

Disruptive Innovators

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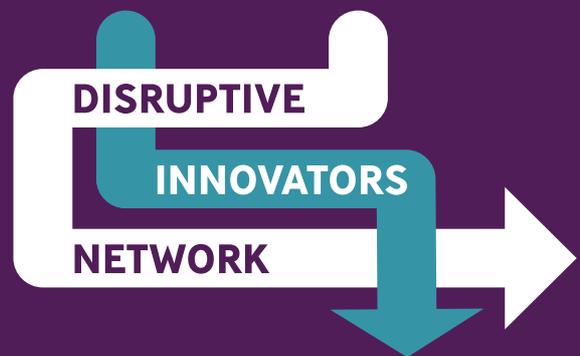
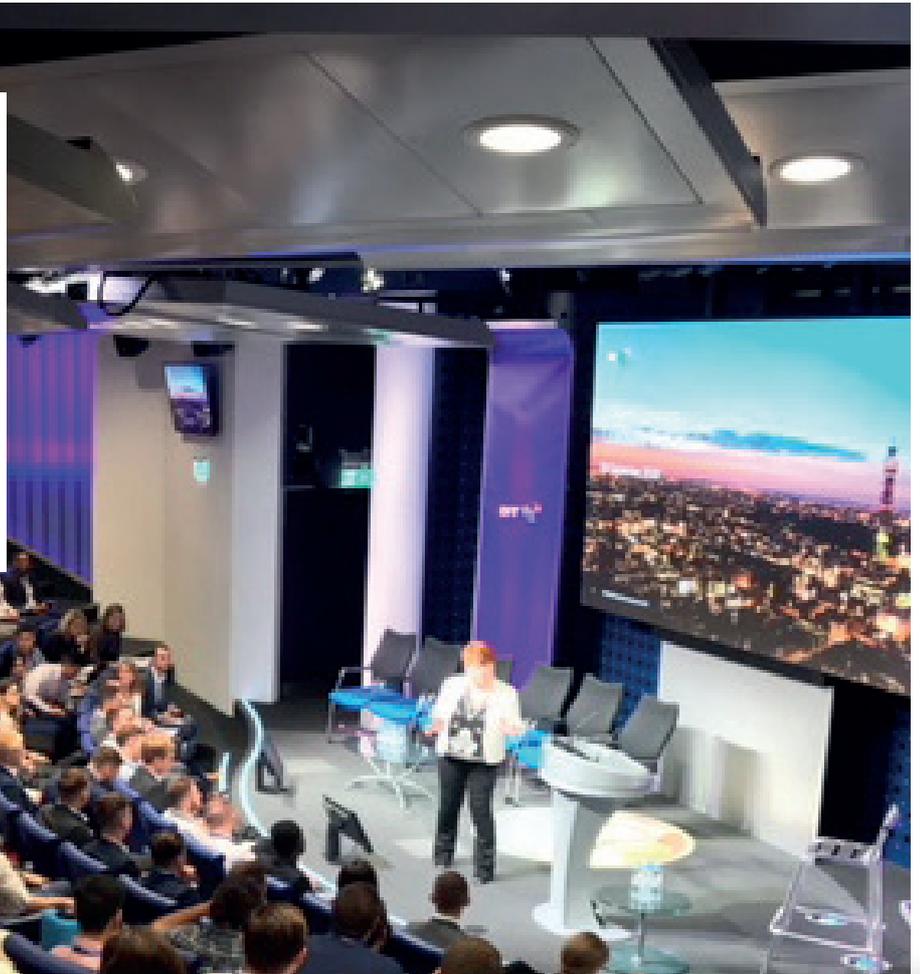
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what is DISRUPTIVE INNOVATION?

Rob Prevelt is the founder and CEO of D/SRUPTION magazine, Disruption Summit Europe and knowledge platform DisruptionHub.com. Working across all sectors – commercial and public – D/SRUPTION provides information and insight for business on disruptive innovation.

Q What is D/SRUPTION seeking to achieve and what progress has it made to date?

A Emerging technologies and radical new business models are transforming entire industries and, indeed, building a whole new business sector. Prior to launching D/SRUPTION, I worked in retail and was constantly surprised at the sector's lack understanding of the speed and scale of likely disruptive transformation. Those that did 'get it' thought that disruption was all about technology – which is perhaps the biggest misconception about disruption. Technology is central but less important than culture.

D/SRUPTION has grown rapidly since its launch in 2015. We are privately owned and now have over 20,000 subscribers. We work primarily with heads of digital, innovation, strategy and technology, providing information and insight on what is a rapidly changing world. The Knowledge Hub offer is an essential tool for many of Europe's leading organisations including BP, BT, Deutsche Bank, Vodafone, IKEA, American Express and British Land.

Q How does the impact of disruption vary between the commercial and non-profit sectors?

A The primary difference concerns disruptive innovation as a source of competition. Generally, the public sector (including non-profits) knows where disruption is likely to come from, whilst the private sector is vulnerable to disruption from both existing and often unexpected new entrants to the market. For example, the primary retail banks already compete but are increasingly vulnerable to service offers from technology start-ups and tech giants such as Apple.

Another difference is the speed at which disruptive competition is happening in the private sector, which far outstrips change in the public and non-profit sectors, due to the need to maintain shareholder value. And the pace of change is outstripping the pace of regulation.

However, recently we are seeing non-profits step up their appetite and capacity for change. This particularly applies to technology with an increasing focus on Blockchain security and data tracking across the supply chain,

artificial intelligence and data visualisation – but also in cultural transformation.

