mother also pressed upon me the importance of education in achieving independence and success, and I went on to study programming and became a systems analyst.

I wanted to set up a business in my native Zimbabwe, but market conditions in the country weren't ideal, so I moved to the UK. When I met my husband Noel, I saw the potential in his idea [of prepaid credit cards]. I believed in his idea so much, I quit a good job to join him.

We didn't have capital at the start and ran the business from a kitchen table. We were super-stretched and doing several jobs each, and only recruited staff as we needed them.

Thankfully, the business enjoyed 12 years of consecutive growth and this led to our HQ on Regent Street and offices in Wilmslow, Ireland and Malta. Then late last year we were taken over by EML Payments [in a £281 million deal], which saw us listed on the Australian stock exchange.

When we started out, we knew at some point we would sell the business. However, it was not about just selling the business to anyone. It was about finding the right business that would bring us to be a listed company, have shared synergies and one that would bring PFS to new markets that our licence could not tap into.

Our team's mindset is to constantly provide innovative solutions which best fit the ever-changing and fast-paced FinTech space and pioneer into new markets: our company today also provides e-wallets and digital banking software.

We are constantly improving and being innovative with our technology to keep us at the forefront of contactless, mobile payments, wearables and 24/7 real-time solutions.

Whilst PFS was our main business, we also set up Ecomm Merchant Solutions in 2014 in the acquiring space. Ecomm's growth has accelerated very well and our focus has been tapping into the Irish, Greek, Cypriot and UK markets.

An innovative platform for our clients, it has a big focus on automation and analytics. We built it to provide a full end-to-end solution where we are the payment gateway, the processor and the acquirer. The intention is to grow Ecomm Merchant Solution organically like we did with PFS.

I believe in taking a leap of faith and taking a risk to move forward. It is imperative that as an entrepreneur you are constantly thinking of your next project, never resting on our laurels and not settling.

Valerie Moran is only black woman to ever appear on The Sunday Times Rich List. She founded PFS with her husband Noel from a kitchen table in 2008. It has since achieved 12 years of profitability and was acquired by listed Australian firm EML in 2019

🐦 @PrepaidFS

AI MAKING SOUND DECISIONS

AN EXPLOSION IN MUSIC-MAKING HAS CREATED AN A&R HEADACHE FOR THE INDUSTRY AS IT LOOKS TO IDENTIFY THE NEXT BIG ACT. START-UP ANDRSON IS HARNESSING MACHINE LEARNING TO CATEGORISE UNSIGNED ARTISTS' SONGS AGAINST EXISTING HIT RECORDS

Words: Alistair Hardaker

Defending your taste in music is usually a bit of fun over a pub table, but for those in the music industry these choices define fortune or failure.

There's never been such a supply of talent to put money behind. New technology has enabled a generation of bedroom producers who can make music indistinguishable from that created in multi-million-pound recording studios.

The sheer volume of artists makes it difficult for the industry to identify the next big thing among the thousand other acts which don't quite fit the bill – a problem now being solved by two music-turned-tech entrepreneurs based in Ireland.

Zach Miller-Frankel studied opera as an undergraduate before 'falling in' to band management. He would work with Grammy and Oscar-winning bands before breaking out on his own to launch Think Tank Music Management in New York.

After four years, and with expansion in mind, the American moved to Ireland and was impressed with the talent of its local music scene – but less so with how artists were managed.

"At the time – though not anymore – it was quite mismanaged. Artists which were really commercial weren't being commercialised properly," he tells BusinessCloud.

He began a Master of Business Administration at Trinity College Dublin, where he met engineering student Neil Dunne, who was working with and playing in bands and orchestras. The friendship became professional when the pair opened a branch of Miller-Frankel's Think Tank Music in Dublin, with a goal of building a roster of around six local artists by searching social media and music streaming services, attending gigs and trawling through local databases of acts uploaded by the bands and artists themselves.

A&R

Known as artists and repertoire (A&R), this talent scouting is typically carried out by a record label or music publishing company. It's a process which involves following whole music scenes, listening to thousands of songs and a level of serendipity.

As Dunne relates: "It was taking far too much time, it was completely ineffective and what's to stop an artist saying they sound like Beyoncé? Zach turned to me with a napkin he'd scribbled the idea for Andrson on and said 'why don't we automate this process?'"
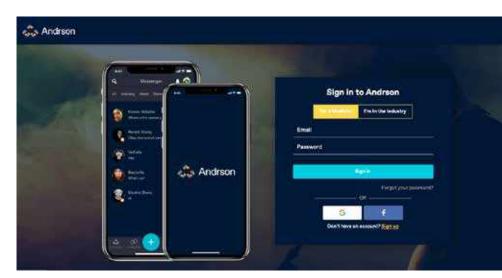
Typically, the number of social media followers and song streams are considered when making a decision about who to sign, says Miller-Frankel, but this data isn't as reliable as it may first appear.

"Unfortunately, TikTok is the place people are going to find new acts, which is abysmal," he says. "An artist might have 100 million streams of one song on Spotify, which on its face is brilliant. Why wouldn't you sign them?

"But those 100m streams could be because they're on a coffee house playlist that's playing in every Starbucks."

He argues that these numbers don't equate to longevity or ROI, which is of course bad for business. Until now, other data – such as identifying artists which objectively sound like successful acts – simply wasn't possible.

This is where Andrson comes in. The platform provides a breakdown of the unsigned artists registered on the platform, with an assessment of how much they sound like already established acts.

Rather than this data being subjectively added by the co-founders or the artists themselves, these musical comparisons are deciphered by artificial intelligence.

The technology to do this was built by head of audio analysis Cárthach Ó Nuanáin, another Trinity College graduate and musician who was working at adaptive music generation platform Melodrive in Berlin as an AI music developer.

He was tapped up by the co-founders to see if it was possible. "I didn't think we could get him," says Dunne. But as luck would have it, Ó Nuanáin wanted to move back to Ireland.

It was his expertise which brought the technology to the point it is at now: "One iteration from becoming the global leader in audio similarity analysis."

Dunne clarifies that this does not mirror techniques used by the likes of Spotify to unearth new artists for consumers.

HOW IT WORKS

Where Spotify bases music discovery on other users' listening habits, Andrson is designed to assess the characteristics of the song itself, and how they compare to existing successes.

It compares the songs uploaded by unsigned artists on its platform to what the co-founders call 'reference artists' – the likes of Beyoncé, Bruce Springsteen and even Tchaikovsky, to a degree.

The technology isolates the elements of a song – key, tone, beats per minute and spectral characteristics – and converts this into up to 1,000 data points.

"If a singer is mathematically 95 per cent like Beyoncé, firstly you can hear that. And because [the algorithm] is based on prior success, you know how to market her, the approximate marketing costs, the ROI, the longevity," explains Miller-Frankel.

The technology "isn't replacing human ears" but designed to get users to the right artist faster by filtering genres and influences reliably and at scale.

Those users range from small management agencies across the US, UK and Ireland to major labels including Universal Music Ireland. Its users also include music supervisors, who find music for use in television, film and advertisements, and touring agencies.

When the right artist or band is found, they can be contacted via the platform. Revenue comes from a £9.99 artist subscription, which the pair have waived for the remainder of the year in response to COVID-19, and a fee for industry professionals based on breadth of search.

Dunne says the company has had calls from technology providers who are looking to licence the Andrson technology into their own software, which offers a new revenue stream.

The firm has opened a Series A investment round, which it hopes to complete by the end of the year. It is also working on the next phase of the platform, which will include new features such as tour calendars and improved analytics.

The funding will allow the firm's tech lead to become its full-time CTO, and to add in-house developers to build out its technology. Dunne says expansion from a core team of six could also result in new tech products, both within and outside of the Andrson brand.

GLOBAL AMBITION

The co-founders' ultimate goal is an exit, says Miller-Frankel, but not before achieving a global presence and offices across the world. "We want every record label in the world to use our platform and integrate with the tools that already exist rather than reinventing the wheel," he adds.

The co-founders, who still consider themselves music rather than tech entrepreneurs, say they have other ideas in the pipeline, hinting at ventures in the gaming industry and blockchain-based music royalty management.

Dunne says: "Andrson is the baby for right now. We're staying firmly in the music industry for good, but we've always had other music tech ideas in the back of our brains and one day we'll hopefully get to try and grow those as well."

ANDRSON IN NUMBERS

Artists signed
5,000

Seed funding
€550,000

Planned Series A
$5M

Making a quality podcast at home

DAP DIP

Podcast production

In our first 'Tech Checklist' guest column, Dap Dip founder Guy Kilty reveals the hardware and software he uses to produce 'The Price of Football' and other podcasts

One of the by-products of COVID-19 has been that almost all of the podcasts Dap Dip produces are now recorded remotely.

The quality of technology online has made the transition pretty smooth. So what do you need to make a successful podcast recorded from home?

CONCEPT

The importance of deciding what your podcast is about, why you're making it and – most importantly – who you're trying to talk to before you start recording cannot be overstated.

Once you have those things in place, everything else – the name, logo, style, tone and episode length – will flow from there.

ROOM

The simple rule is to record in a room with few hard, reflective surfaces. If you set up your mic in your kitchen or in front of a window, you will sound too echoey.

You ideally want to be in a bedroom or a living room with carpet or a rug and lots of soft furnishing to deaden the sound of the room. If you are forced to place your mic close to a wall, just put a pillow or cushion between it and your microphone.

MICROPHONES

Once you've got your room sorted, getting a decent USB mic will hugely improve the quality of your recording.

The good news is that you can get one for under £100: I use the Rode NT-USB, which costs around £95.

Another good option is the Blue Snowball, which costs around £70.

RECORDING

You can record a podcast remotely using the built-in recording function of apps like Zoom or Skype, but there's a big problem with this: every glitch on the connection will end up on your finished podcast.

It's worth looking at a service that records the audio at each end then uploads it to a shared folder. I use Zencastr, which costs £15 a month and has some good post-production tools which make editing each episode more straightforward.

Crucially, too, it's incredibly easy for you and everyone else on your podcast to use.

EDITING

There are a couple of big (and fairly expensive) players, like Pro Tools and Adobe Audition, in the world of audio editing; but to be honest, for most podcasters Audacity is the way to go. It's free-to-download, open-source software that does everything you need to enable you to edit each of your podcast episodes simply and efficiently.

HOSTING

Finally, you'll need somewhere to host your podcast and then push it out to all the major platforms.

Sorting the hosting is simple – there are plenty of cost-effective options out there – but pushing it out to the likes of Apple Podcasts and Spotify can be fiddly, so it can be a good idea to get someone to help you set that up.
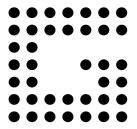
🐦 @GuyKilty

🐦 @DapDipPods

SPACE FOR THE FUTURE

DOWNSIZING OR STARTING OUT ON YOUR OWN?

TheGallery.com is a unique environment built for small businesses and startups in the creative and tech arena.

With seven recording studios, an auditorium, gym, board rooms, meeting spaces and a health food cafe, it's already home to record companies, social media and design agencies, videographers, songwriters and producers.

If you are looking for a space for your business, this is the perfect place to build your future.

WE ARE WAITING TO WELCOME YOU.

THE GALLERY

A DEDICATED
FOLLOWER
of FASHION
TECHNOLOGY

An industry often slow to innovate is now embracing a variety of technologies to solve challenges around the supply chain, on-demand economy, profitability and COVID-19. We speak to the entrepreneurs who are driving change

Words: Jonathan Symcox

—

PREDICTING TRENDS

The fashion industry is notoriously difficult to predict despite the data revolution sweeping other sectors. Trends quickly take a hold and, as suppliers scramble to service the newfound demand, can again become redundant within a few short weeks.

