insight

June 2019

NASA have Pi in their face

NASA has revealed how a tiny bank card sized computer called *Raspberry Pi* has been used to steal 500MB of data from their Jet Propulsion Laboratory in California.

First released in 2012 the Raspberry Pi 4 is soon to be the latest upgraded version of the pocket sized computer featuring up to 4GB RAM, HDMI and USB ports as well as 4K video output all for around £35.

Nasa announced hackers used the Raspberry Pi to take 2 files that dealt with the international transfer of restricted military and space technology. The attacker using the Raspberry Pi device managed to go undetected and hack the network for 10 months.

The malicious hacker gained access to the Jet Propulsion Lab internal network via the Raspberry Pi by hijacking its user account. Although the Pi had been attached to the network by the employee, lax controls over logging meant NASA administrators did not know it was present.

This oversight left the device unmonitored allowing the attacker to take control of it and use it to steal data. Once the attacker had access, they then moved around the internal network by taking advantage of poor internal security measures that should have made it impossible to access their different departmental systems.

The stolen data came from 23 files, but little detail was given about the type of information that was taken and as of yet the attacker has not been caught.

The audit process revealed several other devices on the network, that system administrators did not know about. None of these other devices was believed to be malicious.

When NASA knew about the security breach, it prompted some parts of the agency, including the Johnson Space Center, to stop using a core gateway that gave employees and contractors access to its other labs and locations. This was done as it was feared the attacker could exploit their widespread access to flight systems controlling currently active spacecraft.

Based in California, the Jet Propulsion Laboratory is NASA's main location for building and running the agency's collection of robotic spacecraft including their planetary rovers.

HEADLINES

EVENTS

Raising Futures Kenya Charity Golf day

Hythe Beach Clean

IFRS17 Project Progress Update

Details can be found at:

www.millenniumconsulting.co.uk

Millennium Consulting are going green

Our Green Agenda

The world is experiencing rapid population growth, global warming, environmental pollution, rising water levels, declining animal populations and increasing use of plastics. This is having a detrimental impact on the planet that will have a catastrophic affects on future generations.

So what can be done? In order to fulfil our commitment to operational sustainability, we have launched our Green Agenda, which looks at ways to minimise our impact on the environment. Through this agenda we commit to recognising and understanding the importance of being responsible, sustainable and ethical in order to meet the needs of the present and leave a better environment for future generations.

We will do this through:

- Minimise the use of materials, energy and water in our premises, reducing the amount of waste. Develop effective waste management and recycling initiatives wherever possible.
- Reduce our contribution to environment emissions from travel by investing in technology that allows us to increase remote working and improved use of video- or tele-conferencing.
- Use local suppliers, recycled materials and Fairtrade products wherever possible.
- Measure the carbon impact of our operations and identify and implement means of reducing our carbon footprint. We will support local and overseas "plant a tree" initiatives to aid our journey to become carbon neutral by 2022.
- Use our skills and strengths as an organisation to promote key sustainability messages locally, e.g. taking part in plastic beach cleaning activities.
- Turning off lights and electrical appliances such as computer monitors and TVs when not in use.
- Adjusting the indoor climate by avoiding the use of heaters when not required.
- Replacing light bulbs with energy-efficient lights (compact fluorescent bulbs).

To help keep this agenda in all of our employees' minds, we are undertaking a re-branding process, to help emphasise the 'Green Agenda' across all our activities.

The UK is small when compared with the large economies of China, India and the US, who damage the environment the most; however, if we each pursue a sustained green agenda then the contribution we make will have a positive impact in promoting the welfare of the planet we call home.

Our first beach clean takes place on Friday 2nd August at Hythe beach. To help highlight the problem, we will be showcasing the waste collected on a float at the Venetian Fete in Hythe on Wednesday 21st August. We welcome any volunteers who would like to get involved.

Nine ways Millennials are worse off

A new study has highlighted the "unprecedented" squeeze on younger people's incomes and living standards over the past decade in the UK.