In respect of diversity, one of the critical future business success factors, the non-profit sector is way ahead of the commercial sector. Lack of diversity on the Boards of major companies means that meetings often comprise a bunch of people asking the same questions. Diversity brings different questions, challenges and solutions and that's the point at which you see businesses being able to embrace real change.

“The most important thing... is to look at challenges and problems in other sectors and learn from them.”

The most important thing that organisations need to do – private and non-profit – is to get out and look at challenges and problems in other sectors and learn from them. .

Q What are the future key likely disruption trends in the service delivery of non-profit organisations?

A The first trend is data – increasing amounts of data are being collected through surveys, via utility companies and from IOT sensors. By using machine learning techniques, and by combining layered data from multiple sources' more use can be made of this data to monitor and predict human behaviour, spot patterns and discover and solve problems. This is already happening in the health sector and in extra care schemes. The big issue is what questions we ask of that data. The second trend is around voice technology. I see voice technology as becoming a seamless element in the way that individuals run their lives. Google's Alexa is just one example. Boiler technology already exists enabling the appliance to predict or report malfunctions. Using voice technology, the boiler could order a repair select a contractor from a landlord's approved list and consult the tenant's diary to find a repair slot. The tenant would simply get an automatic appointment confirmation. Voice technology can become a critical support for people with learning or physical disabilities (such as blindness) in dealing with social landlords



ROB PREVETT,
CHIEF EXECUTIVE,
D/SRUPTION and the
Disruption Hub

and other institutions. A good example is RJT which is an Alexa-like support for blind people, connected directly to their doctor or hospital.

A third trend is augmented reality. BIM technology allows residents to visualise what their new home or refurbished estate will look like and contractors to locate existing plumbing or electrical installations before undertaking works. Video technology can be used to certify that repairs were completed properly.

Q Which organisation(s) do you admire as being a successful disruptor (and why)?

A ASOS, the on-line clothing retailer which has transformed retail by driving e-commerce. Monzo, a retail bank offering truly personal services looking at your spending patterns, sending alerts when funds are low and allowing the consumer to more effectively manage their finances.

Provenance, which uses Blockchain technology to track a product through the supply chain from creation to sale and via an app which can be used in-store, enables consumers to verify that the product has been manufactured ethically. This independent accreditation of product quality can help commercial brands for whom purpose is becoming increasingly important. In social housing, construction materials are highly suited to this approach.

“The best advice I've had is not to fear failure. Failure is a great master.”

Q What would you say are the key traits of a successful innovator?

A I think there are four:

- A massive inquisitiveness, an attitude of questioning, an unwillingness to accept that something needs to be done in a particular way because that's how it has always been done
- A willingness to fail and an understanding that failure is a staging post to success and that we learn more from our failures than we do from our successes
- A very thick skin and self-confidence because lots of people will tell you that you are either mad or wrong
- Particularly in larger organisations, the innovator needs to ask for forgiveness for failure rather than permission to experiment. Avoid asking for permission because it is often denied

Q What comes first innovative technology or an innovative culture?

A Organisations tend to dive in and acquire new technology because that's what they think they

need to do. We are seeing organisations invest heavily in AI and IoT without fully researching and understanding what the technology needs to do. Technology for technologies sake.

The culture change needs to come first. You can have the best technology in the world but if the business can't cultivate a culture of innovation, then the new tech will have no real impact.

Q Can regulation stifle innovation?

A Regulation is one of the biggest barriers, and conversely one of the biggest enablers, of innovation.

For example, in financial services and health there are understandable barriers which make those sectors harder to disrupt. However, the moment that regulation changes those sectors are ripe for massive disruption. For example, regulatory changes in financial services enabling 'open banking' (whereby all banks must share data with other financial institutions) are enabling new entrants to disrupt the market share of the big banks. It's important to understand that most regulation is there for a valid purpose and that it sometimes needs to stem unhelpful innovation. Where regulation stifles innovation its normally due to the failure of regulation to keep up to the pace of technological innovation. Regulators need to look outside their own sector to see what's being done on regulation elsewhere.

Q 'Fast failure' is now recognised as critical to innovation. What do organisations who don't have this in their DNA have to do to get it?

A That requires a culture change at the top. The best way to achieve it is to take Boards and executives outside their comfort zone. Get them involved in innovation sprints and out-of-sector study trips and broaden their thinking. The problem is that many businesses don't want risk takers and are content to improve via marginal incremental gains. Fast failure is good but the degree of risk taking needs to be appropriate to the business or sector. For example, you don't want a level of risk-taking in the NHS that endangers people's lives. So there needs to be a balance. Then it's about setting critical KPIs at the start of a project and using them to assess whether something isn't working. Innovation is one of the most frequently used terms but also one of the least understood. There is a big difference between 'innovation' (creating something genuinely new) and 'renovation' (which is just improving what you are already doing). It takes real determination by leaders to innovate properly and it's got to be company-wide if it is to have any chance of success.

SERVANT LEADERSHIP

Academic and business literature suggests that one specific approach to leadership produces superior results, maximises staff retention, decreases absence and creates an agile and braver organisation capable of responding to change through innovation. This leadership approach is Servant Leadership and is being adopted by a small but increasing number of companies such as Balfour Beatty, Starbucks and Marriott International.

