



Danske Bank

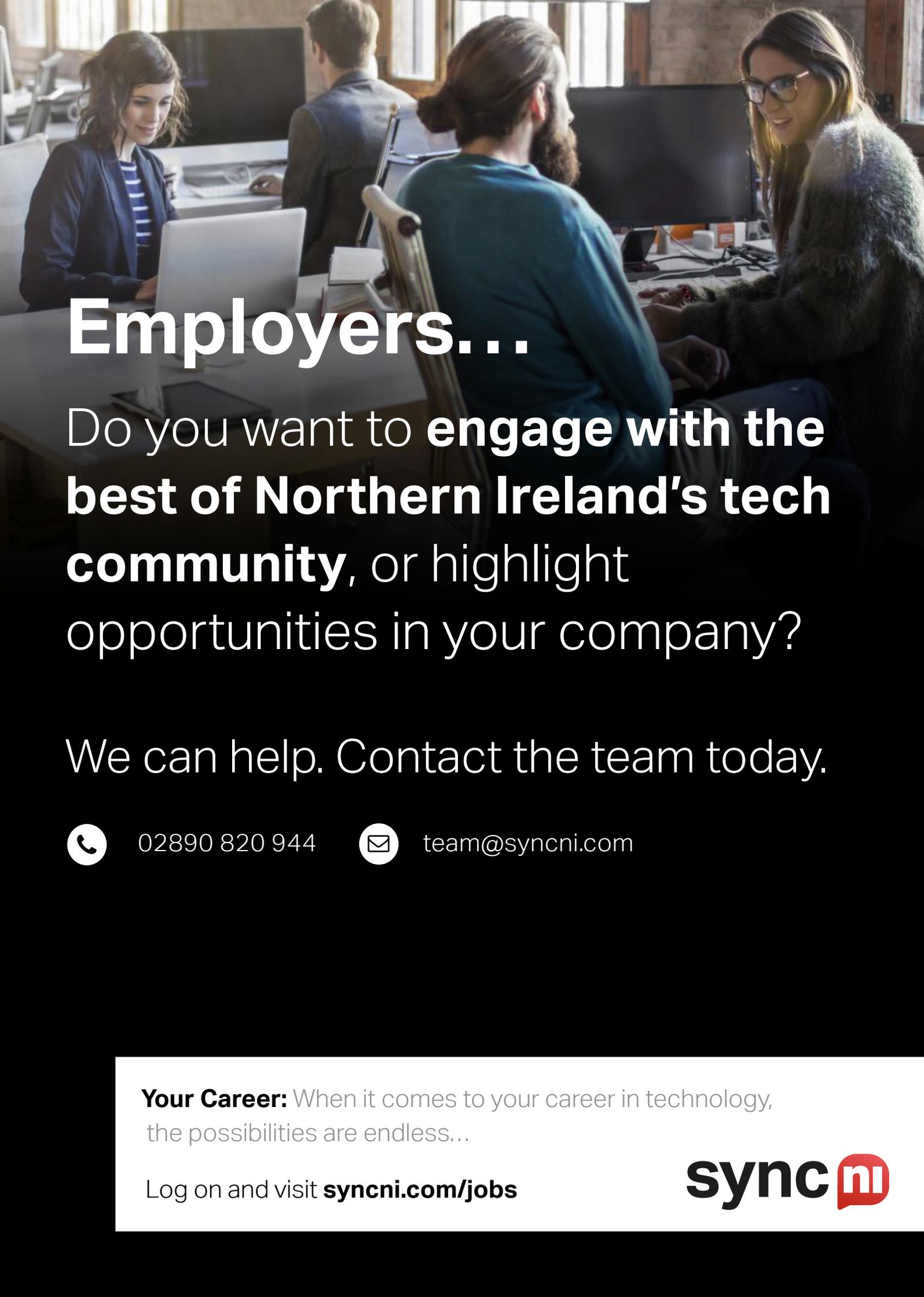
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Welcome

to the latest edition of the Sync NI magazine



About Sync NI

Sync NI is proud to be the voice of Northern Ireland's vibrant technology and business sector.

The Sync NI website and magazine brings readers the latest tech and business news, views, jobs and events in Belfast and beyond.

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Foreword

Richard Caldwell

Managing Director of Personal Banking and Small Business, Danske Bank

It is a really exciting time for Northern Ireland's start-up scene and the early stage tech companies who populate it.

Where once this part of the world was famous for its innovation in traditional industries like ropemaking, shipbuilding and linen, Belfast is now making a name for itself in new sectors like fintech, cyber security and health-tech.

In fact, fDI Markets recently named Belfast third on its list of the fintech locations of the future, behind only London and Singapore.

The research was validation of the journey we embarked on a year ago to open a co-working hub in Belfast for early stage tech companies, with a particular focus on helping to nurture and grow NI's fintech sector.

While NI lagged behind other regions in terms of start-up activity for many years, conditions are now favourable for entrepreneurs who want to establish innovative ventures, attract funding and scale up.

We saw an opportunity to make a difference to these businesses of the future by creating a collaborative co-working space with the right vibe, somewhere they could meet like-minded people, be creative and

help solve each other's problems.

We were in no doubt that Northern Ireland is full of innovative people, so to reach them we partnered with knowledge economy experts Catalyst to access their unrivalled experience in helping founders take their companies from proof of concept right through the growth cycle.

We wanted to contribute to society by creating a community that helps this next generation of Northern Irish innovators to flourish. We've put our money where our mouth is by locating the space in a high value city centre location and we've also committed our time and resources – enabling some of the start-up members to test products with staff and customers.

Tech Nation reported last month that one fifth of Belfast's workforce is now employed in the tech industry – that's more than 60,000 people – and this is only going to increase as more of our innovative start-ups grow into established businesses. It's a measure of success for us that several of our members in year one of the hub have already outgrown us and moved into their own offices.

We are looking forward to playing our part in helping this vibrant ecosystem to grow even further.

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From asset to insight - do more with data at #BDB19

Analytics Engines' Dr Aislinn Rice and Dr Alastair McKinley talk data analytics and how Belfast's tech sector has grown.

Data analytics firm Analytics Engines are the organisers behind Big Data Belfast. This is the seventh outing for the annual showcase which this year takes place in the ICC Belfast on Thursday 24th October.

In the build-up to the event, Sync NI's Niamh Campbell met Analytics Engines' Managing Director, Dr Aislinn Rice, and Chief Technology Officer (CTO), Dr Alastair McKinley to find out more about the event and the company.

Dr. Aislinn Rice

A graduate of the Executive Leadership Program at Harvard Business School, Aislinn is also an IoD Chartered Director and serves as an Ambassador for the NI Hospice.

Aislinn is MD of Analytics Engines, leading a team which includes software, data science, project management and business development professionals. Delivering data analytics capability for a range of clients including The National Gallery, Innovate UK and Coriolis Technologies amongst others, the company specialises in data integration, data management, machine learning, AI, in-depth analytics and visualisations.

After graduating from Queen's University Belfast with a PhD in Chemistry, Aislinn held senior sales roles with a series of market-leading companies including Machine Vision Technology, Agilent Technologies and latterly Andor Technology where she served as sales director.

Aislinn: "We experienced huge success at Andor, ultimately

leading to an acquisition by Oxford Instruments. That was a great success story - I enjoyed customer engagement, building the team and contributing to the growth of an innovative company. You're constantly learning, manoeuvring, responding to your customers, responding to the market and responding to the challenges within the company."

The opportunity arose to join Analytics Engines and lead the company on its next phase of development. After a series of new contract wins over the past 12 months, the team at Analytics Engines has enjoyed significant growth - from software development and UX through to data science and project management, the team now offers the capability to support clients across every phase of their data journey.

According to Aislinn: "Analytics Engines can call upon a range of excellent problem-solvers with the capability to turn data into a valuable business asset. The team has a passion for data allied to deep domain knowledge which enables them to deliver truly unique solutions to organisations around Northern Ireland and beyond. For example, we are currently delivering a powerful data solution for a global brand, The National Gallery in London to help them improve and learn from visitor experiences."

Another one of our projects for trade finance firm Coriolis Technologies involves pulling in over 20 billion datapoints of complex trade information and presenting it within an intuitive dashboard.

"It's inspiring to be part of the team that's delivering solutions

of such breadth and scale," she says.

Dr. Alastair McKinley

Alastair is the Chief Technology Officer at Analytics Engines where he is responsible for technology strategy, solution architecture and innovation. Alastair gained his PhD from QUB in 2009 focusing on high-performance computing and algorithms used in telecommunications. He is interested in data modelling and data engineering in PostgreSQL and Python, Cloud Native solution architecture and NLP applications.

Alastair: "We've developed solutions for organisations across numerous sectors – ranging from healthcare and biomedical through to media, tourism and trade finance. That breadth of experience puts us in good stead in terms of the capabilities that we can bring to customers for delivering solutions now."

Many of the solutions commonly developed for clients are designed to reduce risk, generate efficiencies and build revenues.

Alastair: "Our experience working across the whole stack has enabled us to develop a unique set of Rapid Application Development modules that accelerate solution development ensuring the customer a speedy return on investment.

"Our modules include components right from infrastructure and cloud setup, ETL and record linkage, UI components and analytics tasks like NLP."

Analytics Engines & Big Data

Presented by Analytics Engines and supported by headline sponsor EY, supporting sponsors Dell, CME Group, Allstate Northern Ireland, SmashFly, SpotX and Altra Executives and industry sponsors Invest Northern Ireland and



Roger Eigenheer, COO of EY's UK&I Delivery and Innovation Centre and Dr Aislinn Rice, MD, Analytics Engines

Signifyd, the event promises to provide insight into emerging trends and issues in data and business analytics.

The first Big Data event in 2014 was held at the Titanic Hotel in Belfast and hosted about 50 people. Last year when it was hosted at Belfast's ICC Waterfront Hall, there were over 500 attendees. Beginning as part of the Big Data Breakouts global event, it took on a life of its own and became a standalone event in its own right.

This year sees multiple speakers coming in for the conference, including Zscaler's Bil Harmer from Austin and GitHub's Clair Sullivan from Denver.

There promises to be strong speakers from across the UK and Ireland, but much more of an international pull as well.

Aislinn and Alastair believe this makes a big statement about the growth and breadth of talent within the tech community in Northern Ireland.

Aislinn: "It's great to see the great ideas and innovation emerging from the local ecosystem. Big Data is very much about bringing forward those thought leaders and experts into the room and exchanging ideas."

Alastair: "A lot of the topics in our first Big Data conference in 2014 were on

machine learning and AI. It was mainly people at the cutting edge of that discipline, who were really trying these ideas in practice. Things have massively changed. Companies are trying to apply the analytics and machine learning techniques to derive additional value across a lot of sectors.

"For example, there's been a big change in health for where's there's a willingness to try new ideas, new techniques to improve patient outcomes by analysing historical data, and seeing what insights you can get to improve the outcomes for the future. This appetite to harness the transformative effects of data analytics is shared right across the public sector as well as commercial organisations."

Aislinn: "I'm immensely proud to be surrounded by the talent pool within this company, and their dedication and passion. Everyone is bought into the vision, not only as an organisation but in terms of transformation for our customers. A large part of what we do is listening to our customers, fully understanding the nature of their business challenge, and then aligning our capabilities as best fit to what they require."

Visit online **Big Data Belfast**

 bigdatabelfast.com



BIG DATA BELFAST — 2019

Meet the speakers

Now entering its seventh year, Big Data Belfast returns to the ICC Belfast on Thursday 24th October. The event brings together talent from across the technology and business communities throughout Northern Ireland.