The Resolution Foundation's first "intergenerational audit" spells out some of the challenges facing the so called "Millennials" in the UK (those born in the 1980s and 90s), compared to both previous generations of young people and older baby boomers.

The think tank says it should be a wake-up call to policymakers, urging them to focus on how income growth can be "rebooted for younger generations."

Decline in wages
The think tank says the past decade has seen wages take an unprecedented battering as Britain's economy endured the financial crisis and its aftermath.

The foundation's report says younger workers have been hit particularly hard, with real hourly pay for workers in their 20s dropping by 9.2% between 2009 and 2014.

The share of 18-29-year-olds working in lower-paid jobs has soared from under 30% in the early 1990s to almost 40% today. It has remained flat across older age groups.

Stuck in temporary and part-time work
The number of young people working part-time or in a temporary job through necessity rather than choice has remained flat over the past few years.
Meanwhile the number of workers in older age groups trapped in such work has continued to drop as employment rates have picked up to record levels in the UK.

Graduates in low-paid jobs
Young people leaving university at the height of the financial crisis were far more likely to go into low-paid work than before and after the crash.

Britain saw a 30% rise in graduates in lower-paid work when the crisis began, and the rate remained high for 7 more years as the British economy struggled to recover.

"This matters because time spent in low-paying occupations reduces someone's future earnings prospects, not just because pay progression and training are weaker in these occupations but also because moving to higher-paying occupations is relatively rare," the think tank notes.

Rise in housing costs
People born in the early 1940s had to fork out around 10% of their incomes for housing costs when they were young workers. For people born generations later in the early 1980s, housing costs had more than doubled as a proportion of income to 24%. "Housing costs for today's 20-somethings are a result of increases in ongoing housing costs across tenures since the 1980s, and a shift towards the highest-cost private-rented sector," according to the study.

Lower home ownership
Home ownership rates have been falling for young adults since the late 1980s. Six in 10 families with breadwinners born in the early 1950s owned their own homes by the age of 33. For earners born in the early 1980s, the number is around 33% lower at just 4 in 10 families. The report highlights high house prices and "the associated deposit barrier" as the key challenges for younger would-be buyers.

Children in rented homes
The study says more members of 'Generation X' are becoming parents while living in the typically more insecure private rental sector than in the past, rather than as homeowners or social housing tenants.

The share of children starting school while living in privately rented homes has increased from 10% in 2003 to 25% today. Living with parents. The share of people in their late 20s living with their parents has also increased, reflecting rising housing costs and the squeeze on wages. It has increased from 24% in 2007 to 32% in 2018.

Higher taxes, lower benefits
The report says that the average 30-45-year-old will be around £385 worse off by 2024 because of tax and benefit changes introduced since the Conservatives returned to power in 2015.

By contrast the average household "headed" by an over-65 will see a £100 gain to their finances as austerity cuts take a heavier toll on the younger generation.

Less money for going out
Millennials are now forced to spend a far larger share of their income on essentials like bills and education, leaving them with 7% less disposable income in real terms. People aged 18-29 and even 30-49 today now use a smaller share of their non-housing spending for recreation, culture, restaurants and hotels than those aged 65 plus.

Harness insurTech innovation through IFRS 17 compliance

Technical innovation is driving significant change for the insurance industry, in areas ranging from customer experience, AI, chatbots and machine learning, through to leveraging Cloud computing. Combined with the need to respond to new regulatory challenges, such as IFRS 17, it is clear that now is the time to dramatically reengineer not only the back office but also the front office.

In recent years there has been a flood of new regulation across most industries, with the insurance sector particularly affected. Solvency II had an enormous impact and now IFRS 17 is underway. It's not only IFRS 17 that affects insurers. They have also been affected by IFRS 15 for revenue recognition, IFRS 9 for financial instruments and IFRS 16 for lease accounting and in the USA life insurers are working through LDTI changes.

