Entrepreneurs fanning the flames of innovation

Cambridge Torchbearers

A BUSINESS WEEKLY publication in association with Cambridge Judge Business School and Horizon Discovery

2017
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For more than 800 years, University of Cambridge graduates have produced exceptional accomplishments – ranging from the scientific discoveries of Sir Isaac Newton and Charles Darwin to famous literary and artistic breakthroughs.

Rooted in this history, we too at Cambridge Judge Business School encourage students to go out and “do something extraordinary” – and this includes developing the entrepreneurial spirit and skills to start a business from scratch and nurture it to success, growth and, hopefully, global reach.

Cambridge Judge is therefore delighted and honoured to be academic sponsor of the first edition of Cambridge Torchbearers, because we believe that encouraging budding entrepreneurs to test their ideas, talents and vision is an essential part of a 21st Century global business school.

Starting up a business benefits society by injecting new energy, ideas and capital into innovative products and services. Entrepreneurship now also includes starting social enterprises, which have societal aims at their heart. And it also helps instil the skills and insight needed to excel in today’s knowledge economy, because the determination and vision needed to launch a company are also the qualities essential to many other endeavours in business and in life.

The recent history of the city of Cambridge reflects the vibrant entrepreneurial spirit that this new publication chronicles. The harnessing of intellectual firepower and entrepreneurial drive has helped create vibrant science and business parks, and world-beating companies like chip designer ARM.

These exciting ventures have, in turn, attracted the best and the brightest from around the world – many of them joining young businesses to share in the entrepreneurial adventure.

And entrepreneurship is truly an adventure – with its fair share of triumphs and setbacks, and lessons learned from each. Thomas Edison famously described his tortuous process of developing a successful light bulb by saying: “I didn’t fail 1,000 times. The light bulb was an invention with 1,000 steps.”

Cambridge Judge reflects this sort of entrepreneurship journey in the way the School has organised its programmes, research and other initiatives.

The School’s Entrepreneurship Centre includes teaching and mentoring programmes for people just beginning their entrepreneurial adventure, as well as ventures already well on their way to success.

The Centre for Social Innovation focuses on how entrepreneurship can help solve some of the world’s most intractable problems such as poverty and disease, and recently welcomed the first students for a new Master of Studies in Social Innovation degree programme.

Beyond these dedicated centres, entrepreneurship is also embedded in many of our other programmes including the MBA, Executive MBA, Master of Finance and Executive Education.

This embrace of entrepreneurship by Cambridge Judge has yielded some notable success stories that have put Cambridge innovation on the global map.

The Raspberry Pi low-cost computer is inspiring children around the world to code; VocalIQ has advanced the use of artificial intelligence in voice recognition; SyndicateRoom is allowing other startups to raise money through crowdfunding; and the founders of Prison Voicemail, which links inmates with friends and family, recently met the Queen at the Pitch@Palace event organised by the patron of our Entrepreneurship Centre, HRH The Duke of York, KG.

As this exciting publication demonstrates, entrepreneurship can take many forms and guises and that helps enrich Cambridge, the UK and business and society at large. Cambridge Judge Business School is pleased to play its part in this exciting launch, and we hope that it inspires people of all stripes to do something truly extraordinary in the entrepreneurial sphere.

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Rocket science the Cambridge way

Success breeds success and what we are seeing in Cambridge now is the coming of age of a regional hi-tech cluster that has become one of the best known clusters in the world ranked alongside those centred on Boston, Massachusetts and Palo Alto, California.

Factors that have contributed to this success include a large pool of experienced staff, culture of entrepreneurship, availability of local risk capital, local business accelerators, a vibrant business community and the attractiveness of the greater Cambridge area.

The university has very much played its part with a good number of students and staff becoming company founders. It is, of course, no coincidence that MIT, Harvard and Stanford Universities are, like our own Cambridge University, at the focal point of their own clusters.

Whilst it appears that the existence of a university appears to be necessary for the birth and growth of a cluster it takes decades before growth reaches criticality. Depending upon how you measure them, there are some five hi-tech clusters in the UK out of a total world number of around 30.

The technical consultancies have acted as a catalyst in the stimulation of Cambridge hi-tech businesses. The oldest technical consultancy company is Cambridge Consultants Limited (CCL) which was founded in 1960 by three Cambridge graduates and was formerly owned by Arthur D. Little, itself founded in 1886.

Arthur D. Little was the world’s first management consultancy and for many years one of the largest and most diversified consulting companies in the world. Other Cambridge-based technical consultancies include The Technology Partnership, PA Consulting, The Science Group and Plextek. A significant and profitable business stream in these technical consulting companies is the design and development of high volume consumer products for global blue-chip clients.

Consequently, the consultancies have been instrumental in spinning out product companies including CSR, Xaar and Inca, TTP Com, Sphere Medical and Domino Printing.

Although the technical consultancies have helped generate a significant proportion of new companies and trained staff who have joined the Cambridge workforce, there are many companies including Abcam and Autonomy, which were founded by individuals on leaving Cambridge University.

It is interesting to note that staff from pure management consulting companies have not been instrumental in founding new product companies. The UK’s knowledge economy is too new for us to know how long hi-tech clusters might survive. Judging by the past (not always a reliable approach) this hi-tech driven economic cycle may well last one hundred years or so.

On the other hand, if the speed of acquisition of UK companies by non-UK acquirers continues apace then this period might well be much less. In the past, clusters developed organically in regions where, for example, coal, steel, ships and pottery were produced.

Then clusters were driven by brawn and the availability of raw materials; now the drive comes from brains and computing power.

Although central government claims that it is able to seed and accelerate the growth of clusters, this is not in the gift of politicians who are driven by short-term exigencies.

Regional government, however, may well be be better placed to affect change. Growing a cluster to critical mass non-organically is possible and it only takes will, capital and time.

One approach to aiding and accelerating the growth of hi-tech clusters was proposed by Herrmann Hauser’s report to government outlining how Fraunhofer Institutes, after the successful German model, could aid the UK economy as well as help cluster growth. [Ref. 1]

Each institute – known as Catalysts – are focused on a specific area of expertise and are partially funded by government. The model proposed was that institutes would perform advanced research or pre-product development work and would serve industry on both a paid and unpaid basis by undertaking work requiring equipment or expertise that clients do not themselves own. The Institute for Manufacturing in the University of Cambridge’s Department of Engineering is an excellent model of how such Institutes should work.

One of the biggest challenges for emerging companies is to grow whilst surviving acquisition by predators both domestic and foreign but mostly foreign.

Wolfson Microelectronics, a spin-out from Edinburgh University and formerly CSR’s comparable company in the UK, succumbed when it was acquired by Cirrus Logic of California. Autonomy was acquired by HP in October 2011 who, after a number of management changes, experienced buyer’s regret.
CSR was bought by US giant Qualcomm in August 2015 for $2.4 billion.

The company that has signally demonstrated success and staying power is the Marshall Group of Cambridge which not only remains one of the largest employers in the region but has been in existence for over 100 years.

Whilst most mature companies strive to remain independent it continues to be mystery to me as to why the founders of startups think that being acquired should be a goal in its own right and is a preferred trajectory for investors. I believe that aiming for an early exit demonstrates a paucity of ambition by founders which is quite disappointing.

The evolution of telecoms

In the 1970s, 80s and 90s the PTTs (Post, Telephone and Telecommunications authorities) of many countries decided to split themselves into their constituent parts including postal services, local telecoms and cellular.

In the late 1970s, the big three UK manufacturers of telecommunications equipment were STC (part of the global ITT corporation), GEC and Plessey.

These three manufacturers supplied the UK General Post Office and British Commonwealth countries on a buggins’ turn basis. Similarly, France, Sweden and the USA also had their own incumbents.

Today, China and other developing countries are producing low-cost equipment which, when taken together with web-based services, will soon change the telecommunications landscape.

The University of Cambridge is playing its part here in educating a generation of engineers from around the world who will return home to help produce the next generation of communications equipment.

In 1978, I made a career choice and joined Standard Telecommunications Laboratory (STL) in Harlow which was the principal research laboratory of ITT, the second largest telecoms company in the world after AT&T.

STL was a powerhouse of telecoms research, having been responsible for the invention of optical fibre communications, pulse code modulation, and the single chip VHF radio pager as well as digital cordless telephony. Unfortunately, in the mid 1980s, ITT decided that there was no future in telecoms and sold its telecoms interests which then passed through a succession of hands resulting in STL’s closure following the demise of the Canadian company, Nortel, in 2009.

ITT was the world largest conglomerate and, besides telecoms, defence and industrial products companies, owned Avis Car Rental, Sheraton Hotels, the Hartford Fire Insurance group and the Rayonier forestry and pulp company. Interestingly, Nokia also had its origins in forestry products before it became the world’s largest mobile phone manufacturer in 1998. Financial fashion dictates that the day of the conglomerate have passed and the best companies today are rigorously focused.

ITT, however, was a successful conglomerate for many years until its British born CEO, Harold S Geneen retired in 1977 after nearly 20 years as CEO. His successor, Rand V. Araskog, steadily sold off parts of the business and the company became a shadow of its former self. Harold Geneen was a larger than life character and was known for his aphorisms, a few of which have lodged in my mind:-

• “Better a good decision quickly than the best decision too late”

• “You cannot run a business, or anything else, on a theory”

• “You can know a person by the kind of desk he keeps. If the president of a company has a clean desk then it must be the executive vice-president who is doing all the work”

• And, my favourite, “in business deliver no surprises.”

During this period, here in the UK, Arnold Weinstock was successfully building the rather more focused GEC.

I joined CCL in 1991 and in 1998, James Collier, Glenn Collinson and I co-founded Cambridge Silicon Radio, the fabless semiconductor company, together with six founding engineers.

We spun out of CCL in April of the following year. CSR raised $85 million pre-flotation and became the largest global market supplier of Bluetooth chips. CSR plc listed on the London Stock Exchange in March 2004 and became a FTSE 250 company in July of the same year.

As a technology startup, CSR was one of the UK’s great commercial success stories of the past decade. I was proud to be a member of the team that grew the company from a startup of nine in 1999 to over 1,000 staff around the world in a highly successful publicly listed company headed by CEO John Hodgson, which delivered $705m in revenue and $154m in pre-tax profit in 2006 when I left to become an angel investor.

The founders spent much time and effort in recruiting John who was British but had spent all his working life with global semiconductor companies following his emigration to the USA in the 1970s. He was a Brit with a British sense of humour but acted like an American: A winning combination.

Onwards and upwards

In the late 1990s, James Collier had been working on CCL-funded lightweight and licence-exempt radio technology. When the Bluetooth standard was announced he rapidly migrated his technology to the Bluetooth standard which positioned us ahead of the large established semiconductor companies who had not seen the potential of this new radio technology.

I approached 12 VCs both in the UK and US in late 1998 and eight expressed a strong interest in investing in our fledgling Company. We delivered our corporate presentation to most of the eight VCs and eliminated those who either wished us to decamp to the USA or who wanted too large a stake in the company.

Eventually, we received a joint term sheet from Hermann Hauser at Amadeus Capital together with its partner investor, Gilde in Holland, and including 3i in Cambridge in late December 1998. These three VCs were CSR’s first investors and three months later, after having produced a business plan, we spun out of CCL who then became a shareholder in CSR in exchange for the assignment of patents, some
licensed patents and goodwill. Ian Vance who had been responsible for the single chip pager and cordless telephony work at STL was employed by the VCs to undertake technical due diligence on CSR.

CSR created, under the technical direction of James Collier, the world’s first Bluetooth device on a single piece of silicon at 2.4GHz (a license-exempt frequency band) incorporating the XAP processor core, which was licensed from CCL, digital logic and analogue radio frequency electronics all on one very small piece of silicon.

CSR’s first product BlueCore1 was launched at a time when even the established global semiconductor companies did not have design models for silicon that worked at such very high frequencies.

CSR, however, was able to design chips at 2.4GHz because James Collier had developed the necessary design models at CCL for use in customer projects. For this world-first development, five of us at CSR were awarded the prestigious Royal Academy of Engineering MacRobert Gold Medal in 2005.

Glenn Collinson brought much to the party as CSR’s first marketing director due to his unusual combination of vision and strong focus. CSR rapidly established headway as the company first to market with a low-cost single chip Bluetooth product.

Our BlueCore1 single-chip Bluetooth product won more customers in more product segments than any of our competitors. Before BlueCore1 hit the market, I remember that while Glenn Collinson and I were presenting, in 2000, our single chip product plans to a large audience in California, one wag in the audience shouted out that he did not believe that it was possible that CSR could deliver on our promises.

What he actually meant was that his very large sclerotic semiconductor company believed that it would take another three years before they could develop such a product and, in fact, that proved to be the case and they never did manage to achieve any traction in the marketplace!

This comment from the audience did not trouble Glenn and I as we knew that James’ test results showed that commercially available silicon worked satisfactorily at 2.4GHz. I understand that, as a processor core intellectual property licensing company ARM, in its early days, also experienced the same prejudice concerning being headquartered in Cambridge and achieving success as a newcomer in its chosen market.

**Challenge for chip companies**

The challenge for chip companies is to produce a design with a small silicon footprint given that silicon is costed in cents per square mm. CSR sold its chips in dollars and delivered its financial results in dollars because this is the common currency of the semiconductor world.

James and his team also incorporated significant on-chip testing and re-configuration circuitry into CSR’s products such that the performance and functionality of CSR’s chips met the evolving Bluetooth standard without major redesign.

Delivering the best product is crucial but, as consumer electronics is a game where the prizes go to the swift and first to market, the challenge is also to avoid becoming a bureaucratic, inefficient and slow moving company; characteristics which, like the increase in entropy over time, are part of the natural order and must be continuously combated.

CSR was originally named Cambridge Silicon Radio, a name which for some customers, was difficult to remember and to spell. We needed a shorter and more memorable domain name.

A few years after we launched the company, therefore, we managed to beat the Australian Colonial Sugar Refining company to the purchase of the CSR.com domain name which was then owned by an ailing company in the USA.

This acquisition, together with our logo and corporate colour scheme, helped cement our powerful presence in the marketplace. Our strong lean and mean startup culture had enabled us to develop our branding package over the kitchen table without the need to pay any out-of-the-door cash to branding agencies or corporate designers.

**Absolutely fabless**

In the first few years, when staff growth was 100s of percentage points per year, Iain Campbell our HR and recruitment manager, had signed up more than 300 staffing agencies for the supply of CVs and had developed a finely tuned process for sifting the deluge of CVs which came to the company every day.

We recruited staff from Cambridge, the wider UK and more than 20 other countries. Our secret of success was that we recruited the best people, trained them well and gave them very interesting work.

Our equivalent pay was in the top quartile and we offered options from a well-designed stock option plan. Incidentally, there are a number of founder-led hi-tech companies in Cambridge that still do not offer stock options; this would not be possible in California.

Concerning ambition and confidence, I remember that when we started CSR, we had difficulty making industry pundits believe that we could create a fabless semiconductor company based in Cambridge, UK. For the incumbents in the semiconductor industry, mostly homed in California, setting up a chip company in Cambridge, Massachusetts would have been a step too far, let alone Cambridge UK!

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Cambridge is an excellent city in which to place a fabless company, given that chip design work can comfortably be done in Cambridge and the chips then manufactured in a third-party semiconductor contract fabrication facility (fab) – commonly situated in Taiwan or China – and then shipped directly to customers around the globe.

CSR drop-shipped its chips from Taiwan stamped with the CSR logo and our customers paid CSR who, in turn paid the fab; that is the fabless semiconductor model. Even the largest and most successful US semiconductor companies, who own in-house silicon fabs, also use third-party fabs for reasons of load management.

The fabless model – which applies to semiconductors as well as other products – feeds the UK’s aspiration to foster and grow knowledge-intensive industries whilst allowing manufacturing to be situated offshore in regions with lower labour costs. This model was also labelled High Value Manufacturing by Justin Hayward of CIR in Cambridge.

Entrepreneurs are sometimes asked what government could do to help; the answer from most entrepreneurs would be, “keep out of the way.” It is sometimes a citizen’s duty to help government but do not expect government to help you.

Things like housebuilding and science park building take care of themselves. Infrastructure (roads mostly) has been a sore point and it is not obvious that Cambridge’s success has encouraged game-changing investment in regional infrastructure by central government.

Although the UK tax system is sorely in need of reform, there have been some helpful tax incentives including EIS and SEIS relief as well as the one-time tax relief for entrepreneurs. However, the gamechangers for entrepreneurs able and willing to grow $billion companies, namely, the 10 per cent tax taper introduced by Gordon Brown has long gone largely due to abuse by private equity players in the city of London.

It would be interesting to know how many of the 15 Cambridge-based $B companies owed their success to UK government support. In CSR’s early years, representatives from the governments of France, Singapore and the USA visited us on a number of occasions to ask what it would take to persuade us to decamp to their respective countries.

Various inducements, including grants and free rent, were mentioned. In the same timescale, however, it was not obvious that the UK government even noticed that CSR existed. Maybe this is indicative of how hungry – or not – we are in the UK are for product success and whether we have the companies able to manufacture them?

I remember, back in 2000 when customers from Japan, Taiwan and Korea were insistent on visiting CSR with their complete product design teams, interest from the UK was mostly about trying to persuade CSR to provide free Bluetooth training courses. There are now few indigenous electronic consumer product companies in the UK although there are notable exceptions, such as Dyson, the world beating, innovative mass-market UK air management category.

**ARM and the men!**

ARM were one of the first of the new wave of Cambridge-bred hi-tech companies and started some eight years before CSR as a joint venture between Acorn Computers, Apple Computer (now Apple Inc) and VLSI Technology in 1990. They went public in 1998 in the year that we began to think about spinning CSR out of CCL.

We knew some of the founders and staff at ARM and recognised that they, as individuals, were not too different from us. Simply put – they were role models; if they could do it then so could we. Like the ARM founders we were a ready-made team. There were nine founding staff of CSR of which James Collier, Glenn Collinson and I were the three founding directors.

James picked the six founding engineers which completed our team of nine. It helped that all three founding directors had worked in industry for a number of years before joining CCL. With the blessing of Paul Auton, the chairman of CCL, we formally spun out in April 1999.

In the very early days we rented CCL facilities and lunched in the CCL canteen until our first £12 million set us on our way. We took much of the CCL meritocratic and lead-by-example culture with us including offering a free two-course lunch to all employees. This later perk was, we believed, beneficial to the company in that it encouraged staff to stay on the premises at lunchtime and to share a canteen table and ideas with staff with whom they did not normally work.

In total, CSR raised over £50m in pre-IPO cash from VCs, Corporates (including ARM, Sony, Compaq, Siemens and Philips) and banks prior to flotation on the London Stock Exchange. In CSR’s early days, and once our revenue had topped £100m, we were told by one of our large customers that we were their only private company supplier. This became a further incentive to become a public company.

**Building a $1bn business**

It is tempting to say that building a $1bn company is not rocket science but rather it is simply that a large number of contributing company components need to be more than satisfactory in order for the venture to be successful. The recognition of what those components are, building them effectively, and operating them efficiently is what VCs call ‘execution’. This also requires focus and the ability to stay on track whilst ignoring the many diverting opportunities that do not contribute to the primary goal of hitting the market with the right product at the right time. We are tempted in
Cambridge to think that technology is everything but, for a product company, it is usually the sales, marketing or manufacturing functions that are the weakest. It used to be said in VC circles that, in their investee companies, VCs back three things; management, management and management. Stick to the knitting and remember that Davos is for those who have made it rather than those who are in the process of making it.

At CSR, we recognised that a world-class silicon manufacturing team was necessary to ensure that we obtained good service and value from our third-party silicon fabs. As the necessary skills did not exist in Cambridge at that time, we recruited manufacturing staff from Scotland, the USA and wherever we could find them.

A number of Cambridge companies have made the mistake of thinking that all that is required of a fabless semiconductor company is to design a chip and then hand it over to a fab and then wait for the chips to come off the manufacturing line.

In this way lies failure, as what make chips successful is producing a design suitable for very high volume manufacture and testing it exhaustively before committing it to manufacture. Our experienced manufacturing team was led by Chris Ladas, a veteran professional, who had spent all of his working career in the semiconductor industry. Chris knew and had worked with the senior management of the fabs for many years and ensured that CSR got the best possible service. There are now a good number of staff in Cambridge with the silicon manufacturing skills needed by fabless semiconductor companies.

It is necessary to be confident (or foolhardy) to start a global high volume products company. At CSR, we admired the American can-do attitude prevalent in the semiconductor industry and, in fact, our principal competitor at the time, Broadcom, was co-led by a former US Marine. I believe that the CSR culture that we built in the early days was can-do but was also meritocratic and collegiate in the best Cambridge traditions.

The funding environment

The best startup opportunities will attract funding so is there a shortage of angel or venture capital today in the UK? As an investor, it is quite common to be presented with a business plan for a good opportunity where product development is well funded but the plan is undercooked by not asking for the amount of capital necessary to rapidly gain market traction by adequate deployment of marketing and sales effort.

Does this represent a lack of founder experience or ambition or are founders conditioned by cautious investors who do not have deep pockets? Probably all of the above coupled with the fact that, here in the UK, we do not have as many well-funded role model companies who have become successful as there are in the USA.

How far down the line of attractiveness should angels and VCs go to provide funding to less attractive propositions? As a business angel, I see many opportunities and about one in 50 of them looks really attractive. It is often easy to see what is missing in the startups that pitch to me for funds. On the other hand, as it is not so long since I sat on the founder side of the table, I can easily understand why some founders don’t appreciate my wise words of advice. It will take another seven years or so for me to see whether I have already passed on the next FaceBook, Abcam or CSR!

Are entrepreneurs born or made?

There are certainly some learnt skills including project and financial management as well as sales and presentational skills that help entrepreneurs to pitch and win funding as well as make their company a success. A stint in one of the design and development consulting companies is a good place to learn these skills whilst working for market-leading global clients.

It is noticeable that management (rather than technical) consultants do not very obviously make natural entrepreneurs; maybe the plethora of analysis tools in their kitbag inclines them towards analysis rather than action. Studying entrepreneurship increases the ability to recognise opportunities. Some people may go through life and not see the opportunities. However, once they look at the world through a slightly different lens, they start to see opportunities that may have potential overshadowing the concomitant risks.

Opportunities in general don’t jump out at you – they have to be shaped, they have to be created, and once people understand that process, they will never look at the world the same way again.

Cambridge Judge Business School, through its many programmes

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teaches entrepreneurial skills and acts as a focus and meeting point for those wishing to become entrepreneurs.

On the other hand, James V. Koch of Old Dominion University in Norfolk, Virginia [Ref 2] believes that if you want to know who’s most likely to be an entrepreneur then don’t go to a business school and see who has taken entrepreneurship courses. The more important thing is to look at someone’s personality and ability to take risks.

He is not sure that you can teach somebody to love taking risks. It seems hard-wired in the individual. It doesn’t mean they will act on the opportunity but if people are more sensitive to seeing opportunities, they are more likely to act on them and persevere in the face of adversity like James Dyson, until they are successful. According to Thomas Edison [Ref 3], many of life’s failures are people who did not realise how close they were to success when they gave up.

Over the years, I have been asked to produce a number of case studies summarising the what and the how of CSR’s success and, looking back, I think that the essence of the what is to select a global high volume market, produce a winning product and get it to market first.

As for the how; find a team (some entrepreneurs are not natural team players but doing it solo, at least the first time, is very lonely), create and reinforce the right culture, recruit the best people, train them and reward them well for good performance.

This is not rocket science but it is, increasingly, the Cambridge way. Is there any variety of fabless or high value manufacturing business which would be unable to grow to world-scale from a base here in Cambridge?

