

2015 / 2016

TECHNOLOGY EDITION

# *The Parliamentary Review*

A YEAR IN PERSPECTIVE

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The Rt Hon Philip Hammond MP  
Julian David

## ■ REPRESENTATIVES

First Recovery

Triaster

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Review of the Year  
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## The Rt Hon Philip Hammond

Chancellor of the Exchequer

This Government is clear that a strong economy is the essential prerequisite to delivering prosperity and improved life chances for all, building a Britain that truly works for everyone, not a few.

Since 2010, we have made significant progress. Britain has been one of the fastest growing advanced economies in the world over the last few years; our employment rate has reached record highs as living standards rose to the highest level ever last year. At the same time, the deficit as a share of GDP has been cut by almost two-thirds from its post-war peak in 2009–10.

While the decision to leave the European Union marks the beginning of a new chapter for our country and our economy, we start from a position of strength and our economy is well-placed to confront the challenges ahead.

Britain will, in due course, begin negotiations to leave the European Union. We recognise there may be some uncertainty as we negotiate and then a period of adjustment as the economy transitions to the post-EU reality. As we go forward, we are determined to build on our strengths as an open, dynamic, trading nation to forge a new global role for Britain.

We are determined to make a success of Brexit and have seen some positive developments with large companies such as Siemens and Lockheed Martin confirming that the UK remains an attractive place for them to invest.

This is all good to see but we cannot be complacent. At the same time as we seek the best possible trade

arrangements with our European neighbours, we must also redouble our efforts to promote trade with the rest of the world. Since the referendum we have seen a number of countries indicating their wish to agree trade deals with the UK, and I'm certain the list will continue to grow.

People can be assured that we are prepared to take the necessary steps to safeguard the economy in the short term and to take advantage of the opportunities that arise in the longer term as we forge a new relationship with the European Union.

The message we take to the world is this: we are the same outward-looking, globally-minded, big-thinking country we have always been – and we remain very firmly open for business.

“As we go forward, we are determined to build on our strengths as an open, dynamic, trading nation to forge a new global role for Britain”

## Julian David

CEO of Tech UK



The vote to leave the European Union has caused much uncertainty. Our challenge is to turn that uncertainty into opportunity.

We will do that by remaining open. Firstly, the UK must stay open to global talent whilst we grow our own talent pool. UK tech is world leading because it attracts the best skills and entrepreneurs from around the world. To prepare for Brexit tech businesses want a smart immigration system that is responsive, fast and frictionless and a smart skills strategy that prepares people today for the jobs of tomorrow.

Secondly, the UK must have open access to the European single market. UK tech is highly integrated with European markets and must be able to compete on equal terms following the UK's departure from the EU. Tech firms need to be able to do business across Europe in a way that is clear, consistent, predictable and scalable.

Thirdly, we need an open borderless world for data. A modern service-based economy cannot thrive unless data can travel seamlessly around the world. This is not just a tech issue, it impacts the whole of the services sector— from financial services to the creative industries. Failure to secure the free flow of data would create the biggest single trade barrier facing the UK economy in a post-Brexit world.

Fourthly, we need to open the flood gates to investment in digital infrastructure. To compete in a post-Brexit world the UK needs world-leading, fixed and mobile networks. The UK has always been one of the most competitive markets for communications services. It now needs to be the most attractive market for investment and to build the infrastructure that will underpin our future growth.

Finally, we must be open to collaboration as we forge this new future. The public and private sectors need to work together to ask what we can do differently to make this country even better than before.

All of this must be done at pace, to signal to the world that the UK is open to investment and innovation – determined to maintain the great British tradition of inventing the future.

“The public and private sectors need to work together to ask what we can do differently to make this country even better”

## Encryption



Apple's iconic iPhone was at the heart of an security debate this year, with the company on one side and the US Government on the other

Security experts had for some time been telling anyone who would listen about the inevitable moment when policing and technology companies clashed over encryption.

While cryptography has of course been around for thousands of years, 2016 saw a turning point where the masses were now encrypting their activity by default.

This was mostly down to Apple and Google. With an update to iOS (the mobile operating system), Apple changed the tone: if your phone was locked with a PIN, only entering that PIN could decrypt the data on the device. It was a move that meant that even Apple couldn't retrieve data on a locked phone without the owner's PIN.

The company was making a shrewd move. Tactically, it meant they wouldn't be compelled by police to routinely break into phones and, in the public eye, it was positive PR at a time

when tech firms' reputations were in tatters following the Edward Snowden surveillance revelations.

Global law enforcement agencies, principally the FBI, were seething and desperately seeking ways to work around the issue; on 2 December 2015 they thought they had it when two terrorists killed 14 people in San Bernardino, California. In searching their house police found two phones. One was destroyed, the other, an iPhone was still working – but it was locked.

What followed was an intense public stand-off between Apple and the FBI, between the security community and the US Government. Both sides insisted they were protecting the American people from either terrorists or hackers.

The FBI knew Apple could not decrypt the phone, as this was ultimately impossible. Instead agents played a card Apple really did not expect. If Apple can't decrypt the data, prosecutors demanded in court, they should instead make it possible for the FBI to try every single four-number combination until they happen upon the right one. As it stood, after several incorrect attempts the phone would destroy its own data.

Apple refused to do this and sent out a letter to customers explaining why it thought a breach in one iPhone's security would put all iPhone users at risk. This view was backed up strenuously by most security professionals – but not all. Eventually, the FBI was approached by an independent security firm who said

they had found a way to do it and so, the day before it went to a full trial, the case was indefinitely postponed at the FBI's request.

It was over, for the time being but another case will surely soon materialise.

Encryption by default means everyone with a smartphone is now encrypting their messages, rather than it simply being an obsession of the uber-cautious of yesteryear.

Messaging apps from Facebook, Apple, Google and others have rolled out the function in a move that has police worried as the majority of cellular communication is no longer now about calls and standard texts but hard-to-track data instead. As one Congressman put it, a court can force a man to go under the knife to remove a bullet if they feel it's a vital piece of evidence but it cannot force tech companies to reveal what's on any person's phone.

The issue to be debated is not whether to ban encryption, or weaken it. It's too late – the technology can't be reversed and nor should it be; governments and businesses rely on encryption to keep information safe.



FBI building,  
Washington DC

Instead, we may begin to see more pressure and perhaps legislation over what mechanisms technology companies are forced to put in place to help with investigations. The firms, particularly Silicon Valley's most powerful, are likely to resist any move as it brings the moral choice back to their doorstep; something they had actively tried to avoid.

Speaking at a conference in March, GCHQ Head, Robert Hannigan, said 'Since the trade-offs are for society as a whole, it must surely be for elected representatives to decide the parameters of what is acceptable.'

## Artificial Intelligence

Every year all the major technology players hold their developers' conferences, a way of teaching independent developers how to work with their systems and a chance to woo them with freebies and parties as a way to drum up loyalty.

This year's string of conferences had an ongoing theme: Artificial Intelligence (AI) is the next major frontier in technology and now is the time to start working with it, or else be left behind.

At Build 2016, Microsoft Chief Executive, Satya Nadella, proudly showed off Cortana, the assistant on Windows, while saying that 'bots are the new apps'.

In this context, the term bots usually refers to software that is designed to interact naturally with users – often through voice commands or plain-English text requests.

So, rather than loading up a website with the weather forecast,



Artificial Intelligence is set to revolutionise the tech sector

a Windows 10 user could instead ask Cortana 'Should I wear a jacket today?' and be told what they need to know. In theory.

In reality, bots are extremely hit-and-miss – but that's not to say they won't one day be extremely effective. At Facebook's F8 conference, it announced a range of smart bots coming to its Messenger app. The ultimate goal is for users to be able to put in commands like 'I'd like to buy a blue shirt' and be guided through the entire process – with suggestions from the bot being enhanced by the fact it knows a lot about the user's personality, right down to, perhaps, how much they are likely to want to pay depending on how wealthy they are.

Facebook's ambition in this area is huge – though the first few bots on the system have failed to impress. In many cases, using the bots has been more cumbersome than simply doing things the 'old fashioned way' – such as Googling for news or shopping by scrolling through pictures.

The best-received AI bot so far has arguably been Amazon's Alexa. Alexa is a charming assistant, with a female voice. To demonstrate its capability, Amazon produced the Echo, a standalone cylinder-shaped speaker with a built-in microphone. A shout of 'Hey Alexa' would activate it and requests like 'tell me the news', 'check my emails', 'set my alarm' or 'play some romantic music' all yield satisfyingly effective results.

If bots are indeed the new apps, it's no wonder the tech giants are trying desperately to get ahead – but it's far too early to predict who will emerge as the leader with bots in the same way Apple dominated the sale of apps.

Of course, AI will one day go well beyond simplistic assistants helping us shop. DeepMind, a Google-owned London-based AI pioneer, wowed people last year by creating an AI that was able to play 49 Atari games and get the highest possible score.

Microsoft Chief Executive, Satya Nadella



The breakthrough wasn't that a machine could be made to play the games but that DeepMind had created a machine that was able to play the game without being programmed by a human to perform that task. It was presented with *Space Invaders* and through AI and machine learning it was able to conquer it.

In March this year, DeepMind took on a bigger challenge. It played the world champion of Go, a fiendishly complicated strategy board game popular in Asia. In a contest of five games, DeepMind's AI won 4-1, drawing admirers for the way it was able to beat its human opponent with moves described as 'beautiful' and 'perfect'.

DeepMind's aim is obviously not about creating an AI that's great at board games but stunts like this show the AI's ability to approach problems in ways not considered by the human brain. Today's progress means it can



Google's Deepmind self-taught complex game strategy

beat the human mind at Go but future breakthroughs might lead to fresh thinking for science, medicine and even politics.

## Virtual and augmented reality

This year saw the first consumer-level virtual reality headsets go on sale.

There's a huge gulf in strategies between the major brands. At one end, you have Google's Cardboard. It's quite literally that, a piece of cardboard folded in a way that allows you to slide your smartphone into it. By placing it over your eyes, you get a cheap-and-cheerful virtual reality experience that may not be the incredible immersive world promised by higher-end VR products but is certainly being seen as something of a gateway drug and, for the most part, a bit of good fun.

At the other end of the scale you have HTC, Sony and Facebook. Facebook owns VR firm Oculus, the company



HTC Executive Director of Marketing, Jeff Gattis wears the HTC Re Vive

that arguably kicked off the VR resurgence when it raised money for its headset on the crowd-funding site



Microsoft's virtual reality headset – HoloLens

Kickstarter. This year it finally released its first high-end headset, along with 'minimum requirements' that meant gamers would be looking at spending well over £1,000 in order to own both the headset and a computer powerful enough to power games for it.

HTC took largely the same approach with its Vive headset, a product in a similar price category but more heavily geared towards hardcore gamers – its tie-up with PC games maker Valve is almost a guarantee of success.

However, for high-end VR to go truly mainstream, it is likely it will need to come via the games console market, rather than through PCs. To that end, Sony announced it would bring out PlayStation VR in November 2016 and this would work with the existing PlayStation 4. Rival Microsoft said it too would be taking on VR in a major way, though they don't have a headset of their own instead attempting to be cross platform and working with both Oculus and HTC.

Interestingly, Microsoft said its Xbox One console was not powerful enough for truly high-end VR and so it would be bringing out a super souped-up console in 2017.

It means Sony and Microsoft have both taken a huge gamble. Sony's headset is out first but could be poor in quality and underpowered. Microsoft's Xbox VR experience will not be around until 2017 but could be considerably better in the long run.

Microsoft hasn't developed its own VR headset, instead putting effort into Augmented Reality (AR) – a similar idea to VR but in which digital graphics appear overlaid into the real world.

This is much more difficult than VR – but some predict AR will ultimately be the dominant model as it could also be applied to some very practical situations, such as mending a machine with the help of instructions appearing in thin air in front of you.

Microsoft is leading the way here. Its HoloLens AR headset is heavy, hot and suffers from a small field of vision but it shows great potential – it is already being used by the likes of NASA to visualise ideas and projects.

A more frivolous application of AR in 2016, though arguably no less revolutionary, was Pokemon Go. The smartphone app placed Pokemon monsters in the 'real world', encouraging gamers to walk around towns and cities finding the creatures to capture.

Within a week of its release, more than 15 million people were playing the game, with some calling it the birth of a new genre of game that forces people to leave the house.

The Pokemon Go phenomenon saw the value of Nintendo soar by 50% in the fortnight after the game's release.

## Autonomy

Joshua Brown was central to the development of Tesla, a great fan of the car company that now enjoys the kind of fervour that legendary makers like Ferrari and Porsche have commanded for decades.

One of the more popular features of the latest Tesla cars is Autopilot, a function that takes control of the car when driving on a motorway. It will change speed and react to traffic and even change lanes automatically.

Brown was using Autopilot when a lorry pulled across the road up ahead. According to Tesla, Autopilot did not spot the lorry's white trailer against a bright sky. The car did not slow down – colliding with the trailer before careering off the road. Brown died from his injuries in what was believed to be the first death involving autonomous driving technology.

Tesla's move to incorporate Autopilot was bold and controversial. Some said the technology was not ready – Tesla themselves said Autopilot was in 'beta' mode, a phrase normally reserved for a new app or game rather than software controlling a vehicle going at 65mph on a public road.

Tesla said 130 million safe miles had been driven by Autopilot which, when compared to the rate of human fatalities on freeways, was almost twice as safe.

The fact remains that the death of Joshua Brown was a tragic yet inevitable part of the timeline of autonomous driving in our lives.

Earlier in 2016, Google – the pioneer in autonomous driving – reported its first crash where the software was deemed to be at fault. It pulled out on a bus,



Tesla Model S on Highway 40

predicting that it would slow down. Nobody was hurt.

The US Transport Secretary, Anthony Foxx, said the Google crash was 'not a surprise' and that it was likely there would be more. Crucially, he said it was unfair to judge autonomous cars against perfection and instead comparisons should be made with accident-prone humans. Like Tesla, he made the point that, while the technology wasn't foolproof, it was already, even in its infancy, demonstrably safer than humans.

Development in autonomous driving is happening rapidly. Otto, a San Francisco-based company, is testing self-driving 18-wheelers on roads in Nevada. Unlike autonomous cars, the disruptive effects of which perhaps won't be felt for decades, trucks that drive themselves down motorways and freeways is a technology that will revolutionise the long-haul business – potentially allowing drivers to work longer hours. Then again, if the



US Transport Secretary, Anthony Foxx

technology is that good, perhaps we won't need drivers at all.

Uber has invested heavily in the technology, while rival ride-sharing service Lyft announced it is aiming to trial self-driving minicabs in the near future, with the deal being that riders take the wheel if necessary.

More traditional car makers like Ford, Volvo and GM are investing heavily in research – with rumours that Apple is also working on a car of its own.

Regulators are under pressure to keep up with the demands of companies while considering the safety impact of the new technology.

## Facebook



Mark Zuckerberg and Chan in Prague

The world's biggest social network topped 1.6 billion active users this year. More than half of the people on the internet are on Facebook. Chances are, even if they don't have a Facebook account, they are part of the business somehow – apps like Instagram and Whatsapp boast user bases of 500 million and 1 billion respectively, while Facebook is one of the three major players in virtual reality. It finally launched the Oculus Rift headset this year.

Perhaps more significant may be Mark Zuckerberg's emergence as a major philanthropic and political figure.

This year he's spent time with US President, Barack Obama, and Indian Prime Minister, Narendra Modi, as well as Chinese Premier, Xi Jinping, though that last meeting was considered to be a move potentially good for business (Facebook is banned in China) rather than any kind of political meeting of minds.

At the company's annual developer conference – a chance to show independent developers ways to work with Facebook on products – he used his time on stage to denounce the policies of Donald Trump. On Facebook, he regularly posts politically-minded messages, commonly referring to himself as the

'leader' of Facebook, rather than its Chief Executive or even founder.

The 32-year-old Zuckerberg had managed to keep his views from visibly seeping down into the running of his network but this was called into question when several reports – quoting former employees – suggested Facebook staff were artificially inserting news stories into the site's Trending Topics box.

The box appears to the right of a person's news feed and so is considered a prime piece of internet real estate. It is portrayed as an organic occurrence – that if enough people talk about a news story it will appear in this trending box because of Facebook's algorithm. Not so, the employees said. Stories were actually being placed in there by a team of human curators. What is more, these staff were apparently being encouraged to push liberal news sources over conservative ones. It was an allegation that had the conservative news media up in arms. A hastily arranged summit was held in May to address concerns.

Facebook denied an institutional bias but did say it would improve training of its staff to combat the issue. The furore does bring into question how political Zuckerberg can be if his network is deemed so powerful and influential when it comes to swaying voters.

