

GIBSON INDEX NEWSLETTER

NOVEMBER – DECEMBER 2014: Issue No. 105

Your Monthly e-Newsletter on British Enterprise and Innovation

Welcome to the UK's most comprehensive and best-read Newsletter on Small Technology Companies, Academic Enterprise and Latest Innovation

A call to create 'whole new industries' by a group of Cambridge academics – by investing more cash in innovative R&D – is a hammer blow to the reputations and track record of the **Technology Strategy Board** and **EPSRC**, and now largely irrelevant minnows such as **NESTA** and **The Carbon Trust**.

The study, by the **Centre for Business Research** at **Cambridge University's Judge Business School**, claims "there are precedents to prove the payback from such a policy".

The strategy is backed by ex-Cabinet member **Lord Andrew Adonis** in a foreword to the 65-page report, '*Creating Markets for Things that Don't Exist*'.

He writes: "Within the funding which is labelled R&D very little makes it to innovative companies to develop commercial products under current government R&D spending practices." Instead of spawning new innovations, the study says, much reported R&D spending today is used to support government decisions to procure existing products.

"This demand-led or 'technology-pull' process has spawned innovations which create all sorts of new markets and world-leading companies – and the UK should continue to learn from this approach," Lord Adonis adds.

It states that the UK should replicate successes such as the UK's National Health Service's **Small Business Research Initiative** (SBRI), which led to the development of 'several breakthroughs', though the commercial success of these initiatives is debatable.

The Cambridge study is authored by **David Connell**, of the Centre for Business Research, and a strong advocate of the US-originated SBRI programme.

Not all the proposals make sense. The report calls for a 'mini DARPA' to be created within the MoD – even though the **Centre for Defence Enterprise** does a good job at **Harwell**.

Mr Connell said: "For decades innovation policy has been based on the idea of funding R&D through grants and tax credits in order to address what economists call market failure. But when it comes to very innovative technologies, for which there is as yet no product and no market, the concept of market failure is largely irrelevant. That's why it's important that R&D spending policy focuses on creating new markets for things that currently don't exist at all, as the study title suggests."

The report: www.jbs.cam.ac.uk/media/assets/Main-report-Creating-markets-for-things-that-dont-exist.pdf

www.gibson-index.com

The Newsletter is compiled and edited by **Marcus Gibson**, former *Financial Times* technology correspondent, who has been covering enterprise and innovation for more than 20 years. The Newsletter aims to highlight developments in at least 100+ companies each month. It is derived from the wide-ranging news-gathering operation that produces the [Gibson Index SME database](#), which now contains profiles on more than 48,000 UK-based technology SMEs.

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COMPANY OF THE MONTH

One of the most successful British appeals on Kickstarter is for Torquing Group

This Welsh-based firm has made a palm-sized photography drone that can be controlled by smart phone. It took three days to raise its £125,000 target and by Boxing Day 2013 it had received £1,029,278. The company has used the system essentially to get pre-orders on the devices and says that the more money it gets, the more features it will develop.

“What ensued is nothing short of breathtaking,” said **Reece Crowther**, marketing director. “After eight minutes, the campaign had received its first pledge. After 24 hours, the campaign had generated just over £40,000. We didn’t want to go to venture capitalists where we could lose a significant proportion of our company so we reached out to hobbyists and enthusiasts on **Kickstarter**.”

A side benefit is the network of almost 500 keen buyers, many of whom are providing feedback about the development of the devices. Noticing a dearth in autonomous, intelligent very small UAS technology, **Torquing Technology** found a niche in the unmanned aerials systems market and in 2010 began breaking ground on developing autonomous, intelligent Nano UAVs.

Initially developing a 240mm x 240mm autonomous, intelligent UAS, co-founder **Ivan Reedman** and his team of highly skilled engineers and developers at Torquing Technology worked tirelessly to continue to reduce the size of this UAS technology, without impacting on its capabilities.

Contact: www.torquinggroup.com

SME NEWS – ENGINEERING, CONSTRUCTION & ENERGY

British Army signs up Roke Manor Research to probe the future

In Dec 2014 Roke Manor Research secured an 18-month contract from the British Army to seek possible innovations that ‘could be exploited in the 2030-2040 timescale’.

Jonathan Farrington, the technical lead on the program, said Roke “will be scanning the market for innovative technologies that are in the early stages of development so that the Army can consider their exploitation... This is an excellent opportunity for academia and the commercial sector to promote their ideas to the Army and become major contributors to the future development of the UK’s land forces.”

The British Army is taking a look at what impact future technology developments may have on land forces by 2040 and has recruited a major research company to identify potential ideas from the commercial, academic and other sectors.

The technology the company aims to review includes 3-D printing, synthetic biology, quantum technologies, big data, robotics, sensors, power, communications and augmented human performance.

During the initial 18-month research programme, Roke, now part of defence contractor Chemring plc, will present the Army with an overview of technologies that could be exploited to support the requirements for future capability, said the research company in its announcement.

Contact: www.roke.co.uk

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Parvalux Ltd designs new gearbox especially for golf trolleys

In Feb 2014 this manufacturer unveiled a new gearbox designed especially for golf trolleys, and Bournemouth-based Parvalux Ltd tested it with a simulation of 250 rounds of golf.

Parvalux is the UK's largest manufacturer of small-g geared motors, with 18 million of its geared motors installed around the world. Parvalux technical director **Martin Pennock** said: "We recognised that a universally mounted gearbox would benefit our OEM (original equipment manufacturer) and MRO (maintenance, repair and operations) customers, who wish to retrofit existing golf trolleys on the market.

It was created by Parvalux's in-house product design and development facility, which consists of 17 engineers who design bespoke motors for a range of industry segments.

The application engineers at Parvalux's test facility carried out an 'accelerated life' test on the GB41, using a golf trolley test rig.

An electromagnetic particle break was used to apply a variable load on the product, replicating the steep slopes of a typical golf course. The rig performs 4,000 cycles on the gearbox, simulating 250 rounds of golf.

It was founded in **Romford, Essex**, by **Leslie J Clark**, who began selling motor rewinds in 1947. The company moved to Bournemouth in 1957 and moved from re-winding motors to designing and manufacturing complete gear-motor units for industry. It is part of the **Clark Group** under chief executive **Steven Clark**.