References explained

Reference 1:
The Current and Future Role of Technology and Innovation Centres in the UK. A Report by Dr. Hermann Hauser.

Reference 2:
http://www.entrepreneur.com/article/228273

Reference 3:
This is presented as a statement made in 1877, as quoted in ‘From Telegraph to Light Bulb with Thomas Edison (2007)’ by Deborah Hedstrom, p. 22.
We champion outstanding science and technology by commercialising innovative research to create the next generation of world-leading technology companies.
Cleevely turns tap on Cambridge innovation

As the driver behind Cambridge Wireless, co-founder of Cambridge Network and now a super-angel he is helping new generations of startups gain global traction. To think – his talent almost went down the drain as his gap year turned into a tap year!

He recalls: “I was working as a freelance plumber between school and university and thought about developing a franchise model – and thought hard about doing that rather than uni!”

David’s thoughts had crystallised by the time he was finishing his PhD. “I wanted to start a consultancy because I had already got experience in that. And I wanted to do it in Cambridge because SQW had just published The Cambridge Phenomenon report and I thought this would be a great place to start it.”

The consultancy was to become flesh as the globally-respected telecoms thought-leader, Analysys.

David says: “After I finished the PhD I went to work at a consultancy in London to learn the tricks of the trade before starting my own business. I was 31 when I founded Analysys and growing my first company has been one of the most exciting and challenging things I have ever done.”

All our Torchbearers have been asked whether they had a business plan or even knew how to compile one. The majority of responses indicate that business plan documents seldom formed part of the startup armoury.

David said: “Consultancy doesn’t need much of a business plan. You go hunting for business. But you do need a strategy and mine was based on working for people who knew me from previous jobs, getting projects which were just a bit too big and slowly recruiting people to grow the business.”

The startup Analysys operated around about the breadline and sometimes, as David well recalls, there was hardly a crust to be had!

“An old friend who had his own small company bought us the first computer and printer and let me repay the loan slowly. Otherwise I bootstrapped. It was pretty tough – one year I didn’t pay myself anything at all.

“Growing the business proved hugely stressful. I found it difficult to recruit people and cash was always a worry. It was worse in a way because at least when the company was small I could save it from disaster by not paying myself.

“Recruitment was the biggest headache. When you are small people don’t want to take risks. Getting admin and finance systems in place was also tricky.

“Despite what people think, consultancies are finely balanced and without proper project management, billing and other systems you can easily make a loss. Then there was brand and marketing: getting larger projects with big clients took a long time because you needed to build a track record.”

So did he ever wonder why he bothered?

“No. As I say, growing my first company has been one of the most exciting and challenging things I have ever done. It has probably taken years off my life, but I don’t regret it.

“I made plenty of mistakes – hiring the wrong people, letting projects get out of control. The biggest was not selling in 2000 when the market was going bonkers.

“I just couldn’t believe how stupid people were being. I know now that this is how markets work and you should’t think you know better!”

So who did he lean on when times got tough? “Geoff Walsham, my former PhD supervisor, was a great help. Most importantly I could never have done it without the support of my wife Ros: looking back on it I am amazed how much faith she had in me when things were so rough and we had three small kids.”

Despite early trials and tribulations Analysys became a global telecoms consultancy whose reports consistently went to the heart of the real issues in the industry. They helped inform government and corporate policy on communications.

Here’s the meat of the matter. “We grew to about £12 million turnover, survived the great crash of 2001, grew the business some more and I sold it in 2004 to a company that had approached us back in 2000. I walked away with cash – which is a miracle in a people-based business.”

David pretty much had to go it alone in founding and growing Analysys in the early years. “I talked to some people when I was setting up and at the beginning had one partner but bought him
out because he wasn’t able to commit to full time – he had a very lucrative job elsewhere.

“That changed after I co-founded Cambridge Network; the people I was then in touch with were vital to the success of Abcam. That led to Cambridge Wireless and Cambridge Angels, without whom I would never have managed to do all the things I have done post Analysys.”

Those things include financially kickstarting Abcam, which is now also a world leader – some call it the Apple of Antibodies – in the supply of protein research tools to life scientists across the planet.

David recalls: “By the mid-’90s I’d seen that the internet was going to be big and tried a few things within Analysys. But it was a chance meeting with Jonathan Milner that led to setting up Abcam.

“I put up most of the money, brought in the web expertise from Analysys, became chairman and mentored Jonathan. We floated in 2006 and the company is now a member of Cambridge’s $1 billion club with a market cap as we speak of £1.59 billion.

“Since then I’ve co-founded one other company and sold it and have about six others ‘on the go’ where I am chairman or a director. All are doing well, though they all have ups and downs. One in particular has the potential to be very significant.”

Relentlessly positive, Dr Cleevely still admits to frustration as he sees young companies making the same old mistakes. “I see the same problems regurgitated over and over: All the time! I find it difficult sometimes to realise that for many these problems are new!”

His only regret is a minor one: “Given my time again, I’d have sold Analysys in 2000. I would have had more starting cash and could have developed some of the other interests soon after the crash. It is all about timing and 20/20 hindsight!”

He urges young entrepreneurs to pursue their passions in business. “If they asked for my advice I would tell them to keep an open mind, network, look out for opportunities, hone your own skills – but above all do what really excites you; don’t bother with the rest.”

Dr Cleevely believes SMEs are short-changed by government and big business in the UK and says this is costing the economy valuable GDP.

He says: “UK government and big businesses don’t buy enough from smaller, fast-growing companies. If they did that we would have much more economic growth and more high profile companies like the US.

“In terms of the local cluster, Cambridge needs to be more upfront about what it does, how it works and how successful we are. There’s a lot of untapped value here for the rest of the UK.”

In saying that, Dr Cleevely still believes that Cambridge is moving in the right direction in terms of building successful international companies.

“Cambridge is better at scaling up than everyone thinks,” he says. “We have a small base so you would not expect many large companies. In fact we have grown 15 companies worth over $1bn.

“This is extraordinary for a market town! So I think our success rate is fantastic. Of course we could do better, but as more companies grow and we recycle management and entrepreneurial talent I think Cambridge is better placed than almost anywhere else to achieve scale-up.”
Fighting fraud: from Cambridge roots to global tech leader
Dave Excell
Featurespace Founder & CTO

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We want to continue to be adopted by the most significant global financial institutions – not only to improve their revenues but also help to build a better experience for their customers.
Fighting fraud: from Cambridge roots to global tech leader

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Hauser hit jackpot before Acorn turned into a technology oak

It was founding Acorn Computers and the company’s legacy in computer engineering that earned Cambridge entrepreneur and VC Hermann Hauser a place alongside Bill Gates in Silicon Valley’s ‘Visionary’ Awards hall of fame.

But it was three cherries in a row and a tug on a gaming machine handle that helped Hermann and Acorn hit the jackpot after he and Chris Curry gambled £50 apiece.

In best Michael Caine tradition, Dr Hauser plucks a ‘There’s not many people know that’ gem from a myriad of memories about his early business life.

“Chris and I didn’t suddenly start Acorn, the fountainhead of computer development, with the click of our fingers. Acorn was a soft startup and we began life as a technology consultancy called CPU – Cambridge Processor Unit Ltd.

“We were young – I was in my 20s – and was not averse to taking risks. I had some business experience with my father’s wine business in Austria, which was a successful venture. I was going to export the Hauser wine to England but it never took off.

“Chris had left Sinclair Radionics, where we met during the development of the Mk14. Chris wanted to develop it further but Sinclair couldn’t be persuaded so we each took a gamble with a £50 investment and set up CPU.”

Securing the first client proved a novel experience for the young Hermann. A fruit machine company in Wales, Ace Coin Equipment, was experiencing difficulties with the guts of its machines, which would often cough up a jackpot in the most bizarre circumstances.

It was Hermann, wearing a salesman’s hat – who was despatched to clinch the historic first order. CPU had developed the ACE controller based on a National Semiconductor SC/MP microprocessor and would soon switch to MOS Technology 6502. It was effectively a solid and dependable new ‘engine’ for the fruit machines.

“To be honest I didn’t really have a clue what kind of money I should be asking for in return for our technology and brainpower. Bear in mind that I had just got my PhD in Physics at Cambridge and the business had no money at all.

That modest cash haul would be swollen to a turnover of about £10,000 in the first year of Acorn, just under £100k in the second – then the milestones were ticked off: “We hit £1 million, then £5m, £8m, £40m and then £90m-plus. We were the fastest growing company in the UK. We had grown from zero to just under £100m revenue in less than five years – and we were profitable!

“It was quite a ride but there were many times when we flew by the seat of our pants. That first sale is a classic example: My PhD was in Physics, not electronics!”

CPU financed the development of an SC/MP-based microcomputer system using the initial income from the design-and-build consultancy and launched the system in January 1979 as the first product of Acorn Computer Ltd.

The trading name was deployed by CPU to keep the risks of the two different lines of business separate.
The microcomputer kit was named as Acorn System 75. The name Acorn was chosen because the microcomputer system was to be expandable and growth-oriented. It also carried the additional appeal of appearing before ‘Apple Computer’ in a telephone directory, Hermann recalls.

CPU – then Acorn – had already assembled a highly talented band of brothers to expand the scope and power of its technology proposition.

Despite the lucky strike of the first sale, Acorn most definitely had a business plan – or at least a vision.

Dr Hauser says: “We had a very simple business plan that contained one detail very precisely: It’s all going to happen in microprocessors and every house will have one.

“We call them chips now, of course, and with the ARM Holdings business born within Acorn, we are proud of our prophecy. With more than 86 billion chips shipped there are now 12 ARM chips for every person on earth. That’s quite a legacy.”

Driven by such talents as Hauser, Curry, Steve Furber, Andy Hopper, Sophie Wilson and Jim Mitchell, Acorn developed the Atom and moved on to the BBC Micro, the Electron and the Proton.

The BBC Micro sold well and Acorn Computers Ltd became part of a newly-launched and broader church, the Acorn Computer Group with an historic IPO for the sector.

The group was born with a market cap of £135m and shares at 120p and at a stroke took the original £50 gambles by Messrs Hauser and Curry to respective holdings worth £64m and £51m.

The Acorn RISC Machine project started in October 1983 with £5m investment and silicon partner VLSI Technology Inc produced the first ARM silicon in April 1985. Its first practical application was as a second processor to the BBC Micro.

Acorn won a Queen’s Award for Technology for the ARM microprocessor in 1992 – ironically two years after ARM as a separate business managed to wriggle free of Acorn ownership.

Acorn’s days of winging it were effectively grounded in a year which – thanks to George Orwell – already carried an ominous ring: 1984. The glory of the IPO had been replaced by a nuclear winter in the industry; Atari was sold, Apple almost went bankrupt and demand for Acorn home computer products collapsed.

Acorn was in a hole but kept digging, spending reserves on R & D. It lost £11m in six months. Italian computer company Olivetti took a 49.3 per cent stake at £12m. By early 1986 Acorn had exited the US. From then on it was all about ARM.

Dr Hauser said: “The problem at Acorn was that we never had any stock and it was to prove our eventual downfall. The problem was volume production but then we over-compensated, opening factories all over the place. Then demand went through the floor.”

Dr Hauser had 43 per cent of the fledgling ARM and Dr Hauser had little doubt that those who had bought shares in Acorn at IPO were hanging on to them to keep a stake in ARM.

Life after Acorn has proved similarly exhilarating for Dr Hauser who has scarcely sat still. He started the Active Book Company with a £1m of his own cash. AT&T acquired Active Book and incorporated it into EO Personal Computer in 1991. Dr Hauser became CTO and chairman.

In 1993, he set up Advanced Telecommunication Modules Ltd with Andy Hopper and the venture was acquired by Conexant in 2004. Dr Hauser founded NetChannel which was sold to AOL and then completed what, for many, seemed the next logical move, setting up a venture capital organisation.

Continued ➔
It was in 1997 that Dr Hauser co-founded Amadeus Capital Partners which is now investing millions into other tiny tech acorns which he believes will grow globally.

“I had known for some time that I wanted to be a business angel to help companies access finance much more easily and effectively than when I started out in business. There wasn’t Venture Capital in the UK when Acorn started: We had to go down the bank loan route.

“The dealflow at Amadeus has been consistently excellent in terms of both quality and future opportunity. Cambridge has developed a world-class cluster in genomics and leads the field in many aspects of personalised medicines development.

“So I was particularly proud that Amadeus led the Series B VC financing of Solexa, which developed a next-generation DNA sequencing technology which became the market leader.

“And of course there was added satisfaction when Solexa was sold to Illumina in 2007 for more than $600m. I was also the first customer of the Illumina Personal Genome Sequencing service.

“It’s good to see Illumina is now building a European HQ in Cambridge – obviously keeping a close eye on me!”

Dr Hauser also co-founded Cambridge Network and in 2000, when Plastic Logic was founded from his alma mater, the Cavendish Laboratory, Hermann became chairman.

He has created or helped create scores of millionaires and says that helping young companies through Amadeus still gives him a tremendous kick.

“Tremendous pleasure of working with extremely bright young people who make something out of nothing. Many of my great successes have stemmed from ideas that did not exist before I got involved. I groomed many of them from zero.”

Despite being born in Vienna, Dr Hauser has done so much for the UK economy that the Government made him a Knight of the British Empire – a title he chooses not to bandy about.

He also wrote the ‘White Paper’ which led to the introduction of the technology Catapult centres across the UK.

Now he is paying it forward yet again – and this time with a neat piece of symmetry to his home territory of the Tyrol – having launched a new summer school in the Austrian haven of Alpbach, the first major manifestation of the International Entrepreneurship Center Tirol that Dr Hauser founded.

To underpin the initiative he formed a partnership with both the European Forum Alpbach and the Centre for Entrepreneurial Learning at Cambridge Judge Business School.

The venture provides a framework for founders through which they are able to present their product or venture ideas to an international jury. The summer school includes a blend of lectures, interactive workshops and coaching with renowned mentors to prepare the participants for pitching at the end of the programme.

The overall objective is to evolve the ideas to marketability and create successful new entrepreneurs and companies in the process.

Yet another acorn planted in fertile minds that could sprout into a fresh forest of enterprise. Thankfully, after a lifetime as a business pathfinder, Dr Hauser can now see the wood from the trees.
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String of hits for Steve Ives after Microsoft near-miss

As a boy of six, Steve Ives charged for tickets to a puppet show in his garage and over the years he has become adept at pulling the strings of some iconic Cambridge technology businesses.

Serial IT entrepreneur Steve Ives believes his first business, Torus Systems, should have sold out to Microsoft and explains his enduring appetite for tech startups.

His first enterprise – Torus Systems, founded in 1983 – piqued the interest of Microsoft but the board didn’t heed his exhortations to sell.

A sale at the time would have been historic for Cambridge and Britain as it wasn’t until July 1995 that Microsoft would make its first UK acquisition – indeed its first outside of North America.

Torus would live to rue the decision – and die for the want of it: The company went bust a year after Steve left it with £1 million in the bank.

Undeterred, Steve went on to sell Trigenix – one of two spin-outs from his technology consultancy Ives & Co – to Qualcomm for $40 million.

His passion for startups endured with a follow-up venture Hoverkey, a mobile application security company. He also became chair of Teamstudio, previously a wholly-owned subsidiary of Ives & Co.
His CV also includes spinning Aspective out of Ives & Co and founding social media company Taptu. He worked as VP Business Development for Qualcomm Europe until mid-2005 following its acquisition of Trigenix.

So it all began in short pants! Steve recalls: “My brother and I held a puppet show in our garage and charged for tickets – I was six at the time and he was four. We sold about 50 tickets.”

His business affairs got serious soon after leaving college. “I’d been working for a year in a consulting firm after graduating from college and I happened to meet up with a college friend – Steve Jolley – who’d graduated in computer science from Cambridge.

“The PC industry was just getting started and it turned out we’d both been thinking about product ideas so we decided to choose the best idea and join forces.

“I was working in the US in Washington DC for a firm called Strategic Planning Associates. I was an associate helping the managers and the partners carry out different kinds of business and market analysis for their clients.

“They had one of the first IBM PCs which I started using for spreadsheet work. That’s when I realised that PCs and PC software would be big business. I was 25 and it was back in 1983.”

The business the two Steves founded was Torus Systems, which developed networking hardware (a plug in board) and software (an icon-based office system) for IBM PCs.

He had picked up useful knowledge and experience in a project for Acorn Computers founders Hermann Hauser and Chris Curry. “I’d completed a market research project for them in the summer of 1980 after I graduated from Cambridge.

“They’d asked me to look at how Acorn might enter the US market. I went to talk to several retailers and distributors in the US then wrote my report which I presented back to Hermann and Chris. They were very helpful in the early days of Torus and introduced me to many great specialists who helped us to solve our various challenges.”

The birth of Torus

“I had already accepted a place at the Wharton School in the US at the start of the summer so I was tied up for the next two years studying for my MBA, but that was when I first caught the startup bug,” Steve recalls.

“We had a business plan for Torus which I wrote. One thing that business school does teach you is how to write a business plan!

“Steve Jolley and I had some personal savings which we used to get Torus started in 1983. Walter Herriot was the manager at Barclays in Chesterton Road in those days and he agreed to lend us £85,000 under the government-backed Small Business Loan Scheme.

“This was enough to get our first product into production. Later, when we had substantial sales, Acorn came in as an investor.

“I think we got lucky with Barclays. I don’t remember being hugely stressed by that initial fundraising. When you’re in your twenties you don’t see the possibility of failure nearly so much. You just see the opportunity.

“The second round fundraising was more stressful. We had a team of developers and payroll to meet. We initially accepted an offer from a venture capitalist who decided to change some key terms just before completion.

“The initial trust that we’d built up with him went out of the window. We had just enough money in the bank to be able to walk away and find a new investor.”

There were other issues: “The software development went really well, but we had a lot of problems manufacturing our hardware to the required quality level. We eventually found excellent suppliers but we wasted too much time with second-rate suppliers in the early days.”

And so to Microsoft. Steve says: “About five years in, the Torus business was going really well but our US competitors were growing fast. They were beginning to move in on our market in Europe with much greater financial resources than ours.

“I told the board of directors that we should find an acquirer or we would risk being squeezed out of the market. Microsoft was very interested in buying the business.

“The other directors were gung-ho to keep going as an independent company and couldn’t understand why I was being negative on the future of the business. I felt I had no option but to resign. That was very stressful.

“The company went out of business 12 months after I left – despite my having left it with over £1m of cash in bank, which was a lot of money for a startup in those days.”

Continued ➔
Undeterred, Steve went on in 1989 to found IT consultancy Ives & Company which soon built kudos and momentum.

He says: “I was a sucker for punishment but Ives & Company was highly successful and grew to about 120 professionals. From this we subsequently spun out a couple of other companies.

“The first was Aspective, one of the first enterprise cloud application companies, which was subsequently acquired by Vodafone. The second was Trigenix, which developed user interface frameworks for mobile devices. This company was acquired by Qualcomm for $40 million in 2004. I worked at Qualcomm for a short time in the handover phase.”

Did he see any of the same old problems from Torus regurgitated in his follow-on ventures? “They were mainly different problems. The subsequent businesses were all software ventures so there were no manufacturing problems to worry about.

“The biggest challenge was always recruiting enough really talented engineers and this got more difficult as the Cambridge cluster grew.”

Given a fresh start what would he do differently? “Agreeing to be acquired by Microsoft in the very early days would have definitely been a smart move!”

Steve believes the environment in the UK is generally supportive to the startup community but he questions the commitment to new businesses of some of the larger banks and reckons founders these days need to be built from strong material.

He says: “When things are going well with a startup it’s unbelievably rewarding. When things are going badly it’s extremely stressful and you have to have the right constitution to deal with that. Luckily I’ve almost always been able to sleep at nights even in the tough times.

“Ever since the early ‘80s I think the UK environment has generally been supportive to new ventures. The one aspect that has got a lot more difficult is bank lending to small businesses.

“Since 2007 the bigger banks have almost completely removed themselves from the scene as far as entrepreneurial ventures are concerned. This means that founders need to be even more efficient with the capital they invest.”

So do enough Cambridge businesses scale to their maximum potential? “I’ve seen that many Cambridge entrepreneurs do indeed have the ambition.

“However, their growth is limited by the fact that the experienced operations, marketing and sales people they need to move to the next level are thin on the ground around Cambridge.

“These kinds of people haven’t generally wanted to move to Cambridge for various reasons. To scale more easily, a Cambridge-based venture should plan to move its commercial operations out of Cambridge after the startup phase – like ARM did. I don’t see this as a failure of Cambridge – it’s just the way that the city operates.”

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Created by Cambridge Ahead in partnership with Barclays working with the Centre for Business Studies (CBR) at the University of Cambridge

Image: AstraZeneca
I suggest he is probably the first technology entrepreneur of Cambridge because he started a business in 1881 with his friend (and business angel) Albert George Dew-Smith. This business was Cambridge Scientific Instruments.

Horace grew up in an amazing family, although many of them were rather sickly. He and his brother were encouraged to go and wander around the hills of Wales to develop themselves and their confidence.

Horace also decided he did not want regular education and persuaded his father to have him individually tutored. Not having had a classical education he only just made it into Trinity having taken a Little-Go – an examination held at Cambridge University in the second year of residence and also known as ‘the previous examination’ because it precedes by a year the examination for a degree.

This is where he learnt physics and mathematics to build on his natural curiosity. His first instrument was actually for his father – to measure the growth rate of plants.

Horace was growing up at a busy time. It was the Victorian era, blazing ahead with inventions from all round England and Scotland. It was at the height of a self-confident empire.

He was part of the environment, especially when he left Cambridge for a few years to work for a civil engineering firm in Kent. This is when, probably, he brought his training at Cambridge, natural curiosity and new skills in engineering together, so that when he returned to Cambridge he was able to start Cambridge Scientific Instruments on Lensfield Road.

The legacy of this company and its founders is quite amazing. It was a first and excellent role model for others in the university to grasp the notion of commercialising their research. This was slow – but it was a first seed.

It also demonstrates the porous boundaries between pure and applied research and how scientific progress needed instruments and that instruments could only become available under market conditions.

In 1886, W.G.Pye left Darwin’s company to set up a competing business and this grew in different directions, becoming a manufacturer of radios and later of televisions.

People who worked at Pye learnt their management skills and eventually found their way into other new firms, especially after Pye was closed down by Philips.

The talent pool, the culture and the deep links into science and engineering are probably the three main legacies because in due course all this spawned the Cambridge Phenomenon.

The red thread of the business history of Cambridge perhaps starts with Horace Darwin’s company in 1881 then progresses to Pye and onto Chris Curry who worked at Pye and migrated to Sinclair and Acorn. The rest is even more history!
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When Seattle-based Microsoft bought into ‘Sleepless in Suffolk’

The deal remains a rarity – an East of England acquisition by Microsoft. And at that, an acquisition of a software company headquartered in a town in Suffolk that the giant US corporation had probably never heard of.

Amy and Ran Mokady built one of this region’s hottest software businesses, STNC Ltd, in Bury St Edmunds.

Microsoft came calling in July 1999 – two years after STNC’s VC round – although the amount paid for the company has never been disclosed.

STNC was only Microsoft’s second acquisition in the UK – four years after the first – and only its third in Europe. Some result for a company turned down by Barclays for a £3k loan when it started out!

Like most things life has thrown at her, co-founder Amy Weatherup – as she is now – took it all in stride. Then she appears to have had a firm grasp of a lot of things from an early age.

As a 10-year-old she learned to make soft toys in school and decided that she would make them when she was older and sell them in her own shop.

“This was before the internet existed, of course; nowadays I would have planned to sell them online,” she adds.

One fundamental principle has remained inviolate: “I always viewed the divide between home and work as arbitrary and wanted to have my life which included all of it mixed in together. I couldn’t imagine anything worse than having to do work which I didn’t enjoy,” says Amy.