Find the full line-up of speakers on the next four pages, and visit bigdatabelfast.com for tickets and more information.



Clair Sullivan

Machine Learning Engineer



Derek Hosty

Head of Global Data



Bil Harmer

Chief Information Security Officer



Rebecca Harding

Chief Executive Officer



Dr. Rebecca Harding is an independent economist specialising in trade and trade finance and CEO of Coriolis Technologies, providing data as a service to the trade and trade finance space. She is the co-author of the acclaimed "The Weaponization of Trade: the Great Unbalancing of Policy and Economics."

She frequently appears on The Ian King Show, Sky News, BBC World and BBC Radio 5 live, Newsnight and Radio 4 and is cited in the Broadsheet press, including recent articles in the Financial Times, Telegraph and CityAM. Rebecca is a member of the World Trade Board.

She advises the Council of the Society of Professional Economists and until February 2017 was the Chief Economist of the British Bankers' Association. Her senior roles in business and academic institutions include Founder and CEO of Delta Economics, CEO of Equant Analytics, Senior Fellow at London Business School, Global CEO of the Global Entrepreneurship Monitor, Head of Corporate Research at Deloitte, Chief Economist at the Work Foundation, Senior Lecturer at the Science Policy Research Unit and currently a Fellow at Offenburg Institute for Trade and Innovation. She was a Specialist Advisor to the Treasury Select Committee and Chief Economic Advisor to the All Party Parliamentary Group on Entrepreneurship.



Prof. Mark Keane

Chair of Computer Science



Aaron Walters

Senior Director Global Data Licensing



Paul Brook

Director Data Analytics & AI



Linda O'Reilly

Senior Data Scientist



Paul Brook manages a team of Data Analytics and Artificial Intelligence specialists at Dell EMC. His team works with customers, business partners and technology integrators across EMEA describing and designing platforms that help to make money and save money for Businesses and Public Sector organizations as part of their digital transformation.

Author of 'The Life of AI' (Amazon June 2018) Paul was previously responsible for various programs within Dell, including Hyperscale/Cloud and High Performance Computing. Prior to Dell Paul worked in the Applications Development and Managed Services sectors. Before joining the IT industry Paul worked for a Consultancy that specialized in Business Performance Improvement.



Tobin Craig

Senior Data Scientist



Thom Kenney

Chief Executive Officer



Cathy Craig

Behavioural Neuroscientist



Gudmunder Kristjansson

Founder & CEO



Tobin Craig is a Senior Manager Data Scientist with Allstate NI, and has over two decades of digital investigative experience in computer forensics. He has built and developed computer forensic capabilities for four different Federal Agencies with the United States Government, and has conducted hundreds of digital investigations for the Office of Inspectors General with the Department of Veterans Affairs, the National Atmospheric and Space Administration, the Department of Transportation, and the Department of Education.

He holds a first class Master's Degree in Forensic Computer and Cybercrime Investigations from the University College, Dublin, is a Certified Computer Examiner with the International Society of Forensic Computer Examiners, a Certified Forensic Computer Examiner with the International Association of Certified Investigative Specialists, and a Certified Fraud Examiner with the Association of Certified Fraud Examiners.



Steve Rogers

Chief Digital Officer

Reach



Aislinn Rice

Managing Director

 **Analytics Engines**



Jonny Milliken

Head of Threat Intelligence

 **ALERT LOGIC**



Neal Richter

Chief Scientist

SPOTX

Dr. Neal Richter serves as Chief Scientist of SpotX and represents SpotX and the RTL group within the TechLab. Neal has served as CTO of Rakuten Marketing where he oversaw technology and data science teams across programmatic and affiliate systems. Prior to Rakuten, he was CTO and Chief Scientist at the Rubicon Project.

Neal has been an active participant in the TechLab going back to when it was the Technical Advisory board in 2011. He has been a contributor to the development of the OpenRTB protocol, Ads.txt, Ads.cert, and Sellers.json and other associated standards. Neal received a PhD in Artificial Intelligence from Montana State University. He holds twelve patents and has published more than fifteen academic papers in machine learning in artificial intelligence.



Alastair McKinley

Chief Technology Officer

 **Analytics Engines**



Robert Barbour

Data Transformation Director

Travis Perkins 



Jennifer Houle

Risk Manager

 **RBS**



Andrew Trimble

CEO & Co-founder

KAIRIS

Alastair is the Chief Technology Officer at Analytics Engines where he is responsible for technology strategy, solution architecture and innovation. Alastair gained his PhD from QUB in 2009 focusing on high-performance computing and algorithms used in telecommunications.

He is interested in data modelling and data engineering in PostgreSQL and Python, Cloud Native solution architecture and NLP applications.



Paul McKernan

Joint Managing Director



Eoin O'Reilly

Ireland (EY Ireland) Partner
and Head of Data Analytics



Roger Woods

Chief Scientist



Andreas Schaefer

Risk Manager



Eoin O'Reilly is a Partner and the leader of the Data analytics practice at EY Ireland. Eoin is passionate about innovation, data analytics and emerging technologies and how these can be used to solve real world business problems and help enhance organisational intelligence. This focuses on providing data driven business insights and intelligence automation solutions for a diverse set of cross-industry clients, including those in consumer products, technology, financial services and Government.

During his career at EY he has also developed extensive experience advising clients in IT risk management, internal audit, information security, cyber security, forensic investigations and security testing.

Before joining EY he was a Technology Consultant in Ireland where he held lead roles on a number of large scale systems integration projects in Government, retail and telcoms sectors.

Eoin has a Bachelor's degree in Management Science and Information Systems from Trinity College Dublin, a Master's degree in Security and Forensic Computing from Dublin City University, and is a member of the Association of Chartered Certified Accountants.

Location

ICC Belfast

This year's conference returns to the ICC Waterfront Belfast. An experienced and ambitious international convention centre in the heart of Belfast.





Getting creative as a Data Scientist at Allstate NI

Allstate NI Data Scientist Deborah Hunter outlines her role, with tips for those considering a career in data science.

Deborah Hunter is a Data Scientist in Marketing Analytics (MARA) at Allstate NI in Belfast.

She has over 10 years of research and lecturing experience in Physics and Applied Mathematics. With a PhD in Astrophysics, Deborah has worked on many data analytics and modelling projects in this field as well as in Medical Physics at Queens University Belfast (QUB).

More recently, Deborah has applied her academic knowledge and teaching skills to the fields of big data analytics and predictive modelling in Consumer Analytics.

She is currently delivering Allstate's Community of Practice (CoP) training courses in Data Analytics to Allstate employees in NI and beyond.

Allstate NI has provided Deborah with opportunities to apply her practical modelling skills and ML techniques to meet the evolving challenges facing data scientists in the Insurance Industry.

Sync NI's Niamh Campbell sat down with Deborah to discuss

data science at Allstate, and how people from all disciplines can get involved.

Tell us more about your PhD in Astrophysics. Is it common for someone with this background to go into data science?

There are many data scientists with a physics or statistical background from QUB in our Belfast office. The research skills, coding and statistical side of astrophysics makes it very easy to transition into data science.

My PhD involved statistical data analysis as well as the manipulation of optical and near-infrared telescopic images. I used my IT and mathematical skills to model the spectra of a nearby supernova and to determine the chemical composition of the progenitor star.

One aspect of astrophysics which I loved was collaborating with international teams of research scientists. I wrote proposals for observing time on the Gemini North Telescope in Hawaii. When working with telescopes at the Roque de los Muchachos Observatory located on the island of La Palma in the Canary Islands, I just missed Brian May from Queen when

I was out there! I attended conferences in Italy and learned about data analytics processes at the European Southern Observatory (ESO) in Munich, Germany.

My role in Allstate has seen me collaborating with Data Scientists in the U.S and India. I was flown to our Head Quarters in Chicago after only working in our Belfast office for six weeks!

🔴 You taught for quite a few years. What made you make a career transition?

Although I enjoyed teaching and inspiring talented young people, I did miss my research days at Queen's University. It was when I went on an international teaching programme with CERN in 2015 that I realised I wanted to make the career transition.

As I had taught for a few years I knew I had to go back and learn coding and machine learning (ML) in R and Python as I didn't learn these in my undergrad. Data Science is such a fast moving and complex field that it is important to be proactively upskilling and extending your experience.

Then when I felt comfortable I applied for data science roles. Physics graduates have statistics, coding and modelling experiences. Having those basic skills really helps.

When I first started working in Allstate I informed them of my teaching background. My work goes between developing predictive models for marketing purposes, such as determining effectiveness of digital marketing campaigns as well as customer segmentation. Our propensity models predict every household with a probability score which can be used for targeted marketing and personalising our customers' preferences and needs. I can work on my own initiatives and explore new algorithms. I also teach data analytics courses in the Belfast office to Allstate staff. American colleagues can watch the courses internally through Allstate TV.

I also supervise Queen's placement students studying towards their MSc in Data Analytics. Students typically spend 3 months working on a Data Science related project within Marketing Analytics.

To date, my colleagues and I have delivered to approximately 400 employees throughout Allstate NI (Belfast, L'Derry & Strabane) and have hosted several successful events since first forming in late 2017.

I find Data Science to be a rewarding and fulfilling career as I now have the perfect balance of teaching, collaboration, model development and research.

🔴 Allstate seems to then have catered to your own skills and abilities. Can you tell us anymore about the company culture?

Allstate encourages progression and taking the initiative to develop ourselves professionally. We have regular group sharing sessions in Belfast because we like to keep up to date with the latest ML techniques and technological developments. The Chicago office also has 'lunch and learn' and 'decoded' sessions twice a week, whereby over 150 people join Skype sessions to learn about best practice and share experiences in data modelling. The company is great in ensuring we are learning and bettering ourselves all the time.

We have discovered that there is a new documentary called "Data Science Pioneers – Conquering the Next Frontier" which is currently being premiered in London. We've planned to hold a screening 'popcorn movie evening' in the Belfast office to watch it. We also often have meet-ups open to the public called 'Everything Data' which relates back to teaching courses. We regularly host these events and invite guest speakers both externally and internally to share their knowledge, which will hopefully inform more people

outside of Allstate about data science and what our team here in Allstate does.

🔴 What do you think are the best attributes that a data scientist should have?

People assume data scientists are stereotypically just good at maths, logistics and coding away in a corner, but data scientists can be quite creative people. A Data Scientist requires a good balance; a creative combination. I myself have a passion for photography and art. We don't all do the data processing ourselves, as most of our Marketing Analytics team are data engineers and do that too.

Data scientists are curious people who enjoy uncovering new patterns in data, and developing innovative products, services and business models. The novelty in the processes that frame our work, the unpredictability in outcomes and the space for interpretation in the project all require creativity. Story-telling is also important at every stage from data exploration and feature visualizing to model creation. Some favourite story board tools used at Allstate NI include PowerBI by Microsoft and Tableau. When narrative is coupled with data, it helps to explain what's happening in the data and why a particular insight is important. When visuals are applied to data, they can enlighten to insights that they wouldn't see without charts or graphs.

Allstate's Marketing Analytics (MARA) group delivers analytic-driven insights to solve complex business challenges across the company. The growing team of Data Scientists and Data Engineers together build products that create insights to help business leaders, agents and customers make smarter and more informed decisions. The Data Scientists use mathematical, statistical and machine-learning techniques in the research and development of predictive models and decision-making tools.