Enter fashion prediction platform Dressipi. Co-founded by Donna North and Sarah McVittie around 2012, the business is working with high street brands John Lewis, River Island and Topshop to help them predict what customers will buy.

"Fashion and clothing is much more complex than most other products," North tells BusinessCloud. "Every product has a very short lifecycle, only about six to eight weeks, and there is always a 'cold start' problem.

"The physicality of the consumer makes a real difference as to whether they can wear that item, from a size or shape perspective; then you get into their preferences; and then there is the context.

"So there are a lot of challenges that prevent you from taking off-the-shelf models or algorithms and using them within the fashion domain."

Dressipi now claims to hold the largest and most accurate customer and garment dataset in the industry, powering billions of product and outfit predictions every year. Products are attributed a set of 25-50 data points to create a 'digital twin' of every feature within a garment. "For example, there could be detail on the bust, transparency on the back," says North.

"We may then combine features to get a trend. If polka dots and flares combined with a certain material make a trend, then we can annotate every garment with that set of features. Then when it starts behaving differently to how we may expect, we would understand why that is."

A team of 25 today, it employs mostly data scientists and engineers who work with experts to gain that crucial human insight into fashion. "Very early on, we paired our data science and engineering teams with fashion stylists so we could learn and implant those kind of nuances into the algorithms," says North.

"If a product type suddenly starts getting bought, a stylist might say 'that became a trend three weeks ago'. Suddenly customers who said that they didn't like polka dots and flares last month are going to purchase that item.

"No one other than somebody close to fashion will be able to pick up nuances like that, which are the small percentage difference in performance from a pattern perspective."

SUPPLY CHAIN

According to North, another problem unique to clothing is that around 40 per cent of products created are never sold at full price - and therefore are oversupplied. Identifying true demand is also tricky.

"A retailer might sell out a product very, very quickly in a small number of core sizes. It is then a 'fragmented product': they can no longer promote it so it is hidden and it becomes very difficult for a customer to get to that product thereafter," she says.

"If you use personalisation on the front end – getting customers to products as quickly as possible that best match their needs and their preferences – then you have a view on what is true demand. And then you can start solving the supply side: what supply do I need for that true demand?

"The two sides are symbiotic: we come in at both ends."

TOSHI, also based in London, works with more than 30 brand partners to provide an 'at-home' concierge experience. Founded in 2017 by Sojin Lee, it is now onboarding three or four major brands every month. Its client list includes Chanel, Christian Louboutin, Erdem, Huntsman, Christopher Kane, Roland Mouret and Galvan.

Chanel, for example, has seven boutiques in London and an eCommerce site that only features eyewear and offers a concierge service called Chanel Concierge, supported by TOSHI. In order to service the 'last mile to last metre', brands are adopting 'micro-warehousing' to ensure the products are close to the customers.

"The first step [of TOSHI] was to go to all the brands and say 'your stores are your warehouses'," explains Lee. "You need to activate them into that kind of behaviour to become a part of the on-demand service economy… and generate a ROI on the rent that you pay, which is astronomic.

"I believe that supply chain and logistics is like the veins that carry blood: without it, we're just gonna fall apart as an industry. It's not enough just to invest half a million pounds into a beautiful website because at the end of the day, it still triggers a brown box delivered by a lovely gentleman in a brown vest."

ON-DEMAND ECONOMY

TOSHI aims to bring the service customers might expect in a luxury boutique to their home environment, at a time that suits them. A network of stylists with several sizing options are trained to fit clothing, measure for adjustments, immediately return unwanted products and provide styling recommendations.

"It was a no-brainer to look at what Will Shu had done with Deliveroo and what Matt Maloney had done with GrubHub," says Lee. "All these on-demand businesses were using technology to democratise access to product; enhancing and connecting pre-existing consumer behaviour in a more seamless and relevant way.

"It was ironic that it didn't exist for fashion, considering it's a commodity that lends itself so well to this type of behaviour. If you go to a luxury brand, they offer this type of service to their top VIPs. But in our heads, it was like, 'why can you only offer it to 50 people? This should just be a normal way of shopping'."

— SUSTAINABILITY

Up to 40 per cent of clothing bought online is returned, compared with 5-10 per cent of in-store purchases. TOSHI stylists' sizing options are one way of reducing the industry's carbon footprint.

The question of sustainability is firmly in the thoughts of North and McVittie. "Fashion is responsible for about 10 per cent of global carbon emissions. Part of what excites us around making the supply chain more efficient is this ability to reduce wastage in the system," says North.

"In fashion the margins are very, very slight and it's moving very, very fast. It's very difficult for these retailers to stop and take a step back and say, 'Okay, how can I do this differently?' If we can help them improve their profitability; get rid of some of the wastage; create more optimum inventory in supply chains; then they can really start looking at this huge problem.

"It's very difficult to solve it when everyone's breathing down your neck and you're a low-margin business."

— BOOSTING REVENUE

Lee, who performed analyst and commercial roles at luxury brands including Chanel early in her career, spent more than seven years as a founding member at eCommerce fashion trailblazer Net-a-Porter.

"Early on I understood how to use data to have a bigger impact on sales and conversion. Selling is not just an art of creating beautiful products; it is very database- and metric-based and derived on consumer behaviour," she reflects.

"Building Net-a-Porter wasn't just about revolutionising content online: it was about distribution capabilities and the scalability and the reach of eCommerce."

TOSHI, which employs 25 people – not including the network of stylists – is backed by 12 high-profile private investors, including GrubHub CEO Maloney. Its 'central brain', as Lee puts it, is the data and CRM opportunities which drive higher revenues, increased average order values and reduction in returns. Its partner brands have experienced a 40% increase in average order value; a 30% increase in revenue; and a 30% reduction in returns.

Meanwhile River Island says that customers who interact with Dressipi's personalised content are twice as likely to convert to a purchase, while their order value increases by an average of 20 per cent.

HoloMe, winner of our London Tech 50 innovation ranking (see interview, p52), has produced virtual catwalks for eCommerce fashion outlet ASOS and

enabled H&M models to show off clothes inside people's homes.

"By allowing the consumer to bring mobile shopping into their own physical space, we can create a more intimate buying experience," says HoloMe CEO Janosch Amstutz. "We are excited to see how our technology can be used as a new way to communicate to the customer."

—

COVID-19

The COVID-19 pandemic saw a shift in online purchasing habits from evening wear such as dresses to more casual clothing. "Our retailers saw a big shift in what the consumer was purchasing. We also saw a big shift in their need to have more nimble access to their data," says Dressipi's North.

"We built data products which enabled them to get a view in real-time about what was going on in their business so they could access the insights they needed to react in the moment."

The majority of TOSHI's target market is situated close to the major cities of the world. Currently live in London and New York, it plans to launch in Paris, Los Angeles, Dallas, Toronto, Milan, Hong Kong, Singapore, Beijing and Sao Paolo in the next two to three years.

Some of these retail destinations rely on tourism for more than 50 per cent of their revenue: the devastating impact of COVID-19 has therefore slowed TOSHI's expansion, while conversely accelerating the business

as brands look to drive strong store revenue in an 'empty vacuum of no traffic'.

"New York has been more impacted at the store level between COVID and the BLM (Black Lives Matter) marches. A lot of the stores were looted," acknowledges Lee. "Is there depression in demand versus supply for Oxford Street today? Yes. Do I think that will last past the next 18 months? No, I do not - because I don't think human nature continues this way.

"We'll have to come back and find some sort of balance, but Oxford Street is not gonna be boarded up and shuttered down. Will central London die suddenly? It's never going to happen.

"It's forcing businesses to look at the total market and say: 'What should I be doing to ensure that I am relevant - and be agile enough to morph with that relevance?'

"I think it's really important for any business, no matter how small you are, to keep a budget for innovation and R&D; otherwise, you'll end up like a sitting duck at some point."

TIME TO DITCH FAST FASHION

Eshita Kabra, founder of fashion rental app By Rotation, saw the devastating effects of textile waste first-hand on honeymoon in India

My start-up is a sort of Airbnb for fashion, allowing people to share the high-quality clothing they have invested in with each other.

The aim is to make designer fashion more democratic: instead of buying a Zara dress for £40 and wearing it once, they can rent, say, a Reformation dress for £30 for the weekend. In doing so, they can help reduce the waste produced by the fashion industry.

I grew up in Singapore but hadn't been back to my motherland, India, for many years - so my English husband and I planned a trip there for our honeymoon. In Rajasthan, we noticed there was a lot of textile waste.
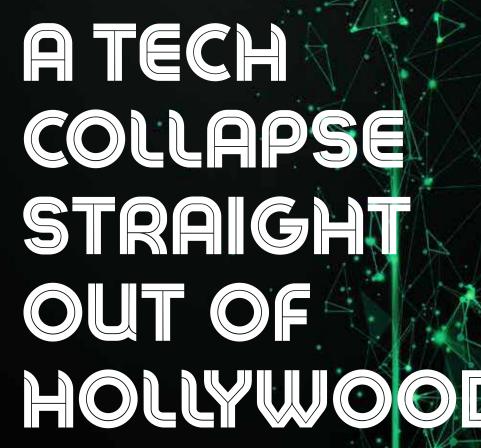
We saw animals, including pigs and even cows – which are sacred to me as a Hindu – feeding on this waste. This is an area well away from the well-documented landfills of Delhi.

I felt like I was part of the problem: I had bought several outfits for the honeymoon and wasn't sure I was going to wear them again. We as consumers are half to blame for how polluting the fashion industry is.

When I got back, I hosted a Facebook event with my friends to gauge their opinion – and began working on the business from there. We launched late last year and already have 27,000 users. We try to educate them on the positive effect they are having on the planet with our Impact Scale.

By Rotation would love to obliterate fast fashion – or at least persuade them to improve their supply chain and create products that are more expensive because they are higher quality.

A TECH COLLAPSE STRAIGHT OUT OF HOLLYWOOD

THE STORY BEHIND THE FAILURE OF A 'GROUND-BREAKING' BATTERY CELL TECHNOLOGY FIRM READS MORE LIKE A HOLLYWOOD BLOCKBUSTER THAN A BUSINESS COLLAPSE. WHAT REALLY HAPPENED AT ZAPGO?

Words: Chris Maguire

When the news broke in July that battery cell technology company ZapGo had entered administration it looked like just another business failure.

The company, which employed 25 people, was based at Oxford's Harwell Research Campus when the administrators were called in on July 23rd with debts of $14 million.

However, dig a bit deeper and the story of ZapGo – and the people behind it – reads more like a Hollywood blockbuster movie than a business collapse.

It has all the ingredients: a memorable appearance on Dragons' Den; a string of business failures; investor disputes; claims of world-changing technology; a bitter dispute with a major US corporation; and an ongoing court case.

At one point ZapGo's president of US operations Charles Resnick was indicted in the US accused of fraud for submitting receipts for prostitutes as business expenses – although he told BusinessCloud the charges were subsequently dismissed.

To understand what happened at ZapGo we need to start with the central figure: founder and CEO Stephen Voller, the public face of a business which attracted $25m investment on the back of claims that its technology would be able to charge electric vehicles in five minutes.

The $25m was broken down into $5m of grants, $6m in equity and $14m in debt – and it was the 12-15 per cent interest charges on servicing the debt that Mr Voller said forced the company into administration. The 61-year-old added: "Technology businesses [like ours] don't fail because the tech does not work – they fail due to a lack of funding.

"As we moved into the COVID crisis in February and March, when we were anticipating closing a funding round, it brought that to a halt – that's the long and the short of it."

However, ZapGo's investors give a different version of events and lay the blame firmly at the door of Mr Voller.

WHO IS STEPHEN VOLLER?

In 2009 he appeared in series seven of Dragons' Den, when he asked for £2.5m for a 30 per cent stake in his company Bee Automobiles, which was looking to produce the next generation of electric cars.