As it stands, he may not need to worry. He has effectively already announced his exit from Facebook with a Bill Gates-esque move to give away his stock while still retaining control of the company.

Following the birth of his daughter, Max, Zuckerberg's two-month paternity leave in November demonstrated the site's ability to operate without him controlling things day-to-day.

He and his wife, Priscilla Chan, said they would use their stock to launch the Chan Zuckerberg Initiative, a limited company that has pledged to carry out charitable activities. Its first action was to invest \$24m to Andela, a start-up aiming to educate tech developers in Africa.

His 'giving away' of 99% of shares represented \$45bn at the time of the pledge – though money will be diverted to the Chan Zuckerberg Initiative at a rate of approximately \$1bn in each of the next three years. Critics have said the initiative could be utilized for lobbying and for-profit activities and that Zuckerberg's stock 'donation' can be deducted from his tax bill.

Some of their other 'charitable' endeavours also came under fire this year. In India, Facebook launched Free Basics, a service by which mobile users could access Facebook (and a small selection of other sites) and not have it count towards their data bill. In developing countries, where mobile data is extremely costly, this was billed as a way in which Facebook was bringing mobile internet to a whole new mass of people.

However, it wasn't seen like that in India. Instead, it was seen as a move to monopolise an emerging market. If users could access Facebook for free, what chance would any other fledgling business have to compete?



Marc Andreessen was largely critical of the ban to Free Basics in India

In the end, Free Basics was banned by the Indian communications regulator. The fall-out was considerable, not least thanks to a tweet by prominent Facebook investor Marc Andreessen who said the decision to ban was 'anti-colonialism'.

His tweet – which was later deleted – drew derision. It was an ugly affair for Facebook, with Zuckerberg apologising a day later saying he found the comment 'upsetting'.

Nevertheless, Andreessen remained on Facebook's board.

Free Basics was also banned in Egypt – and Zuckerberg seems to have retreated on his strategy for the time being.

In its quest to continue growing its userbase, Facebook is said to be looking at ways to operate in China. The site is currently banned in the country – like most Western social networks – but recent meetings with Chinese Propaganda Chief, Liu Yunshan, suggest an ongoing dialogue. Zuckerberg has also met with the charismatic Jack Ma, owner of Alibaba, the e-commerce company that also runs several of China's biggest social networks.

## Google

As it grew from a humble search engine, two sides of Google began to emerge. On one side, the bits that made money: search, advertising, YouTube, cloud services and more. On the other, the slightly more experimental side of Google: self-driving cars, Google Glass and hot air balloons delivering internet to the developing world.

Investors were heartened by Google's ability to keep one eye on the future but they did want more transparency over how much these side projects cost and whether they were making enough – or indeed any – money.

So Google created Alphabet, its own parent company. Alphabet would own a simpler Google that had been streamlined into the profitable parts of the business. New Google would

be led by Sundar Pichai, who joins the ranks of highly-successful Indian-born executives in Silicon Valley.

Old Google's more outlandish, unproven ideas were spun off into separate companies also owned by Alphabet. These 'Other Bets', as the company called them, would be reported separately in financial documents, giving a clearer picture of how the core business was doing.

It was in February that Alphabet nudged itself, albeit briefly, into being the most valuable publicly-traded company in the world, overtaking its Silicon Valley neighbour, Apple.

Any story about the stunning successes of Google – or rather, Alphabet – are typically footnoted with a worry about its power.

Google hit the headlines when it rebranded part of the business to Alphabet



Specifically, the company spent 2016, and will spend the next few years, facing unrelenting questioning of its market dominance in search and advertising. The European Commission has, at the time of writing, three anti-trust investigations open against Alphabet. The latest, filed in July, alleged Alphabet was abusing its dominance of search to benefit its advertising business.

This charge followed similar accusations that it was putting its shopping and price comparison services ahead of its rivals and that Android, by far the most popular mobile operating system, held too tight a grip on the world's smartphones.

Anti-trust investigations are lengthy but potentially catastrophic to balance sheets. More than 90% of Alphabet's total earnings come from advertising and so the curtailing of its reach could extend right across its business.

Also, should Alphabet be found to be breaching anti-trust laws, the penalty can sometimes be brought as a percentage of revenue, rather than a fixed fee. In one famous case, Microsoft was fined \$730m by the Commission after it was ruled the company was making it too difficult for



Sundar Pichai was announced as the new CEO of Google

internet browsers, other than its own Internet Explorer, to compete.

At its annual developer conference in May, there was of course no suggestion Google was concerned. At the event, Sundar Pichai showed off enhanced efforts in virtual reality – Google is seeking to make a universal platform for creating headsets – and huge strides in artificial intelligence.

Its 2014 acquisition of UK-based AI pioneer DeepMind is starting to show impressive results. Its AI robot was not only able to beat human opponents in a highly strategic game but also show 'creativity' while doing so, Pichai said.

## Techxit

The UK technology community, like many of the country's business leaders, rallied hard to prevent a Leave vote.

Of course it did not work and in the weeks following the referendum, technology companies reacted with disappointment, though not panic, at what may be ahead.

For start-ups, the primary cause for concern was less access to key talent.

There is a shortage of skilled developers in the UK and so start-ups are routinely looking to Europe for help filling the ranks.

In a survey conducted by Tech City UK, the Government quango that promotes the UK's tech scene, 1,200 members of the start-up community were asked to give their views on Brexit. 51% said they were worried Brexit would



Rumours suggested Brexit could benefit the tech sector in Berlin

negatively hit their ability to recruit the people they needed. But, perhaps sensing a global opportunity, 79% called for visa processes for countries outside the EU to be reviewed to make it easier to hire employees – particularly from the US and India.

The Brexit vote certainly won't bring about the abandonment of major tech firms in London – as they're not really in the city anyway. While the likes of Facebook have sizable offices in England's capital, favourable tax conditions have meant Ireland is the country of choice for the European headquarters of US tech giants.

Some think Brexit would be a gift to Berlin. The city could nudge ahead, as the 'Silicon Valley of Europe', if it is seen as a better place to start a tech firm.

In a cheeky stunt, Germany's Free Democratic Party paid for an advertisement to be driven around

London emblazoned with a message reading 'Dear Start-ups, Keep calm and move to Berlin'.

While technology in the UK is yet to produce its own Google or Facebook, there is an expectation that Fintech – financial technology – will be the sector where the city can flourish.

It's here where Brexit could cause serious damage. Should major banks move operations, even gradually, out of London the city's tech scene would lose its secret sauce. Unlike Silicon Valley, which is a five-hour trip and timezone away from Wall Street, London's start-ups are right up the noses of the banks in the City. Some warn that removing this proximity could slow innovation.

On the flip side, Silicon Valley firms have long been left frustrated by what they see as harsh policies, particularly in relation to privacy, put in place by the EU.

For Google, an attempt to 'unify' its privacy policy, by combining data across its many services, was eviscerated by the EU – a publicity nightmare for the firm. Also, the so-called Right To Be Forgotten – in which individuals can have certain search results removed from searches for their name – also frustrated the company.

If the UK is removed from Europe's vision of data privacy it may be seen as a more favourable (or at least more straightforward) market to operate in than before.

There have been some anecdotal reports that UK start-ups have already found it more difficult to attract investment.

The announcement of a likely sale of ARM Holdings in July was touted as evidence there is huge value to businesses in the UK. The Cambridge-based company designs the computer chips used in the majority of mobile devices, including Apple's iPhone. Japanese group SoftBank said it planned to buy ARM for £24bn, a move that was welcomed by the newly-formed Theresa May Government. The sale was proof, Matt Hancock, Minister responsible for digital policy, tweeted that the UK could foster world-beating tech firms.

Others, though, were concerned that ARM Holdings had seemingly just become yet another British technology company bought out by foreign money.

## Social media

Social media in 2016 has been about going 'live'. Where live broadcasting once meant hooking up to a satellite and paying thousands of pounds to beam over the airwaves, it now takes nothing more than loading up an app.

The surge in popularity of live streaming from mobile phones – helped in part by improved mobile network speeds in the US, UK and Europe – has already had a profound societal effect.

Moments after Philando Castile was shot by police in Minnesota, his girlfriend began a Facebook Live broadcast. Immediately, viewers from around the world could witness the bloody and graphic aftermath of the shooting.

It came just days after another black man, Alton Sterling, was killed by police in Baton Rouge, Louisiana. Both killings provoked anger which was intensified by the live broadcast.



Live streaming on the go has had a profound societal effect

While traditional media companies are bound by decency guidelines and broadcasting laws, live streaming on the internet has no such limitations.

Live streaming has also stepped in when traditional media has fallen short. After shootings at a gay nightclub in Orlando left 49 people dead, Democratic members of the US



Jack Dorsey, Chief Executive Officer of Twitter

House of Representatives staged a sit-in that lasted some 26 hours. The US equivalent of BBC Parliament, C-Span, was unable to broadcast the sit-in as the house was, by definition, not in session. Instead, the network – as well as the likes of CNN and Fox – used live stream feeds from the chamber floor to make up the gaps in their broadcast. In many cases, the live streams were being filmed by the politicians themselves.

Over the course of 2016, Facebook invested heavily into getting big-name media brands using Facebook Live. There was continued caution, however, as media companies worried about the level of control Facebook was rapidly obtaining over distribution of journalism.

Another challenge facing the networks in 2016 was activity by terrorist groups. Twitter, which continues to suffer from widespread instances of trolling and abuse, acted quickly to stamp out pro-extremist views that were being posted on the network. It said thousands of accounts had been shut down using a combination of human moderation teams and algorithms designed to recognise tweets that could be carrying a jihadi agenda.

Twitter, incidentally, stumbled its way through the year, unable to improve on its faltering stock price and in one unexpected quarter managed to record a drop in active users. Investors had

long been on CEO Jack Dorsey's back over slow growth but *negative* growth was territory few expected Twitter to enter. That said, the company is well placed to improve over the next 12 months. It has signed big deals to stream live sport directly on the platform and its live streaming app, Periscope, is a worthy competitor to Facebook Live.

Then again, Twitter's main selling point – that it's where news happens and celebrities hang out – is looking under threat. Facebook is aggressively pursuing news organisations and 'influencers'. As for celebrity, Twitter has been overtaken by Facebook-owned image-sharing social network Instagram. The app announced it had reached the 500 million monthly active users milestone in June – confirming, as many had suspected, that it was leaving Twitter in its shadows. When celebrities talk about how many followers they have, it's now Instagram they are referring to, not Twitter.

Meanwhile, Snapchat continues to gain influence. While the app began as a simple way to share photos that would 'disappear' seconds later, Snapchat is now a major publishing force. Its Discover tab, where media publishers like the *Daily Mail* and *Vice* create bespoke content in the vertical screen format, is seen as a gateway to the elusive younger audience that media companies and advertisers crave.

## Apple

2016 was the most difficult year Apple has had for well over a decade.

For the first time, the iconic iPhone was officially in decline, with year-on-year sales dropping by around 10 million compared to the same period in 2015.

That said, sales of 51.2 million still make it the biggest selling technology product, of any kind, on the market.

The drop in sales contributed to a 13% drop in revenues overall, the first drop in revenue for more than 10 years.



Apple iPhone sales have declined by 23% in China

It left investors worried that Apple's reliance on the iPhone's success was very quickly becoming a serious, perhaps long-term, problem.

To make matters worse, Apple's recent success in China went off course. Apple makes more money there than it does in the whole of Europe and it was in China where growth was occurring at an unprecedented rate previously enjoyed by no other company. Simply put, Apple couldn't build stores fast enough to satisfy the demand of China's middle and upper class.

Instability in the Chinese economy hit Apple hard – even though Chief Executive, Tim Cook, had been confident they could weather China's wobbles.

In 2016, Apple's sales in China dropped by 23%. A number of its services were also shut down by the Chinese Government – a move that prompted Apple investor Carl Icahn to sell all of his Apple shares at a value of \$2bn (£1.4bn).

Tim Cook took the fairly unusual step of getting in front of the TV cameras to defend the company as an investment – his appearance on CNBC's *Mad Money* programme was designed to make the valid claim that a bad quarter for Apple was still hugely profitable and that the company had more ideas in the pipeline.

But does it? The Apple Watch has not been the blistering new category investors had been looking for – though Apple is yet to actually say how many it has sold to date. As for more new ideas and products, Apple's long tradition of absolute secrecy is being put under strain.

Is the company being quiet because it is working on something extraordinary, like a car? Or is the company being quiet because it has nothing new to talk about?

The uncertainty saw the company's stock tumble in April, coming as it did



Tim Cook, Chief Executive of Apple

against the backdrop of the encryption battle described earlier in this review.

There were also concerns that Apple is lacking in expertise and resources for the next big tech boom – artificial intelligence and big data. While its rivals collect reams of data on users, Apple has comparatively little.

That's been useful from a publicity point of view – collecting data is always seen as sinister, no matter what the purpose – but long term Apple

could find its software is noticeably more 'dumb' than ideas coming out of Google and Facebook. Already its personal assistant, Siri, suffers from being considerably less advanced compared to digital assistants from Google or Amazon.

The perhaps premature comparisons to Blackberry have begun – 2017 will be a defining year for what is, for the time being at least, the most valuable public company in the world.

## The new space race



Elon Musk, CEO of Tesla and SpaceX

With the passing of Steve Jobs, Elon Musk has slowly taken up the reins as the most interesting, peculiar and potentially world-changing individual in Silicon Valley.

He's best known as the boss of Tesla, the company that made electric cars cool (though he's not selling enough of them quite yet).

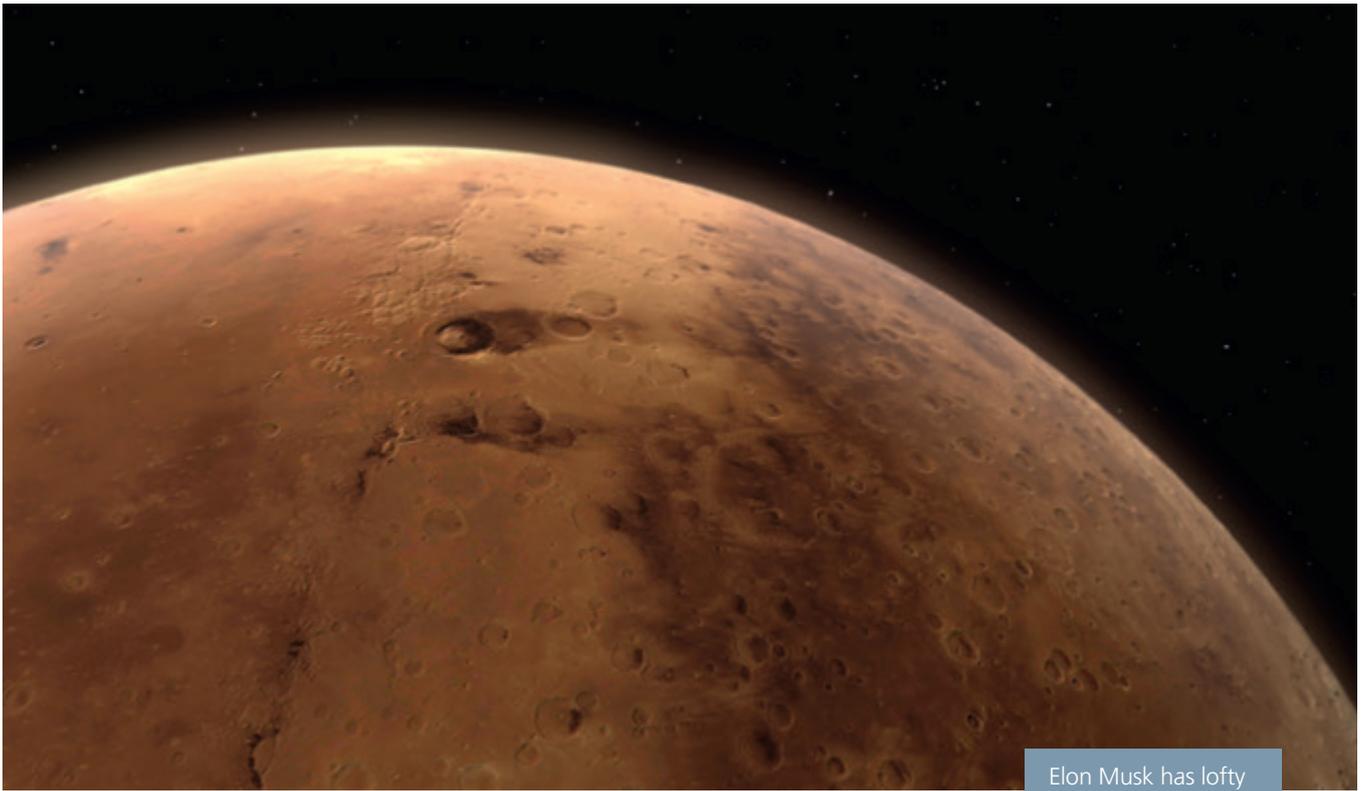
His side project, SpaceX, is applying Silicon Valley money and culture to the new space race. Working with NASA,

SpaceX has already delivered supplies to the International Space Station and by 2018 it is hoped the partnership will see the launch of a mission to Mars.