“When I was 14 I got my first job working in an old-people’s home. The owners were self-employed and had always worked from home in a variety of businesses – including high-precision manufacturing. I saw this as an ideal way of life.”

At around the same time, Anita Roddick came and talked to Amy’s school about her experiences in setting up The Body Shop – she was an old girl. “I still remember her talk in great detail. I was struck by how normal and matter-of-fact it all was and thought – if she can do it, then so can I,” Amy said.

Within eight years she had proved her point. “My first actual business was founded with my husband Ran Mokady, who had also always intended to work for himself.

“It was just a case of us waiting for the right opportunity. We always joked that we tried being married first to make sure we could survive running a business together.”

When the seeds of STNC were sown in 1993, a 22-year-old Amy was living in Cambridge and studying for a PhD in Fluid Mechanics at the Physiological Flow Studies Unit at Imperial College, London – “which I never completed since our startup took over too quickly.”

Ran was working on computer networking for the iconic Acorn. Amy recalls: “We were both early and avid users of email and newsgroups and saw computers as the obvious future of communications.

“Our initial goal was to make email available in the new market for portable computers (then called PDAs – Personal Digital Assistants), which were predicted to be the future of computing.

“From the start we developed software and licensed it to hardware manufacturers, sometimes for a fixed fee and wherever possible for a per unit royalty.

“When the internet exploded in 1995-6 we added web browsing products as a natural extension to our range. We transitioned easily into the emerging data phone market as mobile phones gained data capabilities and became more powerful, eventually working on the earliest smartphone models.

“As the market matured and consolidated – which happened very quickly – we also worked directly with the emerging smartphone operating system companies and platform providers, such as Symbian and TTPCom.”

STNC did not have a formal business plan initially because it was self-funded and both founders were in full-time employment; anything earned by the business was a bonus. In fact the founders used the proceeds of STNC’s first customer deal to pay for their first ever car.

“We started running formal budgets and monthly cashflow forecasts when we were thinking about taking on our first employee – in 1995 – and then put together a detailed business plan when we started looking for investment in 1997.

Continued ➔
“We wrote it entirely ourselves and included the information that we thought would be most important. We had always written our own product specifications and sales & marketing information, so in many ways this was just an extension of those.”

STNC was funded entirely from sales for the first four years, by which time the company was eight people. “In our first year, we asked Barclays Bank for a £3,000 loan secured against outstanding customer invoices, which they refused, so we didn’t even use overdrafts or short-term loans,” Amy says.

“We raised £1 million of investment from 3i in 1997 and had grown further to 10 people by the time the investment round closed. This was a very large first round in the UK at that time.

“We had a strong customer base and pipeline of well-known UK and multi-national electronics companies so it was easy to be very credible. We also genuinely could have continued to run the business without any investment.

“The 3i cash was purely to develop new products and grow the business more rapidly so that we could keep up with the market as the internet ramped up around us.

“The internet exploded into public view in 1995-6, at which point every electronics company needed a web browser and email client on their products.

“Our customers were crucially important. Psion and then Symbian (co-founded by Psion) were repeat customers throughout the lifetime of our business. We also worked with Ericsson, Brother, Sony, Microsoft, TTPCom and many others.

“Most of our customer relationships were long-term investments which needed to build up over 2-3 years before they resulted in large contracts so we also fostered close relationships with Nokia, Samsung and Motorola, although they had not yet converted into paying customers by the time of our acquisition.

“We were fortunate that the UK was a leading developer of PDAs in the early 1990s (with Psion being an industry leader) and then for smartphones (Symbian, TTPCom, ARM, CSR). This meant that we could secure early customers close-to-home and easily maintain strong relationships with them.”

Amy recalls that the process of scaling the business was often very stressful but swiftly adds: “Running a business always is if you take it seriously. We were constantly running internal forecasts to show when we would need to make people redundant if we didn’t get the customer deals we were working on – which is a very good way to keep you focused on getting deals closed.

“Our business was based on small numbers of large contracts, which made it very lumpy and very dependent on individual customer’s timescales. Fortunately we always managed to balance hiring and customer deals so that we never had to make anyone redundant.

“This was despite one customer who changed their mind on a deal after we faxed them the signed contract and after we had spent over three months negotiating that contract with their lawyers. Despite all the stresses it was one of the best experiences of my life.”

Recruiting also proved occasionally problematical. Amy confides: “We made a few poor hires, especially when we were under
pressure to get people through the door quickly to get the work done.

"The important thing was to review new staff and deal with these sooner rather than later and to always take up references. We also very quickly introduced a difficult coding test for engineers to make sure that they could handle our type of embedded, highly-efficient software.

"The most difficult hiring challenge was expanding the senior management team beyond the two original founders. We managed this on the software development side, which was the vast majority of our staff, but didn’t manage it on the commercial side.

"This was not a problem at the stage that we exited but was something that we had identified as needing to address in the next year or so had we continued on as an independent company.

"Among the toughest challenges in building the company were the inherent uncertainties and being responsible for the livelihoods of all our staff and their families.

"Managing staff was stressful, especially when we made hiring mistakes and had to resolve the situation, but the most stressful part was keeping customers happy and balancing the cashflow on a day-to-day basis."

Despite the strains and occasional struggles, Amy certainly had no regrets: "We never wondered why we had bothered. It was what we wanted to do and we believed in our vision of the future that we were helping to build – the vision of everyone having an internet-enabled device in their pocket.

"In the end it took until 2007 for our vision to hit the mass market, when the first iPhone launched, but we had been working towards it since we started the company."

STNC actually scaled very successfully, doubling in size every year ahead of the acquisition by Microsoft: "By the time of the acquisition we were 55 people on two sites in Bury St. Edmunds and The Quorum in Cambridge and had a seven-figure turnover," Amy says.

Networking and building solid contacts was part of STNC’s DNA. Amy says: "Networking was business as usual for us. We worked hard to build strong relationships with our customers based on trust and this led to new business opportunities over time.

"We naturally networked with our customers and potential customers at industry events, and because we were part of our industry – which was very small in the early 1990s – we knew what was happening and who was doing what before things became public knowledge.

"Good examples of this were the development and launch of Windows CE and the formation of Symbian. We were not directly involved in the Cambridge cluster at the time, despite being located here, except through friendships and former colleagues."

There has certainly been a life for Amy since the Microsoft takeover. She is an active business angel, having made multiple angel investments, and holds a number of board roles. Echoing her work-life ethic, these roles include advising several charities as well as two schools.

Just a sample of her paying-it-forward roles would leave some entrepreneurs gasping for breath. In 2002-3 she became co-founder and marketing director for Pogo Mobile Solutions, which designed and built a fully functional reference design from off-the-shelf components for an internet-enabled smartphone. This was four years before the first commercial iPhone was launched.

Amy says: "We made the mistake of getting too far ahead of the market and building the product that WE wanted – the product solved problems that we knew were there but which mobile operators and end users hadn’t identified yet.

"There was also no viable route-to-market for the product. We only later understood the background dynamics in the VC industry at the time where the US VCs basically put all their eggs in one basket to fund Danger Inc. for consumer smartphones (Danger was eventually acquired by Microsoft, and their founder set up the Android group at Google), and Blackberry for business smartphones, while the Europeans were still very cautious following the dot.com crash and weren’t funding much at all in 2003.

"In the end it took the financial and brand clout of Apple to make the smartphone market a mass-market (in 2007). The decision to wind up Pogo was probably the most difficult business decision I ever made."

Since 2005 she also became involved with Light Blue Optics in Cambridge. Amy worked for them for a year as VP of sales & marketing and helped the company secure its first investment round from 3i.

"LBO was working on new technologies for miniature projectors. I am still an investor and they now have paying customers, albeit in a completely different market area."

Showing a keen eye for disruptive startups, Amy also got involved in 2008 with sound technology pioneer Audio Analytic; she joined as an investor and board member in 2010. The company has grown steadily since then and its first consumer products found ready engagement with customers.

Audio Analytic licenses software sensors to hardware manufacturers to allow different types of sounds to be detected, for example glass breaking, babies crying – and a number of security applications.

As well as pure business ventures, Amy evangelises across a much broader church. She became involved in a different kind of startup – as a trustee of the much vaunted University of Cambridge Primary School.

Since 2006 she has pioneered her own venture as director of the i-Teams programme at the University of Cambridge (www.iteamsonline.org) which supports the commercialisation of new technologies and trains post-graduate students in hands-on business development skills. It launched a second programme, called Development i-Teams, which looks at taking new technologies into the developing world.

A passionate gospeller for enterprise, Amy urges budding young entrepreneurs to follow their dream. "If you see an opportunity, then go for it," she says. "The worst that can happen is you lose some money and the best is that you turn your vision of the future into reality."
“I would advise them to always value their staff – you are not the company, they are. Give everyone share options and be generous with them – it doesn’t cost you anything but rewards the people who put in the effort and really does make people more loyal to you.

“Surround yourself with people who are better than you in some way; listen to them and let them do the things that they can do better than you can. This is much harder than it sounds!

“Also, listen to your customers – and to the market – and then combine what they say with your own gut feel about the future. But don’t try to get too far ahead of what the market will accept unless you have investors with very deep pockets.”

Amy believes the UK environment is fertile territory for building new companies although more could be done. She says: “More flexible office accommodation and more large-scale office developments where it is easy to grow a company while moving within a single site would help the scale-up stages a lot.

“At STNC we had four different offices in four different towns or villages from 1995-1999 to accommodate our growth and by 1999 when we were 55 people we had two separate sites 30 miles apart, which was not ideal but was all we could get at the time.”

She says the Cambridge Cluster needs a new cohort of serial entrepreneurs if more companies are to scale globally. And she believes more could be done within larger businesses to allow ambitious and entrepreneurial individuals to spin-off their own ventures – a strategy made flesh by Microsoft, for example.

She says: “I don’t think people’s ambitions are limited at all – every entrepreneur wants to change the world. The practicalities and the difficulty of doing so is what stops them, as well as the sheer hard work and effort that it takes.

“Eventually it becomes easier to exit and in many cases the financial rewards of an exit mean that they would be foolish not to take it.

“What is missing is the infrastructure of people around our entrepreneurs who have built large-scale businesses, to act as role-models and to show the right and wrong paths to take.

“We don’t have enough repeat entrepreneurs; a profitable exit is an excellent result for all concerned, especially if the founders can then use their knowledge and experience to start another company.

“We don’t have enough people leaving larger companies to found or join startups, which is the mechanism in the US that has fuelled many new and large-scale startups – think of the number of ex-Microsoft employees that went on to found their own ventures.

“Perhaps our larger companies don’t foster an internal entrepreneurial culture in the way that US companies often do, or perhaps they are just not large enough themselves yet.

“The point is that, realistically, Cambridge is too small to do it alone – we don’t have a large enough local talent pool of people who know about managing and growing companies and it is too hard to move people into the area.

“We also need to understand founding TEAMS better and not focus so much on the CEOs. Companies need 2-4 founders to be able to grow and they all need to be fostered and developed as the company grows, not discarded along the way.”

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Chipmaker ARM launched in 1990 with less than £3 million funding and just before its takeover by SoftBank of Japan in the summer of 2016 had a market cap of $25 billion. £3m launch funding! Such riches!

Cambridge’s second most successful ever technology business, Autonomy, was launched by Mike Lynch with just £2,000 – donated by what he calls “an English eccentric” – yet fetched more than $11.7bn net when it was acquired by HP in October 2011.

Dr Lynch is refreshingly honest in assessing his triumphs and tribulations and was one of the first entrepreneurs to engage with the Cambridge Torchbearers initiative so he could pass on his experiences to new generations.

His story will strike a familiar note with entrepreneurs everywhere as he recounts how frustration in his personal life morphed into an unexpected opportunity to become a multi-millionaire. Here is his own story – Mike Lynch uncensored.
My first interest in business grew out of the fact that I was a musician and I could never afford to buy what was then called a ‘digital sampler’ – they were about £100,000. I wanted to use them to make music – so I set about building one instead. As I had designed one, I found that I could sell the design – so it all happened by accident really.

When I was doing my PhD I realised that some of the work that I had done would be very useful to solve problems. I didn’t know anything about how to run a business or the challenges involved so naively I just got started.

I was doing my PhD and living in a student house on Devonshire Road. Whilst doing my PhD I was building prototypes of synthesizers – and I understand that because the college never changes the carpet the solder is actually still there! This was in the late 1980s and I was in my mid-twenties.

The nature of the Autonomy business was completely driven by the technology: one of the first things I did was use computers to match fingerprints for the police, which was a very easy sell. It would take several people weeks to do this job but a computer could do it in five minutes flat.

I had been very fortunate to have a large number of people in my life who were very inspiring – from my old PhD supervisor Peter Rayner through to John McMonigal at Apax, who was really the person that let me know that you could take this technology and turn it into a real business.

I didn’t have a business plan and I didn’t know how to compile one – it was only by the time the business got to £4 million of turnover and £2m of profit that we prepared one. By the way, this was a margin I never achieved thereafter!

The business got going with a £2,000 loan from an English eccentric. In the early days no-one would give us any money, which proved stressful – so we were very grateful and lucky to receive the initial loan.

After that, it meant that you learned to run a business very quickly – or you simply went out of business. We encountered all kinds of problems. We didn’t know anything about marketing, we had to go back to first principles to learn these things as we went along. A lot of our early lessons were about finding really good people and listening to them.

There is a lot of stress in running a business but you are on a mission to make your dreams come true, which is incredibly rewarding. I found the most negative part to be the small number of rogue elements in the City who were out to destroy value for their short-term gain.

At least my dog was always there for me – for a small treat, it would listen to all of my problems and then look reassuringly into my eyes!

The success of the business got out of hand! The company got about a billion times larger than originally envisaged. I was glad I had a co-founder: it is very important to have co-founders because on the days that you are up, they are down – and likewise; they can pick you up on the days that you are down. This balance is important for the business.

It is equally important to have a distribution of synergistic skills. For example, I’m very bad at networking – generally I think its importance is placed above good product and customer care, which is to the detriment of the business.

That said, my links with certain institutions have been invaluable – obviously, without Cambridge University we wouldn’t have had anything to create a business from and some of our early stage investors, such as Apax, proved incredibly helpful.

After leaving Autonomy, I founded Invoke Capital, a technology investment company that seeks out fundamental technologies across Europe.

It has some superb portfolio companies including cyber security market leader Darktrace and behavioural analytics specialist Featurespace. There are many significant others.

Did I ever regret being in business? Yes – at the height of the dot-com bubble, when Autonomy was worth an absolute fortune I would have bought up every biscuit factory in the world.

You have to realise what you are letting yourself in for. It’s like flying a fighter jet – it’s incredibly exciting, but there is often vomit in the cockpit and it takes total commitment. Equally you must also realise that it is absolutely possible for you to do this.

Looking at the broader question of the entrepreneurial environment in the UK, the country is making a lot of progress and we are entering a new phase where a lot of the problems for early-stage companies have been fixed. However, a lot of the problems still remain for the mid-stage companies.

The UK has become a lot more supportive of entrepreneurial ventures – it is night-and-day different from when I first started. Yet, there are still many areas that could be improved, both at the beginning of the process and at the end.

The size of businesses is not limited by ambition or short-termism – they are limited by structural failings in the UK stock market. A lot of work is going on to fix these and hopefully will mean that in the future, the rational decision for business owners will be to not sell their company but instead to keep it going themselves.
He was soon shooting at more lucrative goals. Adam’s first company was Zeus Technology – a story that began in the summer of 1995 when he was studying Computer Science at Cambridge University.

The 19-year-old Twiss and friend Damian Reeves became interested in the nascent World Wide Web (as people called it at the time).

“We were very fortunate with our timing,” he recalls. “Mosaic, the first ever web browser, was released a month before we started university and Churchill College gave us a 10Mbps symmetrical internet connection to our bedrooms – and this was in 1995!

“During our second year we had set up some of our own websites and they were getting lots of traffic that was being served by our PCs (486 DX-2s with 16MB of memory, and 400MB hard disks, around 1000x smaller than a typical PC these days).

“Our machines couldn’t cope with the load and our hard disks and fans were keeping us awake at night. We had three choices:-

• Buy bigger machines – which we couldn’t afford
• Take down our websites – which we didn’t want to
• Write better web server software – by elimination the default option

“So after our exams at the end of our second year we decided to have a go and write some software. We had 11 days before we left Cambridge for the summer and we got our first release out after eight days.”

Twiss recalls that Damian made this post to a Usenet newsgroup.

$20comp.infosystems.www.serversunix/comp.infosystems.www.serversunix/2rybyaHiVNs/mHQW3iZaK6sJ

D.J. Reeves
6/15/95

“We are currently reaching the finalising stages of writing a high performance WWW server for Unix and are looking for beta testers on a variety of platforms. Anyone who is interested in beta testing this new software should reply to this message specifying the system which they are using, number of accesses per day etc. for consideration.”

Twiss continues: “At that point the major server vendors of that era – Compaq, HP, Digital, Sun – were all hoping the web would help create a new demand for servers and were trying to position their solutions as ‘great for servers.’

“Our software was much faster than everybody else’s so soon we had performance engineers from these companies downloading and using our software!

“Towards the end of our third year at university we realised our software had value and we set up a website for our software with a price on it – and people bought it.

“Our second customer was Steve Kirsch, the founder of Infoseek, one of the top search engines of the day. This was a bit like selling to Larry Page of Google today.

“We collected the cheques from these sales but never cashed them. We had one pile with cheques and another pile with brochures from recruitment fairs etc. In the end our pile of cheques seemed like more fun and neither of us applied for any form of job.”

VCs will probably throw up their hands in horror but infant Zeus did not have a business plan in the early days. “Never really needed one,” says Twiss.

“We made our software better, added the features that early customers wanted and sold more. Zeus sales grow exponentially and we achieved 200-300 per cent year-on-year revenue growth for the first five years.”

Twiss summoned up the figures:-

1996 – £11k (when we were students)
1997 – £40k (year after graduating)
1998 – £110k (we wrote our first business plan at this point)
1999 – £300k
2000 – £1.3 million

The added beauty of this cash-centric business model was that Zeus was self-funded from 1995 to 1999. It raised one £300k angel round and then went on to raise Venture Capital.
Dead man walking

But life was far from a bed of roses as casualties built during the technology sector’s perfect storms.

“The period 2001-2003 was particularly tough with the fall-out of the dot.com crash – a lot of our customers were Internet companies – and then worse still with the telecoms crash that followed,” Twiss recollects.

“We saw customers default on huge amounts of money, suffered from massive politics among our VCs and the company very nearly died several times.

“It got so close at one point that we had letters in envelopes to shareholders – stating that we were going to wind up the company – sitting in the post tray waiting for the postman to arrive. Fortunately our VCs sorted out their differences before the postman turned up.”

In retrospect that has to be viewed as a first class postal service as Zeus went on to be sold to Riverbed for $140m in 2011 and gained a further upspin following California tech company Brocade’s acquisition of Riverbed.

The staying power of the company was matched by that of the co-founders who were equals in every sense. Twiss says: “We largely played symmetrical roles from 1995 to 1999 and then I tended to focus a bit more on the business side and Damian the technical and it worked well.”

Twiss unashamedly hands a lot of credit for his own entrepreneurial approach to peers on the other side of the Atlantic.

“I found the most useful thing was actually reading books that told the stories of Silicon Valley startups. These provided more inspiration and relevance than speaking to most UK people.”

Twiss was suitably inspired to find life beyond Zeus as a serial, Cambridge based but internationally aware, entrepreneur.

After Zeus, he founded a technology consulting business called Saviso in 2012. “We promised ourselves we would never raise any VC but self-fund the business through consulting revenue,” he says.

“Out of a consulting project with Telewest – which went on to be part of Virgin Media – we saw a need for technology to help ISPs manage P2P traffic on their networks. Out of this we developed the technology that we spun out into a business called CacheLogic.

“CacheLogic was the type of business that needed VC funding, so we went back on our promise and raised VC money. We later pivoted CacheLogic into Velocix and after a rocky period it was sold to Alcatel Lucent.” The value of the sale was never published but it was millions of dollars.

After Velocix – in 2008 – the tireless Twiss setup another consulting business called Versio4, out of which he then founded a spin-out business called SwiftServe with one of the venture’s customers.

Saviso was sold in a management buyout while SwiftServe and Versio4 continued to actively trade with Adam splitting his time between the two businesses.

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More young guns need to go for it

**VC-board politics**

Twiss says that both at Zeus and Cachelogic/Velocix there were issues caused by VC/board politics and the different objectives of VCs, founders and angels.

“It is too simple to just dismiss this as blaming the VCs,” he says. "The reality is that VCs have a portfolio approach and often wider motivations than just the company (e.g. raising their next fund) that puts them in a different position to the other stakeholders.

"In both companies I think the VCs were too slow – or I didn’t do a good enough of a job of persuading them – to change the course of the business when the markets we were in didn’t evolve quickly enough.

"At Velocix we made the mistake of scaling up before we had got the product-market fit correct and were not focused enough on fixing that. At Zeus we had product-market fit, but we made the mistake of scaling up the business (hiring more sales people) without understanding that our leads were all viral/word of mouth driven.

"So hiring more sales people (after raising lots of VC) didn’t have any affect on our revenue growth at all; it grew, but no faster.

"I think the other thing that Cambridge startups tend to do is spend far too much time worrying about the product or business plans rather than engaging with customers and partners.

"I'd suggest new wannabe entrepreneurs read a book like 'A Good Hard Kick up the Ass – basic training for entrepreneurs.'

"This removes some of the popular misconceptions and reminds people that selling and engaging with the market rather than too much focus on just writing code or business plans is what makes great businesses.”

**What Cambridge startup scene?**

Looking at the broader picture and the environment for starting and building businesses in Cambridge and the UK, Twiss identifies a number of issues.

"This might sound like a strange comment given Cambridge is one of the largest technology hubs and has some illustrious success stories but I still think Cambridge lacks a startup scene.

“Compared to the Valley, San Francisco (in itself), Los Angeles, New York and even Shoreditch there isn’t the same buzz of lots of young startups in Cambridge.

“We also still have issues over funding – particularly a lack of early stage funding – allied to a lack of VCs who are actually entrepreneurs.

"Investment bankers, accountants and MBAs typically don’t make good VCs. There is a lack in Cambridge of VC funds and angels. There are angels, but they operate in a handful of groups, and it’s on a different scale to Silicon Valley where $1 million is considered a small angel round. Arguably there is also a lack of really good quality startups to fund as well.

"I don’t see these as government issues. I think that as a cluster we need to do more to encourage and promote more startup companies and try to create the same kind of buzz that Shoreditch has with an active startup culture.”

Twiss believes it is a popular misconception that Cambridge companies ‘sell out too early’ or are limited in ambition. "I think the problem is we don’t have enough startups,” he insists.

"Even in the Valley only perhaps one in a thousand startups ever gets to the billion dollar mark. The reason there are so many billion dollar companies there is largely because there are just so many startups.

“We now have several billion dollar companies in Cambridge and more big names than at any time in the history of the cluster. The real value of having the likes of HP, Microsoft, Brocade, Amazon, Apple, Qualcomm, Oracle, Broadcom, Alcatel-Lucent etc in Cambridge is that they are now far more likely to buy other Cambridge companies – which provides better exit opportunities.”

The incentive is there if more young guns in Cambridge want to go for it, Twiss believes.
BDO provides audit, tax and financial advisory services to businesses across the world. Our deep commitment to client service is matched only by our in-depth knowledge of the issues that affect both individual businesses and entire industries.
New business, similar competition: It really is a small world for Richard Green

It’s ironic that Richard Green’s first venture into business involved scrapping old bangers given that the company he spun out of Cambridge University’s Computer Laboratory – Ubisense – is noted for helping to manage production lines for some of the world’s leading carmakers.