Contact: www.parvalux.co.uk

Lime Microsystems wins British Engineering Excellence Awards SME of the Year

In the 2014 The British Engineering Excellence Awards a series of firms' exceptional achievements were celebrated – in a truly exceptional cast of winners this year. First, the excellent **Lime Microsystems** was voted SME of the Year – it specialises in field programmable RF transceivers for next generation wireless broadband systems.

Lime launched the first commercial chip in 2009. Until then, the solution either required multiple devices or devices only to be built for target markets with high volumes.

It is a small company that has shown impressive growth as well as a good plan for achieving more. Although a multinational later launched a competitive product, Lime continues to compete against this company by producing a more configurable device suitable for use by a broader customer base and by promoting its use through an industry movement.

Lime's technology has been adopted by more than 250 organisations for applications ranging from consumer communications equipment to software defined devices for use by the emergency services.

The **Start Up Of The Year** was **Aeguana Digital**, which was established in December 2012. The three founders had previously been involved in the vending market and found it slow moving with little innovation and high costs. They set out to change things. They spotted an opportunity in an apparently staid market, took action and achieved a great deal in a very short time."

The result is **Digital Vend**, described as a machine that is cost effective, reliable and that provides real time data to the operator. A patented vend mechanism allows it to be adjusted to fit any small product, whilst users can engage with it via rich media digital ads. Digital Vend collects real time data and allows

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for content to be 'pushed' to it. Amongst the innovations is the use of a **Raspberry Pi** to ensure a low cost, yet powerful solution.

The **Design Team of the Year** was **Houlder Ltd**, a firm that have been commissioned by **MPI Offshore** to develop and supply of a pair of gripper arms that would allow offshore wind turbine piles to be maintained in position during installation. The arms needed to: aid the installation of piles in up to 40m of water; handle piles weighing up to 650 tonnes; and handle piles up to 65m long and 7m in diameter.

The **Materials Application of the Year** was **Nylacast Ltd**. The worm wheel is a safety critical component for any electric power steering system. Nylacast's worm wheel is made from a combination of polymer and steel. The steel inner hub provides dimensional stability and strength, while the outer ring is made from a custom formulated grade of copolymer 6.12 developed by Nylacast's R&D department.

This outer ring allows the gear to have self lubrication properties when working alongside a mated steel worm, ensuring it runs smoothly. The polyamide is cast, rather than extruded or injection moulded, allowing a very accurate globoidal gear tooth profile to be specified. More than 11 million devices are now deployed on 45 vehicle models around the world with no reported failures or defects having been reported.

Finally, the **Mechanical Product of the Year** was won by **IHC**, the Dutch-owned marine engineering division based in Northumberland, for its Hi-Traq subsea crawler.

Hi-Traq provides the ability to ensure the safe burial of inter-array cables for the offshore renewables industry through the use of an innovative self levelling system controlling four, independently driven undercarriage tracks.

Having analysed available trenching technologies, IHC determined a dedicated subsea crawler would be the best solution for inter-array cable burial. A four track crawler system would provide better manoeuvrability than two track, skid-steer vehicles, while it's patent pending levelling system enables vertical trenches to be cut whilst the device is on slopes of up to 20°.

Contact: www.limemicro.com – www.aeguana.com – www.houlderltd.com – www.nylacast.com – www.ihceb.com

Arson suspected in November fire that destroyed north London manufacturer

Archway Sheet Metal Works Ltd, the last business standing in the way of Tottenham Hotspur FC's £400 million stadium redevelopment plans, was started deliberately.

The owners of Archway Sheet Metal Works, in Paxton Road, a noted manufacturer of catering equipment, vowed to return to the factory gutted by a mystery blaze. Fire investigators are currently probing the cause of the fire that broke out in the early hours of 24th Nov, following months of "threats" to raze it to the ground.

Its bespoke manufacturing creates a wide range of products – from stainless steel flooring, to work surfaces, bars, door covering, lavatories, even an entire room can be constructed of stainless steel. It joins the long list of threatened firms still manufacturing in inner London.

Josif Josif, 46, who runs Archway Sheet Metal Works, said: "People were calling us and threatening us and we were receiving bomb threats and that started a few months ago." The firm describes itself as a "wonderfully old-fashioned family business" producing metal items for the catering and hospitality industry. The owners have been locked in a dispute with Spurs for the last decade over its plans to build a new stadium complex.

Contact: www.archwaysm.com

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Pelamis Wave Power joins Aquamarine Power into administration

The second of **Scotland's** ill-fated marine energy firms has finally failed, following the much anticipated collapse of **Aquamarine Power Ltd**. The firm was unsuccessful in securing the funds required to further develop its marine energy solution.

The core of the problem was – as always – the lack of a single UK Government contract. In a statement, **Neil Kermode**, MD of **European Marine Energy Centre (EMEC)** said: 'Pelamis have been one of the icons of the marine renewables industry, so we are absolutely gutted at this setback.

'It is all the more galling when we know that marine energy has the potential to be a major supplier of power to the UK. But just like anybody who has been to sea, we know how hard it is out there, and trying to build a new power source was never going to be easy. While organisations such as The Carbon Trust, which had backed several marine tech firms, lamented these closures – one commentator said *"If the UK doesn't want even one, why should any other country be bothered?"*

Pelamis' wave machines comprised five tubed sections linked by universal joints that allow flexing in two directions. The machine floats semi-submerged on the surface of the water and faces into the direction of the waves. As waves pass down the length of the machine and the sections bend in the water, the movement is converted into electricity via hydraulic power take-off systems housed inside each joint of the machine tubes, and power is transmitted to shore using subsea cables and equipment.

In September 2014 Pelamis Wave Power was selected to progress to the next stage of a competitive procurement process with Irish utility **ESB** for the deployment of Pelamis wave machines on the west coast of Ireland.

Contact: www.pelamiswave.com

Oxford Photovoltaics grabs Business Angels Association award

The UKBAA organises an annual awards for the best investment of the year. The Best Early Stage Investment in a disruptive technology business award went to Oxford Photovoltaics.