Although the concept of the servant leader goes back to early Chinese philosophy and is found later in the Christian scriptures, in modern management theory the term 'servant leadership' was invented in 1970 by Robert K Greenleaf.

The servant leader is an individual whose motivation is to serve rather than to seek personal success. The servant leader serves the organisation by serving and inspiring its workforce – sharing power, putting the needs of the employees first, helping people develop and ensuring that managers are engaged and accountable to their teams. A motivated and supported workforce then works harder and more flexibly, produces better business results and has a more positive engagement with customers – resulting in greater satisfaction and customer retention.

The servant leader spends much of their time simply talking to staff. What do they think of the company vision? What do you disagree with? How could we do things better? Are there areas of the business outside your defined role that you would like to influence? How well am I performing as a leader? What can I do to make your work more rewarding? Are you achieving a work/life balance – if not, what can I do to help? Are you getting the support you need – if not, what more can I do?

This engagement and challenge is far more profound than the cosmetic 'open door' or 'walking the floor' approaches to workforce management and is far more useful than even the best-designed staff survey. By engaging with the workforce in this way, and by delegating responsibility as much as possible, the leader is both inverting the management pyramid and seeking to develop servant leader 'followers' throughout all tiers of management.

THE KEY ATTRIBUTES OF THE SERVANT LEADERS ARE:

- ▶ **Empathy** – recognising and caring about the feelings of staff with a strong desire to help them
- ▶ **Listening** – by paying complete and humble attention to what others are saying, the leader understands all the inter-personal dynamics of the organisation and can resolve conflicts and provide counselling or training
- ▶ **Awareness** – completely aware of their shortcomings, openly acknowledging them and being committed to personal change, buoyed by the positive staff feedback on their good points
- ▶ **Healing** – inspiring trust by sincerely fostering the emotional and spiritual well-being of staff and by being forgiving

“A servant leader is an individual whose motivation is to serve rather than to seek personal success”

- ▶ **Conceptualisation** – able to imagine the possibilities of the future, reconcile these with current realities and produce a positive 'road map' for the organisation
- ▶ **Persuasive** – getting people to do things through persuasion rather than edict and being willing to modify plans to maximise workforce buy-in. This quality also comes in handy in negotiations with business partners, customers and other stakeholders
- ▶ **Stewardship** – assuming complete responsibility for planning and managing all available resources and acting in a rational and transparent way
- ▶ **Foresight** – having an intuitive ability to predict what is likely to happen in the future, based on the past and the present, and being able to plan ahead
- ▶ **Community building** – bringing people together in a common purpose by creating a sense of belonging to something bigger than the individual, such as the organisation, the team and friendship-based staff support networks



- ▶ **Commitment to the growth of others** – helping staff develop and achieve their career paths within the organisation and giving specific task-related praise wherever possible

WHY DON'T MORE LEADERS ADOPT THE SERVANT LEADERSHIP APPROACH? THERE ARE SEVERAL REASONS WHY:

- ▶ Many leaders are driven by personal ambition – by definition, they cannot be servant leaders
- ▶ It's no quick fix – it can take several years to build complete trust and to cascade servant leadership throughout the organisation

“No servant leader is ever perfect and it can be hard to live up to your values”

- ▶ It can take longer to make decisions – but better decisions are usually made by virtue of greater reflection and there is a higher rate of successful implementation
- ▶ The leader can be perceived as weak – it requires a self-confident leader to execute servant leadership
- ▶ Staff may struggle to get used to their new levels of responsibility

- ▶ It requires the Board or Committee to endorse the leadership strategy – if they don't, the servant leader will have to meet their expectations as well. Which means longer working hours
- ▶ No servant leader is ever perfect and it can be hard to live up to your values

As a former CEO who sought to embrace servant leadership, I would agree that these are real hurdles to overcome. But transformation can be achieved if the organisation has the required level of commitment and patience. Within a few months, positive results emerge which energise the process. And when your organisation consistently has very high staff satisfaction, its staff turnover and absence are significantly reduced and your business performance exceeds organisations with autocratic leadership you may well feel that it's been a worthwhile journey.

The other thing I've learned is that even if an organisation has yet to adopt servant leadership as its corporate culture, individual directors and managers can still apply the principles in their departments or teams. This can be done formally – seeking the recognition and approval of senior management – or informally by a change in your personal management style. When your departments or teams improve their performance and become more agile, senior management may sit up and take notice.

Ross Fraser,
Bulletin Editor

IGNITING WORKPLACE REVOLUTION: A Practical Case Study

The work we do at Corporate Rebels is never dull. We visit the most progressive organisations around the world, learning how they make work more fun. And then we share what we learned via this blog, presentations and workshops all over the world.

Recently, we have embarked on another activity: direct support to organizations that are transforming. It is now an important part of what we do. This is when we put the stuff we write about into practice. And it's where we learn to get better at what we do.

Every now and then we write about some of those experiences. This blog is about the work we're doing with Aster Group in the UK.

HOW DID IT ALL START?

The relationship between Aster Group and the Corporate Rebels started, as most of our client work does, via our blog. Dawn Sowerby, Transformation Director, had been reading it for quite a while before attending one of our Rebel Events.

At this event, in London, we got to know her and colleague Michael Reece, Aster Group's Operations Director. Soon after we started to actively support their organizational transformation.

CORPORATE REBELS SURVEY

Aster had already done some impressive work before we joined in. (Dawn chronicled this in an earlier guest blog.)

The first support we provided was via the Corporate Rebels Survey.