Musk predicted humans might visit the planet by 2026, with the eventual aim of creating a human colony on the Red Planet. 'I'd like to die on Mars,' he said. 'Just not on impact.'

SpaceX has already hit some important milestones on its way to its Mars goal. In December 2015, the company managed to land a rocket upright back on earth after it had been in orbit. Typically, rockets returning to earth are so severely damaged on re-entry they are unable to be used again but SpaceX believes focusing on reusable space technology will ultimately reduce the cost of space travel by a factor of 10.

Other commercial firms are working with NASA on more exploratory missions. Lockheed Martin wrote much of the computing code that got NASA's Juno mission into orbit around Jupiter in July 2016, a mission that had been in the making for more than 13 years. That effort hopes to determine how Jupiter may have been formed and also if it has a solid core.



Elon Musk has lofty ambitions for the colonisation of Mars

SpaceX is just one company looked after by the increasingly powerful Elon Musk. He promised to make Tesla, his electric car company, profitable in 2016. At the time of writing, the firm is some way off doing that and investors are beginning to lose patience with the company that lost almost a billion dollars over the past year.

However, the company managed to attract more than 400,000 pre-orders for its Model 3, the most 'affordable' of the Tesla range, due to be on sale in late 2016. Customers had to put down a \$1,000 deposit to make the pre-order, though this can be refunded at any time.

Investor frustration has had Musk doing what he does better than anyone else in Silicon Valley – thinking and talking big. In 2006, his so-called 'masterplan' was enough to spur hundreds of millions of dollars investment for his Tesla ambitions. In July of this year, he posted the second part of his masterplan. In it,

he described how he wanted Tesla to begin making more electric vehicles, such as buses and lorries.

He also said his company was working on a 'solar-roof-with-battery' product that would give people an easier way to use their homes as a way of generating their own power.

Perhaps more interestingly, he said he intended to be a competitor to ride-sharing service Uber, by setting up fleets of self-driving Teslas in towns and cities. The cars could be summoned by an app, he said, allowing Tesla owners to loan out their cars when they didn't need them. In towns where there weren't enough Tesla owners to satisfy demand, Tesla would provide the vehicles itself.

Outlandish, lofty ideas that some have already dismissed as being completely unfeasible and a sign of an entrepreneur gone amok – but Musk still commands respect and trust among Silicon Valley's richest.

# First Recovery



First Recovery's HQ in the City of London



Paul Jackson,  
CEO of First Recovery

**W**hat happens when a small business is flooded, or suffers a major fire or terrorist attack?

You run a successful company employing more than 70 people. Your family started it in the 1950s. Some of the staff attended your christening. It's a happy, profitable and satisfying life.

One weekend, due to an electrical fault, your entire facility burns down. You were on holiday. You return on Monday morning to find utter devastation. Thanks to your excellent local Fire Brigade the blaze is out, but you can see a bulldozer shoving the remains of your modest factory into the corner of the plot upon which it so proudly once stood.

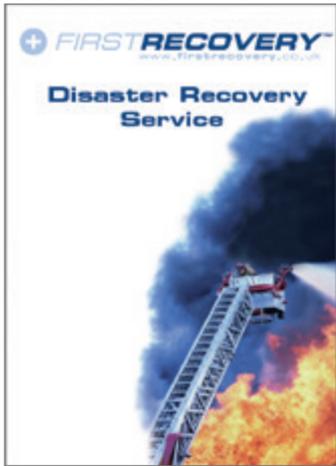
What would you do?

This was a real First Recovery customer facing a real situation. Under normal circumstances the MD would be left to recover the business by organising premises and IT, spending money, trusting the insurer will reimburse all his costs... eventually.

Happily, this business was insured by one of our partners who notified us of the problem. Our Operations Centre in Pangbourne, Berks, immediately despatched staff and equipment. By 2pm on the same day we had organised nearby office accommodation, installed IT, re-established email and diverted his main company phone lines. We encouraged the MD to establish dialogue with all his main clients to explain to them what had happened.

## FACTS ABOUT FIRST RECOVERY

- » Established 2003
- » Authorised and regulated by the FCA
- » Multiple industry awards
- » Disaster Event Managers all senior ex-Police Officers
- » 100% success rate in recovering clients within 24 hours
- » Emergency disaster recovery service – free to clients
- » UK's most popular DR company



He discovered that every one of them had been called by his biggest competitor that morning. The competitor claimed his company was now out of business and that they were ready, willing and able to take over his contracts. He was able to reassure his clients and establish a two-week 'ceasefire', during which he was able to farm out production, take some temporary workspace and carry on. In fact, he kept every one of his clients. Eventually his factory was rebuilt, his staff moved back in, and today his business is thriving.

The key to this success was *speed of response*. The client needed to get in contact with his clients as soon as possible to ensure they didn't stray, never to return. He needed somewhere smart and professional close by to work from, IT installed so he could start sending and receiving emails, his company web presence up and running, and he needed calls diverted to the alternative site.

That is what First Recovery do, and we do it *fast*.

How much did our client pay us to save his business? Zero.

How?

### 'Traditional' disaster recovery...

Over the past ten years there has been nothing less than a revolution in disaster recovery ('DR') services for smaller businesses. First Recovery was at the forefront of this change: in 2003, it was the first company in the world to identify and launch an emergency disaster recovery service specifically aimed at SMEs (up to 200 employees).

The business model for DR companies has remained unchanged since the very beginning of the industry: they will buy, build or rent a very large building

then fill it with lots of expensive servers and IT equipment. It is left empty until the day it is needed.

Add ongoing energy, security, technology refresh and maintenance overheads and one may imagine only City traders, government departments or very large businesses could afford the tens or hundreds of thousands a year such arrangements cost.

First Recovery wanted to provide exactly this level of service but at a price even the humblest of organisations could afford.

*Totally free, for example.*

### First Recovery – a radical new approach:

- » accommodation provided normally within a 5 mile radius of the client premises in any one of over 500 standby office locations around the UK with furniture, meeting rooms, reception facilities and secretarial services for a minimum of one month
- » an experienced Disaster Event Manager attends on site along with appropriate technical IT staff
- » all our Disaster Event Managers are senior ex-Police Officers because their experience and training is geared toward acting rapidly and effectively in an emergency
- » delivery, commissioning and installation of a standby 6 or 12-station PC network
- » re-establish broadband connection to internet services
- » reinstatement of [client's own domain] email service
- » reinstatement of data or general support for client data backup
- » free & unlimited access to BRIO, our easy-to-use online DR planner plus multi-platform app

#### » PARTNERS

First Recovery has more than 70,000+ UK SME clients via insurance industry partners:

- » Allianz (UK)
- » Aspen Risk Management Ltd
- » QBE (Europe)
- » Travelers Insurance
- » Zurich Insurance plc
- » Brokerbility

- » (optional) provision of online data backup services
- » (optional) provision of UK-based Call Centre to handle high call volumes and/or redirection of telephone lines to the recovery location
- » all services delivered & completed within 24 hour Service Level Agreement from mobilisation instructions.

### How do we achieve this?

- » Instead of static accommodation waiting for us, we make use of a database of 500 or more office sites *available at short notice* across the UK.
- » *Incorporating our service into mainstream business insurance policies*: it becomes a free additional service within the policy, akin to no-cost inclusion of legal expenses cover.
- » *Saving our partners' money*: an insurer's single largest component in the majority of commercial claims is the cost of 'Business Interruption'– the additional costs of putting things right, plus loss of profits from the time of the disaster all the way through to when profits resume. Because our clients are back in business so quickly we can cut these costs by up to 70%, meaning our partner's insurance premiums are about the same as those that do not include First Recovery. In effect, our clients pay nothing because they are a 'better risk' to insurers.
- » *Simplifying the service*: when a disaster happens, more or less all businesses need the same things: somewhere close at hand to work from, plus IT, phones, some expertise...and they need it fast.
- » *Testimonials* from successfully recovered clients, their brokers and insurers are available at our website:



<https://www.firstrecovery.co.uk/testimonials.php>

Nearly half a million incidents were attended by fire and rescue services in 2014/15

### The future

Some insurers will always be focussed upon value, and will not wish to add such services to their proposition. However, with increased frequency and severity of extreme weather events, there is pressure upon the industry as a whole to look after their clients when in distress and moreover to be seen to help by the wider public.

First Recovery is the market leader with at least five times the number of clients of our nearest competitor. We are talking now to Flood Re, selected insurers and leading brokers to increase further the number of SMEs who can benefit from our service *when they need it most*.

Contact your insurance broker for more information about First Recovery



# Inhealthcare



Inhealthcare is owned by Yorkshire entrepreneur Peter Wilkinson

“There is so much potential in our technology to remove mundane functions from the NHS and free up doctors and nurses to concentrate on what they do best, which is caring for people in genuine need”

Peter Wilkinson



84 year old warfarin patient John Binks says the digital home monitoring service is “as easy as making a cup of tea.”

**T**echnology specialist Inhealthcare believes its pioneering digital health services can help the NHS to save hundreds of millions of appointments a year.

The four-year-old company is calling on the NHS to embrace innovation and accelerate the take-up of NICE approved technology to improve patient care and reduce millions of unnecessary hospital visits.

The Harrogate, North Yorkshire business has created a national digital health platform which enables remote monitoring for the entire UK population. The 10 million pound investment is supporting 25,000 patients across the county, saving thousands of NHS visits while creating life-enhancing independence.

Inhealthcare’s infrastructure supported the largest remote-monitoring service in England with the roll out of a smartphone app for 7,000 chronic pain in Leeds earlier this year.

Another of its services includes a self-testing service for warfarin patients. With a 5,000 patient roll out, the organisation is reducing pressure on clinics and liberating patients from fortnightly hospital visits. If rolled out nationally, the service could save tens of million hospital visits a year. The company has also been selected to underpin the largest of the NHS England test bed programme as well as the Healthy Town initiative in Darlington.

Inhealthcare is part of Intechology plc, a business owned by Peter Wilkinson, a serial entrepreneur with a strong record of bringing innovative technology to the masses. Peter’s successes include the first free consumer internet service, Freeserve, the first provider of official websites for England’s top football clubs, Planet Football, and the online betting platform, Sports Internet Group, later sold to BSkyB for £300m which later became Sky Bet.

## Next stop: digital health

In 2012, Peter founded Inhealthcare, assigning one of his trusted advisors Bryn Sage as chief executive officer. Bryn has recruited expert NHS innovators to help drive Inhealthcare to the top of the digital health field. Four years on, the company is making significant steps towards the digitisation of the NHS, with thousands of patients using the remote monitoring services across primary, secondary and health and social care.

As a society we are embracing technology in our everyday lives. It is changing the way we live and how we communicate. Be it banking, shopping, holidaying or booking a taxi – digital is now the go-to choice for many. The demand for digital healthcare is also growing with patients more empowered than ever to turn to the internet and apps to self-care.

Inhealthcare's approach to digital transformation allows clinicians to build their own set of requirements and build scalable and cost-effective digital health services.

To date, its digital health services include those for anticoagulation, chronic pain, undernutrition and vital signs. The company will be launching a new app for mental health later this year.

Uniquely Inhealthcare works with any device or technology. A new diabetes treatment pathway may incorporate the use of a glucose-testing monitor with patients communicating with their GP via SMS, while one for mental health may include multiple apps for a range of psychological conditions which send reports directly into the patient record.

## Leading the digital health revolution

Inhealthcare's successes lie in its ability to dig deep to uncover areas where technology can drive real value and

efficiency gains. In recent months, success within the UK digital health economy has come in all shapes and sizes.

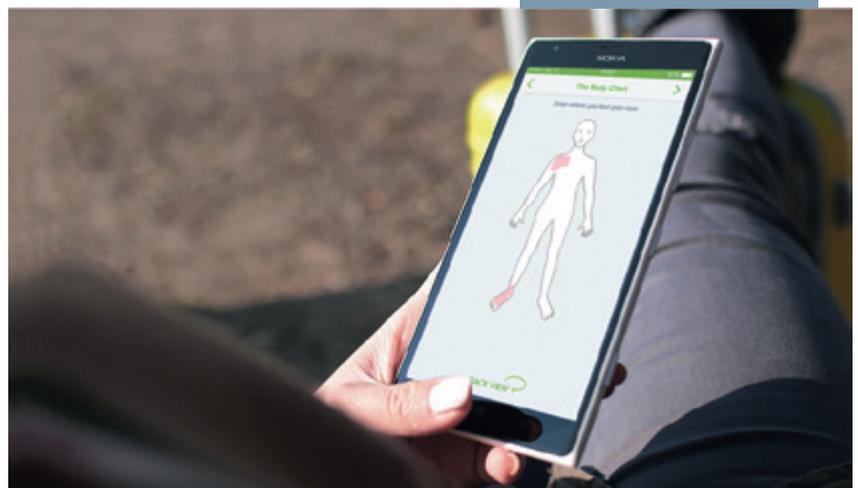
In January this year, Inhealthcare, in collaboration with app developer ADI Health, enabled the largest scale digital health service to be commissioned in the UK. The pioneering contract, which has been rolled out across Leeds, combines leading-edge technology with the latest medical thinking. Across the city, more than 7,000 chronic pain sufferers are now being provided with a secure mobile app that helps them manage their condition better and connects them directly to pain specialist teams and their GP.

The work in Leeds highlights a significant milestone for Inhealthcare as the first region in the UK where patients are able to send information securely back to their GP. Health indicators such as, for example, blood pressure, weight or heart rate can be monitored outside of the surgery, with irregularities flagged for clinical follow up.

Earlier this year, Inhealthcare was selected as the infrastructure provider to underpin the NHS England test bed in Sheffield. The major Government drive to modernise delivery of care encompasses seven test bed sites to address complex issues in healthcare

“In January this year, Inhealthcare, in collaboration with app developer ADI Health, enabled the largest scale digital health service to be commissioned in the UK ”

A new app to help chronic pain sufferers is available to over 7,000 patients in Leeds





From automated calls to a landline to smart phone apps, Inhealthcare ensure its services can be used by all



and Inhealthcare's national platform will play a fundamental part in connecting patients securely to care. This exciting project which will monitor patients with diabetes, respiratory disease, hypertension and mental health conditions will create a holistic model of care with an aim of national roll-out.

Over the past 18 months, the organisation's self-monitoring services for the anticoagulant warfarin have taken unprecedented steps towards easing the lives of thousands of patients. The service is now operating in Wigan, Ilkley, the Isle of Wight, Durham, Darlington and Hull gives patients the freedom to manage their condition at a time and place convenient to them, without frequent clinic visits. The service has demonstrated positive clinical outcomes, for example, in County Durham and Darlington 70 per cent of patients using the service improved their 'safe time' (which reduces the risk of a stroke) by more than 20 per cent.

### Digital inclusion

Inhealthcare know that for digital health to be successful, the technology used by both patients and clinicians must suit those of all ages and technical abilities. Digital inclusion can be a barrier for widespread adoption, and much of Inhealthcare's success lies in making its offering available to 99 per cent of the population. Inhealthcare offers patients the choice of technology, from traditional automated telephone calls to SMS and mobile apps. While an automated

phone call might suit someone who is less familiar with technology or someone who lives in a rural location, an app or SMS might suit the more tech savvy or someone who is always on the go. In Wigan, one warfarin patient, 84 year old John Binks finds communicating his readings back to his nurse "as easy as making a cup of tea."

### Clinician led

For Inhealthcare, clinical input is key. Giving clinicians the tools and means to build scalable solutions that work for their clinical and patient needs is a vital element to its proposition. If a solution does not solve a problem for clinicians, it simply is not going to work and it is this understanding that Inhealthcare believes has enabled much of its success to date. Telehealth has a history of failed projects because commercial companies do not take the time to understand both the complexities and drivers of the NHS. Inhealthcare's Pathway Builder enables clinicians to digitise almost every type of care service at speed.

### The future for Inhealthcare

The opportunity to free up NHS staff from mundane and routine tasks is here. Through the adoption of technology, Inhealthcare firmly believe they have what it takes to save tens of million hospital and GP visits, meaning the NHS can focus on what they do best, which is caring for people.