Kevin Arthur, CEO of Oxford Photovoltaics, collected the award in a ceremony at the London Film Museum. There were 11 nominations in this category, from which six were shortlisted by the judges, which were – Flexiant, Micrima Ltd, Numescent Holdings, Oxford Photovoltaics, Sphere Fluidics and Voice Vault.

The judging panel included representatives from GP Bullhound, Capital for Enterprise, and Growth Accelerator. Oxford Photovoltaics was selected as the winner in this category because the judges considered them to have a technology offer with significantly disruptive potential and a very large potential market.

The judges also felt the company had been very successful in leveraging a combination of public and private sector funding to support their journey of taking university research right through into the commercial market. In 2012 Oxford PV received a £250,000 Smart award for prototype development, and also participated in the Clean and Cool Mission to San Francisco, supported by the Technology Strategy Board. Micrima, who have developed innovative breast cancer screening technology, came a close second.

Contact: www.oxfordpv.com – www.micrima.com – www.numescent.com

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Libralato project focused on a 'revolutionary new rotary engine design

Professor Richard Stobart, chair of powertrain systems at **Loughborough University**, is involved in what is claimed to be the world's first 1-stroke engine – with all of the engine phases take place in each revolution, in parallel.

It is as efficient as a diesel engine (using gasoline) but half the size and weight (and much lower cost). The Libralato engine is a 'game changing technology' for affordable hybrid electric vehicles – the space and weight and cost savings of the engine enable all the hybrid components (including batteries) to fit within standard engine cavities.

Libralato is working with various partners to produce high grade prototypes of the engine, including Loughborough University Automotive Engineering Department, **University Politehnica of Bucharest**, **Infineon Technologies**, **The Engine Consultancy**, **Techmachine SRL**, **CRITT M2A**, **ATARD**, **Productiv Ltd** and **MIRA**.

In 2012, the Libralato engine was selected to take part in the '**Make it in Great Britain**' exhibition at the London Science museum, coinciding with the **London Olympics**.

The scientific team of the Loughborough University Automotive Engineering department has a reputation for powertrain research and has the longest standing automotive degree programme in the UK.

Powertrain research areas include: combustion kinetics, modelling of engine in-cylinder flows, heat transfer, friction and tribology, fuel catalytic processing; fuel spray research, optical techniques for studying complex flow processes, use of advanced materials and control systems.

Contact: www.libralato.co.uk

SME NEWS – ELECTRONICS & TELECOMS

Automation experts Mirage celebrate completion of a £300,000 contract for Honda

Mirage Services Ltd, based in Trentham Lakes, was approached by **Honda's** Swindon plant to design and build a number of Autonomous Guided Vehicles (AGVs), which are used within production facilities to carry out a number of tasks from delivering components to taking the finished product from the line.

Sensors on the machines follow a magnetic tape route around the factory, while the AGVs are programmed to carry out specific functions. MD **Nick Mountford** said the business hoped to build its client base on the back of the thriving automotive sector as well as raise its profile in other industries such as food processing and packaging.

Mirage already works with local manufacturers including **Toyota** and **JCB** as well as exporting to the likes of **Toyota Peugeot Citroën Automobile (TPCA)**, a joint venture of Toyota Motor Corporation and PSA Peugeot Citroën, in the **Czech Republic**. But this was the first contract it had completed for Honda.

Mr Mountford said: "We have been successful in bringing a range of new skills into the business which has opened the door to working outside the automotive sector. We recently won a contract with a pharmaceutical business, for example. We put solutions in place for the low-value jobs, allowing businesses to train their staff to concentrate on the more skilled operations. We definitely see it as a growth area as Britain looks to strengthen its manufacturing base."

Contact: www.mirageservices.co.uk

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Malvern smart home electronics firm develops multiroom HDTV system

HD Connectivity Ltd, which operates from **Link Business Centre** in Malvern Link, has designed, developed and manufactured a multiroom video distribution system allows any HDMI entertainment devices to be accessed on up to eight HDTVs at the same time. **Chris Pinder**, co-founder of HD Connectivity said: "We've been able to push boundaries with new technologies, expand into new markets, including **America, Australia** and **Canada**, and invest in further research and development.

"We have been able to increase export sales by 250 per cent, a truly great achievement. Our new multiroom HDTV video distribution system, designed and manufactured in the UK, is the first of its kind to be developed outside Asia and is proving to be popular with the American market due to its clever design, solid engineering and UK-based support.

"The 'Made in Britain' stamp is a strong endorsement of our product overseas, with clients recognising quality British engineering. Bringing the manufacturing of our products back to the UK from China lets us react to market conditions and feedback much quicker. We can now offer a better service and product, and in turn bring back jobs to the UK and boost the British economy."

The funding package from **Central Finance**, an independent financial consultancy business, helped HD Connectivity bring the manufacturing of its HDanywhere brand products back to the UK and enabled it to export to America, Australia and Canada.

Steve Harris, **Worcestershire LEP** business growth board member and director at Central Finance, added: "Working with Chris and operations director James Trumper at HDanywhere to fund the research and development of the most sophisticated technology in video distribution and home entertainment has been a real pleasure.

Contact: www.hdconnectivity.com

IET Innovation Award for 'first self-organising small cell microwave backhaul'

Cambridge Communication Systems Ltd won the Communications category with its unique self-organising small cell backhaul system, which has been trialled by global Tier 1 operators and equipment vendors over the past year.

The first commercial deployment of the technology was with China Mobile, the world's largest mobile operator, in one of the first live deployments of small cells in China.

The firm also won the Small Cell Forum Industry Award for backhaul design and technology innovation, which is a significant validation of the unrivalled technical and business benefits our system delivers.

Established in 2010, Cambridge Communication Systems (CCS) is a specialist in small cell microwave backhaul systems. The team has a successful track record in creating innovative wireless solutions. The founders – CEO Steve Greaves and CTO John Porter earlier co-founded Cambridge Broadband Networks and Adaptive Broadband. The company is funded by angel and VC investors, and our board has extensive telecoms experience, in creating start-ups and building large businesses.

In 2013, CCS won the *Cambridge Business Weekly* award for Best Start-Up of the Year, followed by a *Cambridge News* Top Innovations 2014 Award.