We sent it out to all Aster employees. It gave us insights into the current and desired state of our 8 trends measure. It gave a clear view of how employees wanted to improve the organisation. It also highlighted variations by department and levels.

Importantly, it revealed the biggest frustrations in the current workplace. Based on these, we designed workshops on the 4 trends that showed the biggest gaps between the current and desired states.



REBEL WEEK: Turning Inspiration Into Tangible Experiments

The workshop week was an important step in the transformation. We offered four different workshops to 250+ managers. We collaborated with fellow Rebels Edwin van der Geest and Lianne van Nieuwkerk to design and deliver these. They focused on:

1. Supportive leadership
2. Freedom & trust
3. Distributed authority
4. Talents & mastery

In each we set out to challenge, inspire, and experiment.

► CHALLENGE

We looked critically at how Aster currently approaches these topics. What is going well? What is not going well? Why do we do things the way we do? Is it really because they are the best ways for the business? Or is it because "We've always done things this way"?

► INSPIRE

What can we learn from workplace pioneers around the world? How can we apply these insights to Aster? We shared practical tools, best practices, and methods used by pioneers around the world to enable inspiring workplaces. No fuzzy theoretical stuff, just practical ideas and case studies on what we've seen elsewhere.

Article courtesy of Corporate Rebels and Tim Goulding and Dawn Sowerby of Aster group

► EXPERIMENT

We designed experiments to conduct in Aster's approaches. Each manager was encouraged to design an experiment for two of the four topics. If they felt committed to experiment, we invited them to post their initiative on the "Commitment Wall".

If they didn't, that was fine too. We didn't want people to put up commitments if they weren't fully motivated to make them succeed. We believe in intrinsically motivated change, not in forced change.

During the week, the "Commitment Wall" filled with change initiatives that were set in motion after the workshops. The aim was to ignite as many Aster Rebels as possible by giving them the freedom and trust to experiment.

STRONG WILLINGNESS TO CHANGE

The willingness to change at Aster was unlike any we have seen before. In almost all parts of the business, people were eager to step up, challenge the status quo, and take personal action to support the changes.

And it wasn't just in the buzz of the moment. Experiments are already under way. For example:

- Experimentation with cross departmental self-managing teams
- Teams running away-days focusing on the four trends
- Extension of the successful flexible working project to include areas that had not previously embraced it
- Starting a 'Project Marketplace' where team members can see what is going on across the whole directorate and get involved in projects not directly related to their current job role
- Some teams started to distribute decision making through the advice process
- Supportive leadership was symbolized by manager's offices that were turned into "Team Rooms" for all to enjoy

- Departments which have been working in a traditional, office-based format, moving to more flexible working
- Review of the 'return to work' approach following increased focus on employee mental health
- Experiments on Role Reversal and Talent Partners were conducted to focus more strongly on talents, rather than job descriptions.

These are a few of the changes in this 1,300 employee organization. We're honoured to be working with such an enthusiastic group, and supporting them in their transformation. We all anticipate the emergence of a truly inspiring workplace.

WHAT'S NEXT

Any transformation takes time, perseverance, and continuous experimentation. At Aster, it won't be any different. Some experiments will fail, mistakes will be made, and challenges will arise. That's why we'll continue supporting them in various ways.

For now, we'll be providing some specific support and training to Aster, whilst also touching base at a day event ("Return of the Rebels") organised with the manager's from the Rebel's week to see how they are getting on, what scattered experiments are happening, what barriers there are, and how to maintain momentum.

We support Aster to achieve their goal of being a workplace where people do good (by providing homes to people who need them) and where they fully enjoy doing this.

We'll offer continuing help via remote activities (coaching, challenging, advising), so as to increase our impact as much as possible.

In short, we'll do everything in our power to help Aster achieve their goal of being a workplace where people do good (by providing homes to people who need them) and where they fully enjoy doing this.

At Corporate Rebels, we are extremely passionate about making work more fun. We can help you too. Drop us a line at info@corporate-rebels.com if you want us to support your organization to transform into a truly inspiring workplace.

RAGING AGAINST THE (LEARNING) MACHINE

Last week I went with a few friends to watch a screening of 2001: A space odyssey in a 70mm projection at the Prince Charles cinema in London. This is a film that I have watched many times, and as with most great movies, new things come to the surface with every new viewing. I was particularly captivated by the following scene:



2001: A space odyssey

For those of you not as fanatical about the movie, a bit of context. Five astronauts are sent on a mission to Jupiter to follow signals discovered on the moon in 2001 emitting from a black monolith towards Jupiter's moons. The spaceship is completely controlled by HAL 9000, an intelligent computer which has never had a fault. In the scene depicted above, the astronauts lock themselves in a capsule to discuss HAL's behaviour (which at this point has become rogue) and their options for disconnecting it. They believe they are safe as HAL cannot hear them...

As I was leaving the cinema, I couldn't stop thinking about how well a movie in 1968 represents the fear, uncertainty and doubt we feel about Artificial Intelligence (AI) and Machine Learning fifty years later. With depressing news every day about machines taking over people's jobs, it's no surprise we feel like staff at the supermarket self-checkout assisting shoppers with the automated machines as we accelerate our own path to unemployment. Feels like the design of a cruel Greek deity but it's just disruptive innovation at work. The same it has been through history.

Artificial Intelligence has had a lot of bad press so perhaps starting with a definition is necessary.