Despite its successes, Inhealthcare has faced its fair share of setbacks. There is no doubt that the complexities of the NHS inhibit widespread adoption, which is why the NHS is filled with pockets of innovation which never quite make a national roll out. Inhealthcare is calling on the Government and NHS leadership to take a central approach to digital transformation and to accelerate the pace at which it adopts new ideas and technologies.

### » DATA SECURITY

Leaked data and privacy issues among many NHS apps caused a media frenzy with patients worried their data might fall into the wrong hands. Intechology has a history of data services so data security remains a key priority for the organisation. The national platform sits within the secure NHS network, and meets the highest levels of data governance, giving patients reassurance their personal details remain confidential.

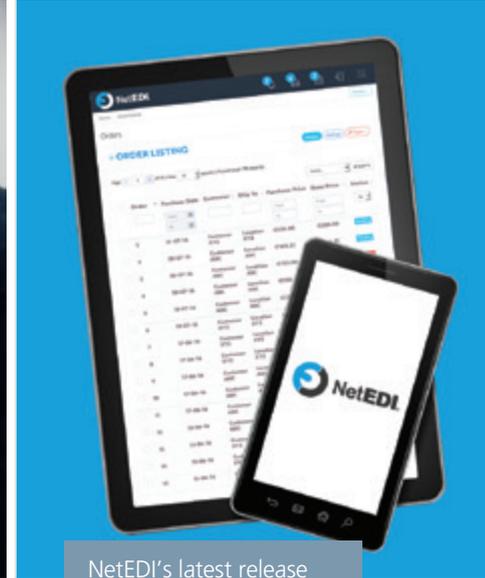


Inhealthcare's Pathway Builder allows clinicians to digitise almost any area of care at speed

# NetEDI



NetEDI provide close liaison with their clients through a Managed Service offering



NetEDI's latest release will work across all devices in any browser

**N**etEDI is a Business-to-Business (B2B) cloud-based software provider that facilitates the exchange of business documents between organisations. The Preston-based company is firmly focused on providing high-quality, innovative solutions and combines the latest technologies with years of expertise to offer a SaaS platform (Software as a Service) for business of all sizes.

## Responding to the market

With organisations continuously looking to drive operational efficiencies and implement cost-cutting, annual spend on B2B software and e-procurement efficiencies continues to increase. It can make an important contribution to how a business operates by improving cash flow, maintaining good relationships with customers and suppliers whilst also forging links with new business partners.

However, as a group, we find that there are still thousands of SME's in the UK that are confused by what has become a necessary technology for modern business. Many of the country's larger organisations now require their suppliers to transact electronically using Electronic Data Interchange (EDI) standards. This led us to design a service that could cater for all types of company from large corporations with extensive budgets and IT departments all the way down to sole traders.

Having previously worked for several of the other B2B software providers in the field, the NetEDI owners (Steve Martin, John Myerscough, Mark See and Marc Nelson) have an excellent understanding of what is required both from a business and user perspective. They have applied their knowledge to develop an innovative,

## FACTS ABOUT NETEDI

- » Cloud solutions provider for Electronic Data Interchange (EDI) & Business-to-Business services (B2B)
- » Established since 2009
- » Privately owned, self-funded company
- » Recognised by Industry leading advisory company for innovation
- » Scalable, cloud-based architecture
- » Award winning ERP integration service

“In essence, it means that by making a single connection to the NetEDI service a client will enable electronic trading relationships with all of their business partners”

robust platform with the flexibility to be scaled to meet different business sizes. Coinciding with the advent of cloud-computing, the company was keen to harness the advantages that an online service model brings and use this as a base to provide a more elegant way of supporting and managing the exchange of transactional data between businesses.

One of the problems had been the over-complicated nature of supporting various technical requirements needed to achieve an end-to-end connection with a trading partner. Maintaining an environment that could support transactional standards such as EDI and XML (Extensible Markup Language) whilst handling various communication protocols and trading partner requirements had resulted in very fragmented software platforms deemed necessary to support the overall B2B requirement.

The NetEDI Software-as-a-Service (SaaS) counters these problems. A fully-enabled B2B integration platform can be ‘switched-on’ in as little as 24-hours providing a service that eliminates the complexity for the client. Data processing and transactional exchanges

with business partners take place in the background inside a secure hosted environment, whilst user interaction is via a simple to use online interface. In essence, it means that by making a single connection to the NetEDI service a client will enable electronic trading relationships with all of their business partners.

The main objective has been to free-up a business from the burden of using its own IT experts and infrastructure by giving them not only the technology but also the necessary tools. We do this in the form of a Managed Service provision. Our people act as our customers’ team of experts. We talk to a business’ trading partners to manage the setup and connections as well as monitoring the flow of transactions which ensures a smooth daily operation.

### Integration

A key area for us has been how we can better integrate a client’s business transactions with their own Accounting and ERP (Enterprise Resource planning) system. As transactions are exchanged with partners, an organisation needs the data to be linked with its own

#### » WHAT ARE THE KEY ADVANTAGES OF OUR SYSTEM?

- » We have tried to eliminate some of the common operational obstacles that can detract from the overall usability of similar software platforms. Key elements such as multi-user access help clients remove bottlenecks as different users inevitably need to perform different tasks in the system simultaneously.
- » We pride ourselves in our capability to provide enormous data processing throughput that is able to support the types of volumes associated with multinational companies.
- » The SaaS model enables us to update the platform automatically with new features on a very regular basis to ensure that organisations are keeping pace with the latest changes and continue to have access to the best available technologies.
- » The ability to handle enterprise level, business critical functions and processes. Our service uses cutting edge hardware with an emphasis on high levels of security and reliability. The platform is housed in Europe’s premier data centre located in London. It enables us to offer superior levels of performance, scalability and security.

accounting processes to maintain an overall real-time visibility of orders, invoices, and despatches.

Traditional integration methods have centred on running file conversion routines to enable a transaction to enter the ERP. We looked at it from a different angle and where possible sought to work with the built-in web service capabilities offered by today's modern ERP systems. This technology allowed EDI functionality to be embedded within the ERP itself meaning that orders, invoices and despatch notes are linked directly to achieve greater speed, reliability and less points of failure.

### Innovation and the future

Privately owned and run by the original owners, the company has grown to become one of the UK's principle B2B providers. It's important not only for customers but for the industry in general that we continue to innovate and look ahead at technologies that can simplify the means of how companies are doing business together.

Technology has always been at the core of what we do. We're constantly looking ahead at the opportunities this affords us to enhance the service. Our R&D team analyses and researches upcoming trends to provide ideas on the future direction of the platform to ensure that customers will always be using the most up to date technology available.

Having being named as 'Cool vendor' by the world's leading information technology research company, NetEDI also gained an innovation award from UK multinational, Sage. It recently partnered with SAP, one of the largest enterprise software companies in the world to gain certified integration between the NetEDI platform and SAP Business One. Such recognition



The offices – businesses of all types and size have signed up with NetEDI

underlines our continued ambitions and opens up new horizons.

### Impact

Until recently, there had been barriers that had bred reluctance in some companies to part from manual methods and older legacy software systems – Capital expenditure being one of them. We feel that the B2B SaaS model in particular has broken such barriers by helping to reduce costs and to adopt the service as a pay-as-you-go model. One of the biggest reasons that using cloud software can help cut down IT expenditure is because businesses don't have to invest in physical hardware infrastructure. In our case, the client also has the benefit of a fully managed service which removes the need to employ specialist staff to perform the B2B operation.

Also, from a technology standpoint, smaller companies can now benefit from the same up to date hardware, tools and technology as a larger organisation.

The company believes that its capacity for innovation and ability to deliver easy-to-use systems ensures an exciting future and opens the door to further opportunities.

“Technology has always been at the core of what we do”

# OBS Logistics



Dave Renshaw, CEO,  
OBS Logistics



Potter Logistics provide  
high quality warehousing  
and distribution services

## ABOUT OBS LOGISTICS

- » Over 12 million Transport orders processed through our managed service annually
- » Employ over 100 staff in the UK
- » Offices in London, Liverpool, Birmingham plus Australia & Singapore
- » Systems installed in 60+ countries
- » Business established for over 40 years
- » Two owned data centres support hosted services
- » Annual turnover £10m+
- » ISO 9000 and 27001 accreditation

**O**BS Logistics provides companies with End to End Supply Chain Visibility. Through the *CALIDUS Total Logistics* software package, which can operate with any ERP (Enterprise Resource Planning) system, organisations can now have a single version of the truth regarding all their supply chain operations. This allows them to make mission critical operational decisions based on real time information, as opposed to fragmented data often manually collated from different systems at different time points.

Founded over 40 years ago in the UK, OBS Logistics is a software company that has a strong customer base including many blue chip organisations across a broad range of industry sectors, such as automotive, pharmaceuticals, transport & logistics, food & beverage. This has been achieved through understanding our customers' and their customers' markets and the challenges they face on a daily basis at both an operational and strategic level.

To allow customers to achieve optimal efficiencies and maximise the effectiveness of their supply chain operations, the *CALIDUS Total Logistics* Solution has been designed with a flexible, adaptable, modular approach. This enables customers to select only the software component most suitable for addressing their challenges and to resolve business problems in a focused, controlled and measurable manner.

## Practical Technological Development & Innovation for Industry

Business is constantly bombarded with new technology, new apps and new software. This frequently generates more data than many companies can manage effectively and often results in important information being lost or misunderstood.

A cornerstone of OBS Logistics is the skill of our UK based in-house Customer Service, Software Development and Advanced Technology Development teams. A key aspect of OBSL's success has been the benefits of these groups working together. The Customer Service team feeding the customers' requirement and aspirations to the Development team, combined with the latest technical innovations being provided by the Advanced Technology team, with all teams focused on delivering systems that are optimised to meet our customer's needs.

For OBS Logistics, the mission isn't simply about getting more data to the customer ever faster – It is about getting the right data to the right people at the right time, and only data that provides relevant information. This keeps them informed and, when necessary, enables them to make decisions to improve the management of their business. Enabling our customers to make the right decisions at the right time can help anticipate and avert potential problems and prevent them escalating, as opposed to only being able to react after an event, to limit the damage to vital services being provided to their customers.

To achieve this, we have developed best in class applications and solutions that are continuously kept up to date in the rapidly changing hardware and software market. *CALIDUS Total Logistics* solutions can integrate with a company's existing hardware and software. This allows customers to maximise the potential of their existing software and hardware as well as getting all the additional benefits of the new *CALIDUS Total Logistics* solution.

Our App based versions allow customers' organisations to benefit from the flexibility of mobile devices. The latest *CALIDUS Vision* mobile dashboard solution is a good example, delivering up to the minute Key Performance

Indicator monitoring across all aspects of a client's business to support company managers on the move.

### How we do it

There are many technology companies, all offering different supply chain solutions. The majority of these companies have a single core competence, but then attempt to extend their offer by bolting on different elements to enhance their product feature and function in an effort to add value. This means customer organisations often end up with a multitude of differing legacy hardware and software systems, many of which have incompatible and inconsistent data outputs, requiring the resulting information to be manually consolidated.

Instead, OBS Logistics offers customers a hub approach. *CALIDUS Total Logistics* solution can take supply chain data from all of the existing satellite technologies that an organisation has in place, and after aligning it, combines this with the data in the organisation's ERP and other system. This allows organisations to make the most of the benefits that specialist technology offers while gaining a holistic view of the supply chain operation; in other words, one version of the truth.

### When getting it right is a way of life

NHS Blood and Transplant (NHSBT) is a Special Health Authority and key to the operation of the NHS. Providing blood and organ donation services to the NHS means supplying enough safe blood to hospitals in England and providing solid organs and tissues to hospitals across the UK. Each year donors give about 1.6 million donations of blood and about 4,000 organ transplants are carried out – saving and transforming countless lives. Over 200 specialist vehicles are used to move blood and associated products between donation sites, processing

“Working with OBS Logistics enables us to keep up with evolving demands and the pace of change, which in turn enables us to deliver customer projects in a timely manner”

Ken Watson, Finance Director and Head of IT, Potter Logistics



NHSBT collect & deliver two million donations of blood every year to the NHS in England

## » THE FUTURE

From a supply chain perspective, the world is getting smaller. Companies are faced with accommodating ever shorter delivery cycles, managing cost and pricing pressures, while operating in increasingly complex multi-modal transport models, which can be affected by all manner of factors ranging from regionalised political issues or industrial action, through to natural disasters. These ever increasing demands generate more data resulting in an organisations decision making process becoming more complex and ever more time sensitive.

Based in the UK, OBS Logistics sees this as one of the key challenges for industry and is working with blue chip organisations across the globe to support them in having a solution in place that not only meets their needs now, but can adapt and evolve to support their future requirements.

laboratories and stock holding centres for final delivery to over 250 hospitals.

OBS Logistics worked with the NHSBT team to supply a Transport Management System for its 200 strong vehicle fleet. The new system is based on *CALIDUS TMS*, the core application that integrates a number of allied technologies. Interfacing with NHSBT's existing ERP system, called *PULSE*, *CALIDUS TMS* integrates *CALIDUS ePOD*, *CALIDUS Portal*, a route optimisation system, Telematics and Satnav, into a single cohesive system. There are over 250 NHSBT drivers and each is equipped with *CALIDUS ePOD* running on an Android smartphone.

Given the life or death nature of what NHSBT does there is no scope for failure. The medical teams at the hospitals must get exactly what they need – on time – every time! This unrelenting demand for excellence is tested every minute of every day. The system is provided by OBS Logistics as a 24x365 fully hosted managed service.

### Enhanced customer service through increased supply chain visibility

Potter Logistics provides specialist third-party logistics (3PL) services to the general logistics, chemical, pharmaceutical, food and animal feed

sectors. The company selected OBS Logistics to gain the many benefits that having *CALIDUS WMS* can provide. These include over-the-web dialogue with customers and easy EDI connectivity for paperless ordering which are particularly important to Potter Logistics. The new system was a major investment in enterprise-level technology and has ensured Potter Logistics maintain their rapid expansion programme by delivering superior customer services.

OBS Logistics, working with Potter Logistics, has supplied and installed *CALIDUS WMS* across six sites. The company is utilising barcode scanning for stock management for its Droitwich, York and Selby distribution centres.

Recognised in the industry as a leader in the Supply Chain market, Potter Logistics has recently installed *CALIDUS Rail*, to support the doubling in size of their railhead facility to meet the changing transport needs of their clients. *CALIDUS Rail* is fully integrated with *CALIDUS WMS*. This shipping container management solution is part of the overall warehousing solution enabling automated management of rail-delivered containers. It utilises in-vehicle terminals fitted in the forklift trucks for moving the containers to and from the trains. The system not only directs the forklift drivers, but also captures the location and movements of the containers, giving full visibility of their location at all times.

Ken Watson, Finance Director and Head of IT, Potter Logistics stated, "Over the years our former bespoke system had proved its worth, but with the rate of change we see in the market today, it is clear we needed the support of a much larger company handling our requirements. Working with OBS Logistics enables us to keep up with evolving demands and the pace of change, which in turn enables us to deliver customer projects in a timely manner".

# Triaster



Triaster Process Libraries –  
'Google' for your organisation

Triaster's first process mapping software tool was released in 2004, designed with the vision of taking process mapping out of the remit of the specialists and making it business as usual. Triaster now offers three award winning Business Process Management (BPM) systems which sit squarely at the heart of our customers' businesses, driving towards their corporate goals.

## Triaster Business Process Management systems

The Triaster systems deliver both desktop process mapping software – for creating process maps – and Process Libraries.

Triaster process mapping software is incredibly easy to use, involving drag and drop of a small set of shapes, to capture an organisations' processes in a consistent, diagrammatic form. There is also the option to capture process data in Microsoft Excel, which some mappers prefer.

The Process Libraries – which can be either cloud hosted or installed on premises – are secure websites, intelligently presenting the process maps and supporting policies, forms and guidance documents. They deliver one central source of accurate information about the organisation – a handbook on how it works.