Contact: www.ccs.com

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24 Seven Ltd creates the UK's first SIM card that 'jumps' between networks

The cards will search out the strongest signal from **O2, Vodafone, and EE**, which comprises **Orange and T-Mobile**. The aim is to eliminate mobile "not-spots," or zones where there is very poor or no coverage at all, typically in rural areas.

24 Seven MD **David Samuel**, 39, says the SIM cards are available now, though a fixed pricing strategy for wide public use is still in development. Full roaming with unlimited calls, texts, and 2GB of data, he says, will cost around £65.

He says the product has been a year in the development. "Twelve months ago it dawned on me that we have the infrastructure, and with a technology partner, do something about mobile not-spots," he said.

"We were thinking about a solution before the government started talking about it — we've written the software in-house. When **Culture Secretary Sajid Javid** started looking into this we thought this could ruin all the work we've put in; or it could help it do really well. I think it'll be the latter. We have the technology. It's ready. This can be huge. We have the technology. It's ready. This can be huge."

Samuel said the two biggest gripes of customers are battery life and phone signal. As a B2B telecoms provider, 24 Seven's background is with business professionals and the new SIM cards were developed primarily with them in mind. Although the technology is available to anyone, Samuel said.

With its market growing, the 24 Seven sales team is putting together pricing plans for potential customers. The estimates are more costly than most contracts around.

Prices will start at £35 per month, which would be 500 minutes, 500 texts, and 500mb of data. Unlimited calls, texts, and 2GB data is likely to cost around £65 per month.

The company is an Mobile Virtual Network Operator (MVNO), which means that it uses the major carriers' networks, which is the same way **Virgin** or **Tesco Mobile** operates.

It's estimated that around 20% of the UK suffers from unreliable connections, while some research suggests many in Britain have no coverage at all in some areas.

Contact: www.24seven.co.uk

SME NEWS – BIOTECH, PHARMA & MEDICAL SCIENCES

MR Solutions introduces next generation MRI magnets to its scanner range

Its MRI magnet technology has been consolidated into its ground breaking 3T and 7T, cryogen free, preclinical scanners. This jump in technology has been made possible by MR Solutions' proprietary technology for optimisation of magnet performance.

Installations of the second generation technology include the **National Institute for Health, Bethesda, Washington DC, the University of Manchester, UK, Korea Advanced Institute of Science and Technology**, and the **International Iberian Nanotechnology Laboratory, Portugal**.

The new technology enables features such as variable field operation, higher intrinsic magnetic field homogeneity, larger fields of view (FOV) elliptical in shape to better fit the subject and automatic field ramping.

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Physicist and CEO of MR Solutions **Dr David Taylor** said: “We have been at the forefront of scanning technology for over 30 years and have installed more than 1000 MRI spectrometers across the world. We have combined that with challenge based thinking to come up with solutions, which deliver what our customers, want – first rate images that are relevant for their particular applications.”

MR Solutions has been able to dispense with the usual liquid helium cooling system by using a revolutionary magnet design. This enables the use of a standard low temperature fridge to cool the magnet to the required -269°C.

The magnet in the new 7T MRI scanners has an elliptical field of view, which makes it even more suitable for research purposes, and as with the 3T range the strength of the magnetic field can be adjusted from 0 to 7 Tesla.

MR Solutions is now the world’s largest independent developer and manufacturer of preclinical MRI technology and developed the world’s first commercial, cryogen free 3T range of benchtop MRI scanners in 2012, followed by the 7T range in 2014.

Contact: www.mrsolutions.com

Medical info firm PrimeVigilance finalises update to its core databases

PrimeVigilance is a leader in providing pharmacovigilance and medical information services for national and multi-national pharmaceutical companies worldwide. It has clients worldwide, providing a service that currently covers more than 100 countries and over 150 medicinal products.

In Oct 2014 PrimeVigilance completed a major upgrade of its core databases for pharmacovigilance and medical information. The new databases enable PrimeVigilance to deliver significant productivity gains with regards to automated production of information for report writing and client analyses.

Neil Clark, CEO, of PrimeVigilance said “PrimeVigilance has grown substantially since it was founded six years ago.” The pharmacovigilance (PV) services offered by PrimeVigilance cover all the regulatory and scientific elements of PV required to obtain and maintain product licences for medicines within Europe.

PrimeVigilance has been awarded the Queen’s Award for International Trade in 2014 for outstanding growth in overseas earnings of 173% over the last three years. In addition, the company has entered a number of new markets in this period including Australia, Germany, Spain, Switzerland and the Scandinavian countries.

PrimeVigilance has grown organically since 2008 and now has over 100 staff employed in its main offices in Guildford, Surrey, and Zagreb, Croatia, as well as an international network of consultants. PrimeVigilance is currently providing services across more than 100 countries.

Contact: neil.clark@primevigilance.com

Oxford Pharmascience Group plc set to open facility in Birmingham, Alabama

Much welcomed in the American deep south, the new factory based in Birmingham’s **Jefferson Metropolitan Park** at Lakeshore, is expected to create up to 200 new jobs when fully operational.

The \$29 million facility is a gamble for a startup company. Oxford Pharmaceuticals will manufacture generic drugs in Birmingham and then sell to global markets. Oxford will initially receive free rent from **Innovation Depot** until its facility is built. Both the city and county will also provide incentives.

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Oxford Pharmascience redevelops medicines to make them better, safer and easier to take, synthesised reduced gastric irritation taste masked naproxen at lab scale and is progressing to manufacturing scale-up and clinical proof of concept.

In June this year, the company announced the positive results of its pilot clinical study of reduced gastric irritation ibuprofen and that it would advance development to apply this exciting technology to other commonly used Non Steroidal Anti-Inflammatory Drugs (NSAIDs). Following these encouraging results, the company has accelerated the application of the technology to the four most commonly used NSAIDs, aiming to take naproxen, diclofenac and aspirin forward alongside ibuprofen.

CEO **Marcelo Bravo**, founder of Oxford Pharmascience, is an entrepreneur with a background in chemistry and chemical engineering. He spent 16 years in R&D with **Procter & Gamble**, and then three years in corporate development with **Boots** (now Boots Alliance plc).

Most recently he was CEO of **Oxford Advanced Surfaces Group plc**, a company he led from inception as a spinout from **Oxford University** which is now quoted on the AIM market.