Green, who stepped down as CEO at the end of 2016, recalls his youthful endeavours as an engineering entrepreneur “buying old bangers, scrapping them and using the proceeds to restore vintage tractors.

“Now our proven products are in use across 10 of the 12 leading automotive manufacturers in the world, and over 12,000 utility and telecommunications professionals are using our software every day.”

AIM-quoted Ubisense now has 260 employees globally and is one of the most celebrated and successful of spinouts from the university’s computer laboratory.

Green is grateful that he was able to cut his teeth, business-wise, with his successful first venture – Smallworld, which was one of Cambridge’s very early success stories.

“It was 1988 and I was 30 when we founded Smallworld. I was lucky to be part of a group of talented folks working on a prototype that was killed off when the company developing it – Computervision – was purchased by Prime Computer in the late ‘80s.

“We saw the opportunity to leave and start off on our own and Smallworld was born. I was marketing manager based at Harston Mill.

“Smallworld was an exciting concept, providing a revolutionary approach to digital mapping – or Geographic Information Systems. My biggest influences then were Dick Newell and Tom Sancha – the founders of Cambridge Interactive Systems – who I joined in 1984.

“At the outset of Smallworld we had sort of a business plan – of course it bore no relationship to the business we developed!

“The seed capital was put up by three of the founders who had sold off their previous business and then sweat equity from the rest of the team who all took at least a 50 per cent-plus salary cut for the first few years.

“It was great fun, very exciting although I am sure I have blanked out the stressful bits; I’m sure there must have been some.

The biggest challenge was to enter a market dominated by big players – IBM and Siemens – and get the name established as a credible supplier to very large blue chip customers.

“We attracted investment from a couple of our biggest customers to overcome this problem which paid huge dividends as they had both an operational and financial interest in our success.

“One stumbling block was not spotting mistakes the second time we made them! But we leaned on each other when times got tough and managed to steer the business to global success.

“We had a very well rounded team – with a cross section of experiences – but in terms of networking it was simple: It was customers, customers, customers – that’s who we networked with.
“Smallworld was listed on NASDAQ in 1996 and trade-sold to General Electric in 2002 for over $200m. At the time we were employing more than 500 people worldwide.”

Richard went on to co-found the current business, Ubisense, in 2002. It floated on AIM in 2011 and now turns over more than £35 million a year and employs 260 staff worldwide.

Surprise, surprise – Ubisense found themselves up against major competitors once again – such as Siemens and Zebra – and therefore had the same brand recognition issue to overcome.

Green is an eternal optimist and extremely positive. “The sun’s out, I’m smiling – it’s another great day,” is one of his entirely genuine responses to: “Hi Richard, are you well?”

He says: “Given my time again I’m not sure there is much I would do differently – other than figure out how to spot the same mistakes before we make them again!”

“And I would thoroughly recommend the thrill of building a business – and succeeding – to any budding entrepreneur. I would urge them to just go for it, make a decision quickly and they will be surprised how much progress they can make.”

Green is equally positive about the environment that has been created in Cambridge and the UK to found and grow a business – with one caveat.

“The only things I would add to the current formula would be for the Government to help promote UK businesses. Perhaps also it would be more helpful if it was easier for companies to sell to the UK government as having customers is the best way in which to propel a business, refine its model, proposition and so-on.”

The positive Mr Green won’t countenance the negative view from some quarters that Cambridge entrepreneurs are limited by ambition and therefore we are not scaling enough businesses.

“I don’t buy that at all,” he says. “In the context of our demographic we are doing brilliantly. Just look at the examples!

“Let’s not fall into that familiar British territory of complaining about everything – football, the weather or a supposed lack of ambition. We have loads of it in Cambridge.

“Just look at the list: Abcam, ARM, Autonomy, AVEVA – and that’s only the letter A for goodness sake!”

Ubisense technology enhances management of the Finnish National Opera
Modest Massarella content to keep his RFeye on the long-term prize

Wireless industry entrepreneur Alistair Massarella is not the type to walk the streets bawling his accomplishments through a loud hailer.

He prefers to let his teams and technology do the talking and the understated but effective approach has paid dividends over a long period for this quiet man of the Cambridge cluster.

It will not be obvious to many that the modest Massarella has founded or co-founded four companies while he has been in Cambridge – two of which have been sold and two others that are still thriving.

Adaptive Broadband was sold to a US company for $18 million; Cambridge Broadband is still going well; Custom Autotech was sold to a UK company and CRFS is profitable and increasing sales at an impressive strike rate.

CRFS – co-founded by Alistair and another serial comms business builder, David Cleevely, in 2007 – pioneered the concept of remote, distributed, real-time networks of spectrum sensors for continuous 24/7 monitoring of the RF environment.

The RFeye Node is considered the most cost-effective wideband RF sensor available on the market today, fully networkable with outstanding speed, sensitivity and versatility and housed in a robust enclosure designed to withstand extreme environmental conditions.

The RFeye Nexus receiver extends the state of the art for high end SIGINT and TSCM applications, offering unsurpassed speed and RF performance, a massive 80MHz instantaneous bandwidth and full rate PCIe data streaming.

In December, CRFS launched its next generation 8 GHz RFeye® Desktop. The RFeye Desktop is the first commercially available, high performance spectrum analyser which is truly portable – it fits in the palm of your hand and can be carried around in your laptop bag!

The RFeye Desktop looks nothing like a traditional piece of test & measurement equipment. It is presented in a compact, lightweight, ergonomic package just like in a consumer electronics product.
Inside is the highest performance, small form factor wideband radio receiver on the market. The REye Desktop frees you from the large, heavy and power-consuming integrated spectrum analysers with their often clunky built-in screens and antiquated operating systems.

It can simply be plugged into a USB 3.0 enabled laptop; the software web apps can then be run within a web browser on your Windows® or Linux based device.

A growing list of mission-specific applications are available as CRFS REye web apps. Over time this library will grow to include many of the cutting edge REye spectrum monitoring tools that CRFS has developed for its other spectrum monitoring solutions. Users can create and share their own applications as part of a wider REye ecosystem.

CRFS serves customers in the military and intelligence communities, police, homeland security and public safety, as well as many civilian customers including spectrum agencies and regulators, sports and public venues, airports and prisons.

Headquartered in Cambridge and with a wholly-owned company in the US, CRFS also has a large network of agents and distributors around the world and additionally partners with OEMs, system integrators and value-added resellers.

Looking back, Alistair reckons he already had entrepreneurial blood coursing through his veins when he was still at primary school.

“I can remember at 10 years old trying to sell old aerial masts that were bent into the shape of go-karts – the idea being to sell them as a go-kart. Sales were not great!”

“Then while studying at college for my degree the concept of having a business started to kick in. It’s easy to say you have a company; its harder to have a company that can sustain itself and make money.”

With a PhD in telecommunications engineering from British Telecom Research laboratories and as a member of the Institute of Engineering Technology, Massarella’s pedigree in the segment is writ large.

It is his success from the outset in helping to form and then grow hi-tech success stories that deserves to be elucidated.

The breakthrough came in Cambridge in the mid-’90s – and at a relatively late age for a budding entrepreneur.

He recalls: “While working as a standards engineer at Olivetti Research in 1996 I was first introduced to hi-tech spin-outs, shares, share options, phantom share options and all night development/ coding sessions to meet a demo the next day!

“The idea of co-founding an organisation with other like-minded individuals was something that appealed to me.

“I was 31 years old. I came to this quite late as I had done a PhD after getting my degree and then went off to Antarctica for a few years. We founded Adaptive Broadband, a point to multi-point microwave access systems venture, which we sold a year later to California Microwave (now Adaptive Broadband Corporation).”

He didn’t volunteer it, but California Microwave paid $11 million cash for Adaptive and laid down another $7m related to targets.

Most of the revenues were split equally between Olivetti and Oracle and staff at Adaptive continued to work in Cambridge following the acquisition.

Professor Andy Hopper, a director of Adaptive and the lab, said at the time that the Americans had bought the technology in the same way that a venture capitalist would.

The laboratory had form in the marketplace, having previously spun off two other enterprises – Telemedia Systems and Virata.

Alistair then co-founded Cambridge Broadband in 2000. The business has $40 million revenues and is still running as a successful international company.

He says: “At Olivetti we did the spin-out with Andy Hopper for Adaptive Broadband and Cambridge Broadband. These companies had multiple founders. It was an exciting time.

“After stepping down from Cambridge Broadband I wanted to do something on my own and I approached David Cleveley at the Cambridge Angels. David and Andy have been a huge driving force and influence behind the success I have had to date.

“I wrote a business plan over the summer and presented to the Cambridge Angels group. CRFS was funded by the Angels with some other smaller funds coming in later to top up subsequent rounds to the tune of several hundred thousand pounds.”

Did that process prove stressful or problematic? “Stress in not the correct word. Anxious that we got the money in the bank to start developing would be a better way of describing the experience.

“By the time a company builds to 30 employees there is more of a determination to make sure that it can pay those people based on sales!

“Hiring good people remains the greatest challenge. Companies must always hire the best possible people.

“This can be tricky as being a startup generally you have to really look after the small amount of cash you have. So keeping salaries low is important and giving people share option incentives is important.

“The time it takes to make sure you have the right people is also critical but a drag when you are desperately trying to develop rapidly.

“Of course the alternative is to have such a good idea that you can raise money at a good valuation, have an oversubscribed round and then pay for good people to join.

“In the long run this works out cheaper for the founders. The key thing is getting that good valuation to raise the cash with as little dilution as possible.

“If I did this again, I would certainly pay to get good people on board early. It will always save you so much time and money in the future. Easier said than done, though.”

Massarella acknowledges the amount of red tape that can strangle the growth of some young businesses but, despite the challenges, says he has not found the process stressful.
“It’s just great being your own boss,” he says. “You always need to remember that cash is king and as long as you have a runway of at least a few months then all is good.”

Having said that, he says he owes a tremendous debt to Cambridge Angels, not just for their cash but also for the moral support they have given through times of lean and plenty.

He said: “I can’t thank the Cambridge Angels enough for supporting me through the tight cash times. We are now very profitable but without them life would have been a little bit different.

“One day I hope to do the same for others with the same aspirations as I had but need a leg up. David Cleveley and Robert Sansom have shown me great support which means I don’t mind putting in the long hours to make sure the business works.”

Massarella also pays tribute to a strong CRFS board: “Ruth Martin came on board first and really made a big difference getting us up and running. Stewart Hyde then added the technical horsepower we needed to start making a difference. And of course our investors were really helpful on many levels over and above putting money into the company.”

Unlike a great many young entrepreneurs with a ‘get rich quick’ mindset, Alistair is content to play the long game.

“One day we might contemplate a trade sale for CRFS but I am more than happy to continue building the company and in no rush to sell out. I am having too much of a good time.

“Nor do I have regrets as such. If I was starting again I would raise more money early on. It’s a bit of a Catch 22 on dilution but will be cheaper for a business in the long run. And I would say to the new generation of business founders, ‘It’s all in the team. Build the team.”

Massarella would like to see more State support for entrepreneurs if the UK wants to build more – and more sustainable – businesses capable of thriving in the face of global competition.

He says: “The only reason CRFS is where it is today is down to the Cambridge Angels. Now we need to make the landscape more attractive for entrepreneurs who are willing to bust a gut building companies and hiring people to work for businesses exporting goods and services to the rest of the world.

“This has to be based around tax breaks for the founders and those willing to invest in those organisations. This includes bridging loan facilities when times get tight between purchase orders and deliveries. The only people who can do that are the investors close to the business,

“This saves the monolithic banks the trouble of saying no because they do not understand the businesses which approach them. I truly believe that Cambridge and the UK can scale many more companies on the international stage – but vision is key here.

“The scaling process requires the board of directors and executive team to share the same strategy to achieve the vision of where they want the organisation to go.”
Fitzgerald has breathed new life into building design

Not all the entrepreneurs fanning the flames of enterprise have sold businesses for vast sums.

Selected CEOs are included in the Cambridge Torchbearers initiative because of the innovative businesses they are currently scaling up globally from a base in the local cluster. Shaun Fitzgerald of Breathing Buildings is a prime example, as Tony Quested discovered.
American comedy actor Steve Martin tells a joke about the benefit of standing in another man’s shoes.

“Before you criticise a man, walk a mile in his shoes. That way, when you do criticise him you’ll be a mile away AND have his shoes.”

Shaun Fitzgerald urges a similar approach when business founders are approaching investors for cash – but without the cynicism.

His rationale is that by metaphorically standing in the potential funder’s shoes you can ask why they should lend you money and on what terms.

Fitzgerald’s company – natural ventilation specialist Breathing Buildings – is doing well in the UK and internationally and having been supported in its infancy by energy giant BP and preserving close ties with Cambridge University – its alma mater – is in a position where it does not need to go round with a begging bowl.

That was handsomely evidenced in December 2016 when the business was sold to UK ventilation specialist Volution Group for an undisclosed sum.

Volution is a market leader in Britain and northern Europe and quoted on the London Stock Exchange.

Breathing Buildings, which remains anchored in Cambridge, was formed in 2006 by Dr Fitzgerald from a collaboration between the University of Cambridge and The Massachusetts Institute of Technology (MIT) and with support from BP.

Since then it has developed its own hybrid ventilation technology niche for the UK commercial ventilation market and is now a market leading designer, manufacturer and supplier of energy efficient, intelligently controlled natural and hybrid ventilation solutions. It generated revenue of £7.8 million in its year ended March 31, 2016.

Dr Fitzgerald said: “Becoming part of the Volution Group will enable us to maintain our focus on growth through new product development and the provision of a more comprehensive offer to our client base.

“I am excited about the opportunity to continue working with the business in the next phase of its development. Being part of the Volution Group offers significant new opportunities.”

Looking at the UK business scene with a broader perspective, Dr Fitzgerald acknowledges that banks are generally not lending enough to SMEs, which he feels is holding back progress for many young companies; he also feels that enterprises need to be realistic about their investment options.

He says: “The main improvement I would like to see to make the UK environment more fertile for new businesses is increased bank lending for SMEs. It is a continuing issue. I see lots of other businesses who have struggled with inadequate support from their banks.

“My other main advice to budding entrepreneurs is that when considering whether what you are asking from an investor is sensible or not, simply swap your shoes.

“Ask yourself, “If I was an investor, what would I demand?” If what is being asked of you now is no more than you would ask if you were an investor, the deal is good to go.”

Breathing Buildings was formed as a spin-out company from the University of Cambridge in 2006, following the discovery and development of a proprietary low energy e-stack mixing ventilation system as part of a major research programme at the BP Institute, through the Cambridge-MIT Institute, with funding from BP plc.

The technology was filed for patent by the University of Cambridge and Breathing Buildings was granted exclusive rights to the IP to develop and commercialise this low energy ventilation system.

Shaun founded the business with Professor Andy Woods, who was the CTO. During 2006-07 prototypes of the system were developed and tested in the Breathing Buildings laboratories, with a team of highly qualified ventilation experts.

Since the e-stack system was commercially introduced in 2007, the success of the product and associated consultancy has been recognised by industry via an increasing number of awards.

E-stack systems are now operating in hundreds of buildings across the UK, ranging from retail projects to local primary schools and there is a substantial pipeline of new projects for which Breathing Buildings is actively engaged in supplying e-stack systems.

Shaun first took an interest in business when doing his PhD in geothermal reservoirs at Cambridge University before moving to Stanford University and California. He later spent five years at Bain and Company.
He returned to Cambridge carrying out research into natural ventilation at the BP Institute before turning his hand to energy reduction using his expertise in natural ventilation to found Breathing Buildings.

“I remember going to conferences which had both academics presenting as well as those from industry. Seeing the challenge between application and theoretical modelling was inspiring.

“So few people seemed able to truly feel comfortable in both camps – certainly there were very few people who were able to lead activities in both arenas.

“In 2005 I decided to form the business. I was 38 at the time. I had been frustrated with building contractors changing designs of buildings I had developed.

“They were using the argument that there were no companies able to provide the equipment I suggested. It seemed that the only way to get the building industry to adopt my ideas was to set up a company and offer equipment ourselves.”

While the primary focus of the business was to develop and commercialise natural ventilation systems derived from a patent it had filed at the university, the company also had a secondary revenue stream from design consulting; however, the main focus was to get the equipment manufacturing side established.

Ex-colleagues from Bain & Company encouraged Shaun to go ahead with the venture and the stress factor was kept low by the tremendous support from BP.

Shaun recalls: “BP contributed the funds to set up the business in the first place and ensure that we had cash resources to support ourselves for two years.

“We faced opposition from incumbent natural ventilation companies who were offering systems which did not meet the design requirements. However, we overcame these by working closely with government to educate those who compile building regulations, and in key sectors these have now been changed to support the industry.”

Dr Fitzgerald concedes that building the company was not without its problems.

“The most stressful times have been when staff members have not developed at the same pace as the business. As a business grows, it needs different skills and managing this transition has been hard at times.

“We have gone through some tough times but the business is now doing well. I have been fortunate in having family for support as well as key shareholders.

“It is a simple thing but if you volunteer to make personal sacrifices for the good of the business, this helps a lot in garnering support.”

Given a time machine, Shaun says he would change at least one element of his methodology.

“I would be really clear with the shareholder structure to ensure that all those in direct day to day management of the business have a good slice of the equity.

“This needs to be applied even at later stages of the company so a good option pool is crucial. The concept ofvesting needs to be used and applied.”

Having scaled Breathing Building successfully, Dr Fitzgerald is aware that many more local businesses could be spurred to greater success given the rub of the green in crucial areas.

He says: “The potential scale of a business may be limited not by ambition, but by the access to finance and the market you are currently in. The ultimate impact of one start-up business may be maximised by being sold to an established trade-buyer rather than going solo.

“The name of the startup may be lost in the process. A different business may need to stay solo with various rounds of investment in order to maximise its potential.

“The nature of the market, and crucially routes to customers, will determine the optimal business model for maximum potential.”
The real legacy leaders leave is culture

By Matt Meyer, Chief Executive of Cambridge-anchored international law firm Taylor Vinters.

Business leadership is not about the new service launches, hitting targets, opening offices or even client wins; the real legacy leaders leave is the culture they have built.

Not only is business culture (the ideas, customs, behaviour and practices) – what differentiates a firm for both its people and clients, but culture can also play a crucial role in driving commercial success, ensuring business longevity and making great things happen.

Walk the talk

At Taylor Vinters, we recognised that the traditional law firm business model was being challenged by evolving client needs and expectations.

Our clients were – and are - doing great things in the world, pushing boundaries in business models and the application of technology, and resolving problems collaboratively to create positive outcomes. They are innovating.

In seeking to be the law firm for innovation we have had to create an environment where we walk the talk.

As a leader in that environment, I hope my greatest contribution to future generations, my colleagues and the clients we help, is to have built a culture of challenging assumptions.

Our management team have sought to create a place where curiosity and positive challenge are where we find our energy and our competitive advantage, not a place to fear.

A business in which thinking differently is encouraged and embraced; I consider my role as one of Taylor Vinters’ ‘torchbearers’ is to facilitate a culture that unlocks the potential of our people and our clients.

Challenge assumptions

That culture of challenging assumptions starts at the top. What is a law firm? Is it a group of lawyers whose role starts and ends with applying the law and selling that knowledge, typically, through the medium of time?

Or is it a business that helps clients take calculated risk, supports them in building commercial value and leverages the business networks that our lawyers sit at the heart of?

If I ask my colleagues where they create value for clients they increasingly say it’s the networks we leverage. They talk about opportunity and collaboration. We can create value by connecting people with good ideas.

Challenging assumptions doesn’t stop there, indeed we need to go even further, push harder and challenge ourselves more deeply. As my team knows only too well, one of my favourite questions is this: We are making this assumption. What would be different if that assumption was wrong? What if it were this? What would you do differently?

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In a culture that fosters curiosity and challenge, that question is met with an open mind, a sense of possibility and empowerment. Our job as leaders and advisers is to open minds and provide fresh perspectives to future generations, if only to validate that accepted one.

**Create a culture of internal innovation**

An example of this approach is the recent launch of a great internal innovation programme called PitchUp. The challenge was simple: Whatever your role or function in Taylor Vinters – from lawyers to support staff – create a pitch for a new way of doing something, be that a brand new client service or a new way of managing paper clips, and present it to the whole business in a Dragon's Den-style Pitch Up day.

There was a risk that such an event could be met with cynicism. By contrast, we have been overwhelmed with the response, not just with the innovative ideas themselves but the energy and engagement, curiosity and challenge displayed across the array of creative, multi-media pitches.

For me, this has been one of the most significant validators so far that we are succeeding in creating the business culture that we set out to build.

**Industry torchbearers**

Being a torchbearer and blazing a trail, is about leadership and legacy; the trailblazer leaves a path for others to follow, including their peers and competitors.

Rather than consider this a disadvantage, I feel that improving the industry through collaboration – especially between businesses and innovators both within and outside of the legal industry – only improves our commercial position and protects our business longevity.

Real leadership is about conveying confidence and conviction so your team will follow you on the new and more challenging path. And essential to this is creating a collaborative culture of open and enquiring minds.

We want to see new projects work in the commercial world and often this means sacrificing control – we do this because we believe in the idea, we don’t want to own it.

This is exemplified by our equity investment and incubation of two LegalTech start-ups, ThoughtRiver and Pekama, where, rather than demand exclusivity, we are supporting them to scale through commercial deals.

We have taken the essence of Cambridge to a commercially receptive audience, expanded in London, Asia and the US, introduced artificial intelligence to our business and been recognised by the Financial Times for innovation in data analytics.

The truth is that these are a function of the culture we have built and not the pillars of it. They reflect a growing confidence to predict the future built on the energy of curiosity and challenge.
Torchbearers
Life Science
Torchbearers
No silver spoon but a golden career for Horizon’s Darrin Disley

The Cambridge Torchbearers initiative is co-sponsored by Horizon Discovery, a pioneer in the global race towards personalised medicines. The gene editing company’s CEO Dr Darrin Disley lit the fuse to the Cambridge Torchbearers series by talking about his remarkable rise from a humble background in the East End of London to CEO of a publicly listed life science company and holder of multiple regional, national, and international awards for leadership and entrepreneurship, including a coveted Queen’s Award in April 2016.

There has been no silver spoon evident in Darrin Disley’s incredible achievements in taking Horizon Discovery from having £9k in the bank in March 2008 to a $113 million UK stock market listing exactly six years later, thereby accomplishing the biggest life science float in the history of the Cambridge cluster.

He has clawed and scrapped his way, metaphorically speaking, from humble roots to a position at the top table of UK and international business and has become one of the most respected and influential entrepreneurs in the second coming of the Cambridge Phenomenon.

Having left school before the age of 16 he had a series of fights against long odds before him: first for his family, then for himself, and then for Horizon. To his immense credit Dr Disley’s takeaway from those hard battles has been to pay it forward in spades by helping, both through investment and also through mentorship, new generations of young students make the steps from innovator to established business owner with every chance of global success. He has endowed scores of young entrepreneurs with the kind of resources that were nowhere in sight when he was starting out.

Dr Disley’s interest in business has never been far from the surface. To a certain degree he followed in dad’s footsteps “ducking and diving” to make a living by playing outside of the usual rules.

A 19-year-old Darrin was playing semi-professional football and working as a laboratory technician for the Inner London Education Authority while his father ran his own small building and shop fitting business which employed 10 people but was struggling.

These struggles put an inevitable strain on family life so Darrin stepped into an administration role to help out – all the time pondering whether to go on to university at the completion of his ONC qualification.