How Danske Bank is using data to make quicker, better decisions

Sync NI speaks to Danske Bank's Head of Data, Marion Rybnikar, about the difference data analytics has made to the bank's business and her desire to encourage more diversity in tech.

Marion Rybnikar has spent much of her career as something of an outlier – usually the only technical woman in the room in tech firms dominated by men.

But having risen to hold senior roles at some of Northern Ireland's leading technology companies, Danske Bank's head of data is passionate about ensuring women coming into the sector now have a different experience – one where they can build a network of "allies" across an organisation.

"All through my career I've worked in predominantly male sectors, and that presents a challenge because it's not just

about having the technical skills to do the job but the skills you need to develop to be successful within a company," says Marion.

"That could be training on resilience, networking, and building relationships at work. So it's important that women, who have the resilience to keep progressing in our careers, also bring other women through."

Marion notes that the theme of building allies has been recognised across many of the networks for women in technology. While things are changing, women are still only a small proportion of the tech workforce and she believes



Marion Rybnikar (center right) and her Data team at Danske Bank.

community is needed to support more of them into leadership roles.

Having started Danske Bank's data team on her own, it is now 16-strong and most of its senior managers are women. The bank has taken the positive step of aiming for a 50/50 split in male and female applications for roles across the organisation. While all appointments are merit based, the bank has found it is able to attract more female applicants for roles by changing the way it advertises, reaching out directly and putting an emphasis on technical and soft-skills, experience and adaptability, not only qualifications.

"In a world where computers are doing a lot of the heavy lifting, soft skills will be at a premium. Those are the complex, human skills needed to interpret the data that's presented and think of different scenarios where it can add value to the organisation," explains Marion.

Democratising Data

The team's core purpose is to help the bank become more data driven to improve productivity and customer experience.

By forming external partnerships with local data specialists such as AquaQ and Datactics (which won an award for its data quality implementation project with the bank from industry blog bobsguide) it has already transformed a number of processes. For example, a task that used to take eight days every month now takes minutes and is done automatically.

"We look at everything from transactional data to credit risk, to business data such as mortgages and corporate loans, and some HR data too. We are working on a number of anti-money laundering (AML) projects, analytics projects, enabling self-service business intelligence, identifying potentially vulnerable clients – creating

tools to deal with huge amounts of information," says Marion.

"I'm proud of the fact that within two years we are seen as something of a trailblazer within the Danske Bank Group. Some of the solutions we have developed they are now thinking of using at group level. It's brilliant that we are seen as early adopters."

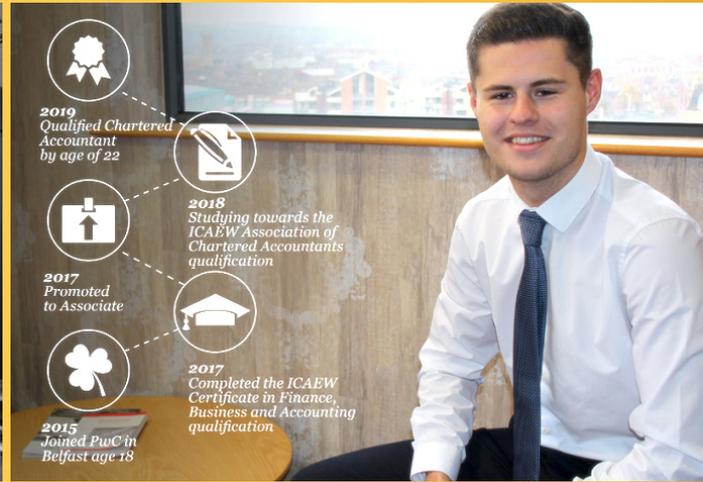
Whether it is an internal or external solution, Marion says the goal is to "democratise data" and put it in the hands of the end user. The outcome of doing this is quicker, better decisions.

"Tasks are now automated and can happen overnight, untouched by human hands, which has freed up a lot of time. We know UK productivity is worse than the EU and in NI is behind the UK average, so it is really important that we are freeing up more headspace."

Marion believes the big issue likely to dominate the data landscape in the next 12 months is data governance – an issue that's already come to the fore in cases against some of the global tech giants.

"In the data world a couple of years ago everybody was talking about big data and then data science, then everybody started talking about the ethics of data science. Now people are starting to think, wait a minute, we are making big decisions here, are we sure that this is all good quality data" she explains.

"Like a lot of organisations, we have a wealth of data, we are utilising it in many different ways either through the use of data science or self-service business intelligence. But we are now very clearly asking if this is being done on good quality data because we are doing this at scale. All organisations, including banks are looking to the future where data is a strategic asset but built on strong foundations."



PwC NI is creating more tech opportunities than ever before

The company is on a mission to become the most digitally-enabled professional services firm.

If you haven't noticed big changes happening at PwC NI over the last few years, you're in for a surprise.

It is now a global hub for blockchain, creating fully funded degree apprenticeships in technology with Queen's University Belfast. It is the principal sponsor for Digital DNA, Northern Ireland's biggest digital conference, and is making a record investment in its new HQ Merchant Square with a keen focus on its technological capabilities.

With this ambition comes a range of opportunities for people who want to develop a successful career in technology here in Belfast. Andrew Jordan is Head of Technology and Innovation at PwC Operate, the firm's fastest-growing division which was created here, and Victoria Porter is one of the firm's first tech degree apprentices who is about to start her second year.

Hi Andrew, tell me a bit about yourself and your career to date.

A: I have a degree in English and History, as well as an MSc in Comp Science, both from Queen's. My first brief job was at Lution, a start-up incubator. I ended up specialising in eCommerce technology and front end web development. After a spell in FG Wilson I moved to London to work for Axon (now HCL) as a consultant, working on large scale eCommerce implementation projects for companies moving sales online.

I then ended up at Motability Operations for around 10 years where we moved to selling cars online instead of at auction. I've always had an entrepreneurial streak and went on to

co-found two companies where I worked as Chief Technology Officer. Vouchedfor is still going and Moola we sold. I enjoyed going on those start-up journeys from idea to product.

Moving back from London just before my twin girls were due to start school I continued to work in start-ups for a brief period but saw a huge opportunity to be part of the early stages of building the technology element of Operate. It was still a relatively young part of PwC and right from the start the senior management team shared a vision that technology would be central to what we do. That commitment was matched by an appetite to invest in the technology team and infrastructure.

Describe the team: what work do you do and what is your typical day like?

The Operate technology team has grown to reflect the demands of our wider PwC business and our clients. These demands are typical in the industry as more businesses seek to increase the automation of repetitive tasks, gain more value from data and reduce the time it takes to get from idea to product. We work extensively across automation; employing



Andrew Jordan
Head of Technology and Innovation
at PwC Operate

Robotic Process Automation (RPA) in particular, data analytics, rapid application development (low code platforms), platform implementation, AI and Support.

Our purpose is to develop solutions to pressing business problems and ensure that the skills of our workforce are directed towards the right activities; not wasted on tasks that add little value which we'll seek to make efficient or completely automate. We also invest in R&D (research and development), building solutions and partnering with other innovative companies to ensure we'll be well placed to address some of the changes our experts see on the horizon.

My day is typically working with the teams who are building solutions and speaking with project stakeholders and potential clients. I also spend a lot of time looking at new technology and seeing how it could be applied within our business. The team plans to maintain continued growth in order to support the needs of the 1300-strong Operate division and we foresee a lot more investment in new technology and training to help this.

► Is it challenging to find people qualified in your field right now?

This is always challenging as Northern Ireland is home to a competitive job market, with more companies recognising the quality of our local talent. Some of the areas we work in are relatively new to Northern Ireland, so finding skills in areas like automation, data and analytics, and AI is difficult, especially as those people have a lot of good choices now. However I'd be remiss not to mention that we have a lot of open roles presently at entry and experienced levels! The Technology Degree Apprenticeship we sponsor through QUB is a great channel for us and is one of a few tools we use to support continued growth.

PwC now has hundreds of tech specialists in various Northern Ireland-based teams, across software development, blockchain, automation, data, DevOps and more. We use some of the latest technologies and are partnered with companies like Google to

drive the technology agenda forward. I'd encourage anyone thinking of returning to Northern Ireland to take a look at how the tech landscape has changed here, and the scope and depth of tech roles that we have now, often without the frequent travel requirements that may have been the norm in the past.

In September 2018, 20 students joined the first year of PwC's Tech degree apprenticeship at Queen's. Part of this fully funded programme includes paid summer placements. Victoria Porter spent time with Andrew's team.

► Did you always want to work in tech?

V: I spent a large portion of my life working towards being a doctor and had aspired to one day become an orthopedic surgeon. I needed 4 AS-Levels for Medicine and I decided to



take Software Systems Development (SSD) with the intentions of dropping it at A2. I had never coded before so I found it very challenging and I quickly developed a bipolar relationship with the subject. I started spending my free time building small apps and learning efficient ways to code so that I could perfect my coursework. At that point I knew that I wanted to pursue a career in technology.

► What attracted you to PwC's tech degree?

I had already applied to Computer Science and Software Engineering at university when my SSD teacher told me about the PwC Tech degree apprenticeship offered at Queen's University Belfast. The Tech degree offers the degree pathway I want and guaranteed summer placements without any work during the academic year; I found this aspect particularly

attractive as it allowed me to focus solely on my studies. And being fully funded means no student debt!

► How have you found the first year?

First year has been fantastic. I thoroughly enjoyed my modules and I took advantage of the vast amount of opportunities that the university offered, such as assisting in the build of an autonomous wheelchair. It was great to go on placement during the summer as well as I know the experience has, and will continue to pay off.

► You've spent time in PwC on placement - tell us about it?

I was placed in Operate which is an enablement team based in Belfast. I spent the first few weeks becoming certified in RPA before being placed on a project where I had to design and build a robot using UiPath. I also did some scripting where I rebuilt a birthday calendar for Operate. On top of that, I attended Digital DNA which was definitely one of the highlights and my first official networking engagement! I also sat on a 'Females of the Future' panel and I attended the Belfast I.T. Girls graduation ceremony as a mentor which was fantastic. Lastly, I recorded a podcast with WebTalksNI, something I wouldn't have had the opportunity to do elsewhere. PwC was very supportive and flexible with these events which I am grateful for as they have all dramatically improved my confidence!

► Any hints/tips for anyone applying?

Step outside your comfort zone and always look for opportunities to prove that you're passionate about technology as this will make your interview much easier. Most importantly, prepare for your assessment and try your best - that's all anyone can ask from you.

For more info on PwC's available job roles, or tech degree opportunities, check out the jobs section at syncni.com or visit PwC NI's website: www.pwc.co.uk/careers/ni-jobs.html



AI vs. AI

Signifyd's Swami Vaithianathasamy explains how fraudsters turn the tech deployed to stop them into their most valuable tool.

The first rule of managing online fraud and mitigating risk is to remember that fraudsters are entrepreneurs.

While it's tempting to think of those committing digital fraud as hoody-wearing lone wolves spending hours in their bedrooms working to weasel their way into someone's online account, in reality professional fraud operations look more like the JP Morgan trading floor.

Like any other enterprise, sophisticated fraud operations have

been turning to artificial intelligence and machine learning to scale their businesses while increasing efficiency, accuracy and profitability. Not surprisingly, but ironically, the key reason fraudsters are deploying AI is to take on the AI used to protect retailers, banks and other businesses.

Think of it as AI vs. AI.

The energy and ingenuity with which fraud rings and cybercriminals have deployed AI-based solutions has matched that of the businesses and organisations that work to protect

themselves from bad actors.