If you focus on IFRS 17 compliance, combined with future proofing your organisation, then it's important to introduce an architecture that meets existing business needs and the new standards, but also considers future challenges. The insurance sector is embarking upon one of the biggest changes it has ever faced in the back-office. New accounting standards combined with the need to innovate, will place significant demands across the whole organisation. One reason insurers are dependent upon legacy systems is due to the difficulties associated with introducing change. Transforming the insurance sector is virtually impossible whilst running existing business and therefore, a non-disruptive, evolutionary approach is advisable from a technical perspective.

Back office technology within the insurance sector has remained unchanged for many years, with batch-based processes currently feeding high data volumes from policy administration and actuarial based systems, through to the General Ledger. Future innovation and InsurTech requires fast-moving real-time data, therefore, moving the back-office from a traditional, historic, batch basis operating model to real time, fast processing is an important consideration.

Front office innovation needs to be supported by the back office. How should insurance contracts be delivered? Blockchain? How is that dealt with in the back office? How are crypto currencies handled? How is the Internet of Things dealt with in terms of real-time telematics? All those questions need to be factored in when looking at future state architecture, and need to be considered over and above IFRS 17, to ensure that the solutions implemented today are able to meet future demands.

The wave of regulatory change has had a wide-ranging impact, particularly concerning data, actuarial model performance and information processing methods of insurers. Increased volumes and more complex calculations have had an effect on the accounting ecosystem and ultimately reporting, which has become more onerous following the regulatory changes.

Given the monetary cost, complexity and time required, it's easy to regard regulatory change as a burden. However, regulatory change will benefit policyholders (in terms of security of the insurance industry) and shareholders (transparency of information and understanding company performance). From the firm's perspective, the benefits are not quite so obvious.

IFRS 17 has provided the opportunity to invest in new finance systems and encouraged the need for transformation. With regulatory change, the best place to start is to consider the data requirements. Data in the insurance industry is often inaccessible, residing in silo-based systems. The data may not be effectively harnessed and there may be quality and availability issues. Regulatory change has exposed and emphasised these data issues and this in turn has driven insurers to start building a more robust technical infrastructure.

The opportunity afforded by new technology to transform finance, requires high quality data. Regulatory change provides the opportunity to lift the lid and address some of those crucial data issues. Insurers are generally constrained by legacy operating models, which impact data quality, actuarial tools and operational processes.

Regulatory compliance requires complex calculations, which rely upon high volumes of granular information. Clunky, old-fashioned mainframe computers and proprietary database systems need to be replaced. Insurance firms have historically relied heavily upon Excel spreadsheets, Access databases and manual processes which are no longer feasible. In order to comply with the regulators and future proof the organisation, insurers need to automate processes. Back office automation investment will enable the deployment of new front office systems leading to the delivery of valuable information concerning business performance.

Automated processing can transform the back-office into less of a data management, calculation entity, delivering more insightful information to ensure front office investment pays off. Regulatory change can therefore be seen as an opportunity to invest in the back office, in areas such as cloud computing, in-memory processing and high-tech, super-fast technology that can crunch huge data volumes

Harness insurTech innovation through IFRS 17 compliance continued….

which support front office transformation. Regulatory change will not directly help insurers however investment incurred as part of a regulatory change programme can support the long-term digital transformation journey.

One barrier to change is the lack of time available to achieve a comprehensive transformation program. Even allowing for the one-year IFRS 17 delay, most insurers will only be able to achieve a compliance plus approach, putting a technical backbone as a foundation for future transformation. This means they will not necessarily achieve all the benefits immediately but will put the foundations in place for future enhancement.

Another significant barrier relates to the availability of funding. It's important to consider the overall business case so that when program sponsors raise these topics with the Board and executive committees, they should look beyond simple compliance. They need to factor into the business case the cost of making an incorrect choice, choosing technology that may constrain the organisation in the future. It is essential that insurance companies invest in up to date technology which has a viable long-term future.

Of course, major change is not without risk. One option is to meet compliance needs whilst deciding upon a long-term roadmap. Timing is crucial as IFRS 17 compliance must be in place by January 2021, in order to allow for a year of parallel running and go-live in 2022. Cloud computing can help deliver the solution in line with the tight deadline. The Cloud provides proven technology and a faster way of testing, UAT, development and production rather than traditional on-premise solutions. It is also highly scalable.