He freely acknowledges that coming to Cambridge changed his life: “After an abortive bid to become a professional footballer, by the time I had returned into education and come to Cambridge I was already 24 years old.

“I came here in 1991 to do my PhD at the Institute of Biotechnology, followed by my postdoctoral research. It was the early days of the Cambridge biotech scene and I was fortunate to have Professor Chris Lowe as my mentor – a true pioneer in the field of technology entrepreneurship.”

In 1998 following completion of his PhD in Biotechnology and a Postdoctoral Research Fellowship (both for Chris Lowe), Darrin was employed by The Technology Partnership to manage the bioscience aspects of a new technology consortia – called Acumen – that was being conceived in the area of high-content drug screening.

Darrin worked with members of the senior management to build plans and to pitch the consortia to top pharmaceutical companies; this resulted in a commitment by AstraZeneca and Rhone Poulenc (nee Sanofi-Aventis) to fund the consortia alongside The Technology Partnership.

He says: “This programme was very successful and led to the launch in 2000 of the first products in the Acumen Explorer and then in later years the comPOUND and Mosquito product ranges, all of which still sell today.

“In fact, Horizon has just purchased the latest generation Acumen Explorer and we have one of the first release machines in the labs. This employment gave me a strong grounding in how you fund without dilution, build with your customers and market sales technology to the global pharmaceutical industry.

“The programme’s success led to me being promoted rapidly and rewarded with more than 50 per cent pay rises. The culture there was not conducive to entrepreneurship, however, with limited ambition for the biotech potential of the excellent instrumentation being built as well as an unwillingness at the time to set-up a spin-out company that would reward founders with equity that would incentivise long-term participation.

“This led to me leaving the company and going to the United States on an O-1 Extraordinary Ability Visa endorsed by Molecular Devices Corporation and supported by TTP.

Continued ➔
New horizons beckon

“In the US, I consulted for a number of biotech companies and this gave me the drive to want to set up my own business when the next opportunity arose.”

Returning to the UK in November 2000, Darrin went to work at technology consultancy Scientific Generics Ltd in the Life Science practice. Within nine months he had spun-out Adaptive Screening Ltd alongside Imperial College and the University of Glasgow to build technologies for reducing drug development timelines and costs.

Adaptive’s Surrogate Proteome Chip and Functional Cell Chip platforms were designed to challenge potential drug candidates ‘in vitro’ with the complex and non-linear biological questions they would be asked when undergoing animal and human trials.

Dr Disley said: “In 2001 the first human genome had only just been sequenced after 10 years and only 1,200 unique protein structures had been crystallised.

“Potential drug candidates were identified by screening millions of compounds against a very simple biochemical assay that had none of the genetic or proteomic context or complexity of the human body. Drug attrition rates then were more than 90 per cent and translation into effective clinical treatments was poor.

“The Surrogate Proteome arrayed the known protein universe – that is, drugable functional motifs, transport, metabolism and excretion proteins – onto a chip and then supplemented these with proprietary protein sensors that were made by mutating the binding pocket of the promiscuous odorant binding proteins found in the human nose to create biosensing models with tailored and diverse affinity.

“All combined, this recreated the ‘affinity binding universe’ of a proteome which was believed at the time to comprise somewhere between 150,000 and 1,500,000 unique members.

“By profiling compounds of known efficacy, mode-of-action, and toxicity over the arrays, patterns of binding could be identified, remembered, then referenced against the blind compounds which were the drug candidates. Bayesian statistics and Neural Nets were used to predict key properties of these candidates.

“The Functional Cell Chip arrayed 96 or 384 individual cells in a microfluidic chip. Each chamber of the chip could be electrically controlled to stimulate dynamic disease states with the function cell compartment.

“This allowed us to test a drug in a wide variety of high content assays in conditions that closely mimic the disease state. With the addition of a strong bioinformatics over-layer, the Adaptive Screening Environment was created. The need to test potential drug against biology that looks like real patients has been a constant theme in my entrepreneurial career from Adaptive Screening Limited to Horizon Discovery.”

Dr Disley did not yet have the confidence to call himself CEO (instead the company only had a COO) even though he was co-founder, first employee, author of the original business plan, co-inventor on seven of its 15 patent applications, and raiser of circa £1 million in financing from venture capital sources.

He also built a multidisciplinary team of 14 people within the first 12 months and further managed the R & D programmes for the company’s technology platforms.

Dr Disley went on to co-author the company’s second business plan that would be used to secure Series A Funding and also played a key role in the investor presentation team while managing an extensive, technical and commercial diligence process with multiple VC firms.

Despite tough economic conditions he secured two term sheets from premier VC firms for private equity investment of £20m and £2m. The lead investors, however, insisted on Darrin recruiting a CEO above him and Frank Craig – who went on to spearhead Sphere Fluidics – was brought in to fill the role. When the £20m deal fell through following the post 9/11 market turmoil, Craig moved on and Darrin endeavoured to work with Imperial, Glasgow and Generics to complete a smaller fundraising, that didn’t come to fruition either so the company was wound-up later in 2002.

This roller-coaster ride developed both Dr Disley’s knowhow and his resolve. It was arguably more useful than any formal business school or entrepreneurship training: “I had never had any training, so I compiled the first business plan using my own wits and raised the investment off my own bat. But I have to say that the entire process was difficult and stressful.

“From the day after funding I had an office and a PA and thought ‘what on earth do I do now?’ Everything I needed help with came at a cost: by relying on internal and external advisers we wasted cash on things that added little value.

“Eventually I took control, hired my own team and pushed the business forward against a backdrop of constant meddling from those with vested interests.”

With all the obstacles tipped in his path one would think Dr Disley wondered at some stage why he had bothered to get into business: “Not at all. It was the most exhilarating experience I’d had until that point. I learned to manage people and investors, write a business plan, raise money, write legal documents, do management accounts, present to all sorts of investors and customers, deal with adversity, and come through under pressure.

“Even though I lost Generics’ and Imperial’s money, the end of the business afforded me the most valuable lesson of my career. In tough times you learn most about your own character and of those around you.

“The positive and constructive way I conducted affairs with all the stakeholders (on the last day I threw the investors, employees and...
former colleagues a part to say ‘thank you’ for their support) meant they all worked with me again.

“In fact my first contract when I went out on my own was from Generics’ venture arm through one of its portfolio companies and Susan Searle, who founded Imperial Innovations Group plc, has remained a friend to this day and sits on the board of Horizon Discovery.”

After the wind-up of Adaptive in 2002 and up to his start at Horizon in 2008 Dr Disley co-founded numerous businesses characterised by the simplicity of their business model.

From these, DNA extraction devices and human growth-factor research reagents have been sold to good effect, generating consistent revenue growth and profits.

This activity created the ‘space’ so that when Horizon Discovery came along he was in a position to be able to participate fully in the upside of the business.

Dr Disley’s success with Horizon Discovery is well documented. The company has twice been named Business of the Year in the Business Weekly Awards.

Its £68m IPO on AIM was a spectacular success in every sense. Beyond returning £6.7m to the founders pre-IPO, its debut share price of £1.80p produced returns for investors up to 32x.

It was not only Cambridge’s largest ever bio float but the second biggest non-therapeutic float in the history of the UK life science sector. Now Horizon is pushing ahead to become Cambridge’s biggest ever non-therapeutic life science company as it leverages the global opportunity presented by its turnkey prowess in the translational genomics arena.

Amazingly, during this surge of activity for Horizon, Darrin has also found time to steer the early fortunes of several Cambridge University spin-outs.

In all, Dr Disley is an angel investor in, board member of or active adviser to around 25 companies – including Axol Bioscience, GeoSpock, Desktop Genetics, Healx, SimPrints, GeneAdviser, Neul, and LaSalle Education.

He injected his own cash into a 10-year endowment of the Christopher R Lowe Carpe Diem Enterprise Fund hosted by Cambridge University and which for the past five years has offered student bursaries to study bioscience enterprise, sponsorship of student societies and non-dilutive funding and precious mentorship to so many new ventures through the Cambridge University Entrepreneurs (CUE) competition.

He is also a trustee of the Footprint Cafés – a social enterprise founded by Cambridge Judge Business School graduate Georgina Hemmingway to help Cambodia fight back from arguably the greatest human tragedy of the modern era by enhancing literacy, enterprise and fair trade to fashion sustainable, vibrant local communities.

Dr Disley has personally donated £300k to the project for which the first outlet opened near the end of 2016 – laying the foundations for similar ventures across South East Asia.

The first Footprint Cafe opens in Cambodia. Dr Disley has injected £300k of his own money into the social enterprise

Continued ➔
His Queen’s Award citation in April 2016 stated that Dr Disley “has made a major contribution to raising the profile of life sciences both in Cambridge and beyond. As part of his endeavours, he has concentrated on a voluntary programme to raise the profile of entrepreneurship and its connection with life sciences. He has given many hours of time to aid young entrepreneurs through mentoring and speaking engagements.

“In the past four years, over 100 young entrepreneurs have benefited from his advice, time and financial support and almost a dozen businesses have been launched, raising over £10 million pounds in capital. He remains an adviser to many of them.

“Darrin also provides assistance to several social enterprises, students from underprivileged backgrounds and advises and assists two universities along with Cambridge University Entrepreneurs.”

As an adviser to young entrepreneurs and a keen observer of business models, Dr Disley sees a lot of the same problems repeating themselves despite the greater well of knowledge that founders can draw from today.

He says: “Misalignment of the interests between founder shareholders, technology transfer offices, management teams, and investors; overly complex business models; misaligned scientific founder motivations; management limitations; and attempts by vested interests to subvert good corporate governance to gain control or bias the commercial outcomes are particular bugbears.”

But Dr Disley says he wouldn’t have changed a single twist or turn of his incredible journey. “If I had my time again I would change nothing at all: otherwise I would not have been able to learn how to manage risk and give myself the best chance of future success.”

His advice to future generations starting out in business is heartfelt and worth writing in tablets of stone: “Businesses are about creating alignments of interests between founders, investors, other shareholders, and most importantly your customers. There is no such thing as a lifestyle business.

“Don’t blame others when things go wrong. Always look inside to understand what you contributed to every given situation before reacting.

“Never use the ‘reply all’ button, and learn to prioritise tasks: no e-mail has to be responded to immediately.

“Embrace your strengths, accept your weaknesses and don’t take yourself too seriously. Delegate to those who have more specific skill sets.

“And remember – not making a decision is not a decision! I would add that the timing of a decision can be as important – if not more so – as the decision itself. That is a gem I learned from Jonathan Milner.

“Building a business is difficult; if it wasn’t everybody would be doing it. So founders have to appreciate that it might not work first-time. It
is also important to afford success and failure the same respect and learn from every experience – especially the failures. Founders need to know when to say ‘STOP’ and move on. And finally, enjoy the journey – don’t chase the destination.”

Dr Disley believes the UK is currently “the best country in the developed world” in which to set-up a high-growth technology business: “Horizon is an exemplar. A UK biotechnology company globally leading its field, it has benefited extensively from the UK government’s award-winning legislative programme enshrined in the Office for Life Science Strategy.

“Horizon has benefited from £12m of EIS funding which promotes an ordinary share class and enterprise control compared with VC funding. R & D tax credits for making cash available when companies most need it; 10 per cent Entrepreneurs’ Relief for founders on the first £10m of capital gains so they can keep more cash to invest in tens of new businesses and charitable endeavours.

“Horizon was the first investment via DFJ Esprit of the flagship UKIF. This country has low corporation tax via domicile of patents in the Patent Box, which facilitates more re-investment into R & D and makes it attractive to acquire foreign companies.

“The opening up of AIM to more risk capital via lower fees, presentation of VCT, and EIS relief also means that more money can be raised from non-index linked funds. Given all of this and much more entrepreneurs have the framework they need to succeed.”

Dr Disley is on record as saying that new companies need to put global scale-up on their agendas from Day One and says there are still too many founders who are limited by ambition and an unwillingness to take the harder path to long-term, sustainable success.

“It is depressing but there are still too many founders who find it easier to align with investors and take early exits and early retirement. The scale-up model exemplified by Horizon Discovery and others can work, but it means taking tough decisions, holding firm, and rolling the sleeves up for the fight over a long period of battle with vested interests. Most founders find it easier to roll over – but that has never been my mind-set.”
Chesterford Research Park offers state of the art laboratory and office space alongside superb central facilities - a community perfectly positioned for today’s thriving pharmaceutical and biotech companies.

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As co-founder of the globally respected Astex Therapeutics, Akubio, Sphere Fluidics and Aqdot – all from a springboard within academia – Professor Abell is also one of Cambridge University’s most assured ‘Dontrepreneurs.’

He has been a Professor of Biological Chemistry at the university’s Department of Chemistry since 2013 and is also Todd-Hamied Fellow of Christ’s College, Cambridge.

His first foray into the world of business came in 1999 when he co-founded Astex, which used fragment-based drug discovery technology to discover cancer therapeutics, with Sir Tom Blundell and Harren Jhoti.

The company’s research efforts focused on utilisation of a proprietary drug discovery engine branded Pyramid. Astex also solved the structure of two key cytochrome P450 isoenzymes involved in drug metabolism, 2C9 & 3A4, which the company felt would help optimise the pharmacokinetic properties and safety of its lead compounds.

Astex’ first drug candidate, a cell cycle inhibitor, entered Phase I clinical trials in 2005. Since that time the company has created eight drugs that have progressed into the clinical stage of development.

In September 2013, Astex was acquired by Japanese giant Otsuka Pharmaceutical for around $900 million.
In 2001, Chris co-founded Akubio, which developed biosensors for detecting bacteria and viruses; it was acquired by Inverness Medical Innovations in 2008. Then, in 2010, he co-founded Sphere Fluidics to develop microdroplet technology and two years later Aqdot, a company developing a new microencapsulation technology.

If you’ll forgive another agricultural pun, Professor Abell has never forgotten his roots as a scientist first and foremost – albeit a highly entrepreneurial one.

Take a deep breath and consider this statistic: He has so far published more than 200 papers. And his research interests cover a broad church – vitamin and amino acid biosynthesis as targets for the rational design of antimicrobials; fragment-based approaches to enzyme inhibition; bacterial and plant riboswitches; reactions in microdroplets; and biological nanotechnology.

Chris had a high work ethic from his youth. He says: “I was brought up on a farm in Yorkshire so understood how a business works from an early age. Forming my own business had been an ambition for several years before a real opportunity arose. My main motivation – frustration – was that I wanted to do more ambitious science than was possible with standard research grants.”

Chris was a Reader in the Department of Chemistry, Cambridge, carrying out research in mechanistic enzymology and was about 40 when he and his co-founders “made the decisive move” by forming Astex.

They secured funding from Abingworth and Oxford Bioventures (working together) and Chris observes: “We were fortunate to be starting a company in the late 1990s.

“The due diligence process certainly seemed to go on for a long time. Each successive fundraising was stressful. Fortunately for me, Harren as a founder and the first CEO dealt with most of the issues and many frustrations. It helped that we made some excellent early recruits and were very thoughtful about what we did.

“I have never regretted being involved in Astex. It is a world-leading company with great employees. I have been particularly pleased by the way Astex has combined commercial success with high quality science, much of which has been published very well.

“There were several times in the evolution of the business when it seemed the fate of the company was too far outside areas I considered my comfort zone. These mainly related to financing.

“But the founders had each other to lean on when times got tough and we also received a lot of support from some key individuals in the industry as consultants and/or non execs.

“Harren and Sir Tom were highly experienced. Harren previously worked at Glaxo Wellcome and Sir Tom, who chaired the Scientific Advisory Board, was also Professor of Biochemistry at Cambridge.

“The outcome of our combined efforts has clearly been excellent. Astex has eight compounds in clinical trials and is recognised as world leading. It was purchased for over $850 million and all the co-founders have maintained their involvement with the company.”

Chris remains a director of Sphere Fluidics and is chair of the Scientific Advisory Board at four-year-old Aqdot, which specialises in microencapsulation.

He is proud that “each of these companies has arisen in some way out of the research we are carrying out in the university. Each company has been quite different – but the stress around fund raising does not change.”

He acknowledges that, given his time again “there are numerous ways in which one might do things differently, but I am quite happy where I am now.

“It would have been great to float Astex after six to eight years but the markets at the time precluded that.”

Chris is already inspiring new entrepreneurs, occasionally in a more direct way than others. He says: “I encouraged one of my PhD students to co-found Aqdot. She is very talented and already knew a lot about what was involved through her involvement with CUTC.”

Looking at the environment in the UK for founding new enterprises, Chris believes attitudes and systems governing funding need to be revised.

He said: “I have found investors take a rather simplistic view about types of companies. For example, they do not seem sufficiently sensitive to different ‘service’ models. There also seems to be a shortage of investors who will come in at the £1m-£2m range.

“There is often talk about whether enough of our entrepreneurs are sufficiently ambitious to scale their companies as we did with Astex. I disagree.

“There appears to be a systemic weakness in the system and I think the problems are in part due to the funding mechanisms available. Most entrepreneurs I know do not lack ambition.”

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It’s fair to say that Dr Richards is a graduate of the school of hard knocks as he shared with some distinguished colleagues – such as Sir Chris Evans and Peter Keen – the dubious pleasure of building Cambridge’s formative biotechnology sector. His pain has led to gain for scores of life science entrepreneurs who have followed in his footsteps.

Richards Minor was entrepreneurial from his school days. He recalls that he and a group of classmates discovered that the local baker always made too many cream doughnuts.

“At the end of the day they would virtually give them to us and we started selling them in school the next day. Any we failed to sell, which by this time were stale, we would save until the following day for sale to the staff at a premium price, of course.”

Such enterprise was to tail Dr Richards into his professional career. Following his time at ICI (now AstraZeneca) he joined PA Technology and says he worked on fascinating biotechnology projects for governments and both large and small companies throughout the world.

“During that time, I did some work for some of the emerging US West Coast biotech companies and found their whole culture intoxicating,” Dr Richards recalls.

“That experience made me decide that I would like to be more involved in startup companies. One of my multinational company clients at PA – in about 1990 – had a new technology that it was entirely ill-suited to develop and commercialise.
"I looked at spinning this out with some of the inventors and with Venture Capital money. We had the capital committed but the company decided to close the technology down rather than allow it to fly.

"It was a salutary lesson and one, unfortunately, that recurs today. However, that really made me commit to finding and being part of a new startup venture."

Andy had also been working with Chris Evans and Peter Keen at Enzymatix and an area of their business – the use of enzymes to solve asymmetric chemistry challenges in pharmaceuticals – "looked particularly exciting."

He says that the financial position of Enzymatix was unstable – but that merely added to the excitement – so he joined, in its dying days, to create Chiroscience (originally Chiros) alongside Chris and Peter.

With help from others, they raised venture capital finance to create Chiroscience ‘the chiral pharmaceutical company’. Andy was 31 at the time. He says: "I was heavily influenced by my experiences dealing with those early US biotech companies. The team at the original Affymax of John Diekman, Leighton Reid, Alex Zaffaroni and Steve Fodor were impressive for their audacious vision coupled with their ability to execute.

"I was also impressed by Tim Barberich and Bob Bratzler at Sepracor who tried really hard to get me to join them in Boston at that time. It seemed that everyone in those formative years had enormous energy and optimism and were set to change the world – and that of course included Chris and Peter."

His early grounding in business principles left him well equipped to build a business. Dr Richards says: "I had done quite a lot of work on strategies and business plans whilst at PA for many different ventures and technologies so I had a pretty good grounding in the theory and format.

"But the test of a business plan is putting it into action. The great thing about the original business plan at Chiroscience was that we had two! One plan was used for financing and we had another more ambitious one that we intended to follow when the time was right – and because of success and regulatory changes sooner rather than later."

Chiroscience was funded originally with £3 million of venture capital from Schroder Ventures (now SVLS), Apax and 3i. It went on to raise a further £10m of venture and private money before completing – in 1994 – one of the first UK biotech IPOs.

“Everything seemed new in those days,” says Andy. “The original financing was, I believe, Kate Bingham’s first deal in venture capital and the IPO was the first under new London Stock Exchange rules to allow high growth, loss-making companies to float.

“Financing is always hard and intense and full of moments when you think it won’t happen and sometimes wish it would go away. I am afraid the same is true today but it is a rite of passage that every entrepreneur has to go through.

“Chiroscience was full of big personalities – in the team, on the board and amongst the investors. It was rarely comfortable and discord was more often the norm than aligned harmony, but it was full of energy.

“I am not sure that I solved any of these people problems; I just lived through them and survived. However, the intensity and the conflict was energising and fostered a sort of manic creativity and desire to succeed which drove the company through its many changes of direction and business model.

“Of course, Chiroscience moved into developing novel drugs and that creates real jeopardy when products succeed or fail – more often fail – based on clinical results that can neither be predicted nor controlled.

“In addition, the prevailing business model of licensing to pharma at a time when they were all merging and could drop programmes on the turn of a card created highly stressful business discontinuities that one had to live with. Chiroscience almost died on a least five occasions."

Great team

Dr Richards added: “As the business evolved, I was lucky to have built around me a really great team who were able to counteract my weaknesses, tolerate my idiosyncrasies and exploit my strengths.

“As a group, together, we overcame so much. That ‘band of brothers’ culture is addictive and stays with you. It is no surprise, and has been a huge personal pleasure, to go on to build a whole series of companies with those I worked with at that time – including Julian Gilbert, Derek Jones, Robin Bannister, and Peter Keen.

“Chiroscience had many achievements and made many mistakes. It was the first UK biotech to have its own originated drug registered in its own name in both Europe and the US. It bought into genomics

Continued ➔
From selling doughnuts to hitting life science sweet spot

for all the right reasons but at too high a price and at too early a time. However, it got new therapies to patients – which is what counts – and made money for investors and started the careers of many in the cluster.

"Even now it still has exciting innovations from those days coming through development such as Romosozumab, the anti sclerostin antibody for osteoporosis, now owned by UCB and Amgen. Chiroscience was acquired by Celltech in 1999 leaving most of us exhausted and our shareholders better off."

Dr Richards says that, in common with many companies at that stage, everyone at Chiroscience did a bit of everything and roles and titles usually meant less than achievement.

"The board of management of Chiroscience evolved at a frightening pace and both Chris and Peter went on to other ventures, leaving me as the only founder that was there from the beginning in 1991 to the end in 1999 – something that still surprises me and many that know me."

Dr Richards is pleased that the backdrop to building a business in Cambridge has improved so radically.

He says: "The network in UK biotech was very small when Chiroscience was founded and most of our interactions were with large companies on a global basis – in fact it always seemed easier to deal with companies abroad rather than those close by and this included our UK based global pharma companies, whose foreign (usually US) business units were often much more welcoming than their parents."

The merger of Celltech and Chiroscience formed a £750 million UK-listed company in roughly equal value from the two constituents. Dr Richards recalls that, post this point, the share price moved very positively such that Celltech could buy Medeva to become the leading UK biotech company at that time. Subsequently Celltech was acquired by UCB.

One might have thought that life after Chiroscience would have proved less demanding for Dr Richards but he drives himself hard.

"After the Celltech deal I had promised my wife to take a year on holiday and this I singularly failed to do. Within four months – alongside many of those from the Chiroscience network – I was founding and angel investing in a new set of companies and by the beginning of the Millennium, I found myself as CEO of Arakis, CEO of Vectura and on the board of Amedis Pharmaceuticals and Biowisdom."

In his new iteration did he see any of the same old problems regurgitated? "The challenges of financing companies and of success and failure driven by unpredictable biology and pharma partnerships remained, but I had learned the importance of teams that really work together and that made a huge difference. Teams are what make companies successful and fun."