Machines have been put to malicious use in ways ranging from the simple — click farms created to steal digital ad revenue — to the complex — model extraction schemes that make off with AI models being trained in the cloud.

Automated bot attacks are proliferating

And the malicious use of AI is no fringe trend. ThreatMetrix reported in 2018 that at times, nearly 90 percent of some e-commerce businesses' transactions were the result of automated bot attacks, primarily for the purpose of taking over users' accounts.

Globally, the device identity company's Cybercrime Report indicated, bot attacks on e-commerce sites increased from under 100 million in the first quarter of 2017 to nearly 1.4 billion in Q2 of 2018.

The huge increase is attributed to the steadily increasing number of data security breaches. ThreatMetrix points to spikes in the bot attacks that coincide with some of the year's most notorious breaches. For instance, ThreatMetrix notes, one of 2017's highest attack rates happened in Q2, just as the Equifax breach, which affected the records of 148 million consumers, was getting underway. It was a breach that the world learned about much later.

And just as the wisest businesses turn to a combination of human and machine to get the optimal result, fraudsters balance the speed and scale of machines with the intuition, experience and expertise of humans to get the job done.

Behind the 1.4 billion 2018 Q2 attacks, for instance, were automated models running down long lists of stolen credentials, trying the staggering number of combinations of names, addresses, credit card numbers, CVV and IP locations until they got a hit.

Given the logistics of a concerted fraud enterprise, it becomes instantly clear why the best in the dark business turn to machines to be successful. A human with enough time and perseverance might eventually crack the code needed to sign into an existing account — one account.

Once the machine breaks into an existing account, a human takes over to ensure that the browsing and checkout behaviour is that of a human, so as not to raise suspicions of the machine-learning models and the human beings protecting merchants from fraud.

Fraudsters, like enterprises, need speed and scale to succeed

But as a business, fraud rings need to take over thousands of accounts — or more — and because account takeovers are ultimately discovered, they need to constantly take over new accounts to keep their cash flow positive.

Beyond the scale challenge, fraudsters also work in a world where time is of the essence. The time between a data theft that produces thousands or millions of stolen identities and the time the theft is discovered is prime time for creating and stealing credit and e-commerce accounts.

Again that human — or even a team of humans — in a room is not going to be up to the task. Machines, however, are exceptionally good at the tasks necessary to takeover accounts — and they never rest. AI also gives fraudsters an edge that is necessary in an era when their targets are using AI for protection.

Fraud-protection systems that use big data, artificial intelligence and domain expertise to foil criminals are constantly learning. When properly designed they sift through orders, sorting fraudulent orders from legitimate ones in milliseconds with incredible accuracy.

Incredible accuracy - but not perfect

About **Swami Vaithianathasamy**



Swami Vaithianathasamy is Signifyd's vice-president of data science and risk analytics. Before joining Signifyd, he was head of payments data science and also led the risk machine learning team at Google. Before Google, Vaithianathasamy was director of global risk solutions at PayPal, where he managed all consumer risk models and credit models.

accuracy. Sometimes a machine or a machine aided by a human with intuition and experience will ship an order that should have been declined. Or the system might hold back an order that should have been shipped.

A properly designed system will include a feedback loop that will feed the circumstances of that error back into the machine, so it learns from its mistakes.

Fraudsters' machines learn from anti-fraud machines

On the other side, the fraudsters' machines are learning the same way. If a fraud-protection model adds an attribute or shuffles the attributes it uses, or in some other way adjusts for a new wrinkle in fraud, the fraudsters' machines will learn from that change and counter the defense.

In recent years, some fraudsters have

sought to speed up that learning process by actually stealing the fraud-protection model they are preparing to go up against. The heist, known as “model extraction,” is the result of the practice of organisations hosting their models in the cloud and calling upon users to accelerate the model’s learning by sending it data to act upon.

The difficulty of essentially decoding the model depends entirely on the complexity of the model. In a previous role, I once sought insight into the skills and thinking of fraudsters with a simple experiment.

For a set of transactions, I created a rule that said any order under £43 would be approved, but orders over £43 would require a more thorough review of a broad range of attributes to determine whether the person, payment method, device and location all lined up as being a legitimate buyer.

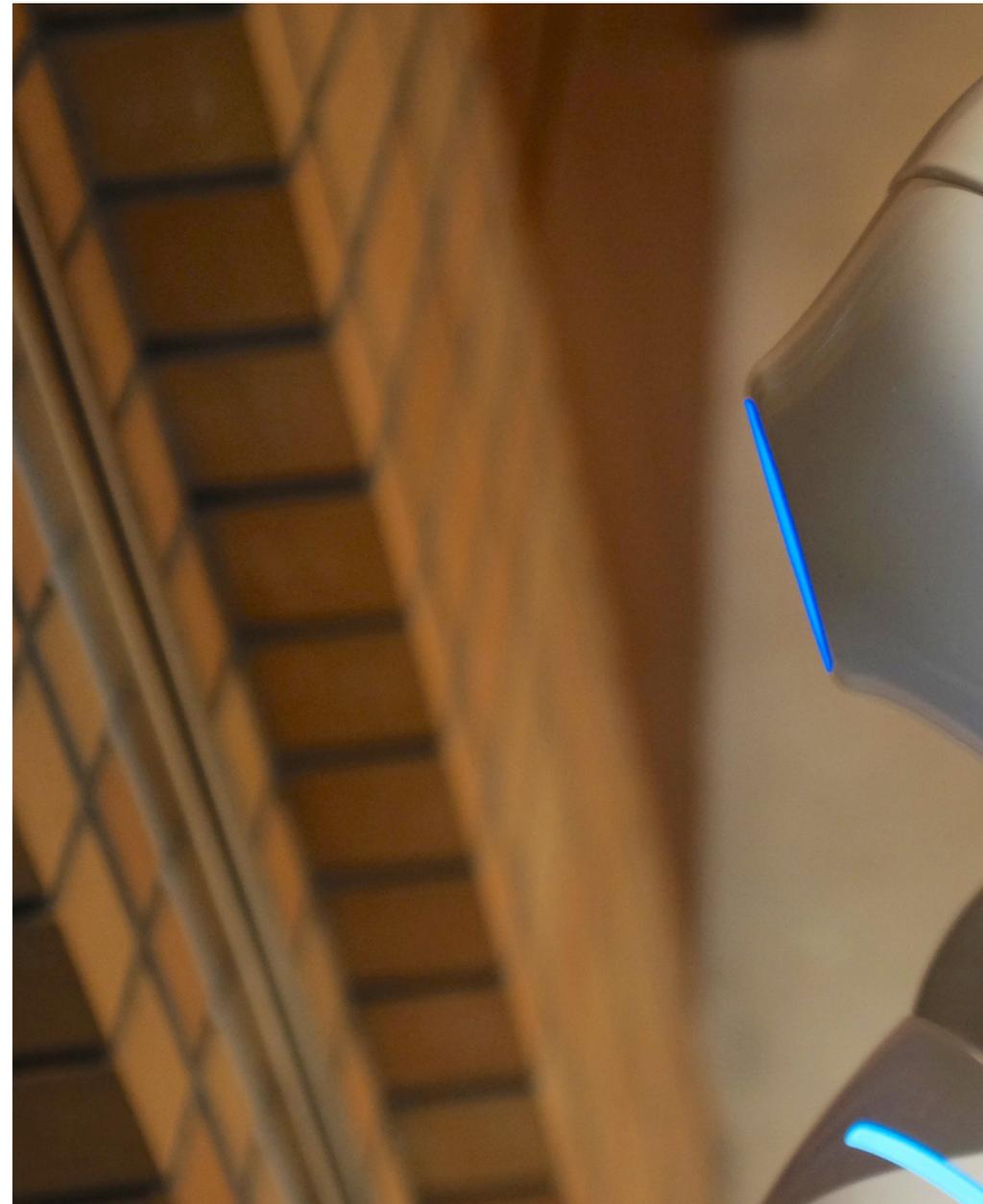
It took fraudsters less than a minute to figure out the crucial factor was order value and the £42 orders came pouring in.

Stealing a fraud model is only half the equation

Those engaged in model extraction work in a similar fashion. Essentially they are reverse engineering the model, or enough of the model, to exploit it. This sort of extraction works particularly well with traditional, static, rules-based models that produce a score upon which a merchant makes ship-or-don’t-ship decisions.

Of course, just “stealing” a fraud prevention model isn’t enough. The fraud ring needs a vast supply of identities and personally identifiable information to go on a fraudulent shopping spree. Unfortunately, such personal data is available in abundance.

When a company like Equifax suffers a data breach, for instance, a portion



of the tens of millions of records stolen end up on the Dark Web — an illicit bazaar of identities and identifying information for sale. On the Dark Web, criminal enterprises open sales channels, offering literally millions of stolen accounts and operating like your favourite e-commerce site, complete with reviews and star rating systems.

Combined with AI, these pilfered identities allow a criminal to place a nearly unending string of orders, trying a tremendous number of combinations of attributes. The criminal relies on a process of elimination, reinforcing the combinations that move the ship-or-

don’t-ship score in a more favourable direction as far as shipping an order. I can safely say that pulling off model extraction would be impossible without AI. Think about it. If I were a criminal seeking to “steal” a model, it might take a million transactions to solve even a portion of a fraud prevention model. And that model would likely be only the first of a series of models reviewing the transaction.

In order to successfully complete the transaction, I’d need to make a million more transactions to crack the next fraud-protection model in line. And after that maybe another.



In short, attempting to decode a fraud-protection model manually is no way to make a living.

But with machines, model extraction becomes a way for fraudsters to future-proof their businesses. Whatever changes a retailer or other business makes to its fraud-prevention model can be uncovered by a fraudster who is able to hijack the model from the cloud.

The answer is in fraud models that stay a step ahead of automated fraud tactics

While the tactics are new, the cat-and-mouse game in fraud is not. And so,

there are defenses available and in the works to turn the advantage back to the good guys.

The AI-powered fraud-protection models, obviously, are already helping retailers and other businesses stay a step ahead of fraudsters. Models that go beyond static rules and learn in real-time provide another shield against determined and nimble fraud operations.

And, of course, models that go beyond simply delivering a score for a merchant to ponder and instead automate the ordering process and come with some

assurance to the retailer that a poor decision won't come out of his or her pocket also goes a long way toward mitigating any maliciousness that an AI-powered fraudster can cause.

If the first rule of managing online fraud and mitigating risk is to remember that fraudsters are entrepreneurs, then maybe the second rule is to make sure that the businesses they run are not sufficiently profitable.

Choosing the right AI and remaining vigilant when it comes to changes in fraudsters' tactics and technology will go a long way to achieving that goal.



Hub partnership creates new opportunities for NI start-ups

A year on from its official launch, the Catalyst Belfast Fintech Hub can reflect on a number of successful contributions to Northern Ireland's start-up scene.

It is now a year since Danske Bank took the bold move of opening a co-working hub for early stage tech companies in the same space as its flagship branch at Donegall Square West in the centre of Belfast.

Partnering with Northern Ireland's start-up and knowledge economy experts Catalyst, the bank wanted to create a space where it could support the growing number of local entrepreneurs seeking to create disruptive tech products and solutions and connect them to valuable expertise within the bank.

The Hub has been embraced by the start-up community

in Belfast and beyond, and Aisling Press, Head of Branch Banking at Danske Bank, who oversees the Hub, says both organisations are pleased with the first year.