AI is the designing and building of intelligent agents that receive precepts from the environment and take actions that affect that environment¹

This definition from Russell and Norvig is considered the gold standard as it covers a large spectrum of activity ranging from computer vision, speech processing, natural language

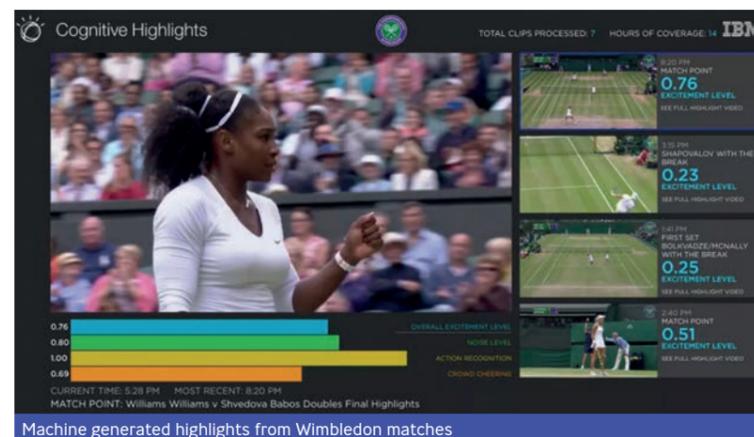
understanding all the way to robotics. Based on this definition, I don't see the inevitable link with machines taking over control of the world but as technology continues to improve at its current pace, more activities which used to be done by humans are taken over by machines. Let's use a recent example:

This year in Wimbledon, all the highlights packages were automatically produced using IBM AI technology to analyse the video, determine the best plays, edit the content and finalise it ready for sharing online or providing it to media organisations. The highlights process was reduced from 3-4 hours to a few minutes allowing the Wimbledon media team to focus on higher value engagement activities.

“Feels like the design of a cruel Greek deity but it's just disruptive innovation at work”

The fact that Wimbledon media staff can focus on activities which generate more engagement is key in this example as it illustrates the subtle difference between world domination by evil technology and what I think is really happening. Let's look at another example which makes this even more evident:

In August this year, Deepmind in collaboration with Moorfields Eye Hospital developed an AI-enhanced process to detect eye disease which “can correctly recommend how patients should be referred for treatment for over 50 sight-threatening eye



ARTURO DELL, Director of Product Development, HouseMark

diseases as accurately as world-leading expert doctors.” The challenge being tackled here is related to the amount of complex 3-D images doctors need to review (1,000 / day in Moorfields Eye Hospital) and the level of expertise required from doctors to interpret these images. Since delays in treatment can cause patients to lose their sight, any improvement in the speed of eye disease detection can have a major impact.

The two examples above can be interpreted as proof that machines will be doing the job of doctors and TV producers, but we need to look at this differently: AI augmenting human intelligence. This view challenges the pessimism and fatalism with which AI is being looked at today and a few thinkers in this space are not using the term AI anymore but flipping it to IA which stands for Intelligence Augmentation. Under this interpretation, the potential of the technology becomes clearer and practical solutions become more realistic and achievable as machines don't need to compete with humans but work together. Every time an article talks about the demise of a current job because of AI, it is important to focus on which part of the job is being augmented by technology and what opportunity this creates²

“These modern techniques can help housing organisations”

To truly appreciate the power of Intelligence Augmentation, it is worth talking about Fan Hui, a 3-time European Go champion.

Go is an ancient board game of strategy that has frustrated computer scientists and researchers



Fan Hui. Professional Go player

¹Wikipedia

²Looking at advances in Artificial Intelligence through the lens of Intelligence Augmentation does not change the fact that there will be significant disruption to jobs through technology. The question is what new jobs will be created and where will society focus its efforts. This is probably one of the key questions for the next 5 years and a topic for another article.

for years. In Go there are more moves possible than there are atoms in the universe, so it has always been considered the greatest test for artificial intelligence. Fan Hui was selected by the London-based AI research company DeepMind (now owned by Google) to train the computer system which ultimately went on to beat the world champion Lee Sedol over 5 games. The training was done by Fan Hui playing against the computer and allowing it to learn and evolve its own strategies. After a few months, the machine started beating Fan Hui regularly and the team developing the programme decided that it would be more effective for the system to play against itself rather than continue playing Fan Hui. This should be utterly depressing but what happened when Fan Hui went back to play against other humans is absolutely amazing. Thanks to the interaction with the AI system his skills had improved significantly rocketing him up the rankings from 600 to 300 in three months.

We've applied some of this thinking to a new project where HouseMark is partnering with Lewisham Homes and Field Dynamics to look at how these modern data techniques can be applied to the specific problems in Housing and more specifically, to those of asset management. We have used 7 years of repairs data from Lewisham Homes to try and predict the repair costs for properties in the portfolio. This does not aim to remove the need for experienced asset managers, but these modern techniques can help housing organisations manage their major work programmes based on predictive spend and allow them to regularly reallocate which properties should be in or out of the programme. This is another tool which augments the intelligence of the organisation and gives a new perspective to base decisions on. It is early days, but the initial results are very encouraging. We are looking to get a group of organisations to work together in a collaborative project to build this system as a product which can be used across the sector. We are particularly interested in working with asset management practitioners to understand how these techniques will augment their skills and potentially transform their jobs going forward.

If artificial intelligence viewed as intelligence augmentation can transform the work of doctors, free up TV producers and exponentially improve the skills of a Go player. What can it do for those of us who work in housing? The answers will not come from raging against the (learning) machine.