Advances in technology, globalization, innovation and the rise of InsurTech have impacted virtually every part of the Insurance ecosystem. Through the rise of InsurTech, smart contracts are now being delivered via Blockchain. In underwriting there have been dramatic changes in the motor insurance market where telematics has been revolutionary. Traditional underwriting factors such as age, occupation, vehicle value etc. whilst still important are now being replaced by real-time data, that provides insight into driving habits, including cornering, compliance with speed limits, driving times (day or night) and the conditions of the roads being driven on. This is significantly changing the underwriting process and providing a more accurate insight into the risks associated with individual drivers.

Innovation provided by InsurTech requires a change in back office processes to harness competitive advantage. One solution for insurers is to ensure that IFRS 17 compliance projects interact with InsurTech and innovation departments. This will combine compliance with the future vision for what a digital strategy looks like. If insurers embrace the new technologies now available then they will be able to build a future state architecture that could remain operational for the next 15 to 20 years and will be an enabling platform, as well meeting new regulatory demands.

Insurers that combine regulatory compliance with a forward-looking digital strategy will be well placed to meet future market demands, able to compete with new market entrants and take full advantage of the benefits provided by InsurTech.

Insurance M&A activity on the increase

Following the recent news that Allianz UK will become the second largest general insurer in Britain following its acquisitions of Legal & General and LV='s general insurance businesses, it seems likely that M&A activity will continue to increase in the UK insurance market.

Allianz's combined transaction, thought to have cost in the region of £800m will give Allianz access to 12 million customers and make it the second largest GI provider behind Aviva. Allianz's acquisitions represent a continuing trend of increased M&A activity from 2017 to date across GI, life and health insurance markets.

Analysts reported a year on year rise in M&A re/insurance transactions from 2017 to 2018 and 2019 is expected to be similar. Factors including rising interest rates and sustained US economic growth helped drive the M&A market in 2018 and looks set to continue in 2019. Additionally changes brought to a head by US tax reform, fewer M&A regulatory barriers and higher valuations for insurance businesses look set to increase the likelihood of further M&A activity.

Reforms in US tax law and reduced corporate tax for US insurers may make them a more attractive acquisition target. It is likely that European insurers will look to the US for potential M&A targets in order to help offset reduced organic growth in domestic markets.

InsurTech is also likely to become increasingly influential in 2019 and play more of a deciding role in M&A markets, as insurers seek more innovative cost effective technology as a method of engaging with and meeting customer demands on digital interactive platforms. For larger global insurers sometimes the most cost effective way to achieve this is to buy assets or entire InsurTech start-ups.

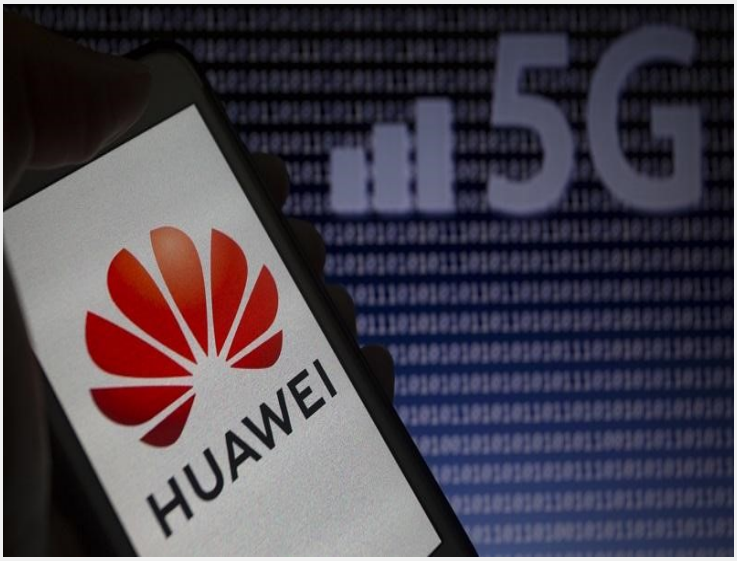
With Europe, Americas and Asia Pacific insurers leading the way in M&A activity during 2018 combined with a strong 2019 Q1, it remains to be seen whether this trend will continue throughout the remainder of 2019. Factors including Brexit, US China trade wars and global protectionism are generating an air of caution and uncertainty which may have a part to play if the M&A market is to sustain current levels: 382 M&A transactions were recorded in 2018 compared with 350 in 2017 (Clyde & Co).