"We feel we have achieved what we set out to do in our first year. It's a thriving co-working space and several of our member companies have gone live with their products. Other companies have expanded their teams and a number have raised significant investment. That's hugely encouraging," she says.

"The Hub is in a prime location and has been fitted out to a high spec, which, combined with the access the partners provide to mentors and advice – and in some cases to our



Aisling Press, Head of Branch Banking at Danske Bank and Elaine Smyth, Director of Innovation Community at Catalyst

customers – has helped create a community the like of which doesn't really exist elsewhere in the city. We've created something unique. Collaboration and community really are at the heart of what we are doing."

Elaine Smyth, Director of Innovation Community at Catalyst, notes that neither organisation had undertaken a partnership on this scale before.

"We have worked with early stage entrepreneurs over many years and built a community of innovators," she says.

"What Danske were planning resonated with us and it felt like a good fit for us to bring the community, the vibe and the energy

to the project."

Elaine adds: "The Hub brings something quite unique to the market. Catalyst is providing access to its programmes, connections and support. Danske is connecting people and providing insights for those in the financial space. We are already seeing this partnership approach add real value."

Aisling admits it has been a learning experience for Danske Bank. But she says the experience of acting as the launch pad for companies that are creating innovative products and services has been very rewarding.

In recent months they have seen loyalBe launch its customer rewards platform; worked with TakeTen's Fintan Connolly to pilot his stress management app among Danske

employees; and seen BlueSona secure a six-figure investment from Co-Fund NI. They are delighted that start-ups like collaboration software provider Oroson has been so successful that it has outgrown the hub.

"Those companies are an inspiration for new members, they show what's possible. We want them to stay involved and to share their experience with the entrepreneurs currently based here," says Aisling.

Elaine adds: "This first year has been a year of trying and testing things. In the next 12-18 months we intend to build on that further, strengthening the proposition for existing and new members but also the wider community," she says.

"We've been taking on board all their feedback, insights and recommendations and will be building that into the experience. I think in year two we will be more focused, more intentional about who we are, about the benefits we bring and about who we want to be part of it."

Aisling agrees that any co-working space is only as good as its members and the community they create.

"We want to evolve based on the experience we've gained and drive the community element in the next phase. For Danske Bank this has always been about giving back to the community and helping promote innovation. We're excited about what the year ahead might bring."



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Meet the start-ups who have used the hub as a launch pad for their businesses.

Meet the start-ups at the Catalyst Belfast Fintech Hub

Mel Morrison, CEO, Bluesona

Bluesona's CEO Mel Morrison has been involved in the fintech hub since it opened. The Downpatrick-based software company has developed technology designed to reduce mobile phone usage while driving.

The app – called Loop – was developed by Mel when his daughter was learning to drive and provides real time data to insurance companies and warns users when they try to use their phone.

Bluesona recently secured significant investment and are in the final stages of completing commercial deals with a number of big insurers and brokers in the UK, Ireland and Europe.

"We have offices in Downpatrick and our development centre in Letterkenny but having space at the Hub in a central location has been fantastic for us when these companies fly in to meet us," says Mel.

"I'd describe the hub as a mature start-up company ecosystem. You are there to work and have proper discussions, and the networking is great, but it's not a youth club. We are building our team, but even as we grow I think we will always keep people on in the hub. They have really embraced what we're doing."





Johnny Matthews, CEO, SeeMeHired

Like many exciting start-ups Johnny Matthews' company SeeMeHired is trying to disrupt a traditional business model. The company offers a digital end-to-end recruitment solution that changes how employers attract and hire talent and helps jobseekers find and communicate with organisations relevant to them.

SeeMe uses a matching algorithm that places relevant roles in front of potential employees, generating a 'talent match' percentage for the employer – encouraging them to hire based on merit and culture fit. Optional features also ensure no elements of unconscious bias enter into the selection process. The business has taken on external investment and will soon release its new app.

"We want to upset the traditional recruitment model, where candidates are not aware about all the other jobs they could be eligible for and don't get any feedback or communication. We're also changing how employers present themselves to candidates," says Johnny.

SeeMeHired has just moved to its own offices in Causeway Tower and is about to hire six new team members, but Johnny intends to keep using the hub every week too.

"It is a great place to network, to feed off each other, to help one another get around problems. We've also found other start-ups who provide services to us, including marketing and design," he says. "Danske Bank is now one of our customers and it has been great to have exposure to the HR team and to some of the bank's customers too."



Christine Boyle, CEO, Senergy

Christine Boyle has used her almost 20 years' of experience in the commercial roofing industry to create Senergy, which has designed and developed the world's first nanocomposite solar thermal panels. These SMART polymer-based solar panels help deliver affordable solar heating by replacing old glass, copper and aluminium panels which are expensive and much maligned aesthetically.

Working with Innovate UK's government-backed High Value Manufacturing Catapult, Christine has employed both Queen's University and Ulster University to design and test her panels. The first products will be demoed next year on buildings in Belfast, Dublin, Edinburgh, London, Exeter and Boston. The lower cost of the panel means an earlier return on investment for customers.

Senergy is now targeting Northern European countries who are ahead of the UK and Northern Ireland in renewable energy and Christine has been using Danske Bank's network to help access these markets.

"The combination of Danske and Catalyst has been useful for us. We like the city centre location and the contact with other companies. I've been on all of Catalyst's programmes and attended many of their well thought out series of seminars looking at IP, legislation, investment, scaling, building a team, etc. That was all valuable when we went to Innovate UK for funding after being in R&D for several years. It allowed us to push ourselves forward."



Programming in English

Instil's CEO Tara Simpson discusses how the tech industry promotes an education in STEM as the basis of software development, but in doing so, we risk the most important skill of all; written English.

For as long as I can remember, programming has been pushed as a largely mathematical and STEM-based activity. To be good at programming, you not only had to be good at maths, you also had to have a solid educational background in maths and science.

It is a viewpoint that we have pushed heavily as an industry, encouraging young people who are considering a career in computing to focus almost exclusively on STEM subjects before their jump to university. It is a viewpoint so ingrained in our minds that we peddle it around as a fact, and without question.

But as the world cries out for more software engineers and industry has begun filling the shortfall by reaching out to people from diverse backgrounds, it is time to question the hegemony of maths over computing. Maths is undeniably important and necessary, but there is another skill that is absolutely essential when it comes to programming well, and that is English - especially **written English**.

To put it another way, based on nearly 30 years of first-hand experience coding, mentoring and teaching commercially, I have witnessed an almost one-to-one correlation between those who can write well and those who can code well. And inversely, between those who *cannot* write well and those who cannot code well.

Mathematical Foundations

This connection between maths and programming is of course

deeply historical. Programming can trace its whole lineage right back through mathematical thinking and mathematical needs. When it comes to number crunching and evaluating numbers, nothing does it like software.

The connection runs so deep that programming is often shrouded in mathematical terms: pure functions, lambdas, closures, boolean logic, and so on. But there again, not all programming is maths, and certainly not today when software dominates every facet of life. If anything, most programming is less about maths and is more about communicating complex steps and flows in ways that make your software easier to work with.

Great programs communicate their intent clearly, and communicating intent is largely a linguistic skill. It may be bound by the syntax of your programming language - the syntax will constrain the ease with which you can say things - but the ability to communicate ideas through (for example) intentional revealing names and cohesive structures is a linguistic skill nonetheless.

Communicating intent requires two things: a programming language with a syntax that allows ideas to be expressed in ways that can be easily understood, and a powerful grasp of the written word so that you can actually express those ideas clearly.

Structure

It all starts with structure and decomposition. Without them, words become lost on the page, their meaning obscured by



Founded in 2005 and based in Belfast, Instil's cloth was cut in the world of compilers and enterprise software. Today, the company works across a broad range of technology and industries - Java, Kotlin, C#, mobile, cloud, telecoms, medical, and finance. As a team, they share a passion for software engineering excellence and creating software that makes a difference to the world we live in.

Visit instil.co to find out more.



the lack of surrounding space. So, as a first step, we break things down into smaller, more manageable chunks. Each chunk serves a purpose: to communicate an idea or collection of cohesive ideas.

We decompose our writing so that it's easier to work with. And we decompose our software for the same reason. The process and rationale are the same.

Every chapter in a book, every paragraph on a page, every sentence exists purely to provide structure to writing. Similarly, every namespace, every class and every method serves the same purpose in our software. That is, to make our lives easier.

Structure and decomposition are key aspects to making things understandable. They transcend maths and writing. Breaking a problem down is a general problem solving technique, but it is a technique that is absolutely core to programming - and writing for that matter.

Empathy

Whether you agree or not, there is another skill that is indisputably part of the creative process, and that is *empathy*. Simply put, writing and coding require huge amounts of empathy and putting yourself in someone else's shoes.

If you care about the reader, you

will care deeply about how you communicate and structure your thoughts for their benefit. Building user interfaces, creating APIs, defining method contracts, naming variables, etc., all require that you think long and hard about the users of your software; and not just your users, but the future developers who will also work on your code. In this regard, writing and coding are virtually indistinguishable.

The bottom line is, writers and programmers are problem solvers. They build narratives, and creating a decent narrative requires planning, thought, insight, and (yes) empathy. Okay, certain styles of writing come more from the heart than the head, and writers may deliberately confuse and obfuscate to keep the intrigue or spark an emotion, but ultimately writers and coders share one thing in common - they are telling a story, albeit in a very different context, and in doing so they are tapping into a completely different part of the brain than we use for mathematical processing.

Words Matter

But writing is much more than just structure and decomposition - it is fundamentally about the words we use and how we use them. Programming is no different and although programs may work within a tighter set of rules than written English, the value of words, names and metaphors is no less important. Words matter.

By introducing consistent and revealing names and metaphors, we reduce the cognitive load on the reader and on ourselves. Good names allow us to maintain intellectual control over our code base. Write for other people not the compiler, and all that.

The thing is, naming is hard. But good naming requires a solid command of language, and specifically of English since that it was most programmes are written in. It's back to my original point about the correlation between people who write and who code well. If you don't communicate well through writing, then chances are, you will probably not communicate well through your code.

Beyond Programming

The final point about the importance of writing is that a programmer's job is much more than just coding. It is also about communicating, almost constantly, across many different mediums and channels.

Every email we send to state our case, every proposal we write to win new business, every requirement we add to the backlog, every message we push onto an IM channel, each requires a command of the written word that cannot be understated.

Writing is everywhere, and being able to write well is an essential part of being a software developer.



Quadra: Why is cyber security important?

Belfast-based Quadra simplifies cyber security and its implications for individuals as well as organisations.

Q quadra are specialists in ISO standards and information security, including ISO27001, Cyber Essentials and vulnerability assessment.

Prevention is better than curing

Quadra has offices in Belfast and Dublin. The company specialises in developing information security management systems and gaining certification, where required to standards, such as ISO27001 and Cyber Essentials.

ISO 27001 is the international standard for Information Security Management Systems. Since its launch in 2005, becoming certificated to this standard has become more popular every year, as concerns and publicity about cyber security breaches have increased.

Cyber Essentials Certification was launched by the British Government in 2014 to protect organisations against cyber-attacks. Most of these attacks are basic and carried out by relatively unskilled people. They have been described as the digital equivalent of a thief trying a home's front door to see if it is unlocked.

Cyber Essentials didn't hit the headlines in the same way that GDPR did, presumably because it's not a legal requirement.

So if it's not a legal requirement, then why? Is it worth the bother? Just how essential is Cyber Essentials?

Certification to such standards is often a contractual requirement or a condition in tender selection criteria. Not having such certification could restrict business opportunities.