Contact: www.oxfordpharmascience.com

Antrim company helps to fight the spread of Ebola in west Africa

Fast Engineering's Fastank liquid storage products are already used in oil and chemical clean-ups, aid programmes, fire fighting, fish farming, animal rescue and even for mud wrestling matches, mass baptisms and raising zoo animals.

Company founder **Seamus Connolly** said some of its products, including portable decontamination pools and bedding materials, are being used in **West Africa** to help halt the virulent spread of Ebola.

The firm sends tanks to more than 80 countries throughout the world and exports 90% of its products for use in both man-made disasters and natural catastrophes like typhoons, earthquakes and disease. Mr Connolly said it has a number of products being used in the battle against the disease.

"We have a range of products being used by aid agencies in West Africa in the fight against Ebola," he said. "Our products are impregnated with anti-fungal and anti-bacterial properties so they are particularly useful in preventing cross-contamination and also in hazardous material handling. The products are mainly being used to hold water, for decontamination and for bedding."

The company's tanks have been deployed during wildfires in Australia, after the devastating oil spill in the **Gulf of Mexico** in 2010 and following Typhoon Haiyan in the **Philippines** last year.

Meanwhile, another company based in Antrim is also sending products to West Africa.

A range of technologies from medical testing firm **Randox Laboratories** are also being used across the worst affected areas. As Ebola patients suffer organ failure and other complications, Randox products are being used to assess these symptoms.

Contact: www.fastank.com

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Pocket App declared the UK's 'largest independent app developer'

Its CEO **Paul Swaddle** was shortlisted as a finalist for both the Creative Industries Entrepreneur of the Year Award and the Media Disruptor Entrepreneur of the Year Award in this year's **Great British Entrepreneur Awards**.

Paul Swaddle has been working in mobile technology for the past 15 years and he co-founded Pocket App in 2011 with the intention of bringing the creative and technical development elements of mobile technology together under one roof. Pocket App is a specialist multi-platform application provider, designing mobile apps and mobile solutions. Pocket App claims to be the UK's largest independent app developer designing, developing and distributing award-winning mobile apps.

Founded in 2010, **Pocket App's** senior executives collectively have over 30 years' experience in the mobile industry having worked in partnership to deliver projects for large telcos, as well as a vast array of leading brands and marketing agencies.

Contact: www.pocketapp.co.uk

Bug-busting business Undo Software wins £1m in funding from Skype co-founder

The proceeds of the oversubscribed funding round will be used to scale the UK business internationally and support the growing adoption of its UndoDB record-and-replay reversible debugging software.

Jaan Tallinn, Skype and Kazaa co-founder, has invested in the third funding round of Cambridge-based bug-busting technology business **Undo Software**. Existing investors backing the round include members of the **Cambridge Angels** group. Tallinn is also co-founder of the University of Cambridge-based **Centre for the Study of Existential Risk**.

Undo's record-and-replay reversible debugging software makes it easier, quicker and cheaper for **Linux** and **Android** developers to record their program's execution and then rewind their code in real-time to find bugs more quickly, saving time and reducing cost.

Undo's software is sold direct to customers such as **Mentor Graphics** and through a partnership with **ARM**. Its performance is said to be several orders of magnitude better than open source solutions, with significantly improved memory consumption.

Tallinn said: "What attracted me to Undo was the sheer usefulness of its software, combined with the strength of the management team's vision for growing the business.

With software now critical to the world around us, the addressable market for this technology is potentially huge."

In January Undo announced plans to expand its workforce by over 30 per cent and moved into new Cambridge offices which are four times larger than the previous headquarters. This builds on several major milestones achieved in 2013.

Contact: www.undo-software.com

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‘Hyperlocal media platform’ in Brighton wins £470,000 in funding

In 2014 a consortium bid to the **Destination Local** competition by **Near You Now Ltd** and media partners received a total of £470,000 funding for their proposal for a localised media platform.

Near You Now enables news media organisations to determine which local stories, social media posts and other information will be most relevant to individual users in any unique location.

The second phase of the ‘Destination Local’ competition is backed by the **Technology Strategy Board** and the (rather useless) agency **NESTA**. The R&D project attempts to ‘explore innovative business models’ made possible by the advent of new, hyperlocal media technologies – as if these were something new..

Anthony Sheehan, founder of Near You Now Ltd, has done well to secure the funding. He said “Customers currently struggle to find relevant local stories and information online and on mobile devices. We believe our platform will make it easier for publishers to customise their service for each visitor based on their current location or where they live.”

The initial R&D of the platform has been helped by **David Weir**, professor of computer science, and assistant Jeremy Reffin, of the **University of Sussex’s** Department of Informatics. They will continue working alongside Near You Now to create more detailed algorithms and semantic analysis, helping to define the relevance of news to an increasingly localised user base.

Professor Weir said “In the future, we expect that people will be able to check their smartphones not just for news on a national or regional level, but to find out what’s happening at the end of their street.”

Contact: www.nearyounow.co

Mobile Content streaming firm SyQic moves to join AIM

SyQic plc is aiming to raise £3.2m on Aim – with trading due to start on December 2nd. The firm, which operates a subscription model and targets the Asian market and migrant communities around the world.

It originally sought £2m from the fund-raising, but the offer was oversubscribed, said chief executive **Jamal Hassim**. The market for internet television is expected to expand significantly in coming years, with global revenues climbing from an estimated £5.6bn this year to \$35bn in 2017, the company said.

SyQic itself generated revenues of about £1.32m in the quarter ending Sept 30. The group’s biggest markets are **Indonesia, Malaysia** and the **Philippines**, although the company is launching in Britain in coming weeks, and later plans to enter Europe and the US.

Mr Hassim said “There’s a lot of growth to come in the next 12 to 24 months, so what we wanted to do was have access to the capital markets to be able to fuel that growth.” The company has its headquarters in the UK, which it will use as “a base of operations” for its expansion.

It will become one of a number of tech companies to debut on Aim this year, joining mobile gaming-services provider **24/7 Gaming** and website addresses business **CentralNic**. Separately, **Caredus Group**, a provider of education and training services, will also announce that is seeking as much as £5m from a float on AIM.