Dr Richards prefers to look forward than look back: "I have never thought it healthy to look back or try to retrace my steps and say ‘what if’. But he has an optimistic outlook on behalf of the new generation of biotech entrepreneurs as long as they keep a sense of perspective.

"I would advise them not to plan too much or be too impatient. Build a strong platform from which to jump – in my case it was a PhD, corporate research experience and broad business knowledge gained through PA.

"The world changes really quickly and opportunities will come so you can jump from that platform. It’s a question of timing, courage and then execution. If you never attempt something that might fail you will never realise your potential."

Is the UK environment receptive to supporting entrepreneurial ventures?

"I am an optimist and I think things are pretty good, particularly at the moment. The culture in the UK has changed and in Cambridge this culture is at its most refined, purposeful, supportive and dynamic. It truly is the ‘low risk environment for an individual to take high risk’ that makes joining a new venture in Cambridge a better bet than elsewhere."

Dr Richards would love to see more Cambridge companies scale and he doesn’t believe that ambition is the stumbling block to scaling, either in Cambridge or the UK.

"Actually most of the decisions to sell early for founders and shareholders have been entirely rational," he believes. "I do wish that more of our companies would scale, particularly in the healthcare space, but for that we need two main things.

"The first is a London-based stockmarket with long term investors that is fully informed of and engaged with the exciting prospects that new technologies can bring.

"It needs those public market investors who will support companies through the £100m, £500m and £1 billion stages of company evolution. I think that this is beginning to happen and IPOs such as those from Circassia, Horizon Discovery and Abzena have been encouraging.

"The second even bigger challenge is that our home market for health has to be ‘open to innovation’ and want to engage particularly with home grown innovation. If you were to do a SWOT analysis for UK healthcare innovation, the NHS would be writ large as a Strength, a Weakness, an Opportunity and a Threat!"
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Cambridge Antibody Technology – affectionately known as CAT – was the architect of the cluster’s first blockbuster drug and had become a ‘must buy’ business by the time it was acquired by pharmaceutical giant AstraZeneca for £702 million in 2006.

CAT’s core focus was on antibody therapeutics, primarily using phage display and ribosome display technology, and its IP was used to create adalimumab, the first fully human antibody blockbuster drug.

Humira, the brand name of adalimumab, is an anti-TNF antibody discovered by CAT as D2E7, then developed in the clinic and marketed by Abbott Laboratories.

CAT was also behind belimumab, the anti-BlyS antibody drug marketed as Benlysta and the first new approved drug for systemic lupus in more than 50 years.

While the AZ acquisition put CAT’s executives on Cloud Nine, theirs was a bumpy runway and an often turbulent ride before the business finally took off.

David Glover joined CAT in November 1994 when it was still a corporate kitten, taking the role of Vice-President, Medical. He joined from Schering-Plough. “Monoclonal antibodies were something I had been keeping an eye on for some time,” he recalls.

While he was initially concerned by CAT’s lack of a CEO, Dr Glover says he was “really excited at the prospect of joining an exciting UK biotechnology company that had strong backing and support from the MRC and the Laboratory of Molecular Biology at Cambridge.”

Dr Glover confesses to a nagging doubt before finally putting pen to paper. He’d had a previous job offer from Pfizer, but says: "This was rather different to the Pfizer offer situation. It was certainly more risky as there was no certainty that the novel antibody technology would work. Monoclonal antibodies had a number of significant issues that needed to be addressed if they were to fulfil their promise as ‘magic bullets’.

“Their recent track record had been disastrous with a number of high profile clinical trial failures. CAT had sufficient cash for the immediate future, but would need to address that situation...
soon otherwise the company would have to drastically reduce its operations.

“I had plenty of confidence in my own ability to make a success of the new job. It didn’t frighten me that I would be the only medic surrounded by over 20 molecular biologists, many with PhDs.

“I would effectively be in control of the company’s preclinical and clinical product development, starting from scratch. No more inheriting other peoples’ disastrous programmes. No more arguing with people in a US head office who didn’t really know what they were doing half the time and had less experience than me.”

**CAT and mouse**

Dr Glover writes that the failure of the early attempts at therapeutic monoclonal antibodies was because the antibodies were derived from mice, by immunising them with the antigen against which the desired antibody was required. When injected into man, the human immune system recognised the mouse antibody protein as ‘foreign’ and rejected it.

That meant that the next time the particular murine antibody was injected into the same patient, their body rapidly neutralised and eliminated it, negating any potentially useful effects.

“The HAMA reaction could itself be dangerous and even life threatening. The solution to the problem lay in making the antibody ‘human’ instead of ‘mouse’, Dr Glover says.

He writes: “The holy grail was to have fully human antibodies. For ethical reasons it was not possible to immunise humans and harvest their antibodies and then use these to treat another patient.

“Two possible routes were developed to get to the fully human molecules. The first was to modify the mouse such that some of the genes of its immune system were exchanged for the human equivalents. When immunised with the target antigen, the mouse would produce a human antibody instead of a murine antibody. These mice were therefore known as transgenic.

“The second route was the one that CAT had pioneered. It was completely different. Human antibody genes were extracted from white blood cells from donated blood or bone marrow. The human genes were then rearranged and inserted into the genes of a bacteriophage, a type of virus that is completely harmless to man. The host for the bacteriophage is a bacterium (E.Coli). As it contained the human antibody genes, the bacteriophage was tricked into expressing the human antibody protein on its surface.

“Huge repertoires, also known as libraries, of phage antibodies were built up, containing up to 100 million human antibodies in a drop of fluid the size of a teardrop. The final step was to use the antigen against which antibodies were required in a ‘selection’ process.

“The selection process was a bit like fishing. The antigen was the bait used to extract out of the library any antibodies that bound to it. Those that didn’t bind could be discarded, and those that did, could be sorted out with the aim of picking the best one.

“The CAT technique provided far more candidate antibodies than the transgenic mouse and the whole process could be achieved in a few days compared with several weeks for the mouse option. I was fascinated by it all and the possibilities that arose.”

**Last of the summer ‘whine’**

The way CAT was structured – Peptech had 40 per cent of the company so three seats on the board – allied to tensions in management meant a power struggle was soon underway. Focus on the core business strategy was lost in the fog and by the summer of 1995, CAT had almost run out of cash. Staff were told there would be no wine at the Christmas party and David recalls: “Morale, already low, sank further.”

Roger Aston was named as new CEO and David and other key figures knew Peptech was also running short of cash but wanted to float: “We were horrified about their listing plans, which included stating its 40 per cent holding in CAT as the key asset. Our vision was for CAT to list in its own right but we knew that we would have to reduce Peptech’s shareholding in CAT to be able to proceed.”
Peptech then made a formal merger proposal to CAT. Dr Glover was part of the due diligence process and says the Peptech pipeline “was uninspiring at best.”

A CAT board meeting, while stopping short of being a night of the long knives, rejected the merger proposal – partly thanks to crucial support from Sir Aaron Klug to “defend the scientific pedigree of CAT and not allow it to be diluted with the inferior Peptech R & D and pipeline.”

Peptech realised its best hope of raising funds was to sell some of its holding in CAT in whom there was considerable investor interest. 3i – previously unwilling to invest in CAT – stepped in to hoover up the holding and effectively put a stand-alone CAT in prime shape for a London listing. CAT gained no money from the share deal so still needed to raise some cash of its own, but that was a fight for another day.

Slowly but surely, Peptech’s hold on CAT was eroded. Its board representation was cut to two and Roger Aston was replaced as CEO by David Chiswell. Staff morale soared and CAT’s scientists were able to get back into the monoclonal groove as the directors sought the cash to steer through an IPO.

Dr Glover says that, with CAT down to its last few weeks of cash, a series of meetings were arranged with potential investors, mainly specialist biotech funds in the UK, Switzerland and the US. Major pharmaceutical companies were also targeted.

CAT had a proposed deal on the table, negotiated by David Chiswell, to licence the antibody library to Genentech from South San Francisco. “The dampener on the deal was that their final offer was only $2 million and for that they wanted a small equity stake in CAT of around two per cent in addition to the library,” he recalls.

“Despite serious misgivings that we might be enabling a competitor and selling too cheaply the deal was signed and thus we narrowly avoided running out of cash. I don’t think the staff knew how close we had come, but it didn’t matter. Later that year we did a similar licensing deal with Pfizer. This time the price was $5 million with no equity stake involved.”

More investors piled in, bringing the total raised to around £10 million in the summer of 1996. As that money came in, CAT appointed Cambridge maths graduate and career accountant John Aston as FD; he had previously worked with the British Technology Group and later been involved in a number of stockmarket flotations, including the privatisation of the water companies. “John gave us credibility in the City and he was absolutely necessary if we were going to float the company,” David writes.

Although the journey to market was lumpy, CAT finally made it to flotation in April 1997. With the help of Cazenove, CAT surpassed its £35m IPO target and raised over £40m in an exercise thought to have been six times oversubscribed. “One of the bigger investments came from a fund whose principal had dozed off during our presentation,” David writes, adding: “CAT had become a flagship company for the UK biotech sector.”

Less than two years after the 1997 flotation, CAT was doing a
'Canned Heat' and was on the road again. This time the target was to raise a further £90 million to fund the expansion of the product pipeline and increase the number of target antigens against which it could use the antibody library.

“By now the technology had advanced and our antibody library was even more powerful. Additional deals had been signed with pharmaceutical and biotechnology companies, which added validity to the claims we were making,” David writes.

He adds: “A backdrop of enormous turmoil in the markets, with wild swings in all biotech company share prices, raised real doubts whether we would be successful with the fundraising, but we scraped home, raising £93 million, selling shares at £18.50. The share price achieved was almost quadruple the price of two years previously.”

The pipeline Dr Glover and his team built at CAT is stuff of biotech legend and well chronicled elsewhere. Suffice to say it was down to David to devise and propose a preclinical package of data to support going into man. Not all the clinical trials went well, notably those involving CAT-152. Then along came Genzyme, which wanted to partner with CAT on anti-TGF-Beta programmes.

The deal was finally struck for both sides to pool their programmes and resources, excluding CAT-152, and share costs and profits 50:50, with Genzyme additionally investing $20m in CAT.

David recalls: “Genzyme’s $20m bought them a one per cent stake in CAT. If they had concluded the deal a year earlier they would have got almost 10 per cent for the same investment, such had been the rise in CAT’s share price. These were heady days and the company was riding on the crest of the biotech wave.”

Deals and disputes seemed to ebb and flow at regular intervals; apart from fighting off a merger with Peptech and rejecting an overture from Human Genome Sciences, CAT had no strategy for merger or acquisition under either David Chiswell or Peter Chambre’s leadership.

Out of the blue CAT announced that it was going to merge with Oxford Glycosciences – a deal that was scuppered when Abbott hit CAT with a royalties bombshell and CAT’s share price nosedived, also cutting off an avenue to raising further cash. But CAT’s core human antibody technology was still coveted the world over and seeds sown by Dr Glover were to blossom into the AstraZeneca deal.

AZ had got into bed with CAT’s rival Abgenix in the US but David grasped the nettle and initiated a partnership deal with AstraZeneca.

In November 2004, AstraZeneca took a 19.9 per cent stake in CAT for a £75m cash injection. AZ got approximately 75 per cent of the company’s future R & D output, including most of the early stage pipeline. It was a logical development for AZ to eventually swallow the whole of the business.

David wanted CAT to diversify into vaccine design and development. The company had already completed a successful vaccine design project with Merck, and antibodies and vaccines went together well scientifically, he argued. But his carefully crafted strategy was shunned and wasn’t even put to the board. Disillusioned, but with no shortage of other offers, the inevitable happened: “It really was time for me to move on,” he says.

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New Conference Centre opens at the Babraham Research Campus

A new conference and social facilities building, named The Cambridge Building, has been opened by Babraham Bioscience Technologies (BBT), the organisation that develops and manages the Babraham Research Campus.

The new facility includes a 200 seater lecture theatre, with additional standalone meeting and break-out spaces, a new restaurant, cafe and bar area.

It is designed as a focal point for both social and conference activities for the Babraham Research campus and the wider life science community.

Derek Jones, chief executive of BBT said: “We are delighted to have a modern world-class facility here at Babraham that will become the social heart of the campus.

“The ability for both the academic and commercial community of the campus and beyond, to have the capability to hold conferences and meetings is an important new feature of the site.

“The Cambridge Building supports campus activities and we’d also welcome interest from potential users from outside the campus.”

For more information about the facility contact: info@babraham.co.uk or call 01223 496269.

The Babraham Research Campus is already a hotbed of success and collaboration in Cambridge’s European-leading life science cluster.

Kymab’s monster $100 million Series C funding, announced near the end of 2016 on top of the company’s previous big-money fundraisings meant that more than £0.5 billion of investment had been injected into Babraham Research Campus life science companies within 24 months.

The investments came from a broad range of sophisticated backers from the US, UK, EU, and Asia, demonstrating the international competitiveness and attraction of Cambridge-based life science companies.

Investors have included Chinese venture capital, The Wellcome Trust, Bill and Melinda Gates Foundation, Woodford Investment Management, and corporate venture capital investments from leading pharmaceutical and technology companies such as Johnson & Johnson, Pfizer, Google, Takeda and Biogen Idec.

Top deals in the investment A-list are Convergence $200m, January 2015; Kymab $190m, May 2015 and November 2016; MISSION Therapeutics £60m, February 2016; F-star $50m, October 2014; Crescendo Biologics $36m, October 2016; Artois $33m, September 2016; Abzena £20m, November 2015; Bicycle Therapeutics £20m, October 2014; CEGX $21m, March 2016; Storm Therapeutics £12m, June 2016.
Part of Babraham’s new conference centre facilities
The full entrepreneurial journey, from idea to scaling up, is reflected in centres and programmes at Cambridge Judge Business School

When people embark on a long-planned holiday, they tend to seek an adventure – a multi-faceted journey rather than a single activity – and that voyage will vary person to person.

Likewise, entrepreneurship is a multi-faceted journey, with different destinations and objectives and a variety of twists and turns en route.

At Cambridge Judge Business School, entrepreneurship education, research and programmes are organised with these sorts of varied and fascinating journeys in mind.

The School’s programmes are designed not only to help would-be entrepreneurs launch a new business, but to effectively manage and scale up their ventures to achieve growth and sustainability.

At the same time, Cambridge Judge recognises that students and others have various goals for pursuing entrepreneurship knowledge or practical skills, so programmes cater to those different aims.

Likewise, the School and its programmes recognise that people are at different stages in their own careers, entrepreneurial or otherwise, and try to accommodate those various trajectories.

Entrepreneurship is embedded into many programmes and initiatives at Cambridge Judge, including electives in the Executive MBA programme on Entrepreneurial Finance and Fast Strategy, Intrapreneurship and Business Instinct.

Beginning with this academic year, the Cambridge MBA programme contains a core module on Entrepreneurship, and students can also personalise their studies by taking an Entrepreneurship Concentration where they can drill down into elective subjects such as Venture Capital and the Entrepreneurial World, How to Start a Technology Company, and Creativity and Innovation Management for Start Ups.

Here is a brief overview of some of the Centres and programmes that address entrepreneurship at Cambridge Judge Business School.

The Entrepreneurship Centre

The Entrepreneurship Centre, under the patronage of HRH The Duke of York KB, offers a range of programmes that address different challenges, needs and phases in the entrepreneurial journey. This includes skills development, venture creation, start-up acceleration and scale up for successful growth.

The Accelerate Cambridge programme offers training, mentoring and shared workspace to promising ventures, and focuses sequentially on several distinct areas such as idea and product development, fundraising and growth. The programme has launched a study of the ventures participating in the programme in order to improve understanding of how ventures succeed.

Venture Creation Weekends is an intensive three-day programme where aspiring entrepreneurs can find out if their start-up ideas are viable. The weekends bring together tech and innovation entrepreneurs, and the winning team gets a place on the Accelerate Cambridge programme.

The Postgraduate Diploma in Entrepreneurship is a unique qualification awarded by the University of Cambridge which enables experienced professionals to become more effective and visionary entrepreneurs. It is delivered on a part-time basis, largely online and takes place over 12 months.

Ignite is a one-week, intensive training programme which helps prepare high-tech and biotech business ideas for the commercial environment through a blend of classes, clinics and mentoring sessions with experts and entrepreneurs. It is designed both for aspiring entrepreneurs and to bolster business development at existing firms.

EnterpriseWISE is an entrepreneurship programme tailored for PhD and early career women in the fields of science, engineering and technology. Women are underrepresented in these fields, and research shows that programmes delivered specifically for women could be effective in recruiting and retaining more women.
The SME Growth Challenge addresses a fundamental problem affecting small and medium-sized enterprises: most struggle to scale up and grow, owing often to a lack of capital and the managerial skills to navigate a firm as it gets bigger. This programme helps SMEs develop the managerial and financial know-how to overcome these hurdles in order to grow both revenues and employment.

Enterprise Tuesday, now in its 17th year, attracts hundreds of people from throughout Cambridge to free weekly lectures and networking events each November and February. The programme encourages people to pursue their entrepreneurial dreams by hearing about the journeys of established entrepreneurs, and also provides a lively forum for the exchange of new ideas and concepts.

Centre for Social Innovation

The Centre for Social Innovation, which launched in 2015, acts as a platform for research and engagement with social innovators, academia and policy in the UK and across the world. Its primary focus is to understand, promote and support social ventures, social change organisations and internal change projects.

The Master of Studies in Social Innovation is a degree programme designed for practitioners working in any sector who wish to lead innovative solutions to pressing social issues through such lenses as sociology, political science and organisational theory.

The programme is part time over two years, and includes both online delivery and four one-week residential periods in Cambridge. The first class, which arrived in autumn 2016, includes 31 students from around the world including Brazil, Italy and Colombia, 18 of them women.

Cambridge Social Ventures supports and mentors businesses making positive social and environmental impacts, ranging from local to global in scale. The ventures work in fields such as health, education, employment, ageing and housing: the common thread is that they seek lasting and scalable change.

The Social Venture Weekend trains emerging social entrepreneurs in business fundamentals, with a strong focus on social impact within the context of creating and scaling a sustainable business. The two-and-a-half day workshops focus on topics such as effective business models, finance and pitching your venture.

Successful and promising ventures emanating from the various entrepreneurial programmes at Cambridge Judge include voice-recognition firm VocalIQ (Accelerate Cambridge); the Raspberry Pi low-cost computer (EMBA); Syndicate Room crowdfunding firm (MBA); drug-repurposing firm Healx (Accelerate Cambridge); Prison Voicemail (Cambridge Social Ventures), which helps inmates stay in touch with family; and collaborative blogging platform Niume (PGDE).
Cambridge Torchbearers

The New Generation
The Raspberry Pi Foundation, which created a credit card-sized, low-cost computer, is the brainchild of Dr Eben Upton, who was concerned that not enough young people were learning computer coding.

So a device born in 2012 has since totalled more than 10 million sales, and two modified versions of the Raspberry Pi were taken by British astronaut Tim Peake to the ISS for experiments, videos and other educational and scientific activities in 2015-2016.

“It’s quite something to see an astronaut, and a British one at that, unpacking your product on the ISS,” says Eben, who fine-tuned his idea for the Raspberry Pi during his Executive MBA programme at Cambridge Judge in 2009-2011.

“One of our biggest concerns when starting the project was that perhaps people today are happy to just be users of technology: that there isn’t a desire to understand what’s going on inside. But when you see the reaction to the product you realise kids are just as keen to learn as we were back in the 1980s,” says Eben, who in 2016 was awarded a CBE in the Queen’s Birthday Honours list for his services to Business and Education.

The Raspberry Pi itself is an uncased circuit board which, when hooked up to a monitor and keyboard, becomes a fully-functioning PC. The latest model, which includes a faster 64-bit processor and built-in WiFi and Bluetooth connections, now costs around £35. The 10 million sales makes the Raspberry Pi the top-selling UK personal computer.

From the start, the Raspberry Pi was conceived as an educational device to help young people discover both coding skills and imaginative uses for computers.

The Foundation’s website includes a Teachers’ Guide and Parents Guide to making the most of the device and fun activities ranging from simulating weightlessness in space to 3D printing.

Yet children are hardly the device’s only customers. Shortly after the Raspberry Pi was announced, it became clear that there was also a market in the developing world and among older people interested in computer projects – the so-called “maker” community.

Having founded three successful software startups, Eben had some business knowledge before beginning his Executive MBA course at Cambridge Judge, but felt he lacked skills in finance, strategy and business model design.

“We decided to adopt a licensing strategy, whereby Raspberry Pi designs the computer and maintains the brand and licences these two things to partners who manufacture the devices in return for a royalty,” he says.

He also credits the broader entrepreneurial ecosystem of Cambridge with helping the project take off and succeed. The device originated from a team at the Cambridge Computer Laboratory and attracted support from numerous local business people and angel investors, several of whom serve on the board of the Foundation or its trading subsidiary.
The Cambridge start-up Vocal IQ has also taken the natural approach. The venture, which uses technology to understand natural language, has been at the forefront of conversational voice systems for use in everything from smartphones to household appliances.

The voice recognition market is expected to expand particularly fast in the automobile sector, as drivers increasingly assign tasks to self-driving systems – so it’s important that people are confident that the vehicle’s systems properly understand what they’ve been asked to do.

Vocal IQ, formed in March 2011 to exploit technology developed by the Spoken Dialogue Systems Group at the University of Cambridge, was later supported by the Accelerate Cambridge programme at the Entrepreneurship Centre of Cambridge Judge Business School.

“Our work with Vocal IQ demonstrates the strong synergies in what Cambridge has to offer entrepreneurs: a university research tradition rich in Nobel Prizes, a strong local venture capital community with global reach, and a vibrant business school with a unique focus on its enterprise cluster,” says Hanadi Jabado, executive director of the Entrepreneurship Centre.

Vocal IQ grew rapidly after venture capital firm Amadeus Capital Partners led a £750,000 seed funding round in 2014.

“Current technologies do not always offer a smooth user experience, with irrelevant or inappropriate automated responses to questions being one source of frustration – a problem that VocalIQ’s new method of dialogue management addresses,” said Alex van Someren, managing partner of the Early Stage Funds at Amadeus.

Later in 2014, Vocal IQ was selected as a finalist at the second Pitch@Palace competition for entrepreneurs, organised by HRH The Duke of York, KG.

Then in late 2015, Vocal IQ was acquired by technology giant Apple for up to $100 million, with the Vocal IQ team remaining in Cambridge.

Vocal IQ uses self-learning technology that allows more natural conversation between people and the fast-growing Internet of Things – which is quickly connecting everything from refrigerators to industrial equipment – in contrast to more scripted interaction in which particular commands are memorised.

Blaise Thomson, founder and CEO of Vocal IQ, is an Associate in Entrepreneurship at Cambridge Judge Business School.

“People speak in all sorts of different ways,” the South African native told a conference in London. “We need the system that is tracking not only the understanding of what you’ve just said, but really the whole conversation.

“So what we believe at Vocal IQ is that the right way to do this is to use machine learning, and to use machine learning in a context that really works for dialogue.”

There are often uncertainties in exactly what people say in particular situations, so the company’s algorithms help figure out the meaning based on probabilities.

For example, if someone says that they would like to watch a “lighthearted movie” featuring Bill Murray, such language translates in Vocal IQ’s database into the desire for a comedy film with the actor.
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Kano Office, London
Yonatan Raz-Fridman and Alex Klein, Co-Founders, Kano
Juliet Rogan, Relationship Director, Barclays

Kano’s vision is simple. A computer anyone can build and program themselves. Recognising Kano’s potential to inspire a generation of coders, we provided a US$1m working capital facility to support Kano’s vision. Co-founder and CEO, Yonatan Raz-Fridman says “Our ambition is to help young people become a powerful force. Coding is increasingly important in today’s society, and Barclays is helping us to impart a valuable skill”.