According to the accompanying BBC show notes, Mr Voller gave a 'nervous pitch' and described himself as the MD of an internet company who had raised £40m for various companies in the past.

It was the biggest single investment request ever seen in the Den. Although Mr Voller left empty-handed, there was no shortage of advice from the Dragons.

Theo Paphitis was reportedly 'incredulous' while Deborah Meaden quickly uttered the age-old line 'I'm out' after saying the project was a 'financial loss-maker'. Duncan Bannatyne, never one to mince his words, said the idea was 'crazy' while Peter Jones had the last word by saying Mr

Voller was 'losing sight of reality now' as it was unrealistic to think he could make and market a car for £10m.

Bee Automotives dissolved in 2010, soon after his disastrous TV appearance. "The thing with Dragons' Den is you know it's not real," Mr Voller told BusinessCloud. "There's no such thing as a Den. It's a TV studio and this is all an act.

"It was certainly an experience and a really interesting one. It's not something I'd choose to repeat."

There's no mention of the appearance on Dragons' Den or Bee Automotives on Mr Voller's LinkedIn profile, where he proudly describes himself as a writer/novelist having self-published his first book 'King Stephen, the Silver Man and Greta the Witch' on Amazon Kindle in January 2014.

"King Stephen is a work of fiction but represents an amalgam of Stephen's life experiences in business and in running technology companies," it explained.

Mr Voller, who said the book sold 'quite a few online', likens his writing to Ken Follett, Tom Clancy and Wilbur Smith but said the 'closest comparison would be the Da Vinci Code by Dan Brown'.

Mr Voller makes no mention of any of the businesses he was involved in before

ZapGo so BusinessCloud has tried to fill in some of the gaps.

In 2002 Mr Voller co-founded Voller Energy to manufacture portable fuel cell systems. Three years late Voller Energy Group listed on the Alternative Investment Market and details of Voller's early career were included in his biography notes.

"Stephen Voller is an experienced entrepreneur who has successfully built a number of technology businesses and managed a number of high growth companies," it read. "Previously, Stephen was chief executive officer of RealCall (now called Adeptra), a company focused on interactive alerting to mobile phones, managing director of Netscape UK and a sales manager at IBM.

"Whilst at IBM, Stephen managed a $1 billion business unit, marketing exclusively through distributors, OEMs, retailers and resellers."

Voller Energy Group soon lost its fizz and in 2009 a notice in The London Gazette from chairman John Ernest Brown announced that Voller Energy Group had been wound up. Mr Voller told BusinessCloud: "Yes, it had my name on the wall; and yes, it did fail; but it failed after I left."

Despite the setback, Mr Voller was back in 2011 as the CEO of an energy storage

company called Cella Energy, which was the first spin-out from the ISIS Neutron Source at the STFC Rutherford Appleton Laboratory.

Things seemed to be looking up when Cella Energy won the Shell Springboard Awards 2011 and a £40,000 prize for developing a technology which allowed hydrogen to be stored in a cheap, practical way, bringing the prospect of hydrogen-fuelled cars one step closer to reality.

Unfortunately, it didn't last. Research by BusinessCloud suggests Cella Energy went into administration not once but twice – in 2014 and 2018 – although Companies House show that Mr Voller resigned as a director on May 21, 2013. "I wasn't there for either of the administrations," he told BusinessCloud.

ZAPGO'S EARLY YEARS

In 2013 Voller founded the company that we know as ZapGo.

The business was originally called London Graphene but it changed its name a year later to ZapGoCharger and eventually became ZapGo in 2016.

"There was continual fundraising going on where different investors came in at different times," recalled Mr Voller. "We never stopped fundraising the whole time."

This was how he came to meet Simon Harris in 2015 at a corporate finance house.

"He claimed to have the means to produce a new device that would charge a phone in a few minutes," recalled Mr Harris. "The subject matter was extremely topical and interesting. We're always looking to stay on top of trends. We thought 'these guys are credible'.

"We arranged for them to present to an audience of potential angel investors in the spring of 2015 and they raised £500,000 in equity funding."

Mr Harris himself invested £20,000 of his own money and accepted a position of advisory board member. "I was unable to get any measure of Voller and his people but we were comfortable with the risk and decided to give it a go," he said.

A second round of funding followed in 2016 for another £750,000 and Mr Harris accepted an offer to join the company as a full-time employee.

"I decided to put my shoulder to the wheel to try and get this technology to market," he said.

According to Mr Harris, the crux of the problem was the product wasn't market ready and wasn't even the right product.

"It became apparent in the spring or summer of 2016 that the technology was not suitable for a pocket-size device," recalled Mr Harris.

"The engineers and scientists tried to apply it to bigger devices like cordless drills, scooters, vacuum cleaners and other consumer devices."

For his part Mr Voller told BusinessCloud the problem wasn't developing technology but making money out of it.

"For example, we delivered power tools that would charge in 15 seconds," he claimed. "We had those products in 2017. The problem is how you make money out of them. If you go into B&Q you can buy a drill with two batteries for £29.99. For us to compete in that market we'd have to get through huge volumes."

He said they also developed phone chargers by 2014 but couldn't commercialise them.

COMING TO AMERICA

According to Mr Harris, ZapGo's biggest mistake was trying to conquer America and the appointment in August of an American director called Charles Resnick. We'll hear a lot more about Mr Resnick later – but Mr Harris was never a fan. "He didn't know anything about the market we were in," claimed Mr Harris. "It was an expensive mistake."

As they attempted to crack America, they exhibited at the prestigious tech show CES in Las Vegas in January 2017.

Mr Harris recalled: "Voller was getting more and more excitable. I was raising to feed the money furnace that the company was burning through. Resnick was trying to get the company into the electrical vehicle charging world. The whole thing was getting out of control."

However, he's keen to stress that there's genuine merit behind the technology. "It's not moon shine," he said. "They should have got their heads down and invested in the scientists to get the product right."

Mr Harris said he tried to warn Mr Voller but claimed he was threatened with the sack and he eventually resigned in May 2018 after nearly three years in the role. Mr Voller declined to comment on his former director.

INVESTOR ANGER

Mr Harris wasn't the only investor to lose money from ZapGo's administration.

BusinessCloud has spoken to several disgruntled investors including Danish investor Steen Winther Joergensen, who invested £47,000 in the start-up.

He invested for the first time in 2017 with £30,000, following it up in 2019 with another £17,000. He never met Mr Voller in person.

"I didn't do my research," he admitted. "I didn't check out the CEO. I didn't know about the administrations or his appearance on Dragons' Den. He's a serial failed entrepreneur. COVID-19 is an excuse."

Another investor, who asked not to be named, said: "He (Voller) burnt cash. He frittered it away."

Mr Voller strenuously denied any wrongdoing. "Unusually for a private company we had more than 300 investors," he told BusinessCloud. "Although the number is large the majority of investors invested relatively small amounts of money through EIS."

EIS stands for Enterprise Investment Scheme and offers tax breaks to individual investors.

Mr Voller said it was a case of risk and reward. "They got their tax breaks on EIS in return for the accepted risks," he said. "The other element that goes with it is under the EIS rules they're only allowed to have ordinary shares, which gives investors limited protection. It's not like the preference shares which most VC investors insist on."

However, the unhappy investors point out that despite being a start-up, ZapGo paid senior staff whopping salaries of £200k+. According to their 2018 accounts, the highest-paid director was paid £219,696, up from £182,812 in 2017.

Mr Voller said it wasn't him but declined to identify who the highest paid director was. "In UK terms it may look like a high level of salary, but in the US it's not," he said.

NIKOLA ENTERS THE FRAY

It was about this time that the story took a dramatic twist when ZapGo came onto the radar of Trevor Milton, founder of Arizona-based Nikola Corporation, which was set up to manufacture alternative fuel vehicles and has a multi-billion-dollar valuation.
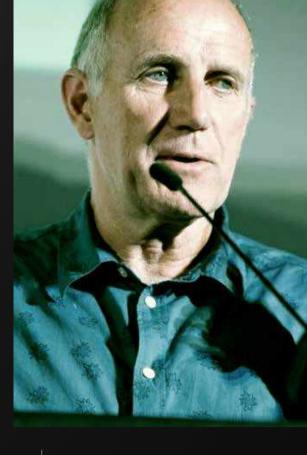
Exactly what happened next is laid out in papers filed by Nikola in the US District Court for the District of Delaware in March 2020 against ZapGo, Mr Voller, Mr Resnick and chief financial officer Tim Walder.

According to the court documents, Mr Milton reached out to ZapGo and Mr Voller touted his expertise as "an experienced business leader and recognised authority on energy storage technologies".

BusinessCloud contacted Nikola Corporation for a comment and was told: "As a matter of company policy, we do not comment on pending legal proceedings." However, Nikola's version of events is laid out in the court documents.

The paperwork alleges: "ZapGo, Voller, Resnick and Walder told Milton that if Nikola invested $8m in ZapGo that ZapGo could develop a Generation 4 (Gen4) C-Ion cell (doubling the energy storage over Gen3) in a few months."

According to Mr Milton, ZapGo claimed that its C-Ion cells were designed for a 30-year operational life and one million charge/discharge cycles.

At the risk of sounding too technical, this was a big claim. The parties signed a Letter of Intent for Nikola to acquire ZapGo on October 31, 2019 for a 'tentative' purchase price of $56.5m in Nikola stock.

With the Letter of Intent in place, Nikola began its due diligence with Jason Roycht, vice president of technology development and strategy, meeting ZapGo – which is when things began to unravel.

Mr Roycht went to England to meet with ZapGo on December 4th, 2019, and Mr Resnick reiterated that development of Gen4 would be complete in 2020 with production runs beginning in 2021. Mr Walder said that the Gen4 cell would enable ZapGo to realise revenue of $4.1bn by 2024.

FRAUD CHARGE BOMBSHELL

Then came the bombshell. According to the court documents: "During his visit to ZapGo's headquarters in Oxford, Roycht was researching ZapGo on the night of December 5, 2019 when he discovered

that Charles Resnick was indicted on 11 April 2019 by the U.S. Attorney for the Middle District of Florida.

"The indictment alleged that Resnick arranged to meet escorts, prostitutes and call girls during business trips through Europe and the United States while he worked for NASA's Center for the Advancement of Science in Space. Resnick would then submit the expenses for the prostitutes as a business expense."

BusinessCloud contacted 69-year-old Mr Resnick at his home in America and although he confirmed he was indicted in the US accused of fraud for submitting receipts for prostitutes as business expenses, he said the charges were subsequently dismissed.

He added that the tax allegations related to 2010-13 when he was being treated for cancer and were several years before he started working for ZapGo or had a relationship with NASA.

According to Companies House, Mr Resnick resigned from ZapGo on December 19, 2019 but by then the cracks in the relationship between ZapGo and Nikola were widening. In summary, Nikola didn't think ZapGo was making the progress they promised and even asked for an additional $8m funding.

The papers filed at the US District Court for the District of Delaware continued: "Roycht did additional research and discovered that ZapGo was on the brink of bankruptcy even though ZapGo postured itself as a $4 billion company and an 'equal' to Nikola."

The relationship broke down completely in February 2020 and Nikola terminated its LOI with ZapGo soon afterwards having clocked up $2,181,508 in development costs. This prompted a counter claim from ZapGo, threatening its own litigation.

THE ADMINISTRATION

What's not in doubt is that ZapGo, which was already weighed down by crippling debts of $14m, couldn't continue and on July 23 they called in administrators.

Mr Voller declined to discuss the legal case by Nikola Corporation other than to say he and Mr Walder had filed for it to be dismissed on September 4th, 2020. He also declined to say whether he was trying to buy ZapGo's IP from the administrators Buchler Phillips, who have been contacted by BusinessCloud.