Contact: www.syqic.com

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Multi-award-winning Glasgow firm Clear Returns Ltd soaks up the praise

Vicky Brock, CEO of technology company **Clear Returns** was recently named Innovator of the Year at the 2014 **FDM Everywoman in Technology Awards**.

Vicky founded Clear Returns, a company that helps ecommerce and multichannel retailers reduce the amount of returns they receive. Their predictive analytics software services help retailers cut operational costs, retain more revenue post sale and improve the customer experience, by helping shoppers keep more of what they buy online.

In 2014 **European Commission** VP **Neelie Kroes** named Clear Returns the winner of **Tech All Stars**, an EU-wide search to find Europe's best young start up.

Returns not only cost retailers time, money and manpower, they can damage their customers perception of the business. Clear Returns cloud based software solutions are designed to give retailers the knowledge and actions they need to grow the proportion of products kept by the customer and the revenue kept by the retailer. The problem is growing: this Christmas organised crime is said to have cost US retailers \$10 billion through fraudulent use of companies returns policies.

The Scottish firm that helps retailers to identify unpopular products has raised funds to expand its team and win more clients. Vicky Brock, who started work on the business 18 months ago, raised £110,000 from **Angels Den** and **Angel Academe**, a network for female investors and mentors. The money was matched by the **Scottish Investment Bank's** seed fund. More than 30% of the angel investors are female.

The cash will be used to expand her sales team and to develop the technology. The Glasgow company currently has eight staff. She said "The product scores customers on what they keep, not on what they buy. Companies get a better understanding of what their consumers want and like."

Contact: www.clearreturns.com

FUNDING & INVESTMENTS

Innovate UK launches its next strategy with – £50 million investment promised

Innovate UK, the former Technology Strategy Board, claims it will be nurturing the 'very latest, potentially game-changing technologies' in the UK. Its four-year emerging technologies and industries strategy is intended to help UK businesses and academics to turn ground-breaking ideas into reality in '**seven technology areas**'. This is one less than the Department of Business' much vaunted 'Eight Great Technologies', trumpeted by its former business minister.

The seven are: synthetic biology, energy-efficient computing, energy harvesting, non-animal technologies, emerging imaging technologies, graphene and quantum technologies.

It stated "These might be new drugs, autonomous sensors and 'hyper-spectral' cameras for advanced detection systems." The plan represents a 'doubling of investment by Innovate UK in emerging technologies' over the next four years. Its ambition is to see the UK lead the world in 'one or more' new growth sectors from an emerging technology.

Contact: www.gov.uk/government/publications/emerging-technologies-and-industries-strategy-2014-to-2018

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Semiconductor firm sureCore receives £1m more, taking the cash total of £2.1m

The new funding has been drawn from **Capital-E**, in Antwerp, Belgium, bringing total start-up funding to £2.1 million. **sureCore** is pioneering 'low-power SRAM IP' company focused on advanced technology nodes.

Sheffield-based **sureCore** CEO **Paul Wells** said the funding was secured in part by successful 28nm test chips run in March of this year – which 'delivered more than 50% power savings' versus industry-standard embedded SRAM.

This round will fund the company's planned engineering expansion, productisation and commercialisation of the company's low power, variability tolerant SRAM technology that is currently undergoing evaluation at a number of leading semiconductor companies. Initial funding came from **Finance Yorkshire's Seedcorn Fund**, and an innovation award from **Innovate UK**.

By partnering with a number of leading semiconductor companies, sureCore has gained access to advanced silicon processes. SureCore's partners benefit by gaining early access to world-leading, low power technology essential to success in many mainstream mobile and emerging Internet of Things (IoT) applications.

sureCore's chairman **Guillaume D'Eyssautier** said "By combining its capital-efficient business model with a deeply experienced design team, sureCore has delivered industry-leading innovation in the critical arena of low power, bringing substantial benefits to our customers in the form of extended battery life, better thermal performance and improved reliability."

Contact: www.sure-core.com – www.finance-yorkshire.com

A total of 26 'exceptional' Scottish start-ups win cash from the ScotEdge fund

In December 2014 some £852,000 was awarded to 26 start-ups by the ScotEdge fund. The awards, the final of five rounds, took place at the headquarters of **Royal Bank of Scotland (RBS)** in **Edinburgh**, and businesses had to pitch to the panel of judges in front of a 300-strong audience, followed by a Q&A session.

The ScotEdge fund is backed by entrepreneur **Sir Tom Hunter**, the Scottish Government, and RBS, with the majority of its funding coming from the private sector.

The funding awards are half-grant and half-loan, and securing the highest amount at £100,000 each, were live shellfish transport system **Lobster Pod**, and West Coast **Fisheries & Butcher**, a food manufacturer specialising in venison.

Young Edge winners received £75,000, and the next-highest award, at £52,000, went to **Smoother Spirits**, which produces **Uisge Source**, bottled spring waters to complement malt whisky.

Six firms won £50,000 each, including **Pulsetta Foods**, which makes gluten-free bakery products from pulses, **Hectares Food**, which manufactures sweet-potato crisps, and gin-maker **Dunnet Bay Distillers**.

Also securing the sum were the **Celtic Sea Spice Company**, whose Mara Seaweed brand produces artisan seaweed seasonings, **Sunamp Limited**, which makes innovative, high-efficiency heat energy storage systems, and **The Kiltwalk**, which organises charity walking events.

Trans World Soccer, which offers the chance to live like a professional footballer, received £45,000. Securing £40,000 was **snap40**, which has created a medical monitoring wristband, while **Safetray**

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Products, which developed G-Hold, a tool for safely holding iPads and tablets, won itself £31,000.

Data visualization software specialist **nooQ** secured £32,000, while £30,000 went to **Beauty Kitchen UK**, which develops, makes and sells environmentally friendly beauty products.

Luxury chocolate-maker **Chocolati** won £27,000, and **Swippii**, a tablet-based digital loyalty programme for SMEs, received £20,000. Sir Tom said “We were delighted with the quality of applications and the winners have demonstrated their edge and ambition to grow a business in Scotland.”