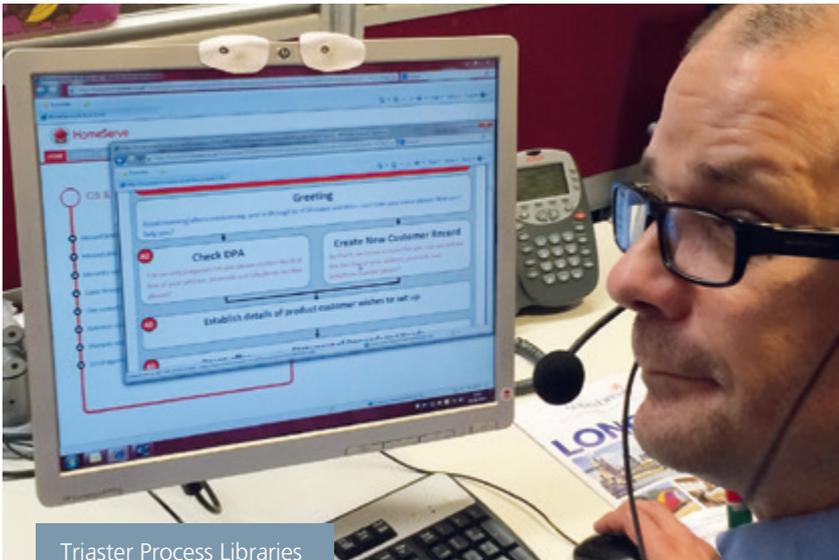
Generally if we want to find out anything these days, we Google it and the results are returned in seconds. Often the only exception to this is at work, where you have to know where to look, or whom to ask, to find information such as how to take paternity leave for example.

## ABOUT TRIASTER

- » A world-leading developer and supplier of award winning Business Process Management systems
- » Microsoft Gold Partner
- » Customers include Microsoft, Skanska UK, HomeServe, Interserve, National Oilwell Varco
- » Based in Oxfordshire
- » Current Turnover £1.5 million

"Triaster is without a doubt the most helpful, professional and forward thinking company that I have ever had the pleasure of working with."

Steve Ward, Business Process Manager, NG Bailey



Triaster Process Libraries return accurate, up-to-date, results in seconds

“The availability of all our core processes on-line and in one place ensures consistent adherence to our standard way of operating and drives home the quality message both internally and also to our customers.”

Guy Bruce, Interserve  
Managing Director –  
Industrial

A Triaster Process Library, presenting your organisation’s end-to-end processes – how it works – together with all supporting information and shared via a secure website, makes that information easily accessible and easily searchable by all staff, via their mobile phone, iPad or desktop. A ‘Google’ for your organisation, returning accurate, up-to-date, results in seconds.

Comprehensive functionality to support process control, automated review and approvals workflow, together with a comprehensive reporting suite on data at the process level, also delivers a full range of business process management tools – but without compromising the ease of use of the general user.

## Supporting the implementation

Although a technology company (very focused on developing innovative software features) one of the secrets of Triaster’s success is that we also support the implementation of our systems with an excellent set of services and a personal approach. On-boarding services are offered as standard and value-add services are available as required.

The design services offered are some of the services that set the Triaster systems apart. A bespoke Homepage design for the Process Library is tailored to appeal to its end users. Some customers prefer a functional approach and some a more creative design.

The design can also be developed as a brand for the Process Library and extended to the process maps and all promotional materials.

## Supporting the cultural change

The cultural change required in most organisations is for process mapping and business process management to become core business activities, linked to achieving strategic goals. Very often process mapping and management are felt to be the domain of the Quality or Improvement team, not acknowledging that the people who do the work have to ‘own’ their processes and take responsibility for their quality and improvement.

## » WHAT IS PROCESS MAPPING ?

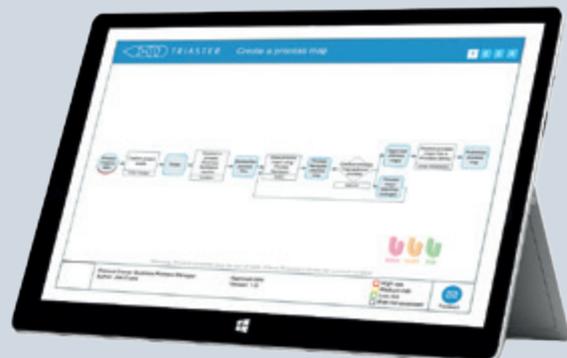
Process mapping is an exercise to identify all the steps and decisions in a process in diagrammatic form.

### What is a process?

A process is a transformation. It transforms inputs into outputs. For example, the process of baking a cake involves taking various ingredients (inputs) and producing the cake (output) using the recipe (process).

### Why process map?

The core reason for process mapping is that those organisations that perform the transformation of inputs into outputs (their processes) well, generally manage to meet or exceed customer expectation. Those that do it best are invariably the most successful.



Triaster systems are designed and set up to enable this, but the implementing organisation needs to adjust to a new approach to quality and business management. Triaster offer full services to support their cultural shift, because we know that this will deliver the best results.

“Once we started, it really opened everyone’s eyes as to what we are doing and questioning why we do it that way. Businesses regularly reach out and ask us to come back for process update sessions and to fill in process gaps from previous sessions.” Mark Curtin, Program Manager – Business Process Management, National Oilwell Varco.

## Enabling business improvement

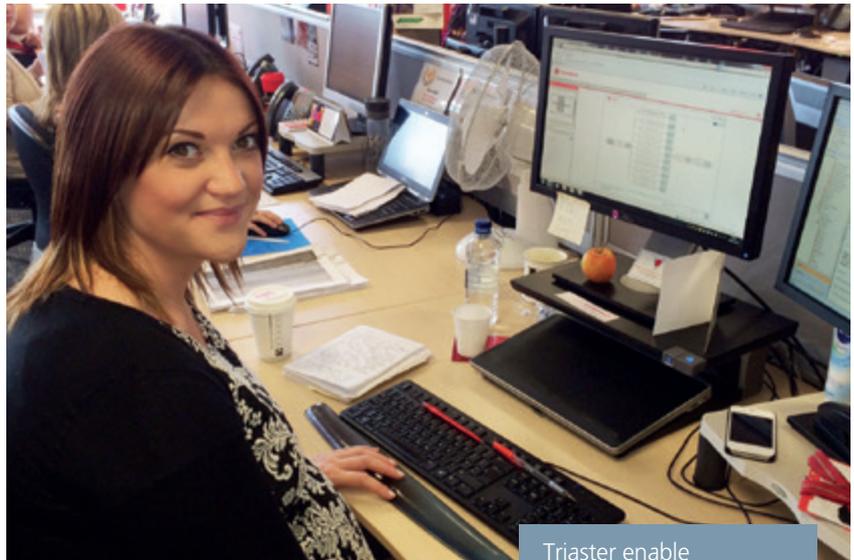
As well as an up-to-date, accurate, accessible source of information, the Process Library is a model of how the organisation currently works.

The Triaster Professional system uses this model as the starting point for modelling future options. It offers the capability to try out differing scenarios for process improvement. These can be simulated, understood, analysed and compared – before the changes are implemented, thereby making Continual Improvement business as usual rather than a major upheaval.

## The benefits of Business Process Management

The benefits of managing your business processes in this way are extensive. Just some of the key benefits of having your Business Process Management (BPM) system squarely at the heart of your businesses are:

- » Having accurate information easily accessible to everyone in the organisation improves efficiency and reduces waste; saving time both in finding information and reducing the need for rework.
- » Once the current way of working is captured, best practice can be identified and adopted across the



Triaster enable  
Continual Improvement  
to be business as usual

organisation, improving efficiency and quality throughout.

- » Responsibility, accountability and process ownership is clearly identified and visible so that the person responsible for the quality of each process is known – not least by them.
- » Risk and single points of failure can also be identified and mitigated against, reducing the possibility of serious quality failures in the future.

## Quality at the heart of every organisation

Quality failures make the headlines all too frequently, the hack of TalkTalk customer data being one recent example. The loss of reputation that this brings and the damage to brand is devastating.

In response to these very public quality failures, the Chartered Quality Institute (CQI) has been vocal in the need for quality to be at the heart of every organisation. They have developed a Competency Framework for the quality profession which integrates quality with business management and calls for both to be driven by the organisation’s strategy.

Triaster’s Business Process Management systems deliver this as standard, which is why the benefits are so extensive and Triaster is a world-leading Business Process Management system provider.

“Skanska’s impressive (Triaster) system of process sharing has significantly reduced both duplication and cost and is a very good example of innovation in practice”

Joe Goasdoué,  
BQF Chief Executive  
on awarding Skanska  
UK with the 2013  
Achievement Award  
for innovation

# ValiRx



Dr Satu Vainikka,  
CEO of ValiRx Plc



ValiRx focuses on clinical stage cancer therapeutics for precision medicine taking proprietary and novel technology towards commercialisation and partnering

ValiRx is a biotechnology oncology focussed company specialising in developing novel treatments for cancer and associated biomarkers. It aims to make a significant contribution in “precision” medicine and science, namely to engineer a breakthrough into human health and well-being, through the early detection of cancer and its therapeutic intervention.

## FACTS ABOUT VALIRX

- » Listed on AIM in 2006
- » Ticker: VAL
- » Year end: 31/12/16
- » Portfolio of global patent filings
- » Technology originates from World-class institutions, such as Imperial, CRT
- » [www.valirx.com](http://www.valirx.com)

## Formation and flotation of the company

ValiRx plc’s formation and flotation was as a result of a reverse transaction in 2006 with Cronos Therapeutics Limited. Cronos, which had been founded a couple of years earlier in 2004 by Dr Satu Vainikka, Dr George Morris and two others, reversed into the AIM listed shell, ValiRx plc, before then relisting on the Alternative Investment Market of the London Stock Market in 2006.

## Plan for early out-licensing

ValiRx’s business model focuses on out-licensing therapeutic candidates early in the development process. By aiming for early-stage value creation, the company reduces risk considerably while increasing the potential for realising value. The group is already in licensing discussions with major players in the oncology field.

» VALIRX PROGRESS

**2014**

- » Collaboration with DKFZ – ValiRx enters into a collaboration agreement with DKFZ to further develop GenelCE
- » ValiSeek Launched – ValiSeek established to speed partner Tangent Reprofilung’s VAL401 lung cancer treatment towards Phase II trial

**2015**

- » Lead compound, VAL201 conducting dose escalation clinical trials at UCLH
- » Opening of new US office in Boston, USA, to facilitate greater interaction with potential partners and leading parties in oncology development

**2016**

- » VAL201’s Phase I/II prostate cancer trial – confirmation that drug is well tolerated up to putative therapeutic dose, shows a high degree of safety and no significant adverse events reported.
- » Expansion of trial into a multi-centre study now underway.
- » VAL401, for the treatment of lung cancer and other oncology indications, is in the late to final stages of preparation prior to its Phase II Clinical Trial

“Delivering healthcare solutions that reduce complexity, drive efficiency and improve patient wellbeing”

The drugs (VAL201 & VAL401)

ValiRx’s two classes of drugs in development, which each have the potential for meeting hitherto unmet medical needs by existing methods, have worldwide patent filings and agreed commercial rights. They originate or derive from World class institutions, such as Cancer Research UK and Imperial College.

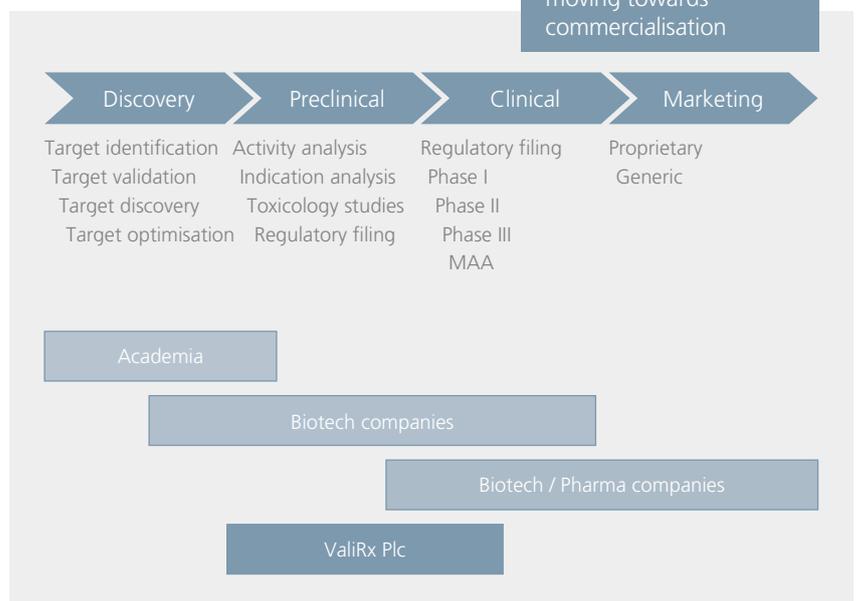
Until recently, cancer treatments relied on non-specific agents, such as chemotherapy. With the development of target-based agents, primed to attack cancer cells only, less toxic and more effective treatments are now possible. New drugs in this group – such as those in ValiRx’s pipeline – promise to greatly improve outcomes for cancer patients.

The company’s two main drugs (VAL201 & VAL401) are currently going through the clinical process; with its lead compound VAL201 showing good safety and tolerability data from cancer patients. With its second drug, VAL401, potentially due to move straight into a Phase IIb efficacy trial involving patients who actually have cancer.

Biomarkers

ValiRx’s complementary biomarkers business to identify the presence of tumour markers at their early onset is a key and increasingly exciting field within their industry. It is one of the fastest growing areas of cancer research and diagnosis. This is because the detection of malignant cells as early as possible is a key challenge in cancer diagnosis and does have a significant impact on the future survival of patients.

Biotech is the link between discovery and late stage clinical development moving towards commercialisation





“I am delighted that VAL401 has progressed according to schedule since being in-licensed to the ValiRx group last year. We look forward to hearing reports from ValiSeek of further advancements to the programme over the coming year and its progression down the clinical pathway”

Dr Satu Vainikka  
Chief Executive Officer

### TRAC

The diagnostic side of the business has been enhanced by the acquisition of TRAC. This is a gene expression analysis platform, which enables the efficient screening of a large number of drug candidates for a wide range of cancer, drug safety and prognostic markers. As the TRAC technology is revenue generating, ValiRx has benefited from the growing number of customers paying for access to its novel capability.

### VAL201

VAL201 is a peptide with a unique mechanism of action, which was first developed by academics partly with support from Cancer Research UK. The compound has recently completed its Phase I clinical studies in prostate cancer patients and is commencing activity on the Phase II part of the study. Work is also being done with the compound to address other solid cancers, such as breast and ovarian cancer as well as the non-cancerous condition, endometriosis.

This is a gynaecological medical condition in which cells from the lining of the uterus appear and flourish outside the uterine cavity. Endometriosis is excessively debilitating and it represents one of the major courses of female infertility.

### VAL401

The company's next most advanced drug is VAL401, which is a reformulated drug with an established safety record

derived from clinical studies and years of use in other medical areas. This drug has just entered the clinical pathway having demonstrated encouraging pre-clinical data as far as lung and pancreatic tumours are concerned. ValiRx has been conducting studies over the past year on VAL401 at ValiSeek Limited, its joint venture partner with Tangent Reprofilling Limited, which was established to progress this novel cancer treatment.

### Future progress

It is a really exciting time for the company and ValiRx is anticipating substantial progress on two key fronts this year.

Firstly, it was pleased to confirm in February that VAL201 is well tolerated and has shown a high degree of safety, with no drug related significant adverse events being reported and that early indications of efficacy have been shown. Additional Clinical Trial Centres are being integrated into the study to assist with the dose expansion stage of the trial. In light of the excellent results shown by the compound and the promising pre-clinical evidence of the compound's effect on endometriosis, the company has started the design of the process in this indication. Accordingly it will test VAL201 for its in-human potential in the treatment of the debilitating female condition of Endometriosis.

Secondly, ValiRx expects VAL401 to enter the clinic. The process of submitting the full regulatory application for a phase IIb trial in subjects with advanced non-small cell lung cancer is approaching completion and it anticipates the trial to begin recruitment during the next months.

The company continues to look to expand its intellectual property as its development programmes go forward and it remains open to technology acquisition opportunities and ways in which it can both deliver and grow.

# Perceptive Engineering



Perceptive's UK HQ at Vanguard House, part of the Sci-Tech park in Daresbury, Cheshire



David Lovett, Perceptive's founder and MD

The ability to compete in an increasingly dynamic world, with new technologies appearing weekly, is the reality affecting most businesses today. The willingness of larger companies to collaborate, harnessing the innovative skills and agility of much smaller companies, may be the key to sustained growth. Government has a role to play, to encourage collaboration between large companies and SMEs through the provision of innovation funds and national centres. This is one company's experience, operating with a collaborative business model in the process industries.

## The Company & Technology

Perceptive Engineering creates engineering solutions using model-based control and monitoring technologies. This means developing a digital model of the process plant to assist with operational decisions and running the model "live", in parallel with the process, to verify the process continues to operate at an optimum efficiency. Our software detects differences between the model and the process; these are highlighted to control room personnel and used within a "control system" to regulate the process. These systems also provide early warning of any developing faults, thereby forming an integral part of a Predictive Maintenance system.