Overall it looks likely that there will be continued growth in M&A activity as competition for assets amongst the large listed insurers increases and interest rates rise. These factors will make medium sized general/life insurers and InsurTechs that offer bolt on capabilities for global insurers in particular, attractive acquisition targets.

Huawei agrees deal with Russia over 5G

Huawei has signed a deal with Russian telecoms firm MTS to develop 5G technology in Russia. Reports say the companies will develop next-generation 5G networks in Russia over 2019 and 2020. The deal was agreed as China's President Xi Jinping began a visit to Russia. This comes after some Western countries including the US have blocked Huawei amid security concerns.

The deal is likely to provide some relief to Huawei which has been under intense international scrutiny in recent months. Huawei has become a central part of the power struggle between the US & China which started out in trade, and is now being played out in the technology sector.



The US has encouraged other countries to block Huawei (the world's largest maker of telecoms equipment) from their 5G networks, saying the Chinese government could use its products for surveillance. Huawei rejects this claim and says it is independent from the government. Still, some countries including Australia and New Zealand have blocked Huawei from supplying equipment for 5G mobile networks.

Efforts by Washington to block Huawei escalated last month when the Trump administration put the company on its "entity list", which prohibits US companies from trading with the firm unless they have a licence.

The US move to blacklist Huawei could have far-reaching consequences. It will hurt Huawei, which is also the world's second largest smartphone maker, as it gets half of the chips it uses from US suppliers.

Meanwhile, US companies could lose a key customer and the development of 5G could suffer given Huawei is such an important player in its development, analysts say.

Washington's moves against Huawei are viewed by some as part of a broader strategy to curb China's growing importance in the world.

Traffic Alert - Britain's 5 Busiest Road Sections

Perhaps unsurprisingly 4 out of 5 of the busiest road sections in Great Britain are on the M25. Predictably, the stretch linking junction 14 at Heathrow Airport with the M4 at junction 15 is the most congested, with 219,000 vehicles using the section every day in 2018. Junction 13 at Staines to junction 14 is the next busiest with 206,000 vehicles, with junction 15 to junction 16 for the M40 motorway next with 201,000 vehicles. The section linking junctions 12 and 13 completes the misery for motorists forced to use the M25 on a daily basis, with 193,000 vehicles using the short section every day.

Only the M1 between junction 9 for Rebourn and junction 8 for Hemel Hempstead manages to challenge the M25's dominance, with 184,000 vehicles using the stretch of motorway in Hertfordshire.

The figures were taken by an analysis of the Strategic Road Network (SRN), which is made up of motorways and major trunk roads managed by Highways England. Although the SRN makes up just 2.4% of England's road network, it carried 34% of all motorised traffic in England.

Of the 5 local authorities in England with the highest levels of traffic, 3 are in the South East (Hampshire, Kent and Surrey), and the other 2 are in the East of England region (Essex and Hertfordshire).

Motor vehicle traffic is up across almost the entire country, with the South West showing the biggest increase since 1993 (39%), followed by Scotland and East of England (both up 37%).

Only Greater London bucked the trend, with traffic down 4%, presumably a symptom of anti-car legislation, expensive parking and the availability of public transport.

AI technology used in 'Deepfake' videos

Originating from the internet deepfake videos portray real people doing things they never did, with close to photorealistic footage. Using a particular type of AI the use of deepfake videos imagery has escalated to the point that the British and US governments are debating ways to regulate them.