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Gonçalo de Vasconcelos with fellow founder Tom Britton of SyndicateRoom.
SyndicateRoom model stands out from the crowd

Launched by two MBA graduates of Cambridge Judge Business School, equity crowdfunding platform SyndicateRoom operates under a simple premise: every investor should be able to get the same deal as professionals.

So the company is based on an investor-led equity investing model, which allows individual investors to invest alongside angel investors on the same terms. People can invest as little as £1,000.

“I heard about crowdfunding when I was studying at Cambridge Judge Business School,” said Cambridge MBA alumnus Gonçalo de Vasconcelos, who founded the venture with Tom Britton after they met through a Cambridge Judge Business School alumni event.

“I liked the idea that people could invest in innovative companies that could change the world and may also return a nice profit.

“The sad truth is that early stage ventures have always struggled to find the money they need to get off the ground and that there are a lot of businesses that could make a real difference if just given a chance and the right mentor.”

The firm’s name comes from a room at the business school – the Syndicate Room – where students work together on various projects.

“The name matches exactly what we do – we syndicate investors,” says Gonçalo.

The company, based in the heart of Cambridge, was launched in September 2013 and now employs 30 full-time staff.

Since its founding, SyndicateRoom has helped more than 80 companies raise over £60 million, and 97 per cent of these companies are still trading. This includes early-stage ventures in different sectors such as life sciences, property, engineering and software.

Successful crowdfunding campaigns through SyndicateRoom include compliance firm nowwecomply.com, which targeted £795,000 and raised more than £1.4 million; testing company Check4Cancer, which targeted £500,000 and raised more than £550,000; and Dymag, which makes performance racing wheels, which targeted £600,000 and raised more than £678,000.

The funding “will create more than 200 new jobs as the company speeds towards its destination: becoming the primary supplier of carbon composite wheels for both the motorcycle and automotive industries,” SyndicateRoom says on its website.

In June 2016, SyndicateRoom launched a new Enterprise Investment Scheme fund, Fund Twenty8, which seeks to bring a portfolio approach to investment in early-stage companies – allowing investors access to investments across a range of sectors.

“Rather than relying on a single fund manager, investments are sourced, structured and invested in by business angels, VCs and other lead investors,” James Sore, chief investment officer at SyndicateRoom, commented in announcing the new fund.

SyndicateRoom raised £3.1m in a Series A funding round earlier this year that will help to support business growth strategy. The company also teamed up with the London Stock Exchange to allow individual investors to participate in IPOs and share placements which, traditionally, have neglected the retail investor.

Late in 2016, SyndicateRoom was honoured twice at the UK Growth Investor Awards – being named both Best Investment Platform and top Industry Game Changer.

The awards are based on a two-stage judging process by a panel of 39 judges, who “look for those demonstrating innovation in investment products and services; impact on investee performance; and how growth capital is deployed.”
Healx developed unique drug-matching technology based on machine learning and genomics. It helps to identify new uses for existing drugs that could help people who suffer from a rare disease. Only five per cent of about 8,000 rare diseases have a cure.

“Globally there are 350 million people affected by rare disease – that’s equal to the population size of the United States,” says Healx founder and CEO Tim Guilliams, who is also co-founder and trustee of spin-off charity the Cambridge Rare Disease Network.

Healx got off the ground when joining the Accelerate Cambridge programme at the Entrepreneurship Centre of Cambridge Judge Business School. Following a recent Series A, Healx has now joined the SME Growth Challenge to build sound foundations for the scale-up part of its journey.

The company recently raised £1.5 million in a Series A funding round from investors that include Amadeus Capital Partners and led by Jonathan Milner; David Brown, an inventor of Viagra, is the chairman of the young company; Darrin Disley, CEO and President of life sciences company Horizon Discovery Group and a Fellow in Entrepreneurship at Cambridge Judge, is also backing the business.

Currently, there is little incentive to invest large sums of money in clinical trials designed to fight one particular rare disease, owing to the astronomical costs and the small population of potential patients.

That’s why Healx is focusing instead on repurposing existing drugs with the potential to far more quickly offer cures at a much lower cost.

Healx excels with a rare healthcare business

Aspirin has been used in some form for more than 2,000 years to treat ailments and most people take it for headaches or common aches and pains. Yet a Cambridge start-up hopes aspirin will also soon be used to treat a variety of rare diseases.

“Healx is the rare combination of a social impact organisation with a commercial unicorn potential and it has been an honour for myself and the coaching team at Accelerate Cambridge to have nurtured Tim Guilliams and Healx from inception to exception.”

“With huge pressure on R & D budgets, drug repositioning will be essential in the fight against rare diseases,” Hermann Hauser, partner and co-founder of Amadeus Capital Partners, said.

“The company seeks “to be able to scale this platform so we can address not 10 rare diseases but hundreds of rare diseases and have an impact on millions of patients worldwide who still don’t have a treatment,” says Guilliams, who before founding Healx earned a PhD in Biophysics and Neuroscience at the University of Cambridge.

Hanadi Jabado, executive director of the Entrepreneurship Centre at Cambridge Judge, said: “Healx is the rare combination of a social impact organisation with a commercial unicorn potential and it has been an honour for myself and the coaching team at Accelerate Cambridge to have nurtured Tim Guilliams and Healx from inception to exception.”
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‘Cell phone’ technology takes on new meaning with Prison Voicemail

When Kieran Ball and Alex Redston were looking for a use for their phone call app, they stumbled across the difficulties faced by families who want to stay in touch with loved ones in prison.

With prisoners limited to outbound calls during working hours, staying in touch is extremely difficult, contributing to a situation in which almost half of prisoners lose touch with their families while behind bars.

“When we visited prisons, we noticed that during the day the phones are not used because family and friends are usually working and wouldn’t be able to answer,” says Ball, a qualified accountant with a background in social venture startups.

“We realised a simple voicemail system could have a big impact in this situation, because it lets people stay in contact even when they can’t both get to the phone at the same time.”

They asked some prisoner families what they thought of the idea and received resoundingly positive feedback, with many describing the irritation of missing a call from the prisoner and not being able to call them back.

The system works with a prison’s existing telephone systems without the need for additional hardware or installation and was launched at Lincoln Prison in October 2015.

Barely a year later, the company made it to the finals of Pitch@Palace 6.0, the event for entrepreneurs organised by HRH The Duke of York, KG at St. James’s Palace in London.

Prison Voicemail “means a prisoner isn’t dependent upon having the partner sit by the phone to hear their voice,” says Paul Baker, the Prison Service’s Deputy Director of Custody for London and Thames Valley.

The service gives the family member and prisoner a unique landline number to call, allowing them to receive and reply to voice messages at a convenient time.

Based in Norwich, Prison Voicemail has been installed in about two-thirds of the 123 prisons in England and Wales. The venture hopes to reduce reoffending rates, based on research showing that inmates who stay in touch with family and friends while in prison are less likely to reoffend after they are released.

One user of the service, whose son is in Rochester prison, said Prison Voicemail had “transformed the way I can contact my son,” providing “great comfort” to other family members.

Another user, Anne, said: “I hadn’t been able to find a way for our children to speak to their dad for three years. After they left their first voicemail I actually broke down in tears. It just makes such a difference, I think the service is brilliant.”

Neil Stott, executive director of the Centre for Social Innovation at Cambridge Judge, said that Prison Voicemail "exemplifies the creativity and innovation we find amongst our social ventures.

“Kieran and Alex have created a product which makes a tangible impact on lives. It is a delight working with people who want to make a real difference in the world – big or small, local or global.”
Blogging platform gaining major global traction

For blogging to be meaningful, it has to find an audience. But for every blogger who breaks through the welter of material – whether through luck or hard work on marketing their content – there are many who would like a wider audience but can’t manage to find one.

The challenge is made harder by every blogger having the same tips and tricks available to them – every new effective tactic is swiftly taken up by thousands, making it only effective for a time.

Startup Niume decided to try another way. The venture brings like-minded bloggers together on a collaborative blogging platform.

Collaborative blogging cuts the work involved in increasing reach and, as importantly, is constantly pursuing the latest techniques for doing so. Through Niume, solitary bloggers quickly expand their reach and their influence – creating an enlarged audience that is also more attractive to advertisers.

“The problem we’re solving is that if you’re a creator or someone with a lot of knowledge about a subject that you want to write about, the barriers to entry are high,” says Daniel Gennaoui, who co-founded Niume in 2014 with Francesco Facca and Alex Hughes.

“You need to set up your own blog, know about social media and SEO (search engine optimisation) to distribute that content, and monetising it is very difficult.

“It’s a very, very hard task, so we’re tearing all those barriers down so people can instantly reach a very large audience and be able to monetise. We make it much simpler.”

Niume – the name is pronounced “nee-u-me,” a wordplay on “new me” – has several connections to Cambridge Judge Business School.

Two of Niume’s co-founders, Daniel Gennaoui and Francesco Facca, were the first two co-founders of a venture to apply and be accepted together onto the School’s Postgraduate Diploma in Entrepreneurship (PGDE) programme.

They later joined the Accelerate Cambridge programme at Cambridge Judge where they refined their business proposition and met leading angel investor Simon Thorpe, UK Business Angel of the Year and now a Fellow in Entrepreneurship at Cambridge Judge.

With Simon as lead investor, Niume held an initial funding round through crowdfunding firm SyndicateRoom, which was started by two Cambridge MBA graduates.

Niume also participated in two events in the Enterprise Tuesday programme organised by Cambridge Judge, in which the venture’s founders pitched their business to the audience. The pitches were videotaped to demonstrate the changes in the venture’s public presentation over time.

“Niume showcases Cambridge Judge’s excellence and thought leadership in entrepreneurship,” said Hanadi Jabado, executive director of the school’s Entrepreneurship Centre, home to the PGDE and Accelerate Cambridge programmes.

“Not only do we provide the academic knowledge and mentoring to help businesses launch, but also the practical skills to help enterprises grow.”

From its Cambridge founding, Niume now has 10 employees based in London’s Silicon Roundabout and has raised a total of £560,000 through two successful investment rounds.

Niume’s approach to helping bloggers monetise their content is similar to that of YouTube. Advertisers place ads with the venture through media-placement agencies, and ads relevant to particular articles are automatically placed adjacent to those blog posts – with revenues shared between Niume and the blogger.

User numbers for Niume have grown from 400,000 a month in May 2015 to more than three million – with women comprising about 60 per cent of users.

The target audience for Niume is people aged 30 to 40 with university degrees and the largest markets are currently the US, UK, Canada, South Africa, Australia and Ireland.
World-renowned

In 2016 we had the great honour to have been awarded the Queen’s Award for Enterprise in International Trade and to be recognised for our role in the export of the UK’s engineering capabilities, in the commercial and military aerospace sector; we also celebrated 50 years of supporting the Royal Air Force C-130 fleet.

Today, we continue to support OEM’s, governments, Air Forces and commercial operators around the world.

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The Legacy

Articles by Tony Quested, CEO at Business Weekly
Five years previously Segal Quince Wicksteed had produced their take on the Cambridge Phenomenon. So when Trade Minister Tim Sainsbury visited Cambridge in 1990, Peter took the opportunity to tell him how Britain could leverage Cambridge’s brainpower and growing tech kudos for the good of the economy.

Sir Tim, cousin of present Cambridge University Chancellor David Sainsbury, was apparently unimpressed. Peter recalls: “He told me that Cambridge was all micro businesses and to come back with the argument that backing Cambridge would be good for Britain when we could talk about big industry setting up here – like car plants employing 20,000 people.

“But that was never what Cambridge was about. Cambridge’s cluster was built around the brainpower of the university and its strength was and remains the global reach of its Intellectual Property.”

Before the establishment of Cambridge Science Park and St John’s Innovation Park – developments that owed everything to the foresight and spending power of the respective university colleges, Trinity and St John’s, - Cambridge was, by Peter’s own admission, “a cabbage patch.”

But by 1990 that was certainly not the case. Six months after Business Weekly launched, ARM spun out of Acorn, Tony Purnell was building a formidable business empire at Pi Research and eventually sold it to Ford, Chris Evans was sculpting a hugely successful Cambridge biotech presence, Marshall and Johnson Matthey had already established industrial powerhouses; proprietary IP and spin-offs from Sinclair Research and Cambridge Consultants were already bringing international acclaim.

Also, unbeknown to Tim Sainsbury, we could have had a dozen Japanese industrial giants in Cambridge had the city council not been so hidebound and anti manufacturing.

Hoshizaki, the ice making machine company, approached Business Weekly in the early ’90s to say that Japanese corporates that had been persuaded to set up in the new town of Telford had become disillusioned and wanted to relocate to Cambridge.
Mitsubishi was prepared to act as power broker for the group. Think of a major Japanese industrial company and they were in the ‘Let’s move to Cambridge’ cartel.

Hoshizaki asked Business Weekly to approach the council but we were told: “No, I don’t think we want all that dirty stuff here.” Imagine the embarrassment of conveying that negativity back to Hoshizaki and Mitsubishi! Unsurprisingly, they looked elsewhere.

On a more positive note – thanks to the continuing brilliance of Cambridge University IP and the growing number of excellent entrepreneurs and managers that built the cluster’s bank of corporate expertise, we can now justifiably claim world-class.

There are several measures for such a boast but the number of billion dollar businesses the cluster has created – and attracted – in the last 25 years is not a bad startpoint. I onica started the ball rolling.

Charles Cotton, mastermind of the most recent analysis of the Cambridge Phenomenon as it has evolved, believes the cluster can justifiably lay claim to have created at least 15 $billion businesses.

He cites Abcam, ARM, Autonomy, AVEVA, Blinkx, Cambridge Antibody Technology, Chiroscience, CSR, Domino, Ionica, Marshall, Prometic, Solexa, Virata and Xaar. I would add Johnson Matthey and GW Pharma to that list. While its postal address points to a Royston heritage, Johnson Matthey is regarded globally as a Cambridge player. GW Pharma is very much a Cambridge company and its roots and lead management can be traced to Ely.

Charles makes an excellent point in deciding birthright: “Not many people are aware of Prometic which was co-founded by Chris Lowe at the university and is now a public company listed on the Toronto Stock Exchange.

“In my definition, the gating factor is that the Cambridge cluster companies concerned have achieved the $Bn valuation, not that they have necessarily sustained that value.”

So, including Johnson Matthey and GW Pharma let’s credit the cluster – because it is much wider than the city alone – with creating 17 billion dollar companies. The significance of that becomes much wider because of three other important factors.

Firstly, having such a clutch of high quality businesses in one hotspot acts as a catalyst to inspire more of the same. Ambition alone won’t get the new Cambridge breed to the milestone but it will help.

Secondly, the kudos generated by these businesses on a world stage has attracted multi-billion dollar enterprises to establish European HQs here. This is not a definitive list by any means but think IBM, Microsoft Research, AstraZeneca, Apple, Intel, Amazon, Amgen, Broadcom, Illumina, Qualcomm, Huawei, Takeda, Gilead, Dr.Reddy’s, BioMed Realty, Oracle, Wasabi, Liberty Property Trust, Heraeus, Hexcel.

Thirdly, the talent these businesses attract and the collaborations or acquisitions engendered by their presence on the doorstep adds further to the muscle of the cluster.

Peter Hiscocks, who started this mini-debate, believes that a lot of Tech City’s perceived excellence is “fluff over substance. I have always regarded London as being South Cambridge, anyway,” he adds with tongue firmly in cheek.

“But one thing certain areas of London have that Cambridge could do with more of is raw energy,” he says. “One thinks not just of Shoreditch and Silicon Roundabout but also Soho, Borough Market and other places that have this tremendous youth and energy.

“Cambridge needs to get back to that same level. We see it through the Accelerate Cambridge programme, at ideaSpace and one or two other places but not right across the cluster.

“It’s the kind of energy Hermann Hauser and Chris Curry generated at the early Acorn and which existed within Sinclair Research. Cambridge has matured in so many ways so to capture some of the London Cluster youth and energy would give us even more capability to sustain the momentum.”
£400 investment turns to gold for founder of Cambridge Phenomenon

Of all the millions of bright ideas conceived by humanity it seems that one humble contribution to innovation is consistently omitted from any pantheon or poll of polls.

He may not have been called Fred. The inventor concerned may not even have been male. But God bless whoever invented the garden shed as a crucible for enlightenment. And, for that matter, the garage, the attic, the barn, the den and the bedsit – every one a fountainhead of inspiration for the budding but usually brassic entrepreneur.

The late-night whirrings, hammerings and occasional explosions and expletives that have alerted generations of the Neighbourhood Watch and the local plod were just wannabee Einsteins and Franklins, Arkwrights and Stephensons testing their brilliance in the only few square feet of space they could find without risking divorce or giving the family cat a heart attack.

Some of the greatest businesses and technologies in history have emerged from modest – sometimes shambolic – surroundings.

Cambridge Consultants was a prime example. Tim Eiloart – whose brainchild it was – was actually better off than many a founder of the day. While studying at Trinity College he had amassed £400 to start a company designed, in his own words, to ‘Put the brains of Cambridge University at the disposal of the problems of British industry.’

He unveiled the concept to a group of friends at his bedsit in Ram Yard. Among them was Rodney Dale, an early director who didn’t realise he had been appointed and who wrote a brilliant early history of Cambridge Consultants – ‘From Ram Yard to Milton Hilton’ (the HQ at Cambridge Science Park) – in 1979.

He reproduced Tim’s first sales pitch letter offering technical copywriting services and boldly stating: ‘Bad writing can unsell a product just as surely as good writing can sell it.’ The pitch closes with this invitation to potential customers: “May I suggest that you give us a small job as a trial?”

Dale recalls that “work started to trickle in” but adds: “All the enthusiasm in the world could not have enabled a group of 25-year-olds working part-time from a bed sitter in Ram Yard to project a convincing image as pioneer industrial consultants. A proper office was needed.”

One was found just around the corner at 1A Park Street where the landlord was none other than Peter Cook “who lived upstairs with a number of other people.”

Cook went on to become famous as a satirist and comedian and with Dudley Moore masterminded the popular ‘Not Only But Also’ TV show.

Not only did the formative Cambridge Consultants have a newly-purchased IBM typewriter but also a metal desk, a chair and a filing cabinet.

Rodney Dale recalls that when the ‘Cook commune’ wanted to go in and out, the occupant of the chair would have to move to let them through.

Dale says the brains of Cambridge Consultants survived on technical writing and translation work but that the consultancy side failed to flourish. It is arguable whether the concept of consultancy even existed at the time.

In the summer of 1961, David Southward – another driving force of the business – appeared on the scene and it became obvious that to fulfil its founding mission, Cambridge Consultants would require a workshop and some hardware.

The business as a consultancy really started to take off as the workshop expanded and more and more projects were taken in for external customers.

The company’s capabilities also broadened as more bright people came on board – among them Gordon Edge who joined from Pye in 1963. Gordon had developed an entire range of electronic instruments within a few months of joining.

Pictured on facing page:
Cambridge Consultants CEO Alan Richardson with former CEO Dr Paul Auton at the unveiling of the £6m Auton Building at the company’s Cambridge Science Park headquarters. The facility houses 120 engineers focused on developing wireless communication technology.

Continued ➔
Rodney Dale recollects that Edge left to join PA, another world-class consulting business, and went on to found another international consultancy – Scientific Generics – which morphed into Generics and then Sagentia – now part of London-quoted The Science Group.

A great many parallels run through the early years of Cambridge Consultants as the lives of various pioneers criss-crossed.

In 1961, for example, Tim met Clive Sinclair who wanted to start a business.

Sinclair Radionics was born that year and was soon selling a microamplifier. The men’s paths would cross again. Cambridge Consultants had another talented engineer in Hugo Davenport who headed up digital systems and went on to build Cambridge Cable into a major player before it eventually nestled under the aegis of NTL.

These days, Cambridge Consultants clients are invariably household names and the technologies in which the company is involved are well established spheres of business. In the early years neither the customers nor the products they wanted Cambridge Consultants to make always fitted these categories or criteria.

The firm built a dishwasher for a private client that the inventor then allegedly bastardised until it didn’t work; the debacle ended in a court case that Cambridge Consultants won and the client was forced to pay up.

In another instance, a musicologist wanted a special electronic organ built but the project had to be abandoned as the client was never totally satisfied with the results.

Pre-customer contract days, the company wasn’t paid after developing hardware for one client who foresaw the automatic petrol station where the motorist served him or herself and the amount was recorded at a cashier’s desk.

Screaming Lord Sutch’s manager, Reg Calvert, wanted an inductive loop system so members of his pop group – another new phenomenon – could romp about the stage unencumbered with wires.

Rodney Dale wrote: “We did a lot of work on that project but one dark day Reg was murdered on his private radio station – a fort in the Thames Estuary – and the project came to a bleak end.”

Cambridge Consultants conducted a lot of pioneering work for projects that never saw the light of day but increasingly many more that did and by 1968 the company was able to quit its cramped and disjointed 3,500 sq ft warren at Histon Road and move into a purpose-built premises in Bar Hill.

By that time Robert Maxwell was on the board and he and Sinclair were soon to play seminal roles in helping to secure the company’s long-term future.

As the Sixties drew to a close it dawned on the directors that being strong on ingenuity was no protection against cashflow problems. The business was clearly ailing – with potentially fatal consequences.

David Southward persuaded Robert Maxwell to invest some extra money and take a more hands-on role in the business. Maxwell was keen but insisted on being given complete control via a voting trust.

The situation came to a head when, at a meeting in London from which Tim Eiloart was excluded, Maxwell suggested that appointing a receiver was the only way to save the business. It was then that Eiloart had one of his brightest ideas – to phone Clive Sinclair.

Sinclair telephoned the Maxwell meeting in London and suggested a counter offer to help delay decisions that might later be regretted; within 24 hours, Sinclair had agreed to invest £25,000 in return for the voting trust. But there was a further complication.

The AIM Group, which had grown in parallel with CCL but of which Cambridge Consultants was effectively a subsidiary, was proving a drain on resources. Basically Cambridge Consultants Ltd’s profits were subsidising AIM Group’s losses.

Rodney Dale said the rift between the sister companies had become so serious by 1971 that a buyer was sought for the group with a £0.5 million price tag.

US company Arthur D.Little (ADL) briefly showed interest but departed without shaking hands on a deal and the group was forced to call in receivers.

A number of possible buyers came and went but ADL returned to the table, attracted by the fact that the asking price was now a fifth of the original.

Richard Cutting led the negotiations for Cambridge Consultants and on January 1, 1972, CCL was reborn as a subsidiary of ADL London. As far as staff and clients were concerned, the business was unchanged from its previous incarnation.

Market intelligence for the period is thin on the ground but as far as Business Weekly has been able to ascertain this was one of the very first instances of a US-owned business acquiring a Cambridge company. It certainly started a trend as American businesses have continued to hoover up some of Cambridge’s brightest science & technology enterprises.
CCL – as it still was then – sold its Bar Hill premises in August 1977 and commissioned a new building around 50 per cent larger at Cambridge Science Park – christened by wags in the company as the Milton Hilton.

The move coincided with a fresh surge of growth for the business and it has since evolved into the mother and father of the Cambridge Phenomenon. From one full-time employee at the outset in 1960 to a team of more than 700 staff, including engineers, scientists, mathematicians and designers in offices in Cambridge (UK), Boston (USA) and Singapore, Cambridge Consultants offers solutions across a diverse range of industries including medical technology, industrial and consumer products, digital health, energy and wireless communications.

It is now part of Paris-headquartered Altran, a global leader in engineering and R & D services which offers its clients a new way to innovate. Altran works alongside its clients on every link in the value chain of their project from conception to industrialisation.

The Altran group generated 2015 revenues of €1.945 billion. With a headcount of more than 27,000 employees it is present in more than 20 countries.