Our software is embedded within our client's automation infrastructure, to improve the precision and economic performance of the whole system. Through a combination of mechanistic design-led and data-driven statistical models, each process can be characterised and opportunities for improvement identified. The models are then used to steer the process to its optimal operating point, saving energy, raw

## ABOUT PERCEPTIVE ENGINEERING

- » Established in 2003
- » Offices in UK (Daresbury Sci Tech) and Singapore (Fusionopolis)
- » Customers Worldwide including Pfizer, GSK, Astra Zeneca, Arla, Danone, Abbott, Unilever, Wyeth
- » Turnover > £2 million
- » Model based design, development, control and optimisation of industrial manufacturing processes



High-value manufacturing, such as pharmaceuticals, is a key area for the company

“Maximising manufacturing productivity using model-based engineering to design, develop and deliver optimised manufacturing processes”



materials and reducing the time needed to manufacture products to the correct specification. In essence, the productivity and efficiency of existing assets are increased.

## Pharmaceutical Manufacturing

Recently, these model-driven techniques have been applied to pharmaceutical processes to enhance the design, development and manufacturing flexibility of medicines.

The whole pharmaceutical market is poised for radical changes brought about by the so called “Fourth Industrial Revolution”, which is enabling significant improvements in the development, manufacture and distribution of pharmaceutical therapeutics. These are exciting developments, exemplified by two Government funded projects in which Perceptive is collaborating:

### ADDoPT & ReMediES

The ADDoPT project (Advanced Digital Design of Pharmaceutical Therapeutics)<sup>1</sup> is addressing the pharmaceutical industry’s desire to deliver medicines more effectively to patients. ADDoPT is developing and implementing advanced digital design techniques that will eliminate non-viable drug candidate formulations as early as possible, streamlining design, development and manufacturing processes. ADDoPT is being delivered by a consortium of 12 partners comprising leading businesses in the pharmaceutical value supply chain, knowledge-driven technology SMEs and specialist knowledge-based partners from UK universities and research centres.

The ReMEDIES (RE-configuring MEDICines End-to-end Supply)<sup>2</sup> project, launched in 2014, is headed up by GlaxoSmithKline (GSK) with research

led by the University of Cambridge’s Institute for Manufacturing. It brings together key players in the end-to-end supply chain, including major contract-manufacturing organisations and equipment manufacturers, along with regulators, knowledge transfer networks and healthcare providers. Its aims are to optimize manufacturing and supply, and to offer more personalised, faster and cheaper drug delivery. To provide a better service to patients and to safeguard jobs across the UK, the sector needs to find innovative ways to tackle inefficiencies and capitalise on these new opportunities. Perceptive Engineering is collaborating on the control and optimisation of tablet manufacturing on a novel continuous system. Our challenge is to provide a robust monitoring and diagnostic system for the modular processing equipment that is used to manufacture drugs. This modular continuous platform will operate at “point of need”, decreasing production costs and increasing speed to patient.

### Continual Innovation

Most of our new ideas are unearthed when solving specific “problems”, so our future is frequently under review as new “problems” arise. Working with Frugal Engineering techniques – or at least the ethos behind them – we strive to limit excessive features and provide solutions which balance maintainability with sophistication. Our vision is to have Perceptive Engineering modules embedded in process manufacturing equipment at the design and build stage and, in doing so, ensure that control and monitoring systems are working in harmony with the core functional design. This “systems” design approach is steadily increasing in industry, as exemplified by the activities within the ADDoPT & ReMEDIES consortia.

Speed of change in some sectors is astounding; for example, since “2008 when Apple opened up to

<sup>1</sup> <https://www.addopt.org>

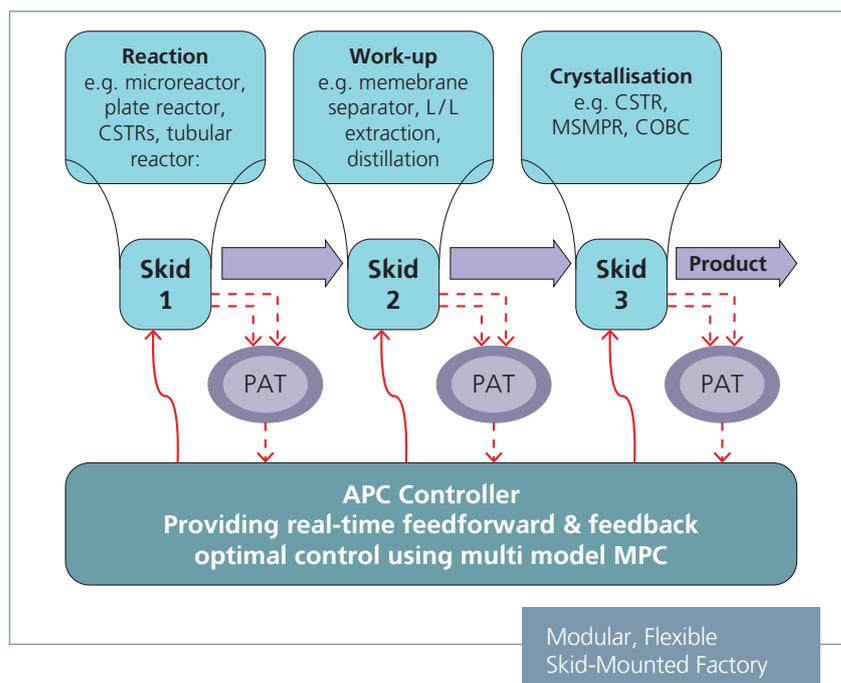
<sup>2</sup> <https://remediesproject.com>

outside developers the global “App” economy has reached >\$100 billion in annual revenues, surpassing numerous industries that have been in existence through the whole of the last century.”<sup>3</sup> The process industrial sector has not seen such a transformation, partly due to the capital intensity at its facilities and the safety requirements that temper rapid change. Nevertheless, it is seeing changes that are beginning to leverage the digital economy, using increased connectedness, speedier transactions and a virtual workforce enhancing productivity. Perceptive Engineering recognises it has a role to play. It continues to develop innovative products to help its customers improve their productivity during all the phases of a product lifecycle; this is accomplished through co-operation with equally innovative national centres across the world.

### The Future of Innovation

Ideas have always been in great supply, but the harvesting and conversion of those ideas into reality requires passion, dedication, determination, strategic thinking and – ideally – fun, to bring to market a product that has true value. Engineers, by their nature, are always keen to innovate. Often it is through attempting a small incremental improvement which provides the subsequent breakthrough and spawns a new product or “feature”. Our Data Quality Monitor which checks the quality of digital data within our product range is such an example; initially it was developed to overcome one specific problem with failing sensors on wastewater treatment sites, but it now verifies all data, ensuring real time information integrity for all critical signals, something which is essential in regulated industries.

Since 2008 we have expanded our innovation activities through collaboration with UK Catapult



centres (innovation test centres), Universities and European partners to develop solutions, almost every year. The opportunities for pre-competitive collaborative research have increased dramatically in the UK, with a wide range of “instruments” open to all industrial sectors. Our collaborations enabled the development of a system to optimise the management of waste water treatment facilities, resulting in energy savings greater than 20% per site. The initial development extended to include the optimisation of anaerobic digestion, a key technology used to convert wastewater sludge into biogas.

Partnering has proven valuable when it is focused with highly complementary skillsets from each partner, particularly when there is market “pull” within the mix. It would be good to see a new breed of engineers coming from the innovation centres, able to create frugal engineering solutions that exploit new technologies, to craft products and solutions that are sustainable and readily available to all. We hope to look back in five years’ time and see that our software platform has had a part to play in the creation of the next generation of industrial processes, enhancing *both* productivity and quality around the world.



“Partnering has proven valuable when it is focused”

<sup>3</sup> The Fourth Industrial Revolution, Klaus Schwab

# intechologyWiFi



Natalie Duffield, CEO



Public WiFi for towns and cities, stadiums and events

“The intechologyWiFi offering is market defining – a solution that provides seamless WiFi coverage, without limits on time; installed and managed at no cost or risk, and accompanied by the means to drive user engagement and revenues”

intechologyWiFi is a company making waves in the crowded and competitive WiFi connectivity market. Its innovative solution to public WiFi is not only a step change in terms of its technical effectiveness and usability, but also the sustainable revenue model it offers to customers, many of which are local councils. This is based on providing services up front at no cost, before recouping investment and commercialising *via* affiliated revenue streams (e.g. sponsorship and advertising).

Since its formation in 2013, intechologyWiFi has been awarded a number of significant contracts – all testament to the company’s powerful combination of start-up agility and broad in-house expertise, wedded to a 30-plus year heritage in tech innovation, strong financial backing and a market-defining offering.

These recent contracts include the delivery of:

- » Public WiFi to **Scotland’s capital, Edinburgh** (with a service offering that saw off BT and other major players during the selection process);
- » Public WiFi to **Watford, Hertfordshire**, a major town on the fringes of London, with a population of nearly 100,000 and attracting countless visitors each year;
- » Stadium WiFi networks and accompanying official mobile applications to **72 clubs across the Football League portfolio**;
- » Stadium WiFi at **Headingley Cricket Ground**, serving county and international Test fixtures.
- » Free WiFi to some of the **UK’s largest summer festivals**, including Reading, T in The Park and Download.

In the town and city, municipal WiFi arena, in technologyWiFi is doing something few else do – fully funding a service that is truly free for local authorities. In the absence of widely available grants to support the funding of such projects, the company must be agile, delivery focused and open to partnership.

This is a challenging path to chart commercially, which is why the company is now focused on opportunities to partner with government and public sector bodies offering grants and funding to support the provision of its WiFi services.



Grants and funding welcomed

The contracts in technologyWiFi has won represent significant achievements – a product of the enthusiasm, proactivity and ‘anything is possible’ mentality of its start-up roots.

in technologyWiFi is part of Intechnology plc, owned by Peter Wilkinson, one of the UK’s most successful technology entrepreneurs, with a proven track record of delivering profitable, free technical solutions, including the first free consumer internet service, Freeserve.

in technologyWiFi CEO, Natalie Duffield, has spent 20 years working in the IT and telecommunications industries alongside Peter Wilkinson. Her experience covers a wealth of areas in the connectivity arena, including managed services, cloud computing, hosted services and outsourced infrastructure, data centre space, telephony and networks.

### Effective public internet connectivity: Still an unmet need

Every year, 32 million smartphones are purchased in the UK, 76% of adults own one<sup>1</sup> and almost all (96%) adults

aged 16 to 24 seek to access the internet while ‘on the go’.<sup>2</sup>

In order to meet the demand of this ever-increasing use of smartphones – and, crucially, the data demands associated with the spectrum of applications and tasks such devices are expected to facilitate – fast, reliable open wireless networks, providing seamless, high-capacity connectivity ‘on the go’ are becoming a necessity.

In terms of digital inclusion, it is an essential requirement for wireless networks to be available free and without restrictions on time, given that the use of data over traditional open cellular networks (i.e. 3G or 4G) comes with costs that exclude many users.

However, the provision of open wireless networks has to be a sustainable and cost-effective venture, particularly in towns and cities, where local councils are facing significant reductions in their budgets, but are still being required to deliver on the strategic digital aspirations of central and local government.

“Fast, reliable open wireless networks are essential to meet the ever-increasing use of smartphones”

<sup>1</sup> Deloitte LLP. 2015 *Mobile Consumer 2015: The UK cut. Game of phones*

<sup>2</sup> Office of National Statistics 2015. *Internet Access – Households and Individuals: 2015*

“intechologyWiFi has a delivery-focused, commercially savvy culture, fostered by an inspirational leadership team, whose experience covers some of the household names in technology innovation, such as Freeserve”

## The intechologyWiFi solution: What's the difference?

Municipal WiFi projects to provide seamless coverage to open public areas have often foundered on the complexities of deploying usable signals across just a few square miles. Such networks are often built for *coverage* rather than *capacity*, meaning that while the WiFi signal is there, if too many people are trying to use it at the same time, the network grinds to a halt.

Furthermore, the public WiFi landscape has been dominated in recent years by the proliferation of ‘hotspots’ – single access points, or sporadic groups of access points across a smaller area, which in the majority of cases provide coverage to users disparately, often with restrictions on time and a requirement for payment.

The intechologyWiFi approach is to provide easy-to-access internet coverage to users – distinct from the traditional hotspot model – across the entirety of an outdoor, high-volume, concentrated public area, whether this be a town or city centre, stadium or event.

intechologyWiFi is able to call upon state-of-the-art hardware in the design of a network equipped for the significant burden of thousands of users at the same time; also possessing the in-house expertise in network planning and design, backhaul and infrastructure implementation to ensure the WiFi solution is best-in-class, achieving optimum coverage and capacity.

### **Captive Portal: Seamless log-on; commercial proposition**

Users of intechologyWiFi networks are also met with a seamless log-on experience, with a fast, simple onboarding process *via* a vibrant and engaging Captive Portal that requires minimal information to be provided.

The intechologyWiFi Captive Portal is also highly customisable for customers, allowing the user interface to support bespoke creative design, tailored questions, as well as sponsorship and advertising activations – providing opportunities to gather valuable information and generate shared revenues, all while never compromising the user experience.

### **Mobile application: A go-to content hub to drive revenue**

As a core part of its public WiFi offering to customers in the sports stadium arena (and also in development as a proposition for the town and city arena), intechologyWiFi develops and delivers bespoke, branded mobile applications, also curating 24/7, 365-days-a-year content to fill them.

In the case of the recently announced deal to provide stadium WiFi networks and accompanying mobile applications to the 72 clubs across the Football League portfolio, the apps intechologyWiFi will provide will be the ‘official apps’ for the clubs in question.

These world-class apps – the product of years of design, development and testing – will become the go-to resource for fans looking for content related to their football club, providing a ‘digital match-day experience’ – with integrated links to the best of news and live social media, commentary, highlights, results and fixtures.

The Football League clubs under the contract stand to earn significant sums of money in associated revenues tied to use of the mobile apps, and the quality and depth of the product as a central ‘content hub’ will attract and keep fans coming back – the size and loyalty of the audience will have a direct impact on revenue.



## Graceful in defeat – David Cameron responds to the verdict of the EU Referendum

Eleven months after delivering the first outright Conservative General Election victory since 1992, David Cameron came to the Commons Dispatch Box as a lame duck Prime Minister, a caretaker who would remain in office only until his successor could

be named. The Referendum vote to leave the EU had ended his career with brutal finality.

He was cheered by his MPs as he arrived in a packed Commons Chamber and he seemed remarkably good humoured. Moments before he rose, the newest MP, Rosena Allin-Khan, who had been elected to replace Labour's Sadiq Khan, the new Mayor of London, had been introduced. With mass resignations from Labour's Shadow Cabinet as the leadership crisis in the Opposition unfolded, he advised her to keep her phone on because she might be promoted by the end of the day.

Then he gave his response to the Referendum decision. 'It was not the result that I wanted, or the outcome I believe is best for the country I love but there can be no doubt about the result. Of course I do not take back what is said about the risks; it is going to be difficult...' He also promised that an upsurge in hate crime against migrants would be stamped out.

One of his key announcements was that he would not trigger the formal EU exit process – Article 50 of the Lisbon Treaty – and the timing of that decision and the nature of the future relationship Britain would seek with the EU were matters for his successor. He said he would take that message to the emergency European Council meeting that had been convened for the next day, to respond to the Brexit vote.

David Cameron's resignation speech outside 10 Downing Street





With the upheaval caused by the UK's European referendum, many questions are still to be answered

'Tomorrow will also provide an opportunity to make the point that although Britain is leaving the European Union we must not turn our back on Europe or the rest of the world,' he added.

For Labour, Jeremy Corbyn – accused of fighting a lacklustre referendum campaign – said his party had put forward a positive case for Remain and had convinced two thirds of its supporters. He said people in many communities felt disenfranchised and powerless because they had been failed, not by the EU, but by Tory governments.

He complained that the campaign had been marked by untruths and half-truths and added, in a pointed rebuke, that 'the country will thank neither the Government benches in front of me nor the Opposition benches behind for indulging in internal factional

manoeuvring...' – an observation that provoked a blast of scorn from Tory and SNP MPs, and silence from the Labour benches.

With Scotland having voted to remain in the European Union, the SNP's Westminster Leader, Angus Robertson, said the Scottish Government would seek to protect Scotland's place. 'We are a European nation and it really matters to us that we live in an outward-looking country, not a diminished little Britain.'