What we do know that in the week after ZapGo's administration Mr Voller became a director of two newly incorporated companies called Carbon-Ion Energy Storage Ltd and Oxford Professional Presentations.

"Clearly we don't know if ZapGo is going to continue in any shape or form at this point in time," he said. "I'm looking at other opportunities. For those people who have looked to be entrepreneurs and founded companies the path is never smooth. You make mistakes and you learn from those mistakes.

"In terms of ZapGo's administration we tried everything we could to try and restructure the debt. It was the last resort to put the company into administration. In putting the company into administration, I was the biggest shareholder. I had about 20 per cent of the shares.

"The majority of the investment we took in was in the form of debt and it was the debt that killed us. The issue we've always had is we've been spending more money and more time servicing our debt than on R&D.

"In 2018 we took in a debt round from a group of investors in the US. This was what ultimately killed us. We took on money on horrendous terms because we were desperate for cash at that time. Frankly the company has been on a downward slope since we took on that money.

"In 2019 we were out of cash again so we took on further debt on even worse terms because the only place we could raise money was from the original debt holders.

"What we tried to do during the first part of the year was restructure the debt by turning it into equity. We didn't succeed in that because we needed 75 per cent of our shareholders to approve the change. We had no choice but to put the company into administration."

WAS COVID-19 TO BLAME?

He found an unlikely ally in Mr Resnick. "ZapGo failed because they could not raise enough capital," he said. "In my opinion had ZapGo been based in Silicon Valley instead of Oxford, my gut feeling is they would have found it a lot easier to have raised investment.
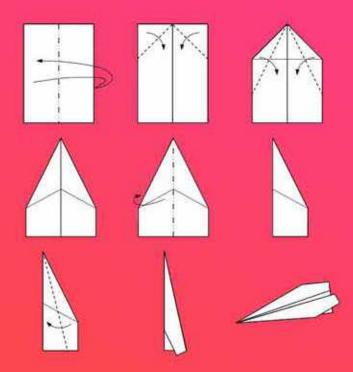
"When Nikola walked away and COVID-19 hit, it made it almost impossible to raise money. Those events coupled with the shareholders of ZapGo not approving a debt restructure made raising additional capital impossible.

"ZapGo was an early-stage technology company. It was high risk but had the potential for high rewards. Unfortunately, most technology companies fail."

However, the explanation cut no ice with experienced angel investor Michael Byrne, who invested £17,000 in ZapGo in 2017 and 2018 as part of the EIS scheme.

"ZapGo had some really good technology and talented scientists but the weakest corporate governance I've ever seen," he told BusinessCloud. "Stephen Voller was a disaster. If they were saddled with debt it was down to him. As soon as the Nikola deal collapsed, ZapGo was done. It's not down to COVID-19.

"This is not the first investment I've had that has gone bad and it won't be the last. This is an example of what can happen when you have insufficient corporate governance."

At Campfire we specialise in creating memorable and engaging experiences for your customers on social media. Like the time we created a number one global Twitter Trend on Black Friday... want to know how we did it?

Just Scan This →

In the meantime, share this message the way our ancestors did before social media existed, turn this page into a perfect paper airplane, and toss it as far as you can. You'll find some instructions above.

 Campfire

Time for podcasts to ad up

THE FAST-MATURING PODCAST
SECTOR IS TURNING TO TECH AS
IT SEEKS TO GROW ADVERTISING
REVENUES. INSPIRED BY THE
U.S. SCENE, DAVID MCGUIRE AND
PASCAL HUGHES ARE LOOKING
TO BUILD THE UK'S LARGEST
MARKETPLACE FOR ADS WITH
ADELICIOUS

Words: Alistair Hardaker

Podcasts have come a long way from their unregulated, audioblogging origins.

In their early days, the medium gave a voice to people unable to access the advert-funded landscape of commercial radio. Fifteen years on, Spotify would pay an estimated $100m to exclusively air long-form interview show The Joe Rogan Experience.

With ever greater audiences and production values comes the promise of rising revenues, with data and technology capable of maximising the impact of advertising.

Enter Adelicious. The brainchild of David McGuire, a former BBC radio producer and founder of Bristol-based podcast production company Stabl, and Pascal Hughes,

CEO of podcast production company Noiser, it aims to become "the biggest marketplace for podcast ads in the UK".

Hughes is a TV director turned podcaster who has worked with the BBC, ITV, Five, National Geographic, The Economist, Netflix and Sky. He had been making shows for television but said despite securing interviews with the likes of the CIA and White House officials in his career, lots of the content was "left on the cutting room floor".

He explains to BusinessCloud that there was an appetite in the UK for well-produced shows which took a cue from the likes of Netflix's non-fiction programming – a far cry from the chat and celebrity shows often found at the top of UK podcast charts.

His pivot to podcasts was a bet which has paid off. Noiser's shows have accrued millions of listeners, and Hughes and team have creative freedom with "no commissioners above us".

"There was no one else doing that in Britain," he says of Noiser's resulting history podcasts, including Real Narcos, Real Dictators and Lone Detective.

—

MONETISATION

But with the new creative freedom came the challenge of monetisation. Hughes describes an industry in which producers either have to find advertisers themselves or sign a 50-50 advertising contract which could last two years. "That's a long, long time in the industry," he says.

Hughes wanted a company which based advertising on success and could connect brands and shows on a case-by-case basis. Adelicious was formed alongside McGuire to connect the relatively small group of professional podcast producers and the pool of brands looking for access to their audiences.

Operating pre-launch since June, the co-founders say it was an organic progression after passing on ad opportunities to other shows, which they thought might be better suited elsewhere.

"I couldn't find a company that does that without having to sign a huge contract," says Hughes.

McGuire, whose firm Stabl has worked with big brands including Red Bull and Monzo, adds: "As the industry has matured over the last two or three years, and companies like Noiser and Stabl have popped up with the means to make some money, suddenly you have a growth which is having to catch its tail."

In the US, podcast revenue streams include lighter, more competitive contracts and entire platforms offering exclusive contracts, such as Luminary, which generate revenue from subscriptions.

McGuire says in the UK producers are having to do "absolutely everything... without the capabilities to make money on their successes".

"It's a really good time for us to do this because there's a huge need for it and there's really nothing else out there," he adds. "We found it encouragingly easy to get started and fill that gap."

Hughes adds: "Particularly in Britain, there's a big need for it."

—

HOST-READ ADS

Host-read advertising, where the host reads ad copy during the episode, is a style of advertising found in some of the world's biggest US podcasts, and it is this style which Adelicious will necessitate.

"Brands love host-read," says Hughes. McGuire adds: "You have that intimacy level, that trust, and suddenly the price

goes from £2-3 per thousand listeners to £30 or £35."

Hughes says that the host-read ads also give podcast makers and hosts the choice of the ads they choose, and the option to blacklist certain topics. Big brands, he says, are now starting to trust that this form of advertising pays off.

McGuire clarifies: "Because it's a much more intimate medium than radio, you want to associate your editorial with brands that align with you."

As an example, he says Adelicious has already facilitated a partnership between a mental health technology company and a successful podcast on therapy. The brands align, he says, and they can work together on editorial.

—

AUTOMATED FUTURE

While the co-founders are well-versed in the podcast industry, the world of tech is relatively new to them. They say that while the process is currently "hand-cranked", investment has been made in web-developers to build out the platform.

"We want to gradually automate the process. We want to reduce of barriers it takes for independent producers to set up those deals," says McGuire.

He said the plan for Adelicious is to become an automated marketplace in which brands can browse shows and audience figures, and producers can seal deals, generating paperwork and legal documents automatically.

"At the moment brands contact us, we have a direct relationship based on our reputation," explains Hughes.

McGuire adds: "Without making too grand a statement, we would like to get to a place this year where we've got all the processes in place and we can prove the model.

"Next year we plan to scale and dominate the market. We can undercut and still make a good profit."

Hughes says the firm plans to bring in more people and will use the deals already secured to provide the cashflow to start hiring.

It is currently working with around 10 shows to provide advertising opportunities, and the welcome challenge is scaling up "quickly enough".

"At the moment we're only letting in certain podcasts, to enable us to have big shows with a bespoke hand-picked service. At the moment we're only able to do that with leading podcasts," he says.
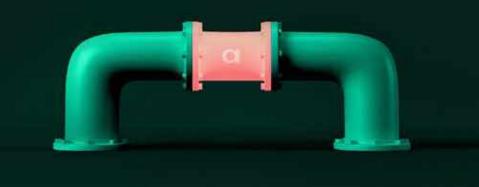
—

DIGITAL DATA

McGuire says that, as with all digital advertising, there has been a need to refine the audience data collected, and this has improved in the podcasting industry, where in earlier years there was almost none for advertisers to work from.

But with GDPR in effect in the UK, he says it's difficult to get to the granular level of data that the likes of social platforms hold on their users.

Hughes says that the brands they are working with are happy with the audience data they provide – which dependent on the podcast platform can include gender, age-group and geography.

"It's still not Facebook-level," says McGuire, "but we've reached a point where the data is good enough. There is no doubt that podcasting advertising works.

"When we first started this, the conversation was around what a podcast is. Now it's about how much money is needed."

TECH50 REGIONAL INNOVATION WINNERS

BUSINESSCLOUD'S LATEST RANKINGS CROWNED THE MOST INNOVATIVE TECH CREATORS IN TWO UK REGIONS.

SEE THE FULL RANKINGS AT BUSINESSCLOUD.CO.UK

London TECH50

1. HoloMe
2. Humanising Autonomy
3. Seedrs
4. AccuRx
5. Dressipi
6. Unmind
7. Cervest
8. TrueLayer
9. Dozens
10. Streetbees

Midlands TECH50

1. Holovis
2. Adapttech
3. Enlighten
4. DeadHappy
5. School of Code
6. Geospatial Insight
7. HIT Energy Services
8. Tended
9. Oxbridge
10. Bloc Digital

THE **HOLO** GRAIL OF COMMUNICATION

LIFE-SIZED CATWALK MODELS AND MUSICIANS ARE BEING BEAMED INTO PEOPLE'S HOMES THROUGH HOLOGRAPHIC TECHNOLOGY – AND ANYONE CAN DO IT USING A SMARTPHONE. JANOSCH AMSTUTZ, FOUNDER OF LONDON TECH 50 WINNER HOLOME, SAYS IT'S TIME TO REBUILD TRUST IN VIRTUAL COMMUNICATION

Words: Jonathan Symcox

The 'Zoom boom' during lockdown has made virtual meetings a fixture of the working week.

Yet does that jolly Golden Gate Bridge background undermine what you are looking to achieve?

HoloMe CEO Janosch Amstutz believes so. "If your subconscious feels like something is not right – that it has been doctored, made up or changed in any way, shape or form - it switches off to the experience," he tells BusinessCloud. "As human beings we have this psychological barrier, a primal defence mechanism, that when we view a human-like object or figure, our subconscious needs to be comfortable with it.

"Even Zoom has gone down this pathway of eroding trust in communications – creating false backgrounds, fake face filters – so you can't tell what's real and what's not more. I'm not sure how long Zoom is going to continue as the business solution of choice if you can't tell if that person has makeup on or not; or if they are actually in the place where they claim to be. Are they in the office? Or are they on the beach?

"Those things are important when you're building trust in communication."

Authenticity is at the essence of what Amstutz and his team are looking to achieve with HoloMe. Winner of BusinessCloud's London Tech 50 innovation ranking for 2020, the three-year-old company's technology enables the creation of life-size photorealistic holograms which can then be viewed anywhere through a smartphone or AR-enabled device.

"We are a communications firm first and a tech company second because we consider the psychological aspects of communication [at the outset]," he explains. "The concept is: how do we replicate the physical meeting – a full-body face-to-face – in the digital sphere?