The last 18 months has seen a rise in deepfake videos depicting the likes of Marc Zuckerburg and Barack Obama behaving and speaking in a way that is completely false and untrue, created by AI with the intention to discriminate the people in the videos.

The concept was first created in 2014 with the use of two AI algorithms that work together in what is known as a 'generative adversarial network' or GAN for short. The two algorithms are called the generator and the discriminator.

The generator is used to generate passable data: to lie without being caught. The goal of the discriminator is to identify images coming from the generator as fake. The two work together to create 'generative adversarial network'.

GANS are a powerful way of creating not just deepfake videos but also photorealistic imagery.

Both the US and the UK are working on regulatory frameworks to help control the increase in these fake videos and photos. In the US, social media platforms are not held responsible for their content. US Congress is considering changing that, and making such immunity dependent on requirements to identify whether fake content has been distributed.

The EU is taking a more active role by using the threat of regulation to force platforms such as Facebook to self-regulate. Facebook currently is ignoring any responsibility around the issue and will only take notice if a third party has ruled the information to be false. Britain's Department for Digital, Culture, Media and Sport is also expected to recommend regulation.

Such is the sophistication and threat of the new AI manipulated media which has been used to discriminate against politicians and hamper election campaigns, new regulations and laws look likely to help govern the increase in this digital disinformation.

Are electric commercial passenger aircraft a thing of the future?

Electric engines are seen as the solution to tackling the industry's growing contribution to greenhouse gas emissions, according to aerospace firms.

The Paris Airshow saw the launch of the world's first prototype commercial all-electric passenger aircraft. Built by Israeli firm Eviation the plane can carry nine passengers for up to 650 miles (1,040km) at 10,000ft (3,000m) at 276mph (440km/h). It is expected to enter service in 2022.

An unconventional design due to it being electrical, the craft is powered by three rear-facing pusher-propellers, one in the tail and two counter-rotating props at the wingtips to counter the effects of drag.

Eviation has already received its first orders with US regional airline Cape Air agreeing to buy a number of the aircraft. With two billion air tickets sold each year for flights under 500 miles at the moment and with an electric plane that can fly 600 miles on batteries alone, the business potential for small electric passenger aircraft is clear, especially if you consider the cost savings of electricity vs fuel currently used.

A small aircraft will use c£400 of conventional fuel for a 100-mile flight. But with electricity it's likely to be around £10 for the same distance, which means much lower costs per flight-hour.

The future also looks positive for medium-range flights (range of up to about 1,500km).

Aircraft targeting this range would use a mix of conventional and electric power, enabling them to cut CO2 emissions significantly by switching on the electrical component of their propulsion at the key points in a flight such as take-off and landing. Hybrid planes are already being designed with potential fuel savings of around 30% and could be seen in the next 5 years.

It's predicted the aviation sector will soon switch to hybrid and electric aircraft for regional travel, with an eventual demand for 550 hybrid airliners each year between 2028 and 2040.

However, for long haul flights the idea of using an electric plane remains an unrealistic prospect due to the limited capacity of current battery technology. This remains a major issue for the aviation industry as the majority of their emissions come from long haul flights over 1,500km, too far for any electric plane.

With the UK committed to being a net zero carbon emissions country by 2050, increased pressure from regulators and sustained high demand for commercial flights it remains to be seen how the aviation industry will cope with lowering its CO2 emissions for long haul flights.

Join us for Millennium Consulting's 2019 "Raising Futures Kenya" golf day at Westerham Golf Club, Kent on Friday 13th September 2019.

It will be a Ryder Cup format team competition, with players allocated to either the Europe or US teams. This will be followed by drinks, dinner, prize giving and a Charity auction. Register at millenniumconsulting.co.uk/charity-golf-day-2019

Raising Futures Kenya's vision is a world in which all children and young people in Kenya live with dignity, opportunity and hope.

They create opportunities for vulnerable children and young people in Kenya to break the cycle of poverty and inequality and fulfil their potential.