The Liberal Democrat Leader, Tim Farron, said he still passionately believed British interests were best served by being at the heart of Europe. A few moments later his predecessor, the former Deputy Prime Minister, Nick Clegg, said it could not be right that the Conservative Party members who would elect Mr Cameron's

replacement would, in effect, choose a new Government. Surely, he said, there should now be a General Election?

A series of Conservative Leave campaigners, the veteran Sir Bill Cash, the former Cabinet Minister, Owen Paterson, and others praised the Prime Minister for holding the referendum, a line also taken by UKIP's sole MP, Douglas Carswell, who was heavily

heckled as he warned that the task of implementing Brexit could not be left to 'Europhile mandarins' and called for prominent Leave campaigners to be involved – a comment which provoked a backbench shout of 'Yeah Farage.'

This was the first of what will doubtless be scores of Commons statements on the Brexit process – they will become a fixture in Parliament for years to come.

## Trident Submarine Renewal



The Government voted in favour of the renewal of Trident

The first Commons outing for a new Prime Minister is normally a great occasion in its own right, but Theresa May's debut, following the withdrawal of her final opponent in the Conservative leadership race the week before, was overshadowed by a spectacular outbreak of Labour infighting.

She was moving a motion to confirm plans for a multi-billion pound programme to replace the submarines which carry the UK's Trident Missile nuclear deterrent – a move which underlined her personal commitment to Trident renewal which, she said, was essential to national security.

She was challenged by the SNP's George Kerevan who asked if she, personally, would order a nuclear strike which would kill 100,000 innocent men, women and children. Her response was a blunt, unadorned 'Yes'. A nuclear deterrent was pointless if a government was not willing to use it, she added.

She had open support from Labour backbenchers including John Woodcock, MP for the submarine-building seat of Barrow and Furness... 'Whatever she is about to hear from our Front Benchers, it remains steadfastly Labour Party policy to renew the deterrent while other countries have the capacity to threaten the United Kingdom and many of my colleagues will do the right thing for the long-term security of our nation and vote to complete the programme that we ourselves started in Government.'

The Prime Minister answered with an approving quote from Labour's manifesto, which said Britain must remain 'committed to a minimum, credible, independent nuclear capability, delivered through a Continuous At-Sea Deterrent'.

The Green MP, Dr Caroline Lucas, said the UK's nuclear weapons drove nuclear proliferation. Theresa May did not accept that at all – and she took a direct swipe at Dr Lucas. 'Sadly, she and some Labour Members seem to be the first to defend the country's enemies and the last to accept these capabilities when we need them.'

The Labour Leader, Jeremy Corbyn, questioned the 'ever-ballooning' cost of Trident renewal – but for him the central issue was this 'Do these weapons of mass destruction – for that is what they are – act as a deterrent to the threats we face and is that deterrent credible?'

Unlike the Prime Minister he was not prepared to press the nuclear button. 'I would not take a decision that killed millions of innocent people. I do not believe that the threat of mass murder is a legitimate way to go about dealing with international relations.'

Mr Corbyn faced repeated challenges from his own MPs. Angela Smith noted he was 'Fond of telling us all that the Party Conference is sovereign when it comes to Party policy. Last year the Party Conference voted overwhelmingly in favour of maintaining the nuclear deterrent, so why are we not hearing a defence of the Government's motion?' Mr Corbyn retorted that Labour's policy was under review, provoking more shouts from Labour MPs.

The bombardment continued. The former Defence Minister, Kevan Jones, compared Labour's defence review to the mythical unicorn; people believed it existed but no-one had ever seen it. Former Shadow Armed Forces Minister, Toby Perkins, said the case for not replacing Trident had fallen apart. Former Shadow Defence Secretary, Vernon Coaker, said Britain could not abandon its responsibilities as a senior member of NATO.



The UK's Trident Missile nuclear deterrent was one of the first issues Theresa May faced as the UK's new Prime Minister



HMS Vanguard returning to Faslane, Scotland

The SNP's Westminster Leader, Angus Robertson, said the people of Scotland had repeatedly shown their opposition to Trident renewal – and he added 'The Government have a democratic deficit in Scotland and, with today's vote on Trident,

it is going to get worse, not better. It will be for the Scottish people to determine whether we are properly protected in Europe and better represented by a government that we actually elect. At this rate, that day is fast approaching.'

## The vote to bomb ISIL in Syria

The Commons surprise vote in August 2013 rejecting armed intervention in the civil war in Syria was undoubtedly David Cameron's worst-ever parliamentary defeat. That moment reverberated when, two years later in the wake of the Paris attacks, he returned to the Commons with a motion to allow British forces to strike at ISIL, or Daesh, in Syria.

He warned MPs that ISIL was plotting Paris-style attacks against Britain and had already targeted this county. 'We face a fundamental threat to our security. ISIL has brutally murdered British hostages. They have inspired the worst terrorist attack against British people since 7/7 on the beaches of Tunisia and they have plotted atrocities on the streets here at home. Since November last year our security services have foiled no fewer than seven different plots against our people, so this threat is very real. The question is this: do we work with our allies to degrade and destroy this threat and do we go after these terrorists in their heartlands from where they are plotting to kill British people, or do we sit back and wait for them to attack us?'

He was attempting to rally all-party support for the use of British forces in Syria – they were already launching airstrikes against ISIL in neighbouring Iraq – but many Labour MPs were

fuming about remarks he had made the previous evening to a meeting of Conservative MPs, when he suggested people who voted against airstrikes were 'terrorist sympathisers'. He faced repeated challenges to withdraw and apologise – but stuck to a formula that unity was needed and that it was time to move on.

One focus for questions was the Prime Minister's claim that there are 70,000 moderate Syrian opposition fighters who could act as a ground force against ISIL while the UK gave air support. Under questioning from the SNP's Westminster Leader, Angus Robertson, he said he was not arguing that all of those 70,000 were ideal partners but if action was not taken now, those forces would soon be reduced.

Another issue was the position of Labour MPs. In 2013, the Opposition Leader at the time, Ed Miliband, had not been prepared to back the Government. By 2015, a combination of horror at the brutality of ISIL and at the Paris attacks meant there were many who supported the use of armed force and would defy any attempt to make them vote against it. Crucially, their number included the Shadow Foreign Secretary, Hilary Benn.

Jeremy Corbyn was opposed to extending the bombing but, under



Hilary Benn took the opposite view to Labour leader Jeremy Corbyn over intervention in Syria

huge pressure, had allowed his MPs a free vote. 'It is impossible to avoid the conclusion that the Prime Minister understands that public opinion is moving increasingly against what I believe to be an ill thought out rush to war. He wants to hold this vote before opinion against it grows even further.'

Another key force in the debate was the Commons Foreign Affairs Select Committee which had earlier published a report raising a series of questions about any intervention which the Prime Minister was careful to answer in detail. Its Chair, the Conservative Crispin Blunt MP, said Britain's military effort in Iraq had helped stabilise the country in the face of a rapidly advancing threat from ISIL and he now supported extending that effort to across the border into Syria.

The ensuing debate produced a series of passionate speeches – the Liberal Democrat Leader, Tim Farron, gave an emotional description of his

experiences visiting refugees who had made the risky journey to Greece. 'A seven-year-old lad was lifted from a dinghy on the beach at Lesbos. My Arabic interpreter said to me, 'That lad has just said to his Dad, "Daddy are ISIL here? Daddy are ISIL here?"'

Winding up the debate for Labour was Hilary Benn who took the opposite view to Jeremy Corbyn. 'The carnage in Paris brought home to us the clear and present danger that we face from Daesh. It could just as easily have been London, Glasgow, Leeds or Birmingham and it could still be.' He said the UK could not leave its defence to others and asked what message inaction would send to Britain's allies – France, in particular.

He listed some of their atrocities: the gay men thrown off the fifth storey of a building in Syria, the mass graves in Sinjar said to contain the bodies of older Yazidi women murdered by Daesh because they were judged



Tim Farron, Liberal Democrat Leader

too old to be sold for sex, the killing of 30 British tourists in Tunisia, 224 Russian holidaymakers on a plane, 178 people in suicide bombings in Beirut, Ankara and Suruç and of 130 people in Paris 'including those young people in the Bataclan, whom Daesh, in trying to justify its bloody slaughter, called apostates engaged in prostitution and vice. If it had

happened here they could have been our children.

'We are faced by fascists – not just their calculated brutality but their belief that they are superior to every single one of us in this Chamber tonight and all the people we represent. They hold us in contempt. They hold our values in contempt. They hold our belief in tolerance and decency in contempt. They hold our democracy – the means by which we will make our decision tonight – in contempt... My view is that we must now confront this evil. It is now time for us to do our bit in Syria. That is why I ask my colleagues to vote for the motion tonight.'

While Jeremy Corbyn folded his arms and looked away, Mr Benn sat down to rapturous cheers and even applause from both sides of the House. A few minutes later the Government motion was carried with 66 supporters from the Labour benches outweighing the seven Conservative opponents.

## MPs pay tribute to their murdered colleague, Jo Cox

Tributes to Jo Cox MP



On Thursday 20 June, a week before the EU Referendum, campaigning was in full swing – the usual cycle of attack, rebuttal and counter attack was being played out. Suddenly the political world shuddered to a halt as news emerged of the brutal murder of the Labour MP, Jo Cox, outside a constituency surgery in her Yorkshire seat.

The House of Commons had been in recess for the Referendum, and was recalled to pay tribute the following Monday. The chamber was packed but the seat normally occupied by Jo Cox was left empty, except for two roses – Labour's red rose and the



Jo Cox's maiden speech to Parliament: 'We are far more united than the things that divide us'

white rose of Yorkshire. In the gallery, Mrs Cox's husband Brendan sat with their two young children and members of their family.

MPs wore white roses and several women Labour members were dressed in the suffragette colours of purple and green. Some MPs wept quietly as the Speaker, John Bercow, opened proceedings 'We meet today in heart-breaking sadness but also in heartfelt solidarity... all of us who came to know Jo during her all too short service in this House [she had been elected in 2015] became swiftly aware of her outstanding qualities, she was caring, eloquent, principled and wise.

'Jo was murdered in the course of her duties, serving constituents in need... An attack such as this strikes not only at an individual but at our freedom.'

The Labour leader, Jeremy Corbyn, agreed the murder was an attack

on democracy and he quoted from Jo Cox's maiden speech when she told the Commons 'We are far more united and have far more in common with each other than things that divide us'.

David Cameron said the House could best honour her memory 'by proving that the democracy and freedoms that Jo stood for are indeed unbreakable, by continuing to stand up for our constituents and by uniting against the hatred that killed her, today and forever more'.

Tributes were paid from all sides, in a short sitting, which was followed by a memorial service at St Margaret's, the parish church of Parliament. The Labour MP, Rachel Reeves urged colleagues 'to carry on Jo's work and guard against hatred, intolerance and injustice and to serve others with dignity and love.... Batley and Spen will go on to elect a new MP, but no-one can replace a mother'.

Jo Cox had been a leading figure in several all-party groups – the Conservative former International Development Secretary, Andrew Mitchell, served with her, as co-chair of the Friends of Syria, making common cause, as he put it, ‘with a crusty old Tory’.

The Labour MP, Stephen Kinnock, had shared an office with Jo Cox. He spoke first of the unspeakable personal suffering her murder had brought on her family. He said Jo Cox

would have been outraged by a poster unveiled on the morning of her death by the UKIP leader, Nigel Farage, showing a queue of migrants ‘A poster on the streets of Britain that demonised hundreds of desperate refugees... She would have responded with outrage and with a robust rejection of the calculated narrative of cynicism, division and despair – because Jo understood that rhetoric has its consequences. When insecurity, fear and anger are used to light a fuse, an explosion is inevitable’.

## The Lords reject the Government’s Tax Credit changes



Baroness Stowell argued that tax credits ‘will remain an important part of the welfare system’

The Government lost more than 50 votes in the House of Lords in the first year of the 2015 Parliament – but by far the most significant, both in terms of the money involved and of the constitutional aftershocks, was the Peers’ rejection of controversial plans to cut tax credits – the benefits used to top-up the incomes of low-paid workers.

Peers are not supposed to meddle in financial matters but this measure was

not part of a finance bill. Instead it was put forward in an order, or statutory instrument, issued under existing legislation, which meant it was both un-amendable and subject to a one-off vote.

Faced with claims that the order would cost the poorest families thousands of pounds a year, the Lords passed a Labour motion calling on ministers to postpone the cuts and provide extra support for those affected, for a three-year transitional period. The result was to throw the Chancellor’s financial strategy into chaos, because it removed £4.4bn of savings.

George Osborne immediately warned that the vote raised constitutional issues and shortly afterwards the Government commissioned Lord Strathclyde, a former Leader of the House of Lords, to review the powers of the Upper House.

The debate began with the Leader of the House, Lady Stowell, defending the plans. She said spending on tax credits had risen from £4bn to £30bn



The interior of the House of Lords

and the bill was no longer sustainable, warning that interference in a key budget measure would overstep the conventions which prevent the Lords from overriding the tax and spending decisions of the elected Commons.

'In our manifesto, my Party made it clear that reducing the deficit would involve difficult decisions, including finding savings of £12bn from the welfare budget. The regulations that we debate today deliver no less than £4.4bn of those savings next year alone,' she explained.

That argument was challenged by Lord Campbell-Savours, a Labour peer and former MP. 'When the Prime Minister said at the last general election that an incoming Conservative government would not cut tax credits – child tax credits – was he telling the truth or was he deliberately misleading the British people?' Lady Stowell retorted that the Conservatives had been very clear in their manifesto that they would

aim to make welfare savings of £12bn and that working-age benefits would be targeted.

There were four amendments in front of Peers: the Liberal Democrat Lady Manzoor had put down a 'fatal motion' which would stop the changes; the second and third introduced delays. The fourth – from the Bishop of Portsmouth – simply expressed regret at the policy. All but the last, Lady Stowell warned, would challenge the primacy of the Commons on financial matters.

Lady Manzoor said 4.9 million children would be affected by the cuts to tax credits. 'We have a duty in this House to consider our constitutional role but we also have a duty to consider those affected by the decisions we make and the votes we cast.'

She went on to say that it was wrong to enact such a major change via 'a statutory instrument, a tool designed for minor changes to processes



Lord Lawson, former  
Chancellor of the  
Exchequer

and administration, being used to implement a substantial change in policy that will affect millions of people's livelihoods. That is not my decision but I hope that we will do everything we can to stop it'.

The second amendment was from the crossbencher, Lady Meacher, who wanted to delay the changes. 'The lowest income families, stand to lose more than £20 a week. For one of us this can mean a meal in a restaurant. For a poor working family it can mean a pair of shoes for a child who comes home from school crying because their toes are hurting in shoes that are too small, or money to feed the meter to keep the family warm.'

The Labour former Work and Pensions Minister, Lady Hollis, proposed the third

amendment which would postpone the cuts for three years while transitional protection was brought in. She dismissed talk of constitutional crisis. 'We can be supportive of the Government and give them what they did not ask for – financial privilege – or we can be supportive instead of those three million families facing letters at Christmas telling them that on average they will lose up to around £1,300 a year.'

The Conservative former Chancellor, Lord Lawson, supported the changes and insisted peers had no right to reject them but he wanted reform of the whole tax credits system because too much money went to well-off families. 'It is perfectly possible to tweak it to take more from the upper end of the tax credit scale and less from the lower end,' he said.

## The Hillsborough inquest verdict

Theresa May,  
speaking as Home  
Secretary



When an inquest jury ruled that the 96 Liverpool football fans who died at Hillsborough on April 15th 1989 had been unlawfully killed and that mistakes by the police and ambulance services had caused or contributed to their deaths, the Home Secretary, Theresa May, came to the Commons to announce the Government's response in an emotionally-charged statement to the House.

The new inquest had been ordered following the devastating findings of the Hillsborough Independent Panel, chaired by Bishop James Jones, which had re-examined the evidence. Its revelations that witness statements by police officers had been altered were so significant that it led to the new inquest and to two major criminal investigations. With 296 days of hearings it had been the longest inquest in British legal history.

Theresa May said that the findings ‘Overturns in the starkest way possible the verdict of accidental death returned at the original inquests. However, the jury’s findings do not, of course, amount to a finding of criminal liability and no one should impute criminal liability to anyone while the ongoing investigations are still pending’.

She praised the families and survivors, who had never accepted official accounts which laid the blame on Liverpool fans. ‘They have faced hostility, opposition and obfuscation and the authorities, which should have been trusted, have laid blame and tried to protect themselves instead of acting in the public interest.’ As some MPs wiped away tears, she added ‘No-one should have to suffer the loss of their loved ones through such appalling circumstances and no-one should have to fight year after year, decade after decade, in search of the truth’.