THE FUTURE OF IOT IS AI

There is a clear intersection between the Internet of Things (IoT) and Artificial Intelligence (AI). IoT is about connecting machines and making use of the data generated from those machines. AI is about simulating intelligent behaviour in machines of all kinds. Clearly an overlap.

As IoT devices will generate vast amounts of data, then AI will be functionally necessary to deal with these huge volumes if we're to have any chance of making sense of the data.

Data is only useful if it creates an action. To make data actionable, it needs to be supplemented with context and creativity. IoT and AI together is this context, i.e. 'connected intelligence' and not just connected devices.

Traditional methods of analysing structured data and creating action are not designed to efficiently process the vast amounts of real-time data that stream from IoT devices. This is where AI-based analysis and response becomes critical for extracting optimal value from that data.

AI is beneficial for both real-time and post event processing:

► **Post event processing** – identifying patterns in data sets and running predictive analytics, e.g. the correlation between traffic congestion, air pollution and chronic respiratory illnesses within a city centre

► **Real-time processing** – responding quickly to conditions and building up knowledge of decisions about those events, e.g. remote video camera reading license plates for parking payments

Actually to be more accurate when I say AI, I really mean machine learning. It is machine learning that provides the ability to detect patterns in data presented. It learns from these patterns in order to adjust the ways in which it then analyses that data or triggers actions.

With machine learning embedded into an IoT environment you get more 'connected intelligence':

► **Predictive analytics** – 'What will happen?'

► **Prescriptive analytics** – 'What should we do?'

► **Adaptive/continuous analytics** – 'What are the appropriate actions or decisions? How should the system adapt to the latest changes?'

We are now also seeing AI being implemented

in the edge. With greater processing power and longer battery life manufacturers are implementing AI processes in 'edge' devices. Referring to the remote video camera example – you don't need to transmit the whole video, only data based on certain triggers, e.g. number and location of parking spaces or ANPR. This can be determined on the edge device.

We're now seeing significant investment in the convergence of IoT and AI and even more sure with this 'intelligent edge'. Microsoft announced in May its vision for intelligent cloud / Intelligent Edge. Azure IoT Edge will enable low-power devices to run containers and perform artificial intelligence locally but retain a connection to the cloud for management and modelling. Similarly in April, Amazon Web Services (AWS) updated its edge computing platform, Greengrass, to incorporate machine learning.

So what does this all mean for the public sector? As the technology matures we will start to see the scenarios for IoT develop significantly beyond the traditional use cases we see today.



PHIL BRUNKARD,
CIO,
Regional Government
& Health at BT

"We're now seeing significant investment in the convergence of IoT and AI"

A FEW EXAMPLES:

- Real-time public safety – thinking back to the video camera analysis example above – vehicle, facial and other visual patterns can be actioned sooner for quicker decision and response by the emergency services
- The ability of machine learning algorithms to foresee possibilities of a device failing will enable remote predictive maintenance to be a reality within a smart city context from street furniture to intelligent building management
- The technology will be critical for autonomous vehicles to ingest millions of events from vehicles to ensure safety, reliability, and efficiency for driver less transportation
- IoT and AI combined could be the trigger to really drive smart city business cases – creating not just the connected city but the connected intelligent city

SUPERCHARGING MACHINE LEARNING

Imagine if speech recognition and image recognition could work simultaneously...

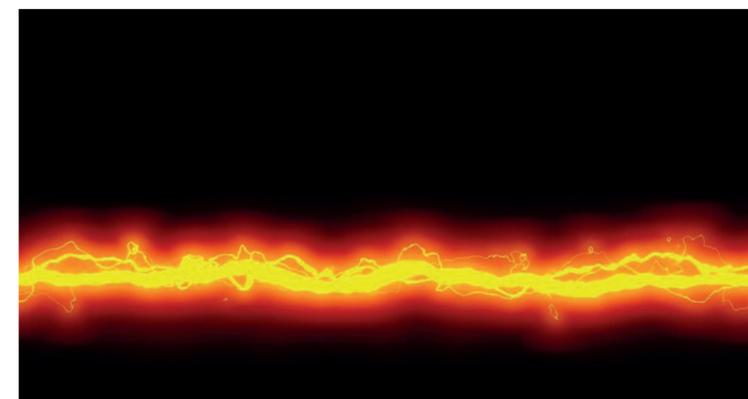
It's not hard to be impressed by the incremental improvement of machine learning and deep neural networks. However, the devil's in the data – in order to carry out a task, networks are trained on extensive, specific datasets. When it comes to speech recognition, systems rely on countless manual transcriptions. The same is true for images. If you want a system to recognise a photo of a cat, you had better show it hundreds of pictures of other cats first. Fortunately, a new machine learning model that recognises both images and speech could help this time consuming and labour intensive process.

'Natural' machine learning

A team of MIT computer scientists revealed the development of a dual functioning convolutional neural network (CNN). The model was trained on 400,000 image caption pairs, building on earlier

"The system could remove the need for a bilingual annotator"

research that matched words with pixel patches. Currently, the system can recognise several hundred different word and object pairs. In the grand scale of things, that isn't a lot – but it does herald a fundamental shift in the development of machine learning. Until now, deep neural networks have been unable to carry out speech and object recognition at the same time. But following the efforts of the MIT researchers,



these two functions could now work together to save manual effort and make machine learning more natural. This would undoubtedly lead to more accurate natural language processing and image comprehension which will have far reaching effects across industries.