"We want to create a communications method that is as close to normal – or perfect

– as possible. We may be the first communications software in the medium of AR and VR that is able to breach the barrier our subconscious puts up."

BAD RAP

If you download the HoloMe app, within moments you can be watching a six-foot Amstutz explaining the firm's tech in your kitchen or garden. "Your subconscious is comfortable that I exist and that I am really doing and saying what you can see," he says. "Our experience is the real human: there's no CGI, there's no processing.

"Tech has had a bad rap around communication for quite a while, with social media causing psychological issues and problems with self-esteem. It's often looked at as a net negative for the world. We want to rebuild trust in communication by changing the way that we use the digital sphere to communicate."

The concept of the 'uncanny valley' – a concept first introduced in the 1970s by Japanese professor Masahiro Mori – claims that as robots appear more

humanlike, they become more appealing; but only up to a certain point, whereupon a sense of distrust sets in.

Facebook's Codec Avatars project, which used AI to recreate people's facial expressions in VR in real-time, may have been a victim of this. Instead of pushing through a virtual world where lifelike virtual avatars socialise, it is rival internal project Horizon, where cartoon avatars without legs interact, which is being given an alpha launch.

"Lack of trust is the issue that Facebook had [with Codec Avatars]," opines Amstutz. "With Horizon, the cartoonish characters are so far detached from being a realistic human that it's okay again."

HoloMe has produced virtual catwalks for eCommerce fashion outlet ASOS and enabled H&M models to show off clothes inside people's homes. The platform has been used to pre-record messaging for the Bill and Melinda Gates Foundation charity and create an AR music video for Warner Music artist Amir, where fans can record themselves singing and dancing alongside him. It has even activated human holograms out of print media with Esquire.

ACCESSIBLE

However there is a low barrier to entry as creators do not require access to high-end equipment and the file sizes are small. "We require just a simple single visual camera: it could be your phone, a studio camera or a tracking webcam," explains Amstutz. "If you used an iPhone 8 to record me, at the other end you could see the stubble on my chin, the weave on my sweater. The quality is that high.

"Other businesses have gone for very heavy studio environments with hundreds of cameras. Intel uses 500 cameras to create the same experience as we do; they also use 10 terabytes of processing

power and five miles of optical fibre cable on their setup.

"We create the same experience, but in a much more scalable way using just a mobile phone."

HoloMe's tech slices the human being out of the recorded environment. "The viewer on the other side could be wearing AR glasses or watching through a phone and see you in their environment as if you were physically present."

The intention is for the B2B and B2C strands of the business to coexist. "We foresee our B2C solution driving a lot of traction into B2B as a lot of brands will say 'hey, that solution is amazing... how can I get that into my own ecosystem? That's the way we drive our business model."

Launching later this year is HoloMe Real-Time, a live broadcast solution for the entertainment industry. "It could be used by a celebrity, musician, politician or educator – anyone with a large audience. It will allow that same intimate connection you get inside a music concert or major conference centre."

LONDON CALLING

Amstutz spent his childhood in Switzerland and Australia within alternative hippy communities. Describing his upbringing as "very rich but very cash poor", he says he rebelled by becoming a physical commodities

trader. When his mother suddenly passed away, he decided to realign his career with his morals and life goals, embarking upon research into the psychology of virtual communication which would culminate in HoloMe.

The firm has an extended workforce of 20 people and has received "significant" investment. "We chose London to launch HoloMe because it's the best place to start a tech company in the world - even better than Silicon Valley and New York," the Swiss says. "It has a mixture of opportunity, talent pool, incentivisation, language and the size of the ecosystem.

"If we had founded in Silicon Valley, the chances of us getting in the door of an Adobe, Cisco, Apple or Microsoft would be infinitely more challenging than it is in London. We would be one of 200 immersive tech companies, whereas we're one in 10 in London, so the doors open easier.

"We now have a collaboration with Cisco over the next 12 months for a telepresence solution."

Scan to see HoloMe in action

 HoloMe

mercarto

The ecommerce platform that ~~Magento~~ ~~Shopify~~ ~~EKM~~ don't want you to know about.

✓ Price plans for every business size

✓ Seamless store builder

✓ Invite third party sellers

✓ Internal product marketplace

✓ Dedicated account manager

0800 246 1443 • hello@mercarto.com • mercarto.com

THE 2,000 YEAR-OLD SMART CITY

LONDON'S FIRST CHIEF DIGITAL OFFICER, THEO BLACKWELL MBE, ON THE CHALLENGE OF EMBEDDING SMART TECHNOLOGY INTO THE GRAND OLD METROPOLIS

Words: Jonathan Symcox

London is the largest city in western Europe and the world's leading financial centre.

Founded by the Romans in 47AD, its infrastructure combines thousand-year-old buildings with modern structures housing cutting-edge technology companies.

The canvas of listed buildings and tight streets is undoubtedly a difficult one upon which to outline smart city initiatives such as autonomous vehicles and fibre connectivity.

"How do we make a city that was built over the last 2,000 years a smarter city?" asks Theo Blackwell MBE, London's first Chief Digital Officer.

Appointed in 2017 to lead on London-wide digital transformation, data and smart city initiatives at City Hall, Blackwell joined from GovTech accelerator Public and helped regenerate King's Cross as a long-standing Camden councillor with responsibility for technology.

Mayor of London Sadiq Khan, whom Blackwell describes as "'pro-technology and pro-innovation", launched Smarter London Together in 2018, a roadmap to improving tech collaboration across boroughs and institutions to feed advancements back into the public sector.

"This 'fix the plumbing' work will help make London a more responsive place

and a better place to do business," he tells BusinessCloud. "We want to improve the citizen experience by embedding innovation where most people get their services: local government.

"Our city is scheduled by the middle of the century to grow by additional two million – eight boroughs' worth. What could apply to one borough could also apply to six, eight or 14 others.

"That kind of linkage between all of them wasn't really happening before."

He says smart cities are often driven by an "overly solutionist" approach which involves "getting a big platform and feeding loads of data into it, and then doing something with it".

Instead, Blackwell is taking on the best traditions of design and experience with data to do something which is more purpose-led.

The likes of the Oyster card have built confidence in TfL as an innovator. The transport body has since provided Wi-Fi across the capital's Tube network, anonymising the resultant data to support analysis of underground passenger flows and enabling the pricing of advertising to raise revenue for the Tube system.

London's 'copper legacy' of wires, as Blackwell puts it, will also need to be replaced by fibre in preparation for the 5G revolution. The Tube network is the perfect place to begin this update: Blackwell says 600 public buildings will be connected up to this fibre 'spine', also lowering the cost for private investment in outer London.

"Our pivot has been towards a digital transformation approach to smart cities, rather than how some people see it: drones and connected autonomous vehicles. Although we do have those too."

The CDO keeps in close contact with leading US cities such as New York, San Francisco, Chicago and Los Angeles, regularly exchanging information around mobility, for example; however he looks closer to home for real smart city inspiration.

"I draw a lot of really good knowledge from European cities," he says. "It's not just about the amount of technology firms that you have: it's about the kind of posture of the city and the quality of that relationship.

"Helsinki have a similar progressive direction to us, as does Amsterdam, Manchester, Leeds, Glasgow and Belfast. They really stand out."

While London is considered the FinTech capital of the world, it is the city's success with data which has allowed it to claim that title, says Blackwell. Evidence of the change that big, open data can quietly make to the city is found in TfL's network of 700 cameras.

Data collected by these is sent to the Turing Institute, the national institute for data science and artificial intelligence, which can then measure air quality and traffic on streets and pavements. The data is then added to an open API which anyone can use to create apps and insight.

Blackwell says this particular project is on the cusp of 48-hour reporting, bringing faster insights about the city as a whole. "Someone can create an app highlighting the healthiest route to take your child to school – it might change day by day, depending on the weather and traffic patterns," he explains.

The technology could also be used for resilience purposes during lockdown, for example measuring the economic activity of high streets and adherence to social distancing. This gives policy-makers more 'levers' to decide where the likes of economic support would be best-placed.

"Moving away from traditional ways of doing things and using data can only come from good dialogue – and creating a sense of the 'art of the possible' when it comes to using the technology."

A MODERN METROPOLIS

Population:

8.3m

Inhabitants per square mile:

5,000+

Boroughs:

33

NHS Trusts:

40+

NHS

Streets:

60,000

Tube stations:

270

Daily Tube journeys:

3m+

SMARTER LONDON TOGETHER'S FIVE 'MISSIONS'

- More user-designed services

- Strike a new deal for city data

- World-class connectivity and smarter streets

- Enhance digital leadership and skills

- Improve city-wide collaboration

60

busby

IN OUR FIRST TECH REVIEW COLUMN, JONATHAN SYMCOX TAKES CYCLING SAFETY APP BUSBY FOR A SPIN

POSITIVES

- Didn't drop out
- Worked in 'emergency'
- Easy to use

NEGATIVES

- One false alarm

OVERALL RATING

4.5/5

BACKGROUND

Busby, developed by K-Safe, is trusted by thousands of cyclists and has monitored several hundred thousand journey miles since its launch in November 2019.

The inspiration for the app came when co-founder Barry Green was involved in a serious cycling accident. It uses sensors in a mobile phone to automatically detect a crash or a fall, geolocate the user and alert their emergency contacts.

Available for free download on any iOS or Android smartphones, it is used by cyclists, walkers, horse riders, runners and road users to predict, prevent, detect and analyse road accidents. It does not collect or store the riders' data.

Now active in 32 countries across six continents, the co-founders say it has already saved three lives.

TOUGH TERRAIN

I fired up the app during an hour-long ride around the Lee Quarry mountain bike trails in Lancashire. These are known locally and further afield for providing a stern test, with rocky terrain and routes which vary in difficulty from tricky to downright dangerous.

GPS

The GPS kicked in without fuss and lasted for the duration of the ride in a fairly remote and hilly setting. When I've used exercise apps in the past such as Strava and Runkeeper, the GPS has dropped out when entering the quarry itself, with the result that the session automatically ends early.

RECORDS

The screen shows the distance you have ridden, which is fairly accurate, although it doesn't store your activity for future reference as an exercise app would. But then, that's not its purpose.

MOUNTED

I mounted my phone on the frame of my bike so I could see how the app updated throughout. The only frustration was when the screen went to sleep and I had to stop to bring it back up. However, Busby's tagline is 'Safety in your pocket' – it is there as a safety mechanism, not to keep track of how far you have ridden.

G-FORCE

The key feature of the app is how it tracks the g-forces acting upon your phone, with the idea that if you are in an accident, it will identify that through interpretation of the impact created. During the ride it could tell when I was cycling; when I stopped, it took a few seconds to sense that I had become still; and when I threw my phone into a hillside, it knew something was amiss.

EMERGENCY

The screen turned red, the phone vibrated and it gave me a clear 30-second countdown to cancel the sending of a message to my emergency contacts. Having mentioned this to my wife earlier, I let the message go through and it did so, smoothly.

FALSE ALARM

The one downside to using the app was when I took the bike down a long and precarious 'black' trail, the shaking of the bike again triggered the alarm. As I was concentrating on staying in one piece rather than looking at the app – and could not feel the vibration - my wife was again notified. You can extend the 30-second delay, should you wish, which would have helped here. And better safe than sorry…

EXTRA SERVICES

Busby Flare allows users to send out an SOS message to surrounding users within a five-mile radius and also connects them to nearby bike stores. The premium version of the app allows for more emergency contacts to be added. GroupRide allows users to set a safety radius around everyone in their group and receive a notification if someone falls behind. A recent update also rewards users by offering coins per mile which they can spend on in-app discounts or enter monthly competitions. Fingers crossed for that Go Pro 8…

Busby is available to download for free at https://www.busby.io/ or by searching for the app in your app store.