Contact: www.scotedge.com

Data analysis firm Squawka named ‘O2 Smarta 100 Business of the Year’

Squawka, the fast-growing small business that using innovative data analysis to build an audience of football fans to give **Sky** and the **BBC** a run for its money, has been named the ‘O2 Smarta 100 Business of the Year’ at the **O2 Smarta 100 Awards 2014**.

Founded in 2011, Squawka’s ‘second screen experience’ has been labelled ‘football fans’ best friend’, providing real-time analysis and content to accompany any live football match. With more than 700,000 customers from 192 countries using the site daily, Squawka utilises the data of its largely mobile user-base to work with brands such as **Domino’s Pizza** and **Ladbrokes** to offer in the moment, highly targeted promotions.

Squawka founder and CEO **Sanjit Atwal** said: “We’re astounded to win this award, we didn’t expect it at all. The money will all go to continuing to invest in Squawka – bringing in new staff and delivering more services for the customer.”

Squawka beat off more than 2,000 applicants and was voted by the public to win the ‘Best Use of Technology’ category. The awards ceremony saw nine other small businesses also collect £1,000 prizes across 10 categories. The winners included revolutionary storage firm **Lovespace**; personalised apple pressing service **Archer and Parry**, and a social enterprise helping self-harmers.

Contact: www.smarta.com/smarta100

UNIVERSITY NEWS

Four Universities to gain from quantum computing named by the Chancellor

In the past two years the Chancellor **George Osborne** has developed a real soft spot for ‘science’, and regularly gives announcements on decisions that should really have been made by the science or education ministers instead.

In his latest generous gesture, the universities of **Oxford, Birmingham, York** and **Glasgow** were as the primary locations for initiatives in researching quantum computing – a subject few, if any, ministers, know anything about..

Overall, 17 higher-education institutions and 132 companies will be involved in the programme. The investment’s aim is to ensure the transfer of quantum technology from theory into practical industry usage. Each ‘hub’ has its own objective – Oxford, for example, will aim to build the Q20:20 quantum computer through its **Hub for Networked Quantum Information Technologies (NQIT)** and coordinate research on quantum simulation. Birmingham will focus its attention on quantum sensing and metrology, Glasgow on imaging, and York on quantum communications.

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The technology explores the more esoteric and surreal aspects of quantum mechanics.

Professor Koen Lamberts, vice-chancellor at the University of York said “Realizing the potential of quantum technologies is a significant scientific and engineering challenge. York’s expertise in quantum communications across disciplines includes computer science, mathematics and physics.”

Applications of quantum technology, outside of the raw computing power of such machines, include development of machine learning and highly secure communications networks.

“Quantum computing will enable users to solve problems that are completely intractable on conventional supercomputers,” says said **Professor Ian Walmsley**, of **Oxford University’s** department of physics and NQIT’s director. “Meanwhile, quantum simulation provides a way to understand and predict the properties of complex systems like advanced new materials or drugs, by using a quantum device to mimic the system under study.”

Contact: www.nqit.ox.ac.uk

Loughborough University and Skanska to ‘print 3D concrete products’

The pair have signed a deal to develop the world’s first commercial concrete printing robot. Skanska, the building contractor, hopes to be using printed concrete products on sites within 18 months and the project is also being backed by **Foster + Partners, Buchan Concrete, ABB** and **Lafarge Tarmac**.

Skanska said the long-term aim was to set-up a 3D printing supply chain. A team in Loughborough’s **School of Civil and Building Engineering** have worked on the development of 3D printing technology for the construction industry since 2007.

The team have developed 3D concrete printers fitted to a gantry and a robotic arm, which is now in its second-generation form. The printer deposits a high-performance concrete precisely under computer control.

It works by laying down successive layers of concrete until the entire object is created.

The printer can make things which cannot be manufactured by conventional processes such as complex structural components, curved cladding panels and architectural features.

Rob Francis, Skanska’s director of innovation, said: “3D concrete printing, when combined with a type of mobile prefabrication centre, has the potential to reduce the time needed to create complex elements of buildings from weeks to hours. We expect to achieve a level of quality and efficiency which has never been seen before in construction.”

Dr Richard Buswell, of Loughborough University, said: “The modern construction industry is becoming more and more demanding in terms of design and construction.

“We have reached a point where new developments in construction manufacturing are required to meet the new challenges and our research has sought to respond to that challenge.

Contact: www.skanska.co.uk – www.lboro.ac.uk

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IP Group leads investment round into Bristol University simulation spinout

In Nov 2014 **Ultrahaptics**, a Bristol University spinout which simulates the feel of objects in mid-air using nothing but sound, is poised for growth after securing a six-figure sum to develop its technology.

The business will expand its software team and accelerate product development using the £600,000 investment, which was led by **IP Group** and one of its managed funds.

Ultrahaptics' technology uses ultrasound to project sensations through the air and onto the user. The product will be licensed for a range of markets, including consumer electronics, household appliances and the automotive sector.

Mark Reilly, head of technology at IP Group, said: "Ultrahaptics has created a unique technology with the potential to transform the user experience of increasingly prevalent touchless interfaces. IP Group is excited to be participating in the company's development and growth."

Tom Carter, chief technology officer at Ultrahaptics, added: "A lot of interest has been registered from several blue-chip organisations and the additional funding will help us to meet the needs of our customers."

Ultrahaptics was set up through the **Bristol SETsquared Centre** and early commercialisation was supported by the university's research and enterprise development team, with funding provided by its **EPSRC Impact Acceleration Account**.

Contact: www.ultrahaptics.com – www.setsquared.co.uk – www.ipgroupplc.com

Institution of Mechanical Engineers launches ambitious UAS competition

Britain's best young engineers will design and build life-saving unmanned aircraft systems (UAS) in a new competition run by the **Institution of Mechanical Engineers**.

The demonstration flights of this 'design-and-build competition' for undergraduate university teams – to produce an unmanned aircraft system for a representative humanitarian aid mission – will take place on 1-2 July 2015 at **Elvington Airfield** and the **Yorkshire Air Museum**.

The annual competition will be the fourth student engineering challenge event run by the Institution, joining **Formula Student**, the **Railway Challenge** and the **Design Challenge**.