But as tech evolves, so do the threats and the hackers.

One aspect Quadra wants to emphasise is that cyber security has on-going implications and is not just a one-off tick box exercise. Individuals can be accountable for security breaches, not just companies as a whole. Often when people hear the word 'data', they assume this applies to tech companies, when in reality it applies to all of us. It covers paper-based records too.

Every individual has their own personal data

Multiple data breaches through social media platforms have become the centre of media attention in the last few years, with the most prominent probably being that of the Cambridge Analytica scandal. The Great Hack, a Netflix documentary released in 2019 examined this scandal through the eyes of several involved persons.

The UK-based political consulting firm, Cambridge Analytica used Facebook as a means for "political-voter surveillance" through the collection of user data points to aid Donald Trump's 2016 US presidential bid. Whistle-blower accounts of the firm's impact on Brexit combined with independent investigations into data mining led to public scrutiny over the influence of social media in political elections.

Yet still today, users and companies continue to lack in the information security skills and systems needed to prevent and defend against such breaches. According to a new Hiscox Cyber Readiness report, approximately 61% of worldwide companies reported one or more cyber-attacks in the last year.

In Northern Ireland's current thriving start-up culture, Quadra wants to help both small and large companies alike to develop and improve information security systems and control. Preventing data loss is a far simpler

and more affordable task than trying to rectify a breach if one happens.

What is GDPR?

Before the General Data Protection Regulation (GDPR) came into force in May 2018, previous European data protection rules struggled to keep up with rapidly changing technological challenges.

GDPR was designed to modernise laws that protect the personal information of individuals. It is an evolution of the 1995 data protection directive, and it covers all of Europe. However, it is still unclear how GDPR compliance requirements will change in Northern Ireland or the UK as a whole if and when Brexit occurs.

Not only can individuals freely request companies to allow them access to the personal information the company is holding about them but said company can also be fined if it does not process an individual's data accordingly, or alternatively, if it suffers from a security breach that could otherwise be avoided.

One of the biggest and most talked about, elements of the GDPR has been the ability for regulators to fine businesses that don't comply with it. If an organisation doesn't process an individual's data in the correct way, it can be fined. If it requires and doesn't have a data protection officer, it can be fined. If there's a security breach, it can be fined.

Quadra has developed a unique approach which can build GDPR controls into systems such as ISO27001 and Cyber Essentials. This can then result in:

1. Improved governance and assurance
2. Improved customer confidence
3. Improved access to lenders and contracts requiring such certification

The GDPR is a far-reaching regulation, intended to protect the privacy of individuals and their personal data within the European Union. The



Gavin Kane, Quadra director

regulation specifies that "controllers" must determine their own cyber security approaches based on the personal information they hold and process.

While Cyber Essentials can help with this, it is not a complete solution for all GDPR obligations. But the Information Commissioner's Office (ICO), whose job it is to uphold the GDPR in the UK, recommends Cyber Essentials as "a good starting point" for the cyber security of the IT systems and networks you rely on to hold and process personal data.

If you fail to protect your systems, you're at a significantly higher risk of a cyber-attack.

A company need not fear if they don't have specialist in-house staff, as Quadra say they can help them with this. The firm delivers a vast scope of in-house and public courses, as well as e-learning solutions, focusing on health and safety, information security, business improvement skills and environmental protection.

For more information, visit their website at www.quadraconsulting.com or email the team at the address below.

Email Quadra



info@quadraconsulting.com

Ormeau Baths and the co-working revolution

Claire Dowds and Lisa Bailie discuss starting a co-working space for start-ups in the heart of Belfast.



The rise of co-working spaces and flexible offices has been one of the biggest business trends of the year, with the market estimated to be growing by over 50% year-on-year.

These alternatives to traditional office space have become popular globally, offering everything from hotdesking facilities for solo entrepreneurs in need of a place to work to private offices for larger teams.

Situated in a historic Victorian bathhouse, the Ormeau Baths innovation space in Belfast is a prime example of the value flexible offices can bring to a city. The space was re-imagined two years ago as an ambitious co-working space for digital innovation and disruptive tech companies and has serviced the local tech scene ever since.

The building has been many things throughout its lifetime, from a communal bathhouse to a public swimming pool, and even an art gallery where creatives could display their work. As co-founder Steve Pette succinctly put it, "Ormeau Baths has been bringing together the community since 1888 - we are still doing that."

What does Ormeau Baths offer?

The Ormeau Baths building offers Belfast's digitally disruptive tech start-ups affordable desk space in a modern working environment situated in a prime location in Belfast city centre. It offers hotdesking seats for those who need a remote office, dedicated desks for small teams to make their own, and private offices for larger teams scaling up that need a private space. It's a managed space with keycard security access, high-speed internet access, office amenities such as printers, and event and meeting spaces.

Ormeau Baths was recently recognised by Wired UK as one of the top 10 co-working spaces in the UK and is well placed as the co-working revolution continues in start-up hubs throughout the country. With key partners such as Barclays Eagle Labs, the space has seen its share of success stories emerge and secure investment.





Claire Dowds

We caught up with Ormeau Baths General Manager Claire Dowds to find out what makes this co-working space tick and how it all got started. "Having lived a rollercoaster life within the start-up world over the last 20 years with my husband Mark, we moved home in 2016 and joined a few others to help set up the Ormeau Baths," she explained.

Claire has been deeply involved in Ormeau Baths since the beginning and stepped into the General Manager role in Jan of this year. "The great thing about this role is that no two days are ever the same," she explained, adding "I love to find solutions and am not afraid of chaos, so this role is perfect fit for me."

Creating a space in which such a huge variety of tech start-ups co-exist is no small feat, but Ormeau Baths has now grown to house over 80 separate start-ups from across the tech spectrum and host hundreds of tech community events. "Community is central to everything that we do here at the Baths and so I begin and end my day with that in mind," Claire told me. "Being curious about what our members need and who they would benefit from being connected to is a question I am constantly asking myself. It is exciting to see and hear all of the new ideas and companies that are emerging in Belfast."

The Ormeau Baths building now hosts Invest NI's Ignite NI start-up accelerator, and this year was expanded with a brand new west wing for NI Screen's Pixel Mill game development

lab and the Digital Catapult Immersive Lab. "Since opening the doors in June 2017, we have doubled in size and continue to see exciting new home grown companies and those who are setting up their development teams here in Belfast going from strength to strength," Claire explained. "Ormeau Baths' future looks like more community development, more home grown programs and potential expansion to other spaces."



Lisa Bailie

Barclays Eagle Labs has been partnered with Ormeau Baths throughout its two year journey, and one of the main driving forces behind that partnership is Lisa Bailie. "Having worked for Barclays for 17 years doing various roles from Personal Banker to Branch Manager I decided I needed a change from traditional Banking and went to work for the Business team," Lisa told me in an interview, explaining that she was in her current role for just about three months when Barclays Eagle Labs partnered with Ormeau Baths. "This was a very different environment from what I was used to but one that I absolutely loved so I decided to apply for the full time position and the rest is history as they say."

The events space at Ormeau Baths has been very important for Eagle Labs and the local tech scene in general, with over a hundred events each year taking place at the venue. "Events have been a huge part of Eagle Labs and we see it as a way of bringing the NI tech community together in one place," Lisa explained. "The event space has brought

everyone from across the NI Eco-system into one place to share insights, foster collaborative opportunities and showcase how good the NI tech scene is scaling."

The past two years have seen some impressive start-ups pass through the Ormeau Baths lab and go on to get significant investment. Lisa pointed to early resident Neurovalens as a model of success with its Modius medical device. "Neurovalens/Modius have to be the first company that comes to mind as they were one of our first residents when we moved into the baths, they started with 3 staff and by the time they moved out they were packed into an office like sardines. It has been exciting watching their journey as they continue to scale and grow." Other firms that have started life in the innovation space and gone on to find investment success or create jobs include LoyalBe and Pitchbooking.

A message to the Belfast start-up scene

As Ormeau Baths passes its second year anniversary and continues to thrive in the rapidly growing co-working market, it's important to recognise the hard work and persistence of those on the ground making it work. "Ormeau Baths was started by a group of entrepreneurs and further supported by various members of the NI Diaspora from launch, coupled with Barclays Eagle lab," explained co-founder Steve Pette, and it's been a labour of love for those involved ever since.

"You have to be willing to be in it for the long haul," Lisa suggested, adding that "Things just don't happen overnight and you need to be prepared for change." With recent expansions including the Pixel Mill game development incubator and digital catapult immersive lab, Ormeau Baths seems set to continue to be a place where high-growth start-ups can find their feet. Claire left us with one simple message for the Belfast start-up scene: "We have a home for you!"



Ulster Bank continues to 'Accelerate' entrepreneurs, with a female focus

The Ulster Bank team share their Entrepreneur Accelerator journey and discuss NI's first female investment day they organised in September.

Ulster Bank's Entrepreneur Accelerator has come a long way since we first opened our doors to entrepreneurs back in 2016.

Back then, our focus was attracting early stage entrepreneurs and we were part of an international movement to encourage and support start-up businesses, while helping Belfast as a city become more hospitable to entrepreneurship.

Three years later, and while we are still very much driven by creating an eco-system for entrepreneurs, as we welcome our 10th cohort of business owners on to our Accelerator programme, there have been significant changes to the landscape.

Last year we took the decision to bring the Belfast Hub, which is one of 12 Entrepreneur Accelerator Hubs located across the UK, in to our Ulster Bank headquarters and I'm pleased to report this has enabled us to better align the work of the Accelerator programme more closely with the rest of the bank while ramping up Ulster Bank's support for entrepreneurs across every division.

2018 was also the year we introduced our new entrepreneurship team. If we are to be the leading drivers of entrepreneurship, then we need to have the right people with the right skills to facilitate this. Every day in our Belfast Hub we have a team of four providing coaching and mentorship to 80 entrepreneurs while also working hard to improve the

overall landscape for these businesses to grow and succeed.

But to what impact? Pleasingly, the figures speak for themselves and we are proud of the significant impact the Belfast Hub has made to our local economy. In 2018, we helped create £3.4m in investment, £2.7m in turnover and supported more than 110 businesses. As we approach the last quarter of 2019, all indicators are positive and we expect last year's figures to be outperformed.

Of course there is still much work to be done and our team remains committed to ensuring we can continue to make advancements. Supporting female-led businesses is at the top of our priority list and we are working hard to level the playing field. 53% of our entrepreneurs in 2018 were female and we hope to continue to grow this figure.

The publication of The Rose Review; a study commissioned by the government into female entrepreneurship, led by the newly appointed CEO of RBS, Alison Rose, highlighted how important it is to assist female business owners and identified some of the more challenging barriers which need to be overcome to make this happen.

Access to relatable role models, creating stronger networks of contacts and reshaping the mindset of female entrepreneurs were all listed as key areas for concern but it is access to finance which remains the biggest issue to be addressed.

Currently women make up just 33% of female entrepreneurs in the UK and The Rose Review identifies that by achieving parity in start-up rates between men and women, could generate an additional £250bn to the UK economy. No government can afford to ignore this issue for any longer, not only because of the moral implications involved but because of the economic growth opportunities that could be generated



Female Investment Conference Day

simply by tapping into female talent.

At the Belfast Hub, we are constantly telling our entrepreneurs to 'Power Up' so when faced with findings as stark as these, we are absolutely taking action to tackle them head on. In September we organised Northern Ireland's first Female Investment Day; an opportunity for female business owners to come together and learn from other entrepreneurs who have been successful while establishing that all important network of contacts.