ARE VIRTUAL EVENTS A LONG-TERM REALITY?

WORLDWIDE LOCKDOWN FORCED EVENTS AND EXPERIENCES INTO THE VIRTUAL REALM, FROM BUSINESS MEETINGS TO SOCIAL GATHERINGS AND EDUCATION. WAS THIS A SHORT-TERM FIX OR A BETTER WAY OF DOING THINGS LONG-TERM?

BUSINESS EVENTS

"EVENTS ARE ABOUT THE SENSES... WE HAD TO REPLICATE THAT"

When your business is based around people being in one place to share in an experience, months of lockdown comes as a devastating blow.

"I was frozen at first," says Holly Moore, founder and MD of Make Events. Based in Wilmslow, Cheshire, the company organises events for FMCG, pharmaceutical, automotive, tech and public sectors. "I'm a face-to-face person and our events are all about the senses, so I didn't know what was going to happen to the business I'd built up."

While many events companies immediately started talking about virtual events, Moore was cautious at first. "My appetite for virtual events wasn't really there before because our whole strategy has been to create the ultimate experience," she says. "Putting events on a platform wasn't what we did or were passionate about." When US motivational speaker Rachel Hollis announced a live online event, 13 of the Make Events team registered to attend from their homes for eight hours of content. With networking being one of the key elements of a business event, Moore knew this should be present in a virtual sense.

"We set up a WhatsApp group and had a coffee before the event and then during the break," she says. "We all wore slogan T-shirts and tried to replicate a live event as best we could. We've always been about putting ourselves in the customers' shoes."

After attending several more virtual events, Moore decided to add them to the Make Events portfolio as a long-term offering, rather than as a temporary measure. Their first event was organised with five days' notice – a quiz hosted by Gethin Jones for the charity Seashell Trust – and saw 300 participating households raise £10,000.

The virtual events arm of the business was born, though Moore says the focus was always on bringing in Make's wow factor before setting up the tech around it.

"A lot of people start with the technology, but we did it the other way round," she says. The team set up a virtual studio complete with a stage and LED backdrop and worked out the optimum time for viewers being engaged with a virtual event - 22 minutes, compared with 45 for a live one.

There were other elements to consider. "We decided to offer branded boxes, delegate kits, that could be sent out to people before the event with an invitation, branded hoodie, workbook and even things like a bag of sweets and a coffee that people could open at a set time during the event," she says. "Then during the event there are chat boxes on screen, voting systems, live Q&As, virtual breakout rooms, an app – everything that makes people feel part of the event."

There is a cost-saving on venues, catering and accommodation; but Moore says the rest of the event should feel similar to a live one.

Already thoughts are turning to Christmas events, while one large law firm is holding five weeks' worth of one-hour-a-day conferences which, if successful, will be rolled out globally.

"If we couldn't have done all these extra bits then we wouldn't have gone down the virtual route because that's what we're about – offering added value," Moore says.

—

EDUCATION

"SENDING PEOPLE AROUND THE WORLD FOR CLASSROOM TRAINING IS FINISHED"

Liverpool-based Tapiit Live was set up in 2019 to offer live stream maritime training globally.

Group founder Richard Turner, a former seafarer, initially set up Tapiit Maritime, a maritime hub providing access to the world's largest database of maritime courses and training providers. However he found shipping companies faced a trade-off between classroom experience and cheaper online training.

"Shipping companies would tell us that the cost of training courses was fine, but it was all the peripheral costs such as accommodation and travel that made some courses too expensive," says Turner.

Tapiit looked into virtual training but knew it had to offer much more. "It had to be interactive and at the same standard as classroom training," he says, adding that there was also a hesitancy over quality issues. The business did a lot of technical work to compress the file size of the different platforms required for live streaming such as video, recording and PowerPoint, as well as setting up its own studio in Liverpool.

It also struck a deal with the world's biggest maritime satellite provider,

Inmarsat, enabling it to offer live stream training to crews on more than 45,000 ships worldwide. The platform was launched in March, with a visit from the UK Shipping Minister, following six months of developing the techniques to get it right.

Equally as important as the technical aspect is the way training is delivered. Tapiit Live estimates a five-minute window to engage people in online learning – compared with 40 minutes for classroom training – so content is based

around 'calls to action' every five minutes. Then there is the training style: instructors have been coached in presentation techniques, such as standing up and moving around and keeping eye contact with the studio cameras.

Tapiit Live writes its own courses or can develop bespoke material for a particular company. Participants receive workbooks before the course, there are interactive elements through live and private chat and the ability to answer questions and polls. Courses range from toolbox talks to maritime English, risk assessments, security and safety culture, as well as mental wellbeing – vital during a time when thousands of seafarers have been stranded at sea beyond their contracts due to travel restrictions.

Turner predicts training will progressively go down the live stream route. "I did a presentation in India in February and told the shipping companies not to build any more classrooms because it was a complete waste of money. In five years, I believe live streaming will be the norm," he says. "The days of sending people around the world for classroom training are gone.

COVID gave people the confidence to live stream and that's only going to increase now."

"WE'LL CONTINUE TO USE VIRTUAL TEACHING POST-COVID"

Universities across the UK have had to take traditional teaching online during the pandemic. The University of Bath already had technologies in place to hold virtual classes, including virtual learning environment Moodle and Teams, but has invested in extra training to prepare staff to use the tech for blending learning.

The university has also purchased Zoom accounts to expand its webinar capacity and functionality, as well as a new digital assessment platform to enable students to take remote exams using their own devices, with extra investment going into webcams and microphones and specialist software to enable staff to make recordings.

Students who returned after the summer holidays were due to learn via a combination of live online interactive lessons, independent learning and up to four hours of in-person teaching. For students unable to attend in person, the university has planned live two-way online activities such as online debates, presentations and discussions to encourage engagement, making use of virtual breakout rooms and polling to ensure attention is maintained.

"Ensuring students retain a sense of community – be that those who are on campus or those receiving an equivalent educational experience at a distance – is an essential component of Bath's approach to blended teaching, as is a commitment to inclusive and accessible teaching that supports the needs of all students," says Dr Christopher Bonfield, technology enhanced learning manager (TEL) in the university's Centre for Learning and Teaching.

He adds: "The University of Bath is committed to taking the best aspects of the blended teaching it will offer this academic year forward into a longer-term and sustainable approach, post COVID-19."

ENTERTAINMENT

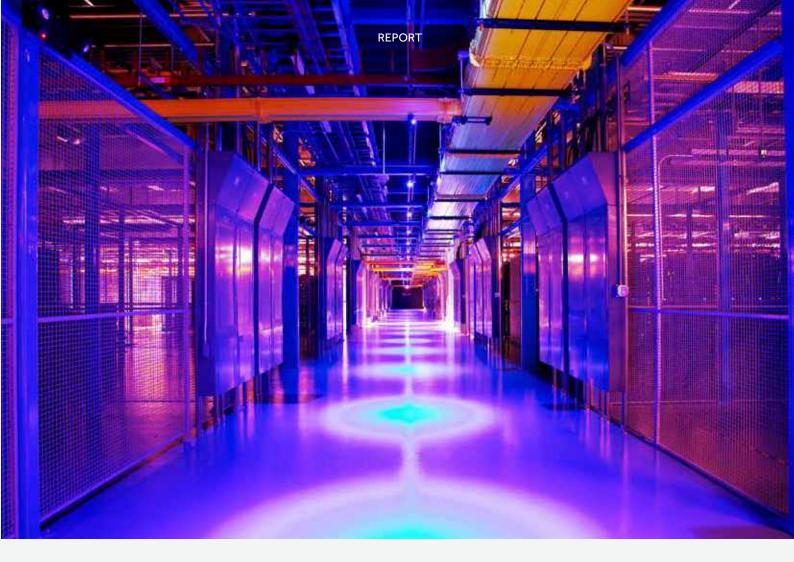### "OUR FESTIVAL WILL BE THE MOST INTERACTIVE YET"

Organisers of the BFI London Film Festival had to rethink the two-week October event due to restrictions on gatherings. The 64th edition announced a "reimagined" offering in July, with 50 virtual premieres to be enjoyed by viewers at home.

Over 12 days, it has been billed as its most accessible event to date, with work from more than 40 countries presented with an intro or Q&A from filmmakers and programmers, as well as online talks from filmmakers and actors and online salons to give audiences an opportunity to delve into themes.

Audiences were made the official jury for the festival awards through online voting, with winners announced in a live online ceremony. It heralds a new era of bringing together filmmakers and film lovers, according to the BFI.

"This has been such a period of uncertainty and change across the industry. When we embarked on a radical new plan for 2020, we stepped into unknown territory," says festival director Tricia Tuttle (left). "We've been so encouraged by the adventurousness of filmmakers and rights holders, the unwavering support of our collaborators and the spirit of unity and experimentation. We have accelerated many of our long-term plans in a few months – especially our desire to offer UK audiences greater access to the LFF.

"We all want to be back in cinemas, seeing films on the big screen, together, immersed. But we also want to keep seeing new cinematic storytelling from all parts of the world, hearing different voices and perspectives."

—

THE TECH

"BUSINESSES COULD QUICKLY ACCOMMODATE NEED"

As the EMEA director of field development for Equinix – the world's largest data centre company, headquartered in California – Matt George works to provide the digital infrastructure for some of the world's biggest digital content providers on earth.

"When lockdown hit, all of a sudden home entertainment became incredibly important," he says. "Not only did we see increased requests for bandwidth, but we saw demand from companies that needed collaboration tools to support remote workforces.

"We saw a significant demand for call centre staff to be able to work from home – thousands of people, which is something that never would have been thought of.

"Using our centres meant these companies could expand very quickly to accommodate need because they weren't relying on physical architecture in their own locations, which isn't agile enough. This is a game changer for certain industries."

THE FUTURE OF MONEY

As we move inexorably towards a cashless society – a process accelerated by COVID-19 – what does the future of payments technology look like? Four industry leaders explain all

Words: Alistair Hardaker

From that contactless payment in the supermarket to your Netflix subscription and next-day Amazon purchase, you will likely make several payments today.

Each of these involves a series of tech operations which ultimately lead to money being withdrawn from your account.

If this line of dominoes falls perfectly, which it most often does, the average consumer need not give a thought to the process.

But incremental change is afoot thanks to newly emerging payment methods, banks and payments technology.

Are consumers now in charge?

Colin Neil is the UK SVP of business development at payments service provider Adyen.

The firm was founded in 2006 and is headquartered in the Netherlands with international offices including the UK.

Its technology is used by the likes of Microsoft, Uber and eBay, and makes up the central domino when these firms process payments.

Neil says that PSPs such as Adyen ultimately allow retailers to accept electronic payments. Despite the listed firm being worth €43bn, he says Adyen is a 'challenger PSP' because of the way it approaches its responsibility in the process.

He says the challenge in the industry for PSPs and payment providers is to accept that customers are now in charge, and the established norms in a country or sector cannot be relied upon forever.

"Retailers are looking for a way in which it's easy to give the customer choice and to offer every method," he explains. "As consumers we don't think about channels, we think about retailers and we want to pay in the way we're used to.

"The mentality for us is that countries shouldn't matter, payment methods shouldn't matter, channels shouldn't matter."

Pointing to the speed with which some smaller firms implemented test-and-trace technology during coronavirus, he adds: "Retailers are starting to see that the technology and apps are very accessible."

How can retailers go cashless?

The restrictions caused by coronavirus also accelerated the necessity for new technology in-store, says Neil – namely the end of physical cash.

He says in the last five years cash has been declining in the UK at a rate of around 6%, and the firm is forecasting that 2020 will see a drop-off in cash of about 38%, slightly ahead of the rest of Europe.

Retailers are now looking to respond to social distancing with contactless payments, mobile selling and digital wallets. And while these are not the newest innovations in FinTech, he says the necessity for social distancing has forced retailers to think differently.