Type no more

MIT's model has positive implications for the development of deep learning, saving manual effort while improving both speech and object recognition. Translation is the obvious benefactor, as the system could remove the need for a bilingual annotator by learning how different languages refer to certain objects. Over time, the model itself would become bilingual. From a business perspective, this could make international B2B and B2C interactions much easier by clarifying conversations. There are thousands of global languages that cannot be translated using the same platforms as others simply because there is a lack of bilingual annotations, but MIT's project could eventually provide the solution.

Another area that could benefit from advanced speech and image recognition is healthcare. Radiologists could search for specific details in X-rays, ultrasound, MRI and other scans using verbal cues, reducing the time spent manually viewing images. Consumer facing industries like retail could even use the technology to offer 'shop by speech' to check stock and item availability. A more immediate implication is the gradual abandonment of written transcriptions in favour of voice commands, thus edging closer to the point when machine-to-human interactions are predominantly based on speech.

Machine learning is advancing steadily, offering tangible proof that neural networks are becoming ever more capable. As machine learning techniques improve, the models will require less input data. Not only will this make it easier for computer scientists to train them, but it will encourage democratisation. That said, merging speech and object recognition is by no means easy and remains in the early stages. The disruption it could bring to translation and many more industries is clear. However, on a societal level, bypassing text commands and refining voice cues marks another important milestone in the journey towards verbal machine and human interactions.

WHEN ANDY MET CEM

In February 2017, the Board of Notting Hill Housing, now Notting Hill Genesis, asked its executive team to explore the potential of using digitalisation to modernise its operations, to develop an agile working capability and introduce a customer self-service model.

Recognising the scale of this challenge, and that this was a transformation rather than an ICT project, it was agreed that Andy Belton (Chief Operating Officer and Deputy Chief Executive) would temporarily step out of his operation role to lead the biggest change in service delivery that the organisation will have experienced.

Andy immediately recognised the need to think ‘outside the box’ and engage in collaborative innovation. His specific objectives were to:

- ▶ Automate backbone business processes to provide the foundation for frictionless on-line, end-to-end, staff and customer journeys
- ▶ Increase productivity and enable staff to deliver a higher level of customer service through mobile working and access to data and business processes on their smart phones
- ▶ Improve insights through collection and analysis of much richer data
- ▶ Engage customers, empower employees, optimise operations and transform products and services

Andy's first priority was to ‘re-platform’ the organisation's operating systems so that they were able to embrace digital service delivery. The idea was that the platform would accommodate two key interfaces – one for mobile operational staff and the other for customers. Andy's research led him to contract with Amido which had built the digital platform that had enabled the on-line clothing retailer ASOS to disrupt the sector and become a market leader. Amido agreed to work with Notting Hill to co-develop WorkWise – a new Cloud-based platform linked to the landlord's multiple legacy systems and partners.

There were some key obstacles and development risks that WorkWise needed to address:

- Some legacy systems are based on 20-year old technology
- Supplier management – cost and time overruns
- Roll-out of customer self-service – getting it right!
- Cyber security – constant and increasing threats
- ICT resources – recruitment is very difficult

WorkWise is now live for on-line repairs and payments connected through an API to main

contractor Wates, allowing real-time appointments for all legacy Notting Hill Housing operations.

When it became clear that the WorkWise platform was going to work, Andy turned to his second priority – developing a digital interface for staff and tenants to enable a customer self-service capability. Again, he began thinking ‘outside the box’, seeking to learn from other sectors.

And then Andy met Cem.

Andy attended Evolve, an exclusive start-up accelerator programme organised by HouseMark and L Marks where he witnessed a presentation by Cem Savas, co-founder of Plentific. Cem covered its development of a B2B technology platform which can allow any housing association, estate agent or property management firm to digitally transform its repair and maintenance service. Andy says that “when I saw the presentation, I immediately thought we could use the platform and instant booking system for some areas of our business.”

Soon, Notting Hill and Plentific were working in partnership, which led to a successful 12-month pilot covering the association's c2,000 temporary accommodation units spread across 15 London boroughs.

The Plentific system has been compared to Uber. Tenants raise a repair request and, if its one that the landlord is responsible for, Plentific offer Notting Hill Genesis a pool of up to five pre-accredited contractors or local tradespeople. The selected contractor then contacts the tenant directly – via a proxy phone number – and together they fix the repair appointment. The Plentific system allows the tenant to use photos of the problem when requesting repairs.

However, Cem Savas says the Uber analogy is too simplistic. “Notting Hill get five suppliers to choose from, Uber offers only one. Also, the pre-accreditation process for verified Plentific tradespeople (covering public liability insurance, Company House registration, ID, proof of address, VAT number and all appropriate qualifications) is far more extensive than Uber applies to its drivers”. The cost of pre-accreditation is recovered by a Plentific levy on contractor invoices.

Andy is considering allowing the tenants to select

How collaborative innovation can transform service delivery for social landlords



the contractor themselves – although this will require rigorous controls about ‘qualifying work’ and job cost schedules before it can be introduced.

Plentific technology has quickly become popular with staff as it cuts down the amount of time spent organising repairs, invoicing and sending payments. This will enable Notting Hill Genesis to achieve efficiency gains and redeploy staff to work more closely with tenants who have multiple complex needs. Housing officers are also able to access real time updates on active jobs, as well as a complete digital record of any messages, documents or invoices connected to the work. This digital property record can form part of ‘real time’ data on the condition of the landlord's stock and the performance of its supply chain.