Cambridge Consultants has not only given birth to some of the world’s most game-changing innovations in medicine and technology but also created entire industry clusters through more than 20 cutting edge spin-outs.

Its inkjet printing spin-outs such as Domino, Xaar and Inca Digital have produced a world-leading coding & marking segment.

Cambridge Consultants also lit the touchpaper to a wireless sector boom in the region by spinning out Cambridge Silicon Radio (CSR) – subsequently acquired by Qualcomm.

Semiconductor spin-out Alphamosaic was bought by US giant Broadcom for $123 million; Inca and Domino are both now in Japanese ownership.

Radar technology is another key strength and spin-out Aveillant has added drone detection to its industry-leading holographic radar capabilities.

Cambridge Consultants’ CEO Alan Richardson is confident that there is plenty more innovation in the Cambridge Consultants’ tank as the world’s leading science and technology trailblazers increasingly look to Cambridge first to develop prototypes or refine potential ‘killer’ devices.
When David Braben co-authored the seminal online game, Elite, back in 1982 he was lighting a slow burning fuse that would lead to an explosion of invention in the industry.

Braben’s company Frontier Developments was basking in a steadily increasing share price on the UK stock exchange at the time of writing but on a broader scale his trailblazing efforts have led to the creation of a genuinely world-leading online games development cluster in Cambridge.

Thirty-five years on from his original groundbreaking development work, Frontier Developments is recruiting in large numbers – in common with other leading players such as Jagex and PlayFusion.

Through upwards acquisition Jagex has even made it to the Chinese Stock Exchange while PlayFusion – founded and run by former Jagex CEO Mark Gerhard – is working with Tokyo-quoted TOMY International on exciting new iterations creating unparalleled interactive play experiences in conjunction with toys and video.

Hundreds of new employees will be required over the next 12 months or so to enable the Cambridge cluster of online games developers to keep pace with demand for their products. The fresh talent attracted to Cambridge in the sector will all be beneficiaries of Braben’s amazing legacy.

Frontier Developments, of which Braben is CEO, currently turns over around £21.4 million. It was founded as a limited company in January 1994. It has now produced several games in the Elite series, including 2014’s Elite: Dangerous. The business floated on AIM in July 2013.

Its first game was the 1993 Amiga CD32 port of the largely successful Frontier: Elite II followed by Frontier: First Encounters, second sequel to the seminal 1984 game Elite by Acornsoft.

The company describes the original Elite as a ‘Game by Frontier’, in its back catalogue during the company’s 2013 sale of shares to the public, with Braben owning all rights to the game assigned to the company in 2008.

Frontier Developments had been planning a new Elite sequel under the working title Elite 4 since 1998. The company completed a successful Kickstarter campaign at the end of 2012, where the new sequel’s name Elite: Dangerous was revealed. Early-access versions of the game have been playable by backers since December 2013. The full game was released to PC on December 16, 2014.

Frontier Developments has created many other games, including Dog’s Life, Thrillville, and RollerCoaster Tycoon 3. The company also made games for the Wallace and Gromit franchise, and has released Wallace & Gromit in Project Zoo, and a tie-in game for Wallace & Gromit: The Curse of the Were-Rabbit.

In 2008, Frontier released LostWinds, a launch title for Nintendo’s WiiWare platform. It received critical acclaim, scoring 81 per cent on Metacritic. It was followed with a sequel in 2009, entitled LostWinds: Winter of the Melodias, which scored 86 per cent on Metacritic.

In 2010, Frontier developed Kinectimals for Microsoft’s Kinect controller on the Xbox 360. In 2011 Kinect Disneyland Adventures and Kinectimals: Now With Bears were developed, along with ports of LostWinds for iOS and Kinectimals for iOS and Windows Phone.

In 2012, Frontier released Coaster Crazy, and started to work on Elite: Dangerous Kickstarter, which successfully closed at the very start of 2013. In 2013, Frontier released Xbox One/Xbox 360 exclusive Zoo Tycoon, published by Microsoft Studios, and launched backers alpha for Elite: Dangerous in December.

In 2015 the company released Screamride, a theme park construction and management simulation game for the Xbox 360 and Xbox One. The company more recently released Planet Coaster, a construction and management simulation video game similar to the RollerCoaster Tycoon franchise.

Over time Frontier has built a uniquely diverse track record comprising games that have defined genres, been critically acclaimed and sold many millions of copies.
Jagex hits Chinese Stock Market fame

Jagex has enjoyed a sensational last year of growth, even by its own high standards. Last September it became centre of attention on the Chinese Stock Exchange after its new parent made a successful placing.

Jagex, which owns the iconic RuneScape online gaming franchise, played a pivotal role in the creation of a new Chinese publicly-listed games company, Zhongji Holding.

This followed Zhongji Holding’s successful placement on the Chinese Stock Market and its subsequent 51 per cent purchase of Hongtou, which acquired Jagex as a first step in the process. Zhongji Holding said it would acquire the remaining 49 per cent of Hongtou within next 12 months.

Zhongji Holding is part of Shanghai Zhongji Enterprise Group, a highly respected and well-established Chinese organisation, and its ownership of Jagex represents the first foray into the gaming sector by the group. Shanghai Zhongji Enterprise Group holds two Chinese public companies, Zhongji Holding and Shandong Hongda Mining.

The initial trading and operational performance of Zhongji Holding will stem from Jagex’s established business and its proven RuneScape franchise. Further to record profits in 2015, which saw Jagex hit new revenue highs of $88.4 million, with $36.1m profit after tax, further uplift was achieved in 2016.

Jagex has expanded with the opening of a new London office to sit alongside its Cambridge HQ. Zhongji Holding is committing significant resources to its investment in the global games sector and further acquisition activity is anticipated as the company increases its presence in the space.

Rod Cousens has continued as chairman, CEO and member of the Jagex board. Lisa Pan, the controlling shareholder of Pan Capital International, who led the acquisition, was appointed to the Jagex board and named director of Zhongji Enterprise Group, with responsibility for international and M & A business.

Cousens said: “The process of building up Jagex to bring about an initial acquisition and then taking it forward on a path that sees it taking centre stage in a new public gaming-focused company listed in China, can only be viewed as remarkable. It is only now that the plans are starting to take shape for all to see.

*Zhongji Holding has great ambition in the gaming space and Jagex is at the forefront of its charge. China is the biggest gaming market in the world and Zhongji Holding’s motivation in the sector will prove a compelling proposition for other gaming businesses seeking access to the region.

“While an integral part of Zhongji Holding’s plans, Jagex’s operations remain unchanged and its business as usual for our games, players and our employees.”

RuneScape, the world’s most popular free-to-play MMORPG, continues to enjoy high growth and Jagex is actively expanding the franchise across multiple titles, devices and via multiple business models and more geographies than ever before.

Celebrating its 16th anniversary, RuneScape, is a major success story in gaming. RuneScape has welcomed almost 250 million players to its world and its monthly players number in the multi-millions.

Last year, RuneScape introduced NXT, an all-new visual engine and game client, and unveiled The Eastern Lands, an entirely new continent in the game.

RuneScape’s retro incarnation, Old School RuneScape, is also experiencing accelerated user growth through its impact in the eSports sector. The game’s Deadman Tournament series continues to deliver a high-profile eSports audience.

Further franchise extensions include the critically acclaimed Chronicle: RuneScape Legends and RuneScape: Idle Adventures, currently in Early Access and created in partnership with the developers of cult hit Adventure Capitalist. Jagex employs over 320 people at its headquarters in Cambridge.
PlayFusion launched its pioneering game Lightseekers on Kickstarter – the first game to combine not just toys-to-life video gaming but also elements of trading card games like Pokémon and Magic: The Gathering into a game that can be played (and played with) in a variety of ways at the same time.

The platform for Lightseekers is fully connected. In partnership with toy manufacturer TOMY, the launch of the game involved collectible cards for a tabletop gaming experience, action figures for imaginative play and a video game that uses Bluetooth to identify when the toys are nearby to allow for the game – playable on tablets – and the toys to interact in an immersive way.

As part of a strong recruitment drive, Gerhard says: “We are growing our world-class team of developers and are reaching out to code ninjas, game engine developers, musicians, and concept artists alike who are motivated by working with the very best in the industry and passionate about wanting to make awesome stuff.”

TOMY was thrilled that its Cambridge-based partner engendered such a successful Kickstarter campaign; it drew 1,635 backers and raised $227,660 for the innovative game and its ground-breaking transmedia platform.

TOMY will manufacture, distribute and market the entire toy line including smart figures, accessories, trading cards and more, and is in full-production mode preparing to launch in early 2017.

Sarah Moen, head of Toy and Hobby for TOMY International, said: “We knew when we first met with PlayFusion back in 2014 that the platform they had created was going to not only disrupt the toy and gaming industries but also really push the envelope on what a great toy is and can be in the future.

“Their Kickstarter campaign put the property on the map in a significant way and as we work together with PlayFusion to get ready for the American International Toy Fair in New York City in February we not only have a great success story to share with the industry but also a community of brand advocates looking forward to the product being available in early 2017.”

Frontier Developments, Jagex and now PlayFusion have helped put Cambridge at the very heart of the global game development industry; the UK city is also home to ARM company Geomerics, Ninja Theory and a growing number of smaller “indie” studios.

Industry observers are forecasting mushrooming headcounts and turnovers for the leading players in this particular theatre of dreams.
Construction is now under way on the £20 million technology centre at Cambridge Science Park, an innovative collaboration between Trinity College, the Department for Business, Innovation & Skills and Central Working.

The state-of-the-art John Bradfield Centre will nurture scalable, high-growth businesses in Cambridge to create a community of over 500 innovators. Central Working, the collaborative workspace provider, will manage the three-storey, 40,000 sq. ft. building to galvanise Cambridge’s booming tech sector, which historically has been driven by collaboration with the University and surrounding businesses.

The John Bradfield Centre, which will open in 2017, will provide vital support to entrepreneurs and businesses alike.

It was the vision and the energy of Sir John Bradfield, former Senior Bursar of Trinity College, that created Cambridge Science Park, and so it is right he is remembered in the next phase of the Park’s development.

It is important to pay more attention to the earliest phase of company development. Many science start-up companies have their roots in academic departments in Cambridge and there has always been space for small companies on the Science Park, but in the John Bradfield Centre the intention is to offer more than space.

There are limits to the support and space that academic departments can give to spinning out ideas and technologies for commercial application.

To this aim, Trinity College are collaborating with experienced partners, Jon Bradford and Central Working, and are also exploring how best to engage the University, students, Fellows and alumni in the enterprise.

James Layfield, Central Working CEO, said: “We’re delighted to partner with Trinity College on this state-of-the-art business growth hub. By combining Central Working’s expertise with the direction of Jon Bradford, who launched the renowned Techstar’s London programme, we will provide the ideal nurturing environment for Cambridge’s innovative entrepreneurs and stand a real chance of uncovering the UK’s next Unicorn business.”

With the new train station linking to King’s Cross and beyond, the John Bradfield Centre is set to become a focal point for even more entrepreneurial activity. Interest has already been received from entrepreneurs and investors, including Trinity alumni.
In the John Bradfield Centre we aim to provide a nurturing, commercial environment for translating science into successful companies.

Sir Gregory Winter, Master of Trinity College

Flexible working and networking options

The new John Bradfield Centre is a joint venture between Central Working and Trinity College, and is designed to grow business. The aim is to provide a nurturing commercial environment for translating science into successful companies, and for turning scientists into successful entrepreneurs.

Businesses will have the option of having their own permanent office, working at a permanent desk in the collaborative workspace, or using the facility on a more flexible basis. Members will also be welcome at any of Central Working’s facilities in London, Manchester and further afield, where they can meet, share and collaborate as part of the Central Working network.

Central Working staff will go out of their way to facilitate relevant business connections across their member-businesses, providing useful contacts and stimulating business growth.

If you would like to find out how your company could benefit, please email hi@centralworking.com

This new centre builds on Trinity College’s great history of scientific discovery and will help to create new jobs locally.

Jo Johnson, Minister for Universities and Science

Ground breaking ceremony for the new John Bradfield Centre

Announced by the Prime Minister in February 2015, this forms part of the Government’s support for the East of England, building on the world-class science and technology base of Cambridge, and reflects its commitment to science investment in the UK, with science spending protected to 2020.

Bidwells is project-managing the development on behalf of Trinity College, and working with the Greater Cambridge Greater Peterborough Enterprise Partnership. SDC Builders Ltd from Bedford have been appointed to construct this prestigious facility.

With £4.8 million from the Department for Business, Innovation & Skills, and co-funding from Trinity College which more than doubles this investment, the John Bradfield Centre will continue the astute and pioneering work of its namesake.
John Bradfield Centre can nurture ‘the next ARM’

Pioneering Trinity College in Cambridge is laying out the welcome mat to a new generation of entrepreneurs willing to build the next ARM-style technology great in the UK innovation cluster.

The inspiration behind Cambridge Science Park, Trinity says its new John Bradfield Centre could be the catalyst for the next ARM and the new Cambridge Phenomenon.

With local tech entrepreneurs mourning the decision by the superchip architect to sell to Japan group SoftBank for $31 billion, James Layfield – CEO of Central Working, which is creating and running the Bradfield Centre – urges nextgen entrepreneurs to pick up the gauntlet.

He told Business Weekly: “The sale of ARM Holdings to Japan’s Softbank sent shockwaves through tech communities and the business pages. The thought of this British giant losing its independence to an overseas backer got many hot under the collar.

“Amongst all the angst and outrage, many asked whether tomorrow’s home-grown tech titans are safe from foreign takeovers. Yet surprisingly few were posing the more significant problem, in my opinion – are we doing enough to ensure we can grow tomorrow’s British giants?

“Today’s SMEs need an ideal environment to flourish. This naturally includes appropriate spaces and office facilities, but it also means a community and support.

“If we’re to discover the next ARM we need to bridge the gap between the education and business communities. In Cambridge, steps have been made to do just this.

“The Science Park is home to some of the most promising tech pioneers today and many are university alumni who maintain close working links with their former departments.

“With funding from central government, Trinity College will this year open the John Bradfield Centre here in Cambridge. As the UK’s largest innovation centre, it will provide a home for thousands of entrepreneurs, including a launch pad and home for Trinity alumni.

“Central Working has nurtured businesses as they transition from one employee to 30, from startup to SME. I’m proud to say that just recently, one of our members debuted their IPO on the New York Stock Exchange.

“It’s a bold move by Trinity College. Academia and business haven’t always been the closest of bedfellows, but I’m sure that forging closer links between the two will reap tremendous rewards for our young founders, who need all the help they can get if they’re to grow.

“Nurturing entrepreneurs as students while also connecting them to the local enterprise communities will bridge the gap between education and business.

“ARM’s sale came as a surprise to everyone, but I refuse to be morose about it. The sale of the business is testament to its huge success and shouldn’t be unexpected in today’s globalised world.

“I firmly believe that the impressive developments we’ve seen from UK start-ups in recent years barely scratches the surface of our country’s tech potential.

“Now is the time to provide that vital support to help these startups grow into giants – and we should allow our universities to play a key role in that evolution.”

James Layfield at the John Bradfield Centre
Nothing artificial about Cambridge’s new wave of machine learning technology

It will come as no surprise to students of game-changing innovation that Cambridge is often ahead of the curve on the international technology stage.

Without a fuss or a scintilla of hype, it has created the world’s leading cluster of product design consultancies and the global number one nucleus of online games developers.

Now it has fashioned a hub of “killer” Artificial Intelligence and machine learning technology that has Asian and American greats beating a path to its door. Cambridge University Intellectual Property is at the heart of so much of the latest wave of the phenomenon.

Artificial Intelligence (AI) is the theory and development of computer systems able to perform tasks normally requiring human intelligence – such as visual perception, speech recognition, decision-making, and translation between languages; basically, the capability of a machine to imitate intelligent human behaviour.

This does NOT mean the advent of an army of cyborgs, with humans wired like sci-fi robots; and it does not mean robots arriving in homes and businesses en masse to kick people with real flesh and blood into some kind of other-dimensional long grass.

It means innovators in science & technology leveraging the most effective synergies between humans and machines to maximise the full effectiveness of both resources.

Wall Street-quoted Accenture sent Business Weekly some research at the back end of 2016 which forecast that AI could double economic growth rates by 2035 by changing the nature of work and spawning a new relationship between man and machine.

The impact of AI technologies on business is projected to boost labour productivity by up to 40 per cent by fundamentally changing the way work is done and reinforcing the role of people to drive growth in business.

Accenture modelled the impact of AI for 12 developed economies that together generate more than 50 per cent of the world’s economic output.

In the UK, AI could add an additional $814 billion to the economy by 2035, increasing the annual growth rate of GVA from 2.5 to 3.9 per cent.

Accenture’s CTO Paul Daugherty said: “AI is poised to transform business in ways we’ve not seen since the impact of computer technology in the late 20th century.

“The combinatorial effect of AI, cloud, sophisticated analytics and other technologies is already starting to change how work is done by humans and computers, and how organisations interact with consumers in startling ways. Our research demonstrates that as AI matures, it can propel economic growth and potentially serve as a powerful remedy for stagnant productivity and labour shortages of recent decades.”

The research compared the size of each country’s economy in 2035 in a baseline scenario, which shows expected economic growth under current assumptions and an AI scenario which illustrates expected growth once the impact of AI has been absorbed into the economy.

AI was found to yield the highest economic benefits for the United States, increasing its annual growth rate from 2.6 per cent to 4.6 per cent by 2035, translating to an additional $8.3 trillion in gross value added. We have given the UK scenario but Japan has the potential to more than triple its annual rate of GVA growth by 2035, and Finland, Sweden, the Netherlands, Germany and Austria could see their growth rates double.

Accenture’s research is worth taking note of because it shows stepping stones to achieving those targets. If Cambridge is acknowledged as the barometer of technological progress in the UK, then the hypothesis is entirely credible.

So let’s get under the hood of the latest Cambridge growth engine. There are too many fundraisings, acquisitions and technological advances in the space for this opportunity and the potential to be gained from it to be regarded as serendipity.

On the prowl

Startup PROWLER.io has raised £1.5 million and will initially focus on gaming then move into autonomous vehicles, smart city simulations and synergistic autonomous systems including drones and robots.
It has been backed by Hermann Hauser’s Amadeus Capital Partners, which was in on the ground floor of VocalIQ, snapped up by Apple a year ago for up to $100m for the power of its speech recognition IP.

PROWLER.io bots use ‘reinforcement learning’ – a subset of machine learning which enables long chains of complex decisions to be made autonomously, so bots can learn and adapt to changing environments. CEO Vishal Chatrath has come out of VocalIQ.

Dr Hauser said: “Clearly there are very compelling investment opportunities around reinforcement learning, which is one of the most active research areas in AI and machine learning.

“As a research-led start-up, PROWLER.io is at the very forefront of this emerging technology and is leading the charge to apply reinforcement learning to many current and future challenges.

“This state-of-the-art technology will continue to develop in the coming years and there are certain to be important applications that we haven’t yet considered.”

The fundraising followed days after ThisWay Global – a Cambridge technology company developing a software platform powered by machine learning for the recruitment industry – secured £1.6 million from a funding round led by Imperial Innovations Group and featuring global investors.

ThisWay’s platform streamlines the recruitment process by matching high-quality candidates to the most appropriate job opportunities using innovative technology and methodologies. The company was founded by dynamic CEO Angela Hood.

**Lynch mob**

Serial entrepreneur Mike Lynch is backing a new Artificial Intelligence company in Cambridge whose machine learning technology is set to revolutionise the due diligence process in dealmaking.

Luminance, a new company in Lynch’s Invoke Capital stable in Cambridge, collaborated closely for several months with Slaughter and May, the international law firm, in testing and piloting the software.

Luminance was founded by a combination of lawyers, experts in Mergers & Acquisitions and mathematicians. Its technology is based on research and development at the University of Cambridge.

It harnesses the power of AI to automatically read and understand hundreds of pages of detailed and complex legal documentation every minute. This offers companies the ability to carry out essential due diligence work with much greater speed.
Fighting rare diseases

In the healthcare arena, a Cambridge machine learning business discovering new uses for existing drugs to fight rare diseases raised £1.5 million from Hermann Hauser’s Amadeus Capital Partners and big names in biotech including David Brown, one of the inventors of Viagra.

Healx uses machine learning and advanced analytics to help find cures for rare disease sufferers around the world.

Founded by Tim Guilliams and based in Cambridge, Healx operates in the fast-growing drug ‘repurposing’ sector. The company uses advanced data analytics, including machine learning and computational biology techniques, alongside scientific literature analysis, to identify novel drug applications for rare diseases that afflict some 350 million people worldwide.

Its model engages directly with patient advocacy groups, allowing them to lead the way in personalised healthcare for rare diseases.

While there are around 8,000 rare diseases – disorders affecting fewer than one in 2,000 people in Europe – only about 500 have a cure.

The technology steering autonomous cars

FiveAI, a Cambridge startup using artificial intelligence and machine learning to deliver fully autonomous vehicles, began 2017 by appointing two world-renowned academics as scientific advisers.

Professor Andrew Blake is the director of the Alan Turing Institute, the UK’s national research institute in Data Science, and an honorary professor in information engineering at the University of Cambridge.

He is one of the world’s leading researchers in computer vision having completed a PhD in AI at the University of Edinburgh in 1983. He later moved to Microsoft Research in Cambridge to found the computer vision group which developed the algorithms for image processing and 3D vision underpinning several Microsoft technologies, including Kinect.

Dr Subramanian ‘Ram’ Ramamoorthy is a reader in robotics in the School of Informatics at the University of Edinburgh, affiliated with the Institute of Perception, Action and Behaviour.

Blake said: “Fully autonomous urban vehicles need the industrialisation of emerging science from the fields of computer vision and machine learning to meet the clear safety goals, particularly in their ability to recognise objects, their states, motions and localities to the highest possible levels of accuracy.

“Across the world, there is now a race to build an intelligent pipeline of technologies in fields where UK academics have been consistent pioneers and where we have some of our very best people engaged.

“I am excited to help FiveAI, a British company, to succeed in leveraging our undoubted fundamental research leadership into winning that race and so create a global leader as this market explodes.”

Stan Boland, co-founder and CEO at FiveAI, has already steered the fortunes of several world-class Cambridge businesses. His first Cambridge coup was overseeing the spin-out of ARM from Acorn Computers in November 1990.

Never lost for words

Cambridge speech technology company Speechmatics recently received an undisclosed level of investment from multiple backers to accelerate the commercial roll-out of its products.

Founded by chief technology officer Dr Tony Robinson, who pioneered PhD research into recurrent neural networks in the 1980s, Speechmatics has developed a unique machine learning technology to harness the full potential of speech technology.

Robinson said: “This is an exciting time to be in speech recognition. We are at the forefront of how deep neural networks are changing speech recognition.

“With our ever expanding and highly experienced R & D team, we continue to push the boundaries in speech technology, especially around languages, accuracy and deployment.”

The firm received investment from several sources, including technology venture capitalist IQ Capital, AI/machine learning specialist and technology investor Amadeus Capital Partners and a number of leading technology investors.

Speechmatics has a successful track record of delivering exceptional results across a wide range of applications and industries: for example, language assessment with Cambridge English or content discovery with Udemy.

Other applications include call centre analytics, call compliance, sub-titling, interview & lecture transcription and media monitoring. Speechmatics has developed highly accurate universal models that work across use cases and industries and do not need to be individually trained.

Tony Robinson’s world-class research team utilises the latest ML and AI technology to offer continual improvements in accuracy, an ever-increasing range of languages and new business applications. This technology is also designed to integrate with other applications in the workplace to generate value and insight.
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