Supported by QUB; Invest NI; Belfast City Council; DELL Technology and InterTrade Ireland, the event brought together more than 100 entrepreneurs, business leaders and funders who pledged to work together to confront the Gender Investment Gap.

Having access to external investment in order to fund growth is crucial for any business to survive but with just 1p in every £1 of venture capital raised going to a female-led business, then already female entrepreneurs are at a disadvantage. Throughout the day, attendees were given the opportunity to hear first-hand from other entrepreneurs who have been able to cut through the noise and successfully access the funding they need. And

the sessions led by female-investors proved to be particularly useful as entrepreneurs, who have perhaps struggled in this area, seized the chance to speak openly and frankly with the very people who can provide them with the funding they need to start or scale their business.

As we begin to start the process again with our 10th intake of participants to the Accelerator programme, pausing for reflection has been a useful exercise.

Belfast has transformed itself into a vibrant city for entrepreneurs and slowly but surely, we are narrowing the gap between ourselves and other UK cities when it comes to measuring entrepreneurship. Life in the Belfast Hub is as busy as ever but it's still incredibly rewarding to see an entrepreneur who has given their all get a huge deal over the line and appreciate that we played a small part in helping him or her unlock this potential.

For more information about the Belfast Hub or to speak to a member of Ulster Bank's Entrepreneurship team, visit the website below.

Ulster Bank's Entrepreneurship team
 ulsterbank.com/accelerator



Making sense of Big Data with location

How knowing "where" ties all your data together.

If you've used any app or computer system that involves digital maps, it may have been powered by Esri, a global market leader in Geographic Information Systems (GIS).

Esri Ireland has worked with local governments, utilities, public safety and defense organisations, insurance, retail networks, fuel companies, telecoms providers, and major governmental industries to make better and more data-driven decisions. Its GIS technology allows customers to record where things happen and analyse why, providing insight that helps them make better decisions.

The privately held billion-dollar Esri Global Network offers a service and technology mapping platform that spans the globe and has been around since the firm was founded in 1969. Locally Esri Ireland employs 80 people in Ireland across its Hollywood and Dublin offices, which help clients in both the private and public sector harness big data and understand the impact of geography on their businesses.

Working with emerging technologies

The world we live in today is highly connected, and every business hears the buzz around things such as Big Data and the Internet of Things (IoT). We all see the impact of emerging technologies in our fields, but it can be difficult to grasp what they actually mean for you in your business. These days a lot of people associate IoT with live data and Big Data with back-

end historical analysis, but for Esri these are two parts of the same thing: it all boils down to data.

IoT is really about being able to capture data with sensors, cars, mobile devices, and other assets -- even people. Big Data then takes that and processes it either in real time or in batches, and the important part is the ability to get value out of this data. Location, Place and Geography plays a huge part in that, enabling companies to tie all that information to where it happens and make sense of it.

Case Study: IoT in Agriculture

Esri's tech has been used with IoT sensors successfully by a multibillion-dollar agricultural producer in the US to radically improve its business. Its products need to go from farm to retail in a strictly limited period of time, and IoT allows the company to track detailed information about the product as it moves from the field to a processing centre, a distribution centre, and then a retail location.

We tend to think of the Internet of Things as a network of sensors, but it can also be the barcode on a package that's tracked through its journey. That creates not just visibility of a shipment but detailed data on each individual stock keeping unit (SKU). The company is using that information not only to understand where the product went in the supply chain and how long it took to get there but also to analyse problems and opportunities. They can see where an exceptional batch

of produce came from, even what part of which field it originated in, and then look at how they treated that field differently. Big Data is producing analytics to help improve the product that they deliver to their customers.

Case Study: Big Data in the public sector

Big Data and IoT are being used by government agencies around the world to understand problems that could impact our most critical public infrastructure. Hurricanes Harvey and Irma in the US were devastating to the areas affected, but a great deal of data was collected during them and emerging technologies played a meaningful role in the response effort.

In the six months before the storm, the US National Water Centre had already created a big data analytics model on where streamflow was across the entire continental US stream network. As a result, they could model and predict the flow through the whole storm cycle for the first time ever. When hurricane Harvey hit, various organisations used GIS technology to combine that macro model with live IoT data from stream gauges in Houston performing real-time big data analysis to predict the next day's flood impact. With that analysis, relief organisations knew where to put shelters and who needed to be moved before the floods arrived.

GIS in private industries

Esri has seen some major business impacts to private firms using IoT and Big Data with location data. Logistics companies are using IoT to ensure deliveries reach customers on time, to save on fuel and reduce mileage, and to ensure that their drivers don't exceed their allotted hours for the day. Retail companies are analysing patterns of life through data that's collected from mobile apps to understand not just buying behaviors but travel patterns and where people shop. The addition of location data to the analysis helps

companies decide where to place their stores, where to advertise, and how to market to potential customers more effectively.

Closer to home, Northern Ireland's tech firms have been using IoT in combination with Esri's GIS platforms to develop ground-breaking new products and services. Kinsetsu is using



IoT data for smarter school transport through its new kstop App that uses real-time data from RFID Sensors. This gains understanding of each pupil's individual school journey and automatically notify parents or schools of any delays. PlotBox is disrupting the cemetery management industry with its GIS-powered cemetery software and mapping system.

Location makes Big Data come to life

From tracking produce through the supply chain to analysing flood relief needs in hurricane-struck areas and disrupting industries with ground-breaking tech, the common thread through all of these applications is location. IoT-based data is enabling businesses across a broad spectrum of industries to realise important business outcomes, and location is a key component that pulls all the data together.

Esri Ireland's mission is to help customers throughout the country to attach geographical information to their

big data analysis. Through schemes such as the Esri Start Up Program, they've helped hundreds of start-ups from around the globe build mapping and location intelligence into their products and businesses. Members of Northern Ireland's start-up community such as Liam McEvoy from SustainIQ, Brendan Mc Cann from Plotbox and Joanne O'Doherty from Kinsetsu have

leveraged Esri's mapping platform to gain a competitive edge in their industries.

Esri Ireland is passionate about supporting these companies who are driving innovation across a wide array of themes including, mobile, Internet of Things (IoT), real-time analytics, augmented reality and more – It's so important for Esri Ireland to help champion all those within the start-up and tech ecosystem that support the current and next generation of entrepreneurs. It presents a way to comprehend the complexity of our world as well as to address and communicate the issues we face using the common language of mapping, what Esri refer to as "The Science of Where" - applying a data-driven approach that uses geography to unlock greater understanding and evidence based decision making.

Esri Ireland will be exhibiting at the Big Data Conference in the ICC Waterfront Belfast on October 24th.



NI Dev Conf makes the NI tech industry something special

Sync NI's Brendan Drain reports back from this year's Northern Ireland Developer Conference.

Almost everyone in the tech sector will attend at least one event or conference throughout the year, whether that means jetting off to a foreign country for something truly massive such as the Amazon AWS Summit conference or just attending meetups closer to home.

Meetups, events, and conferences have become an essential part of the tech ecosystem, a way to keep up to date on everything happening within your field and meet people with similar skills and career interests.

Tech conferences in countries with well-developed tech sectors can be highly corporate platforms on which large companies show off their latest innovations or aggressively scout for new talent and acquisitions, but Belfast's rapidly emerging tech sector has managed to retain a much more down-to-earth style of event.

The NI tech events calendar is littered with hundreds of smaller meetups each year on a wide range of topics, and even huge events such as Digital DNA have a distinctly more community-oriented feel to them. One of the most anticipated events in the NI tech calendar is the Northern Ireland

Developer Conference (NI Dev Conf for short), and this year I went along to find out what it's all about.

What is NI Dev Conf like?

NI Dev Conf really sits somewhere between a meetup and a conference, bringing together hundreds of people from the NI tech scene to give talks on the exciting work they've been doing at their companies throughout the year. The event gets bigger each year, and the latest one filled out practically every room in the Riddel Hall event space thanks to sponsorship support from local tech companies.

Maurice Kelly from Anomali, one of this year's platinum sponsors, told me that NI Dev Conf was "almost like the meetup of meetups," and I saw exactly what he was talking about when I attended my first ever NI Dev Conf this year. All the familiar faces were there from every meetup or major event throughout the year, with the AI and machine learning crowd mixing with web developers and data analytics specialists.

It's a special kind of event that can bring together people from so many disparate disciplines in one place, and I think that's essential for cross-pollination of ideas. It helps to



expose people to new concepts and technologies that they don't get to use in their day-to-day work, and gives them a taste of a different perspective.

Accessibility at NI Dev Conf

While many tech events and meetups draw in a diverse crowd, I seriously have to commend NI Dev Conf for its continued commitment to providing accessibility for the event. The event was held on a weekend to maximise the number of people who could attend and the organisers ran dedicated childcare facilities for those with children who wanted to come. Children and carers could also be brought to the event free of charge.

The standard ticket price was cheaper than most conferences at just £45, with a discounted £15 tickets for students and those otherwise not employed. The discount was applied by a simple code on an honour basis, with no questions asked and no need to prove that you couldn't afford the full price.

There was even an "honesty" ticket that allowed people to enter whatever price they can afford, again taking people at their word and avoiding the social stigma around financial accessibility. The message this sent was very clear: Money should not be a barrier to getting

involved with the local tech community, and everyone in tech should be able to attend.

Wide representation in talks

Local tech conferences provide an important platform for companies to show off their latest innovations and to help them attract new graduate applicants for tech jobs, but what really struck me about NI Dev Conf was the wide range of talks from all levels of industry. In total, over 60 speakers gave talks on topics ranging from cybersecurity and blockchain tech to start-up advice, encryption, artificial intelligence, and even game development.

The primary sponsors and other major players in the NI tech scene gave talks on the tools and processes their company uses, from the deployment of microfrontends for web development or using Akita JS as a state management tool to using machine learning to help interpret medical scans. These highly technical talks gave companies an opportunity to let their staff take ownership of their achievements and present them to peers.

On the other end of the scale were talks from individuals and hobbyists in the tech field on projects they'd worked on, and presentations from

educational organisations and charities. We saw some impressive work from the kids at Banbridge CoderDojo and VR demos courtesy of local hackerspace and charity Farset Labs, and guest Kenigbolo Meya Stephen opened some minds on the problematic language we sometimes use in tech.

Thoughts on NI Dev Conf

While the big global tech conferences around the world won't be going away any time soon, it's refreshing to see how openly Belfast's tech scene has embraced local community-driven events such as NI Dev Conf. When we interviewed this year's platinum sponsors (Smashfly, Anomali, and Flexera) ahead of the event, all of them said that the local event scene was important to their company values.

Events like this show that tech doesn't have to be sterile and corporate, but can instead be a celebration of the diverse community of local developers working in our local industry. There was a very positive gender split for the talks and a diverse range of backgrounds and specialities were represented.

If Northern Ireland can keep this level of accessibility and inclusivity as the tech industry grows, it will be an incredible place for tech companies to thrive.

BCS NI Awards

Recent recipients discuss their work and how industry recognition has helped them.

Northern Ireland's IT and tech sector has seen rapid growth in the past several years thanks to both large firms expanding and an explosion in the local start-up scene.

As the official chartered institute for IT, BCS NI has been an important part of Northern Ireland's IT sector at all stages, with strong links to local schools and members throughout industry.

The annual BCS NI Awards celebrate those who go the extra mile to help develop the local IT scene, whether through their dedication to formal education and mentorship or outstanding leadership within their company. The awards highlight individuals that are held up as role models in the local IT and tech sector and help to showcase the region's computing skills to the wider community.