"Retailers need to consider the physical set-up of the store and retraining staff alongside acquiring new hardware and software to make this work, so it's not instant," Neil explains.

This could involve removing registers altogether or offering eCommerce payment options via a QR code, for example.

Neil describes how a grocery retailer Adyen is working with has built an app to scan items in-store without the need to pick them up. Instead, customers finish their walk around the store and select a delivery slot for the items to be delivered.

"It's that type of technology where we're starting to think more about the consumer journey," he says.

"When retail stores were closed [during lockdown], there was a portion of the UK who had never shopped online, and they began to realise that it's easy.

"You can see new parts of the population moving to the eCommerce world - and that's one of the interesting transitions."

Why are direct debits problematic?

Janice Tong, Product Marketing Lead at GoCardless, is concerned not with contactless payments but the increasingly popular subscription model and its unseen challenges.

> "As consumers we don't think about channels: we want to pay in the way we're used to. Countries shouldn't matter, payment methods shouldn't matter, channels shouldn't matter."

GoCardless was founded in 2011 and offers tech for optimising cashflow and collecting recurring and one-off payments in the UK and worldwide.

Tong says GoCardless is built on bank direct debit technology, which is a 'pull' based mechanism, giving businesses the option to decide when and how much to request in payment.

It's the way most subscription-based businesses charge, but she explains that "historically, direct debit has been really hard to access for smaller businesses".

"The barrier for entry is really high: there's no developer platform or API to connect to in order to digitise the payment method," she adds.

Tong says this makes it difficult and expensive for small businesses to get started with subscription-based billing, and more expensive when payments fail.

The firm's technology connects to eight direct debit schemes around the world, which allows businesses to collect direct debit payments from anywhere using only one bank account, converted into local currency via a partnership with TransferWise.

Tong says around 15% of card payments fail, which costs a company on average £10,000.

Will AI automate pain points?

To combat these failures, the company has introduced Success+, a new feature which uses AI to decide the best time to retry collection – ultimately improving cashflow.

"It's still early days and we're really excited about what the machine learning algorithm can do," she says.

As a business model, the increasingly popular subscription model is at risk of these failed payments. This includes subscribers who, following a failed payment, decide not to continue with their subscription.

Making sure that the subscribers are "sticky", Tong says, is important for

customer growth to continue.

"Every time a payment fails it's a chance for your customer to re-evaluate whether they still need you. And at a time when everyone is trying to be more conscious of what they are spending, it's a chance that you can lose a customer," she says.

"The cost of trying to get that customer back is usually higher than the initial acquisition cost. Preventing the failure to begin with is more valuable than you can imagine."

Is the future new or existing tech?

Liam Gray is FinTech Lead at government-backed tech entrepreneur network Tech Nation.

Gray says the UK's FinTech ecosystem is in good shape, with the investment landscape currently second only to the US with $5bn invested.

He also points out that of the 60 FinTech unicorns in the world, 10 reside in the UK – and four of these are payments companies.

But Gray also says that Asia's payments ecosystem is 'incredible', highlighting the integration of payments into its most popular chat app, WeChat. He says WhatsApp is integrating a similar function in Brazil, and that the UK could expect to see something similar.

"It's all about proximity to the customer, and this is going to be the case across every single industry," he says.

"Whoever owns the customer relationship has the ability to change the way that customers live and interact. Chat is just one way; it may be apps, social media or something else."

Gray says that partnerships between brands and FinTech firms will be key, because the expertise to build these new forms of payment still lie with payments companies.

Gray also points out that US FinTech giant PayPal has begun a push to use QR codes as a method of payment, which

had already seen some traction in the UK.

"With this move from in-person to online, payments companies have benefited most," he says. "QR codes are the perfect way to pay in a socially distanced world.

"I find it quite interesting to see the rise in popularity of QR codes, and the use of it from farmers' markets to big stores.

"QR codes have been around for so long and nobody's been that interested in using them. Now there's a legitimate use-case and problem to solve. It could mean there's more penetration.

"It's not a case of new technologies, it's using what we already have in a more productive way."

Are banks here to stay?

While the world of payments and finance is in a moment of disruption, ultimately these new technologies will need to prove that they are profit-making.

That's the view of Jane Loginova, SVP, global commercial officer at BPC, and co-founder and co-CEO of sister firm Radar Payments.

Radar is a white-label SaaS brand, offering payment solutions and processing in the B2B space. Its customers include financial institutions, payment service providers, banks, acquirers, issuers, FinTechs and scale-ups.

Loginova described the firm as a provider of the technical 'rails' to firms with a payments component.

She believes that banks have been focused on meeting margins, and as a result customer experience has taken a back seat. "[Banks] are big machines with a lot to think about," she says.

Loginova says customers are unsatisfied with experiences in bank branches and their customer service and it has been ripe for disruption. Despite this, she believes they will exist for a long time.

When looking at payments and financial services, Loginova says the smarter

banks have learned how to work with FinTechs and have managed to improve their offering.

"Of all the so-called disrupters, the wiser ones have been focused on value generation to customers, and have been thinking longer-term about partnerships with other players in the ecosystem," she explains.

"A lot of companies which really screamed about disruption and innovation five years ago… I don't think a lot of them are still there."

She says the payments industry has seen a lot of positive hype, but ultimately the aim of FinTechs is smooth customer experiences for the businesses they serve.

"There are still a lot of players, particularly in Asia, which go for getting as many consumers as possible on to their platforms. The question is how you eventually make money with a shorter horizon for profitability, which is as it should be.

"It is the time to focus on generating value."

"Every time a payment fails it's a chance for your customer to re-evaluate whether they still need you. And at a time when everyone is trying to be more conscious of what they are spending, it's a chance that you can lose a customer".

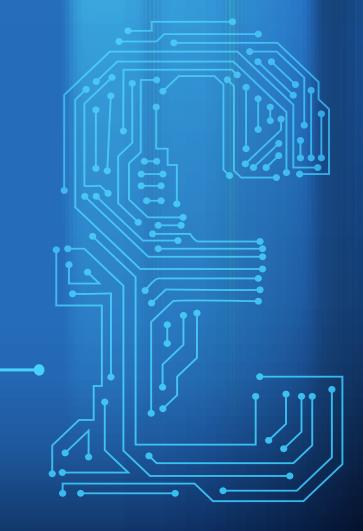## The Experts

Liam Gray,
FinTech lead,
Tech Nation

Janice Tong,
product marketing
manager, GoCardless

Jane Loginova,
senior VP & global
commercial officer, BPC

Colin Neil,
senior VP business
development, Adyen

BusinessCloud

BIGGEST UK TECH INVESTMENTS

These UK-headquartered companies raised the largest funding rounds in Q3 2020

1.	The Hut Group	£1.88bn
2.	Transferwise	£246m
3.	Snyk	£157m
4.	Iwoca	£100m
5.	Thought Machine	£97m
6.	Freeline Therapeutics	£96m
7.	Connexin	£80m
8.	Revolut	£63m
9.	Quantexa	£51.2m
10.	F2G	£46.5m
11.	Selina Finance	£42m
12.	Immune Regulation	£40.6m
13.	ComplyAdvantage	£38.6m
14.	PPRO	£38.3m
15.	Habito	£35m
16.	ReViral	£33m
17.	CentralNic Group	£30m
18.	Moneybox	£30m
19.	Ripjar	£28m
20.	CloudPay	£26.8m
21.	Firstcom Europe	£26.2m
22.	Form3	£24.8m
23.	B2C2	£24.1m
24.	MiNA Therapeutics	£23m
25.	BIMA	£23m

For an up-to-date reference, updated every weekday morning,
visit businesscloud.co.uk/investments

For UK tech acquisitions, visit **businesscloud.co.uk/deals**
For UK tech appointments, visit **businesscloud.co.uk/news/category/appointments**

Will we see a new 'King of Chips'?

Adam Gibson, VP of Skymind Global Ventures, says ARM's potential $40bn acquisition by Nvidia would be both exciting & terrifying

It could be history in the making. ARM, the world's major supplier of microprocessor technology and one of SoftBank Group's most treasured holdings, is the subject of a $40 billion takeover bid by Nvidia, the largest graphics chipmaker on the planet.

If it goes through in the next 18 months, we will witness the world's largest ever semiconductor deal.

SoftBank has been investigating exit options for part or all of its stake, which it paid $32bn for in 2016 – the highest price ever paid for a European technology company. The Cambridge-headquartered chip designer has only increased in value since, as its chips are part of nearly every major mobile processor from Apple to Huawei.

If the deal goes through, this would be a huge win for Nvidia – and it's both exciting as well as potentially terrifying.

This deal would herald 'a new king of chips': until a few years ago, Nvidia's reputation was for creating graphics units for gaming computers. The purchase of ARM, whose designs are used in billions of processors, would crown Nvidia as the top chip maker in America.

It goes without saying that the deal would boost Nvidia's position in an almost unprecedented capacity. The company's expansion has already seen it move from video games to AI and giant computer servers - but now, they would have the chance to compete with reigning semiconductor king Intel and other general-purpose CPU makers.

The deal could dramatically alter the semiconductor landscape and could have ripple effects throughout the chip industry, threatening its rivals: an ARM acquisition could enable Nvidia to provide complete platform solutions along with its GPU technologies, from machine learning, AI, cloud and big data applications, to its own CPU offering as well.

How much should one company be allowed to own? Is this deal one step too far?

Currently, Nvidia does not have much in the way of CPU design or mobile hardware beyond its Tegra line of mobile chipsets. But it does have dominance in hardware accelerators - its GPU strengthens the ability of edge computing technology to process terabytes of data per second.

This means it can facilitate support for a wider range of applications. In fact, last year's Mobile World Congress (MWC) in Los Angeles saw Nvidia present a range of initiatives aiming to cement its leader status in edge computing.

The deal could have negative effects on the ecosystem which are unlikely to be easily overlooked. This could be an overstep that lands the company in a mine of regulatory hurdles as it faces competition scrutiny. The Verge has pointed out that Nvidia is a customer of ARM - whose competitors also use ARM's designs.

We think there's a strong possibility that Apple and other ARM users might move away from ARM if Nvidia owns it. One of ARM's most attractive features is that its technology is used by all the major chip firms - but if a deal like this goes through, we believe it could be dangerous for players like Apple and Samsung who both deeply customise ARM processors.

For instance, the chips inside an Apple iPhone - like those in nearly each smartphone all over the globe - are based on the instruction-set architectures from ARM. That lost opportunity to bid on Apple's iPhone business was one of the reasons Intel is thought to have lost the mobile market - alongside its fatal error to sell its ARM division and XScale processor.

Up until recently, Huawei - which has surpassed Samsung to become the world's largest smartphone maker - was also using ARM chips but was forced to cease production of its custom Kirin ARM chips.

The potential regulatory hurdles could prove too significant a risk to ignore. But whatever the outcome, it will be interesting to see how everything unfolds.

🐦 @agibsonccc

🐦 @skymind_global

Email jonathan.symcox@businesscloud.co.uk to contribute to our 'On the Money' Insights section

Only with great people,

is a great business possible.

MySort
.co.uk

Specialists in technical and creative recruitment

We match people with roles by looking beyond skills and experience. We discover who they really are and what they stand for. Our unique approach matches shared values, ethos and ambition, finding the perfect fit for both the candidate and business.

Our psychometric profiling techniques enable us to move beyond CVs and traditional interviews, providing insight into candidates' goal orientation, drive and beyond.

Aptitude testing breaks down a candidate's strengths and growth areas, helping to ensure that responsibilities within new roles match the candidate and business needs perfectly.

Our consultants are specialists in disciplines and locations; they're able to share insight, key market data and competitor analysis giving our clients an advantage identifying and securing top talent.