“The Plentific technology has quickly become popular with staff”

The Plentific system generates new opportunities for local contractors and (if they perform well) a steady flow of work. They are paid immediately upon completion, though never in cash. Contractors tend to undertake the work more quickly – because they can often negotiate out-of-hours appointments with tenants and because they receive instant payment. Abortive visits are much reduced as there is now no excuse for the tenant to miss an appointment. The Plentific model can also be developed to add a landlord's DLO and Tier 1/prime contractors to the supplier pool.

Andy now has two years to achieve efficiencies to cover the sunk development costs related to the Amido and Plentific technology and to demonstrate sustained improvements in customer and staff satisfaction. Initial results suggest that these are realistic targets. The Plentific temporary accommodation pilot has already led

to faster processes (TA repairs now take less than 48 hours on average), a 20% reduction in job costs, improved asset and supply chain data and enhanced staff satisfaction.

However, Andy knows that the customer service transformation is not risk-free for landlords. Although successful in London, it may prove more difficult to attract local tradespeople and contractors to work on Notting Hill Genesis stock outside the capital. And if Notting Hill Genesis becomes more reliant on Plentific, for example by applying the model to its general needs stock, it needs to know that it will be there in the long term. New tech entrants may disrupt Plentific by copying their approach and competing on price for contractor access. Plentific could be acquired by a Tier 1/prime contractor to stifle competition, with no real commitment to invest in tech upgrades or enhancements. Notting Hill Genesis and Plentific are in discussion about mitigating these risks.

These are future risks. Right now, Andy is very satisfied with the temporary accommodation pilot outcomes. He is particularly pleased with Plentific's exceptional speed and patience in working with Notting Hill Genesis. “One of the reasons that the pilot took a year is because they are incredibly quick about developing solutions to our developing requirements – often turning things around within a day or two – but then it can take a month at our end to secure whole-organisation ‘buy in’ to each specific solution. It has been a big learning experience for us, that the speed of technology companies isn't matched by the agility of a large organisation like ours.” Another lesson is to carefully and incrementally manage the pace of implementation. As Andy says, “You only get one chance to introduce a customer self-service solution, so you have to get it right first time”.

Since entering into its partnership with Notting Hill Plentific have signed a similar agreement with EHSL, a non-profit organisation working in partnership with councils and registered care providers to deliver homes and support to vulnerable people. Plentific now have around a dozen live sites/pilots in the social housing covering over 100,000 homes.

Cem Savas says that participation in Evolve was “a very helpful first step into the sector, but without Notting Hill's willingness to experiment and take risks none of this would have happened.”

For a short video on the Notting Hill Genesis/ Plentific/ partnership, click [here](#)



Dear DIN member

It only seems like yesterday that the Disruptive Innovators Network was launched (the actual date was 20th August). The Network has achieved our first objective of attracting the target of 30 member organisations who are interested in disruption and innovation - and in working together to form a unique community of leaders wanting to do things differently.

The ethos of the Network is that we want to learn fast, experiment, find what works (and what doesn't!) and share this across the DIN community. We have already received positive feedback about this fresh approach, the excitement of hearing from start-ups, the power of emerging tech and out-of-sector leaders sharing their stories.

I am particularly pleased with how the 2019 DIN programme (see below) is shaping up and the opportunities this will offer members to experience radical thinking which will help their organisation innovate in the way it provides services.

Ian Wright

Managing Director of the Disruptive Innovators Network

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DISRUPTIVE INNOVATORS NETWORK: 2019 work programme

CORE MEMBERSHIP OFFER

▶ Understand the current state of disruption and innovation – We are undertaking a baseline survey of DIN members' appetite and risk patience for disruptive innovation. The survey will be undertaken by Crowdoscope - one of the start-ups we've been showcasing.

▶ Network meetings – We will host two network meetings, one on 20th March and one in September. They will continue with a 'magazine' style, offering a mixture of tech insights, thought leadership, start-up pitches and roundtable discussions.

▶ Disruption and Innovation Summit – Members can access free and discounted places for our next annual event in 2019.

▶ Business study visits – Network members can choose from a broad range of study visits to explore disruptive innovation in different business sectors, including:

- Amazon
- BT Aadastral Park
- AirBnb
- EDF
- Northumbrian Water
- Bromford Lab
- BUPA
- Halton HT
- Premier Inn
- Rackspace

OPPORTUNITIES AT ADDITIONAL COST

▶ International study visit – We are planning one international study visit to a European innovation centre (subject to demand)

▶ Innovation sprints – We will run a series of innovation sprints over 2 days to deconstruct, build, test and scale new ideas and solutions for members problems. Our delivery partners at Amazon Web Services, BT, Rackspace and Microsoft will host and support our learning. Initial focus will be on:

- Disrupting resident engagement
- Improving the customer experience
- The virtual workforce and robotic process automation, chatbots, AI etc

▶ Workshops In addition to the bi-annual network meetings, members will be able to attend practitioner workshops designed to give an insight and learning into key innovation themes, including:

- Building your own disruption and innovation teams
- Designing and building your own experiments, running effective simulations

▶ New Tech demo day – A hands-on showcase of some of the best new tech and business solutions from out-of-sector providers, start-ups and our delivery partners. This will give members the chance to talk to the developers, share the problems they want solving and explore how they could be deployed within their business.

Founding partner



Delivery partners



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