Labour’s Shadow Home Secretary, Andy Burnham, said the inquest jury had delivered a ‘simple, clear, powerful and emphatic’ verdict. ‘But it begged the question: how could something so obvious have taken so long? There are three reasons: first, a police force that has consistently put protecting itself over and above protecting people harmed by Hillsborough; secondly, collusion between that force and a complicit print media; and thirdly, a flawed judicial system that gives the upper hand to those in authority, over and above ordinary people.’

He said a similar inquiry was now needed to clear up what had happened at Orgreave during the 1980s Miners’ Strike and his final words, about the families of the 96, produced applause from MPs. ‘They have kept their dignity in the face of terrible adversity. They could not have shown a more profound love for those they lost on

The 96 remembered at Hillsborough



that day. They truly represent the best of what our country is all about. Now it must reflect on how it came to let them down for so long.'

The Conservative, Bob Neill, who chaired the Commons Justice Select Committee asked the Home Secretary to look at creating a mechanism to ensure 'proper equality of arms,' between the families of disaster victims and the authorities in dealing with inquests and legal proceedings.

The former Lord Mayor of Liverpool, Steve Rotherham, – one of several MPs at Hillsborough that day – said the Liverpool fans had always known they were not to blame. 'It took political intervention to force the judicial process of this country to take 27 years to recognise what we knew from day one – that Hillsborough was not an

accident... that drunken and ticketless fans did not turn up late, hell-bent on getting in and that it was not caused by a drunken "tanked-up mob".'

The Liberal Democrat, Greg Mulholland, said the families of victims had been treated appallingly in the aftermath of the disaster. 'We saw police officers sitting eating chicken and chips in the gymnasium as the bodies were lying there, while families were told that they could not hug their loved ones in body bags because they were the property of the coroner. Worst of all, the initial coroner forced alcohol testing on all these victims – including children such as 10-year-old Jon-Paul Gilhooley – of this unlawful disaster. That was a disgrace, and we want to know that it will never happen to a single victim again.'

## An unexpected Leader of the Opposition



Jeremy Corbyn took a different approach at his first PMQs, tackling former PM David Cameron with crowdsourced questions

When the Speaker called on Jeremy Corbyn, as Leader of the Opposition, at Prime Minister's Question Time (PMQ), it was the first time in 30 years in the Commons that the veteran left-winger had spoken at the Dispatch

Box. Unlike the three rival candidates he had defeated so conclusively in Labour's leadership election, he had never been a minister or shadow minister still less sat in Cabinet or Shadow Cabinet.

He was facing a Conservative Leader who had been one of the main players in PMQs for a decade and who had coached previous Tory Leaders on how to handle it for years before that. Things were about to change, Labour's new leader wanted a different kind of PMQs, led by the concerns of the public – and he received 40,000 replies when he asked people to email him with their questions for David Cameron.

'I have taken part in many events around the country and had

conversations with many people about what they thought of this place, our Parliament, our democracy and our conduct within this place,' he explained. 'Many told me that they thought Prime Minister's QuestionTime was too theatrical... and that they wanted things done differently but above all they wanted their voice to be heard in Parliament.'

The result was something quite different, dominated by bread-and-butter issues but with little of the familiar professional political fencing – at least at first. The opening question was from a woman called Marie who wanted to know what the Government intend to do about the 'chronic lack of affordable housing and the extortionate rents charged by some private sector landlords'.

David Cameron observed parliamentary protocol and congratulated Mr Corbyn on his resounding leadership election victory and he welcomed the idea of a new style at PMQs. He agreed more affordable housing was needed but added that the record of the Governments he had led was better than that of the previous Labour Government.

Mr Corbyn followed up with questions from Steven, on social rents and from Paul and Claire, on cuts to tax credits– a subject raised in a thousand of his emails – that he warned would cost families up to £1,300 per year and was 'absolutely shameful,' he said. The strategy was to continue; by his hundredth question, in March 2016, he had asked about health issues in 25 of them, welfare in 24, housing in 16 and education in five; it was a far less Westminster-centric approach.

Those first exchanges were courteous and careful as the two circled one another. It was left to the leaders of two of the smaller parties in the



Nigel Dodds, Deputy Leader of the Democratic Unionist Party (DUP)

Commons to insert a couple of barbs. The first came from the SNP's Westminster Leader, Angus Robertson, who said he was looking forward to working with the new Labour Leader to oppose Tory austerity and fight against renewal of the Trident nuclear missile submarines – a highly divisive issue among Labour MPs, most of whom do not share their leader's unilateralist views.

Then, the Leader of the DUP at Westminster, Nigel Dodds, raised Mr Corbyn's key appointment to Labour's front bench team, his veteran left-wing ally, John McDonnell, as

Shadow Chancellor. Mr Dodds pointed to the plaques by the entrance to the Chamber in memory of Airey Neave, Robert Bradford, Ian Gow and Sir Anthony Berry – MPs murdered by terrorists. He added 'The Opposition Leader has appointed a Shadow Chancellor who believes that terrorists should be honoured for their bravery. Will the Prime Minister join all of us, from all parts of this House, in denouncing that sentiment and standing with us on behalf of the innocent victims and for the bravery of our armed forces who stood against the terrorists?'

That produced loud "Hear, hears" and the Prime Minister replied that Mr Dodds had spoken for the vast majority of people in Britain. 'My view is simple, the terrorism we faced was wrong... The death and the killing was wrong. It was never justified and people who seek to justify it should be ashamed of themselves.'

That flash of steel was a harbinger of the Prime Minister's increasingly dismissive treatment of the Labour Leader in later PMQs – culminating in his advice to Mr Corbyn to 'put on a decent suit'.

## Responding to the Chilcot Report on the Iraq War

Tony Blair, Prime Minister during the invasion of Iraq



It had been a long time coming, and the Parliamentarians in both Lords and Commons had complained about the time taken by Sir John Chilcot to produce his report on the decision to go to war in Iraq. When it did arrive, seven years after he started work, his two million word verdict provoked cross-party soul-searching and recrimination.

Sir John concluded that the UK went to war before the peace process was exhausted, that the intelligence on which the decision was based was flawed and that the planning for the aftermath was inadequate. The Prime Minister, David Cameron, responded with a Commons statement – he began by addressing the families of the 179 British servicemen and women and 23 British civilians who died in the conflict. 'In their grief and anger, I hope they can draw at least some solace from the depth and rigour of this report and, above all, some comfort from knowing that we



UK troops in action in Iraq

will never forget the incredible service and sacrifice of their sons, daughters, husbands and wives.'

He turned to the keystone of the argument for war in 2003. 'Central to the Government's case was the issue of weapons of mass destruction. Sir John finds that there was an "ingrained belief" genuinely held in both the UK and US Governments that Saddam Hussein possessed chemical and biological capabilities.' The evidence for that belief, he found, was not properly examined.

Mr Cameron voted for military action as a Conservative backbencher, in 2003. He said lessons needed to be learned – and the first was that 'taking the country to war should always be a last resort and should only be done if all credible alternatives have been exhausted'. He then added that the

British people should not, in future, recoil from any military intervention. 'There are unquestionably times when it is right to intervene, as this country did successfully in Sierra Leone and Kosovo... there have been times in the recent past when we should have intervened but did not, such as in failing to prevent the genocides in Rwanda and Srebrenica.'

The Labour Leader, Jeremy Corbyn, who voted against military action in 2003, was heckled by some of his MPs when he condemned the invasion. 'Frankly, it was an act of military aggression launched on a false pretext, as the inquiry accepts, and has long been regarded as illegal by the overwhelming weight of international legal opinion. It led to the deaths of hundreds of thousands of people and the displacement of millions of refugees... By any measure,

the invasion and occupation of Iraq have been, for many, a catastrophe.'

In what many took to be a veiled reference to Tony Blair he added. 'We now know that the House was misled in the run-up to the war and the House must now decide how to deal with it 13 years later.'

The Chilcot inquiry published more than 200 memos from Tony Blair to President George Bush. The Leader of the SNP at Westminster, Angus Robertson, pointed to one which he thought was particularly telling. 'On 28 July 2002, Tony Blair wrote to President Bush saying I will be with you, whatever.'

His point about the real reason for the invasion was picked up by the senior Conservative, David Davis. 'The aim was regime change, not WMDs. That fact, and the fact that, as Sir John Chilcot says, Blair's commitment made it very difficult for the UK to withdraw support for military action, amount to a deception and a misleading of this House of Commons. It is not the only one. Sir John has been very careful about avoiding accusing the former Prime Minister of lying to the House but a lot of the evidence suggests that he did. What action can this House take to deal with that?'

## David Cameron and the Panama Papers



Labour MP Dennis Skinner was thrown out of Parliament for labelling the Prime Minister over his personal finances.

The publication of the Panama Papers, a massive cache of documents detailing the tax-avoidance activities of thousands of people across the world, became a personal crisis for the Prime Minister, David Cameron, when his late father's name cropped up.

The leak was from the world's fourth biggest offshore law firm, Mossack Fonseca, and documented the activities of more than 200,000 companies holding property and bank accounts in offshore tax havens like the British Virgin Islands. No-one suggested that the Prime Minister's father had done anything illegal; Ian Cameron had run an offshore fund through Mossack Fonseca that avoided British taxes for thirty years.

Faced with rising anger about the extent to which rich people could avoid taxes, David Cameron released a summary of his tax returns for the previous six years, plus details about money inherited and given to him by his family, his salary, the support received as Leader of the Conservative Party, the income from the renting out of his home and the interest on his savings. The Chancellor, George Osborne, followed suit and the Labour Leader, Jeremy Corbyn, published his

tax return. The Prime Minister made a statement to the Commons, as soon as the House returned from its Easter break.

He was not suggesting all MPs would have to publish the same information, arguing that since the Prime Minister, the Chancellor and their Labour opposite numbers were, or wanted to be, responsible for the nation's finances, they were a special case.

He accepted criticism of the way he'd handled questions about his finances but told MPs he'd been angry about the way his father's memory was being traduced 'I want to put the record straight. This investment fund was set up overseas in the first place because it was going to be trading predominantly in dollar securities so, like very many other commercial investment funds, it made sense to be set up inside one of the main centres of dollar trading.'

He added that pension funds, along with other institutions, invested in offshore funds and that, from now on, most British overseas territories which are tax havens will share information with the UK authorities.

Jeremy Corbyn said the Panama Papers had 'driven home what many people have increasingly felt: that there is now one rule for the super-rich and another for the rest. I am honestly not sure that the Prime Minister fully appreciates the anger that is out there over this injustice... with families lining up at food banks to feed their children, disabled people losing their benefits, elderly care cut and slashed and living standards going down. Much of that could have been avoided if our country had not been ripped off by the super-rich refusing to pay their taxes'.

The leader of the SNP at Westminster, Angus Robertson, also complained that the rules for normal taxpayers were

different from those 'for a small ultra-rich elite' but he focused on the UK's 'particular responsibility' for dealing with tax avoidance in its overseas territories and dependencies.

Andrew Tyrie, the influential Conservative Chair of the Treasury Select Committee said there was 'no point in moralising' about legal tax avoidance – what was needed was action to close loopholes in the law and tax simplification to ensure there were are fewer of them.

Meg Hillier, the Labour ex-minister who chairs the powerful Public Accounts Committee (PAC), said the publication of the Panama Papers 'shone sunlight on areas where some people did not want it to go and she called for more corporate tax transparency. That theme was picked up by her predecessor at the PAC, Margaret Hodge, who had led a high profile inquiry into tax avoidance by multi-nationals. She wanted assurance that HMRC would have access to the register of companies operating in British Crown dependencies.

A Conservative former minister, Sir Alan Duncan, accused the Prime Minister's critics of hating 'anyone who has even a hint of wealth in their life... we risk seeing a House of Commons that is stuffed full of low achievers who hate enterprise and hate people who look after their own family and who know absolutely nothing about the outside world'. The Prime Minister may not have found that entirely helpful, saying 'I do not want us to discourage people who have had a successful career in business or anything else from coming into this House and making a contribution'.

Labour veteran, Dennis Skinner, said the Prime Minister had failed to answer questions about a taxpayer-subsidised mortgage and to Conservative fury he added 'Maybe Dodgy Dave will answer it now'. The Speaker immediately

stepped in to ask him to withdraw the word 'Dodgy' but Mr Skinner was unrepentant 'This man has done more to divide this nation than anybody

else and he has looked after his own pocket. I still refer to him as Dodgy Dave'. Moments later he was ordered from the Chamber.

## The Commons votes down an attempt to loosen the Sunday Trading Laws

When the Government proposed a relaxation in the Sunday trading rules in England and Wales it created a rare political conjunction. Much has been written about David Cameron's narrow majority but for him to actually lose a vote in the Commons requires an issue that unites Labour, the SNP, most of the minority parties and a significant number of Conservative MPs.

The proposals in the Enterprise Bill, which would have given local councils powers to relax restrictions on Sunday trading, provoked just such a combination. In a late addition to the Bill ministers wanted to give councils a new power to extend Sunday trading hours beyond the current six-hour limit for larger stores.

The Enterprise Bill would have relaxed restrictions on Sunday trading





Brandon Lewis MP describes trading laws as outdated with the rise of online businesses such as Amazon

Opponents struck when the Bill reached its Commons Report Stage, the point when all MPs have a chance to consider amendments – including the Government’s addition on Sunday Trading. Conservative opposition was led by an influential backbencher, David Burrowes, who said he was all in favour of the Bill’s central aim of cutting red tape and freeing business but this was a step too far.

He feared an ‘inevitable domino effect, of a race to the bottom, if local authorities get hold of the powers’ and that once one had extended Sunday trading hours, neighbours would be forced to follow. He was, however, challenged by a Conservative

colleague, Robert Jenrick, who said people should have the right to shop when they wanted. Mr Burrowes retorted that he had been listening to his constituents. ‘I am not sure whether he has looked at his mailbag but I have looked at mine and many shop workers, faith groups and others have asked me, “Why are we doing this? Why are we trying to unpick something that is fairly settled, even if it is not perfect?”’.

He received unaccustomed support from Labour MPs. Joan Ryan noted that 49% of retail workers were parents or carers ‘and their Sunday is special to them’. Jim McMahon, newly arrived in Westminster after a

by-election in Oldham, reminded MPs that he had been a member of the Greater Manchester Combined Authority which the Government consulted on the devolution of Sunday trading powers. 'I can categorically say that those powers were not asked for or requested; they were forced on that body.'

Sensing trouble, the Government had offered to restrict the change to 12 pilot areas – but the Speaker had declined to select for debate the last-minute amendment offered by ministers, on the grounds that it had been put down too late.

That left the Minister for Housing and Planning, Brandon Lewis, in the uncomfortable position of asking his opponents to back down, on the promise that he would change the Bill later... 'An evaluation of this exploratory phase will be published. We are circulating a draft for colleagues to consider and I will be asking them to support... which will then allow us to do this in the House of Lords.'

He said that the laws on trading in England and Wales were last updated in 1994. 'Back when the only time we heard of Amazon was when we talked about the river and back when our high streets faced no external pressures. The internet is liberating and changing the way we live and work but the pressures on our high streets are rising and the internet plays a part in that. Our measures will help them by giving local councils the right to expand Sunday trading.'

That brought a scornful response from the SDLP's Mark Durkan. 'He is trying to tell us that he is selling on some sort of deferred click and collect basis – an option that is not available or in front of us today. Is the Minister not pushing

something that will be a predictive text version of public policy that will end up becoming the default position for local authorities, firms and workers who do not want it?'

A Government defeat had looked likely ever since the SNP announced its intention of opposing the Sunday Trading proposal. Eyebrows had been raised because the change wouldn't affect Scotland where there is no similar Sunday trading restriction – but their spokeswoman, Hannah Bardell, was concerned about the knock-on effect. 'The shop workers trade union, USDAW... has warned that the implication of the legislation, without safeguards, is that premium pay for Scottish workers, and indeed workers across the UK, will be threatened by erosion.'

When the issue was put to a vote the Government lost by a margin of 31: In the end 26 Conservative MPs lined up with the Opposition – prompting the Shadow Business Secretary, Angela Eagle, to ask if the Government would 'respect the will of this House and abandon their tawdry attempts to reintroduce this proposal?'

The Business Secretary, Sajid Javid, said the defeat was 'disappointing' and that more flexibility on Sunday Trading would have helped protect jobs in 'struggling local businesses'. He accused the SNP of 'childish and hypocritical actions... They seek to deny English and Welsh shoppers the same freedoms that are enjoyed in Scotland and although they are a party built on the principle of devolving powers from Whitehall, they deliberately stand in the way of a measure that does just that'. Later, the Government confirmed it would not seek to overturn the vote.

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