Start the conversation today

0161 215 3818 | MySort.co.uk

CODING ISN'T JUST FOR GEEKS

Words: Alistair Hardaker

At college Elizabeth Tweedale was president of both the cheerleading team and the computer science club. The former architect has now taken her coding school from the classroom to Zoom

The advancement of technology is changing how we work, with technical knowhow now a must in many roles.

The shift will only increase as automation comes to the fore. It is why American entrepreneur Elizabeth Tweedale believes learning to code is vital for future generations.

"Code is the language of the modern world: whether it's the watch on your wrist telling you how many steps you've done, or the app bringing your emails to your phone. Every smart device needs instructions - code - to operate and communicate," she tells BusinessCloud.

"This modern language is a lifelong skill, one that children can take with them into their futures. Coding should be an integral part of every education."

The former architect, who worked on projects including Apple's famous circular US headquarters before moving to London 12 years ago, is the perfect example of why children should not be pigeonholed according to their interests. While at college in the US she straddled two worlds, serving as president of both the cheerleading team and the computer science club.

"We'd have cheerleading practice on a Tuesday and then pizza night with the guys. You know, 'Two for Tuesday'," she jokes. "All the girls on the cheerleading team would be like, 'we can't believe you're gonna go and have a whole pizza now!'

"But it was great. Everybody has their own interests. If you can tap into those interests, then they just become people again. It's the same with coding: if you get a child that's only interested in fashion, ask them 'Do you want to create a fashion app?' She might realise that coding is quite cool and she can do it. It's not only for geeks."

The serial entrepreneur's latest venture, Cypher, was inspired by her experience as an architect. Tweedale says she found her colleagues didn't have the foundations of computational thinking needed to learn new coding languages as efficiently as she understood them.

COMPUTATIONAL THINKING

Founded in 2016, the firm was designed not to "create a generation of computer scientists doing crazy coding, but because we all need to understand the fundamentals of how technology works and harness it for what we need".

It runs themed classes: for example, by first studying how bees see, students are then taught to replicate what they have learned via code. "It's designed for helping to think about solving problems in their real world. The kids can understand that, by using technology, they make things unique and harness problem-solving," explains Tweedale.

Before COVID-19, Cypher's 5-14-year-old students were taught as part of the national curriculum via after-school clubs and holiday camps. When lockdown arrived, it carried out its one-year online pivot plan in a matter of days. "It was a process of necessity, but it turned out really well for us," Tweedale says.

The company, which has taught more than 1,000 children every year, has racked up thousands of hours of virtual teaching with hundreds of kids since the April pivot.

Tweedale says the move to remote classes was at first challenging for its young students and their parents, with new software and passwords to remember. However the students are now comfortable in joining an online class on their own. "The children that are fortunate enough to have computer and internet during this time have really jumped to a whole new level," she says.

The online classes are currently 50% of the firm's revenue, but Tweedale says over the next three years the majority of the firm's income will be created from online courses as it moves into new markets including the US and Middle East.

PROS AND CONS

However there is still great value in teachers being in the same room as their pupils. "If you start from just teaching people online you could miss a step in understanding how they process information," she says.

The tutors it hires are typically young computer science MA students - coders first rather than teachers. The training these new tutors receive is also being automated and moved online. There are currently around 30 of them working with the firm. "There are so many challenges for training teachers for in-class teaching. When you translate that to having them teach online it seems so much simpler," says Tweedale.

But new challenges emerge, such as how to engage a child who has decided to put their tutor on mute.

On growth plans for the future, Tweedale said it would be possible to organically expand the company, but "every time we've had a capital injection, our revenue has also spiked and margins remained the same".

The company has raised close to £700,000 to date. She adds: "We'll definitely raise again in future, but now it's about getting the initial traction for online nailed down."

» FAST FORWARD

FASTFORWARD TECH PODCAST

Do you lay awake at night fretting about how to grow your business? In uncertain times, more of us than ever are worried about the future. The FastForward podcast, from Tech Manchester, helps to change that by giving entrepreneurs like you the answers they need to take their business to the next level - helping you get a better night's sleep in the process. We call that a win-win!

Hosted by Tech Manchester's director Patricia Keating, FastForward shares the stories and expertise of business experts and founders at all stages of their business journey. It's crammed full of practical advice on how to take your startup to the next level.

Recent podcast highlights:

Episode 76: Angel Investment: Ask an Angel with Jenny Tooth OBE.

Jenny is CEO of the UK Business Angels Association, the trade body for angel and early-stage investing, representing more than 15,000 investors around the UK. She shares her advice around raising finance in the post-Covid-19 world, the loan schemes available to businesses and how angels can help startups.

Episode 78: Didsbury Gin: From Spirits to Hand Sanitizer

Liam Manton co-founded Didsbury Gin in 2017. The company experienced meteoric growth and now, like many other businesses, is now carving a path through these exceptionally choppy waters. Liam discusses how the company's pivot, it's plans for global expansion and support available for businesses during the Covid-19 pandemic and beyond.

Episode 59: Software Engineer to Female Founder

Chi-chi Ekweozor is a social media marketer turned front-end developer, engineer and entrepreneur. She started Assenty in 2016 after witnessing first-hand the difficulty in prioritising questions submitted by audience members for conference speakers via SMS. Chi-chi shares her startup journey so far, the challenge of raising funding and shares the advice she has learned along the way.

 Spotify   iTunes   Audioboom   Google Play

The FastForward podcast is published every Tuesday on every major podcast platform. Listen and subscribe now, so that you don't miss an episode.

The FastForward podcast is part of Tech Manchester's range of services, delivered to support early-stage tech businesses in the North West. Find out more: www.techmanchester.co.uk

 @tecmcr   @techmcr   @techmcr   company/techmanchester

TECH FOR
WFH

WHICH PLATFORMS ARE INDISPENSABLE
FOR HOME-BASED WORKING? AND HOW CAN
YOU MAINTAIN EFFECTIVE COMMUNICATION
AWAY FROM THE OFFICE?

James Lynn, co-founder, Currensea
"Communication is key when WFH, especially at a scale-up. Every morning we have a
15-minute Zoom call to quick-start the day. We use Slack to keep the conversation moving
and offer support."

Deirdre McGettrick, founder, ufurnish
"Basecamp has been our go-to platform for instant team messages but with additional
functionality such as project folders, assignable to-do lists and integration of key team
documents."

Lee Wrall, founder, Everything Tech
"Microsoft Teams has proven really popular because of its versatility. It's enabled people to
communicate and collaborate where they are. It has a familiar interface."

Nicola Collister, founder, Custerian
"Cloud-based apps mean everyone can have a 'Martini experience' - any time, any place!
Platforms like Workplace by Facebook help build mini virtual communities and don't need to be
trained out."

Ranald Young, director, PMAlife
"Everyone joins a weekly informal update meeting where THEY update the team on projects,
achievements and struggles. This format encourages mutual advice between colleagues."

Sarah McDowell, owner, The Leader Centre
"Good communication is vital: managers should ask their teams what they want to know; and teams should also ask their managers what they want to hear."

Nick Morgan, founder, Time + Space
"We use Miro to share workshop boards, Loom to record and share instruction videos, Trello for project management and Google Drive for admin. When we 'jump on a Zoom' there's a clear agenda."

Tim Ternent, MD, Incentive Manager
"Back-to-back Zoom networking sessions can really take it out of us. Cloud-based administrative tools can give businesses headspace to focus on the most important activity: building relationships."

Dave Brereton, director, MysonPages
"Microsoft Teams has been a revelation. We run an IT helpdesk and have portals and systems for everything, but nothing to replicate informal chatter around the desk. It's filled the gap perfectly."

Lorna Davidson, founder, redwigwam
"Good communication is key. I often joke that I can tell someone's mood by the way they walk into the office, and you just don't get that over Zoom. We use a mix of Teams, Zoom and WhatsApp."

Andy Kent, CEO and founder, Angel Solutions
"Slack has been indispensable. With some fantastic add-ons and integration work from our staff, we have kept communication effective and driven the business forward in spite of COVID."

Frazer Durris, CEO, Businesswise Solutions
"Google Hangouts instant messaging is fantastic for check-ins, simple questions that need an answer or communicating with a group. You can do what you need to do without creating email traffic."

Nick Irving, partner, Howgate Sable
"Our business is people so visual platforms are indispensable. Zoom, Teams and Cisco Webex have all been great: we can handle significant numbers of critical external meetings."

Ashkan Marandi, technical director, AMI3GO
"Online collaborative whiteboard platform Miro has many tools built in to help with software and product development. It is the key tool for our collaborative design sessions."

COVID-19 tech changes are here to stay

Gavin Wheeldon looks at the trends which have been accelerated by the global pandemic

As the world continues to fight to contain the COVID-19 pandemic, we've turned to technology for communication, work, productivity... pretty much everything. In doing so, we've accelerated the growth of many tech trends that were already in place.

Remote work and virtual events have become the 'new normal'. Virus-monitoring Big Data technologies that were perhaps only familiar to a fringe tech community are now being used almost everywhere.

With COVID cases on the rise again, it looks like these changes are here to stay.

DATA SCIENCE AND ANALYTICS

Data is arguably the most vital component for many businesses, organisations and public services.

Health monitoring AI platform BlueDot beat both the World Health Organisation and the Centers for Disease Control and Prevention to the punch, warning about the COVID-19 spread in early January, a whole nine days before the WHO released a statement.

BlueDot uses an AI-driven algorithm that scours foreign-language news reports, animal and plant disease networks, and official proclamations. It then gives advanced warning to users to avoid danger zones like Wuhan. It correctly predicted the path of transmission across several cities.

Similarly Purple, my UK-based data analytics company, collaborated with companies and organisations such as the Greater London Authority and HSBC Markets to track the impact of coronavirus on footfall across all verticals. We used over 22 billion data points to accurately collect smart device data.

CONTACTLESS EVERYTHING

COVID-19 has changed the way we think about physical contact with people, objects and certain environments.

Social distancing is limiting physical contact and changing the way we interact with one another. Many stores now only take contactless card payments while deliveries often don't require signatures, just photos. With

coronavirus numbers back on the rise, there is a high likelihood that these measures will be in place at least until a vaccine is discovered.

There is already a significant drive towards making everything contactless in almost every possible vertical. It's likely that peripheral devices will move with a single person in offices to prevent contamination from connecting wires and touching devices. They will be wireless, via Bluetooth, wherever possible.

NFC technology use will rise in an effort to reduce unnecessary touching of buttons, for example in door operation. Voice controls will also be used to limit proximity.

BLOCKCHAIN TECHNOLOGY

Using blockchain technology, we can share any transaction or information, in real-time, between relevant parties and users in the chain, in a secure and unchangeable way.

In the future blockchain is likely to be used to communicate data in real-time about any new infectious disease. For example the WHO, national health ministries and perhaps even relevant hospitals could be connected, sharing real-time information, about any new infectious disease, allowing the world to react in a more effective and timely manner.

Travel restrictions could have been implemented sooner, quarantining policies set and social distancing implemented faster. The pandemic could potentially have been contained in some countries.

It's important that the world takes a hard look at the reporting infrastructure available for communicable diseases – and takes action to implement more advanced, secure and accessible technologies.

@gavinwheeldon

Fuelling Growth From Tech.

Are you ready to start an online fitness or nutrition business? Looking to engage gym members with a bespoke app? Or are you dissatisfied with the current performance of your eCommerce platform and looking for a new solution?

Whether you're an ambitious start-up retailer or a well-established fitness brand, Harper James has a robust software or eCommerce solution for your business.

Speak to a Harper James expert today on
**0845 45 88 444 or
team@harperjames.co.uk**

harperjames.com

0845 45 88 444

🐦 **@harperjames_**

in **Harperjames**