John Turton, chairman of the UAS Challenge, said UAVs are already being applied to commercial roles. In disaster relief situations, UASs can transport medicines and vaccines, and retrieve medical samples, into and out of remote or otherwise inaccessible regions. They also send information from across an affected area and help build a picture of the situation direct their resources.

The UAS Challenge – with **Northrop Grumman** as gold sponsor – will see some of the UK's best young engineers develop the UASs before taking on other teams in a 'fly-off', where they will be challenged to transport a package as accurately and rapidly as possible.

Universities taking part so far include the University of Bath, Glasgow, Hertfordshire, Loughborough, Nottingham, Queens University, Belfast, Sheffield and Sheffield Hallam, Southampton, Surrey, Swansea, and University of the West of England.

Contact: www.imeche.org/knowledge/industries/aerospace/auasc

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University of Chester site to host world class fracking research centre

In Dec 2014 the University of Chester's **Thornton Science Park** near **Ellesmere Port** is to become a world class fracking research centre as part of a £31m government project.

The **Energy Security and Innovation Observing System**, comprising two sub-surface test centres, will analyse results from hundreds of boreholes across Britain as the government tries to reassure residents the controversial gas extraction method hydraulic fracturing, known as 'fracking', is safe.

Thornton, gifted from **Shell** to the University of Chester in 2013, is expected to be the site of the first of the two centres. The second site is still to be agreed.

Run by the **British Geological Survey**, the centres will be a spoke of the Blackpool-based **National College for Onshore Oil and Gas** announced in November, with links to colleges in **Redcar and Cleveland, Glasgow and Portsmouth**.

University of Chester's Thornton-based faculty of Science and Engineering will deliver a number of related undergraduate and postgraduate degree courses as well as specialist masters, MRes and PhD programmes and has recently been awarded funding to construct a multi-million pound **Energy Systems Demonstrator** to develop cost effective, environmentally responsible sources of energy.

The research centres will focus on shallow geothermal energy, shale gas, underground gas storage, coal bed methane, underground coal gasification, underground waste disposal as well as carbon capture and storage.

The Energy Security and Innovation Observing System was announced in Chancellor's **George Osborne's** autumn statement along with a £113m investment in a **Cognitive Computing Research Centre** at Daresbury, which will enable non-computer specialists to gain insights from big data in order to enhance and design products and services.

Contact: www.chester.ac.uk/thornton-science-park – T: 01244 512 800.

AND FINALLY...

>> Alex Salmond 'would have prevented global banking crash – had he stayed at RBS'. The First Minister, who was visiting the **Johnstons of Elgin** cashmere factory in the Borders, said he had promised his bosses at the bank to abandon his ambition to become an MP if he failed to be elected in Banff and Buchan in 1987. In an interview he said: "If I hadn't won the seat I would have discharged my obligation. If that didn't happen then I hope and believe we could have avoided the international banking crisis."

Mr Salmond worked for seven years as an economist at **RBS** before becoming an MP.

In 2008, RBS was bailed out by the Government after bad investments brought it to the brink of collapse. Mr Salmond's claims were ridiculed by his political opponents, who highlighted his previous support for disgraced former chief executive **Fred Goodwin** and his offer to help the bank during its ill-fated takeover of Dutch bank **ABN Amro**.

Scots LibDem leader **Willie Rennie** said: "Alex Salmond's ludicrous attempt to rewrite history over his support of RBS's exploits is dealt a fatal blow by his own pen. It was Alex Salmond who offered his and Scotland's support to the disastrous takeover bid of ABN Amro as one of his first acts as First Minister in 2007."

Scottish Conservative deputy leader **Jackson Carlaw** said: "It goes without saying that the First Minister

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has an ego, but this latest claim is staggering and utterly risible.”

>> Researchers in **Brazil** have discovered drug-resistant bacteria in the sea waters where sailing and windsurfing events will be held during the **2016 Olympics** in Rio de Janeiro.

The “super-bacteria” are usually found in hospital waste and produce an enzyme, KPC, resistant to antibiotics. Nearly 70% of sewage in Rio – a city of some 10 million people – is spilled raw into the waters of **Guanabara Bay**. In its Olympic bid, Rio promised to reduce pollution in Guanabara Bay by 80%. But in June Rio Mayor **Eduardo Paes** admitted the target would not be met.

>> **European Court of Human Rights** has ordered the **French Government** to pay thousands in compensation to Somali pirates, who were caught on the high seas on two separate occasions in 2008, and taken back to France for trial.

However, according to a ruling by the **EU Human Rights Court**, pirates’ human rights have been violated since the French authorities failed to present “promptly” the accused men before a judge upon their arrival to the country resulting in 48-hour delay.

At their peak in January 2011, Somali pirates held 736 hostages and 32 boats, some onshore and others on their vessels.

>> Feeling chilly? In late 2014 this Sheffield magnet manufacturer launched an innovative product which it claims to be able to save 60% of unnecessary heat loss from radiators.

The **Warmroom** product, by Sheffield-based **Anchor Magnets**, is a metal sheet that aims to solve an age-old problem posed by radiators pumping heat into walls. Because it is magnetic, it clings to the rear of a standard steel radiator. Developed in conjunction with the **University of Sheffield**, the results show savings of up to 60 per cent.

Mike Burton, director at Anchor Magnets, said: “Conductive heat from radiators is still very much overlooked in the insulation debate. In tests performed at the University of Sheffield, the temperature of a brick wall behind a radiator was measured at 45°C. Shortly after applying Warmroom panels to the radiator, the wall temperature dropped to 25°C, which means that the heat was no longer dissipating into the wall, but was being reflected back into the room.”

Contact: www.anchormagnets.com – www.warmroom.co.uk

>> This year is the 40th birthday of the Christmas classic liqueur, **Baileys**. Creator **David Dand** had the vision of blending cream and whisky together with the ambition of creating a drink that was both suitable for the export market and one which would reflect the heritage and agricultural traditions of **Ireland**. The first experiments to make Baileys were done in a Kenwood mixer.

Today, there are 40,000 cows on 1500 farms dedicated to producing cream for Baileys. In the early years Bailey’s shelf life was only a few weeks’ today it will last two years.

Consumers in **Britain** love Baileys at Christmas. 39 litre bottles of Baileys are sold every minute in November and December last year – or 55,632 litre bottles daily.

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