Sync NI caught up with some of the recent winners of the award to find out more about the work they do, how they got into the IT industry, and what the future holds for them.

Roisin Rice, St Mary's College
IT Educator of the Year 2019

Roisin Rice has been teaching ICT for most of her career and now works with young people to inspire the next generation of digital natives at St Mary's College in Derry. "I am

is an extremely innovative leader and when I explained how the programme worked we decided to submit an application for St Mary's College to become a Digital Schoolhouse. After a lengthy and rigorous application process we were awarded Digital Schoolhouse status, at that time one of only five in



IT Educator of the Year Roisin Rice, St Marys College Derry, with Glenn Parkinson of Capita

passionate about being an educator and I am always looking out for new and innovative ways to teach and inspire the young people that I work with," she told us. So when she heard about the Digital Schoolhouse programme that uses play-based learning to teach computational thinking skills at a young age, Roisin knew it would be perfect for St Mary's.

"My school principal, Mrs Marie Lindsay

Northern Ireland."

The scheme has been an unparalleled success in the tech education field, with the workshops being fully booked in a matter of hours from its first launch. "Over the course of the Year 2018 – 2019 nearly 900 primary school children and over 60 teachers had taken part in this exciting and fun filled programme," Roisin told us. "It was one of the most enjoyable and rewarding

years of my teaching career.”

Roisin’s experience at St Mary’s has helped with mentoring young children in developing computational thinking skills, an essential early step that equips people to develop skills that could make them the software engineers and IT leaders of their generation. “It was during this time that I met Dr Irene Bell, Chair for Northern Ireland Computing at Schools and the Regional Academic Lead for Digital Schoolhouse who supported and encouraged us on our Digital Schoolhouse journey.” In recognition of her effort, Dr Bell nominated Roisin for the BCS NI 2019 IT Educator of the Year award.

Roisin actually came into ICT later in her career, initially completing an undergraduate degree in Political Science and Social and Economic History at Queen’s University Belfast before doing post-graduate ICT study at Ulster University. “I have been fortunate to have been teaching during a time of great change and innovation in digital technologies,” she told us, having seen the world of IT teaching evolve over the past several years.

“I am passionate about working with teachers to improve learning, share good practice, develop a sustainable digital strategy and promote excellence in learning and teaching using digital technology,” Roisin summarised. Being recognised by the BCS with the IT Educator of the Year award is vindication of that passion, and it’s safe to say that the award has opened some doors. “Since winning the award, I started a new post in September 2019 as Acting Vice Principal at St Mary’s College. I have connected with and built an extensive network of local primary schools as well as partnerships with business and the local community.”

This was Roisin’s very first award from industry, and it’s helped her students too: “Winning this award has widened this network and further benefited

our students and those who have participated in the very successful St Mary’s College, Digital Schoolhouse programme. I think it is important that all young people but especially girls know that they can succeed in STEM and IT industries.”

Tina Lauro Pollock, *Brain and Nerd IT Young Professional of the Year 2019*

led the studio’s crowdfunding efforts and we became the first Irish studio to successfully crowdfund a game on Kickstarter with our first title, the space strategy game Predestination.”

After managing the studio for several years, Tina took the bold step of returning to University to study Computer Science part time in order



IT Young Professional of the Year 2019 Tina Lauro Pollock of Brain and Nerd

Tina Lauro Pollock has run independent game development studio Brain and Nerd since 2012, taking on technical management and production roles on the studio’s games. “I came from a management and games journalism background initially and have always been an avid gamer,” she told us. “When we founded Brain and Nerd in 2012, I

to become a more technical leader. “I was managing a team of artists and programmers to develop games, and have always had a way of critically thinking about game mechanics as part of my games journalism work,” she explained, “but I had no formal education in software development.” Going the extra mile has helped Tina to

make Brain and Nerd more effective as a studio, and she's recently transitioned from a Project Manager role to a full Producer position more deeply involved in every aspect of the studio's game development.

BCS NI recognised Tina with the 2019 IT Young Professional of the Year award for her efforts, and it's not the only award she's been highlighted for recently. She was recently nominated for the Unsung Hero award at this year's Game Dev Heroes awards and the Mentor of the Year award at the MCV Women in Games awards. In recognition of her work as a STEM Ambassador and providing work experience for students, Tina also won the Community Award at the most recent NI Game Awards.

"STEM education is extremely important to me," Tina told us, explaining that "At Brain and Nerd, we've run over 70 work experience and STEM events for young people over the years." Tina is seen as a role model for young people in the local game development scene, and is keen to get the message into schools that there are plenty of IT careers in the field. "The games industry is now globally bigger than movies and music combined and the roles available cover a wide range of IT skills from software engineering and systems design to agile methodology," she explained, "but some schools in Northern Ireland still don't see that it's a viable career for their students."

The game development industry in Northern Ireland is really starting to take off thanks to schemes such as NI Screen's Pixel Mill game development incubator, and the future looks positive for Tina and Brain and Nerd. "The Pixel Mill put us in an incubation space with several other talented studios in Northern Ireland, and has really helped us build a tightly knit game development community here." The game development sector in Northern Ireland is now starting to attract global

publishers and interest from investors. As Tina put it, "It feels like we're right on the cusp of something huge."

Dr Jaime Rainey, *Queen's University IT Professional of the Year 2019*

Dr Jaime Rainey has been working at Queen's University Belfast's Centre for Cancer Research and Cell Biology

example, why do some women with epithelial ovarian cancer not respond to platinum-based chemotherapy?"

Modern cancer research involves heavy data analysis, and Jaime has borrowed tools and methods from other areas of statistical analysis to make sense of the data in her research. "Different types of data require different analytical



IT Professional of the Year Dr Jaime Blayne of Queens University of Belfast with Claire McBride of Olenick

since 2015 and was the recipient of the 2019 BCS IT Professional of the Year award. Her work has both research and teaching aspects and spans work on multiple types of cancer, from colorectal and esophageal to ovarian, breast, pancreatic and prostate cancer.

"In terms of the research aspect, I have a team of PhDs and MSc students who use mathematics, stats and computing to answer clinical and biological questions," Jaime explained to us. "For

methods, what is suitable for one dataset may be inappropriate for another. Sometimes you face issues with data, and have to think of new approaches. Having a background in mathematics and computer science is useful as you can identify an hypothesis and design/implement the software to go with it. It can be quite a holistic approach."

In addition to her research work, Jaime is Course Director for the MSc

Bioinformatics and Computational Genomics at Queen's University Belfast. All students in the MSc degree are taught by lecturers involved in active research and are exposed to the real challenges facing the field, such as quality control of data to the ethical issues in bioinformatics.

"For me, ethical issues in analysing data are crucial. Not just ensuring that data is anonymised and patient confidentiality is protected, but beyond that, statisticians and bioinformaticians need to be held to the highest standard when analysing patient data. Patients consent to their data being analysed for research purposes, and it is up to us to ensure that we have performed our analyses to the best of our abilities."

Jaine was recognised by BCS as a positive role model for students in IT and is passionate about gender equality in the field. She regularly gives talks to schools and appearances at public events to show students how computing and statistics can be used to make a real difference to patient health outcomes. Part of this is showing students that there isn't just one educational route into her field.

"I have had a varied career (I am a Careers Teacher's nightmare). I loved maths at school, but was also very creative. I studied maths at undergraduate level, thinking that I wanted to do research, but not sure quite what," Jaine told us. In fact, she didn't even finish her degree initially as she had to take time out of university due to illness. It was only years later that she went back and took up the Computing and Information Systems MSc at Ulster University, and several years later returned to university for a PhD.

Speaking about BCS membership, Jaine explained that it had been a real starting point for her career. "My father (a retired senior lecturer at Ulster University) has been a long-term member and

suggested that I apply. I don't often say this, but my Dad was right! I had thought that I was too far away from my computing roots to be considered a 'proper' computer scientist, however I am still using all that I was taught at Ulster and continue to build on this foundation."

Winning the IT Professional of the Year award has helped her with a problem that many people in the tech

some doors. "I am hoping that it will help with funding applications, I have a few in that I am waiting for the results on. Fingers crossed! If doors don't open, I'll go in through the window!"

Dave Vincent, *Tourism NI IT Professional of the Year 2018*

Dave Vincent from has made a career out of digital transformation and enabling change at Tourism NI, and was



IT Professional of the Year Award (2018) presented to Dave Vincent by Jackie Crooks from Capita IT

sector face: Imposter Syndrome. "We all need 'pats on the head' regardless of our age or career stage. I received a TechWomen100 Award (UK) and the Irish Women in Tech Award (Data Scientist) this year as well. The software that I developed (GECA) was a finalist in the European DatSci AI Awards recently."

Recognition from industry helps in more ways than one, and Jaine hopes that awards such as these will help open

recognised for his efforts in 2018 with the IT Professional of the Year award. "My job in Tourism NI has both internal and external aspects," he explained, "transforming the organisation and making it fit for purpose while working with the wider industry to provide digital thought leadership."

Throughout 2018, Dave transformed Tourism NI with a full technology and hardware refresh programme and procurement of new software systems

to help the company be more efficient. He procured new CRM, finance and HR platforms, launched new corporate websites, and migrated much of the existing infrastructure to cloud-based services. At the same time, he led external projects across immersive technologies, IoT, and artificial intelligence.

Dave initially came to IT through a Computing Degree at Ulster University in Coleraine, and in his placement year he found his niche: "It took a placement year with NICS to light the fire and for me to understand the opportunity for a role sitting between technical teams and business users," he told us, adding that he's "spent the last 25 years developing" that role. He later went on to complete an MBA in eBusiness.

Industry recognition from awards like this have definitely helped Dave in his career, and it wasn't the only accolade he's received recently. "This award and a number of other pieces of recognition last year (Digital Leaders 100 and Digital Leader of the Year Nomination; and Nomination for Computing Awards Digital Ambassador of the Year) have helped to continue to build my own profile but also to continue to expose the opportunities that tourism offers for technology innovation." He told us that the BCS award "definitely reignited relationships with the wider sector and kicked off a number of new relationships and conversations."

While we typically think of IT as its own sector, Dave recognises that there are aspects of IT that fit into a much broader range of companies. "The IT, engineering and digital mindset and agile delivery focus has huge potential for deployment wider than just the traditional IT and development silos." He sees his current role in transforming business practices as more than just an IT one: "It's about enabling change, supporting the development of new business models and helping organisations that I work for become

more effective and efficient."

Kelly Moore, Kainos
IT Young Professional of the Year 2018

Kelly Moore started her career in tech back in 2016 as a placement student

and computer science before university was limited. "I had never programmed before joining uni, but I was always interested in how computer software worked," she explained, adding "Luckily, I realised in 1st year of uni that I loved it and haven't looked back since."



Young IT Professional of the Year Award (2018) presented to Kelly Moore of Kainos by Claire McBride from Olenick

at Kainos, and has worked with a range of cutting edge technologies and contracts for major clients such as the Department for Transport. "In 2018, I was focused on AI & Machine learning in Kainos – developing prototypes for customers and in house projects," she told us. "I spotted a knowledge gap not only in Kainos but in the NI industry and got involved in a lot of workshops and meetups where I shared the basics of Machine Learning."

Kelly took a classic STEM route into industry as a software engineer, studying ICT at A-Level and going on to complete a Software Engineering degree at Queen's University Belfast. Like many young women her age interested in the tech sector, her formal educational exposure to programming

Being recognised by the BCS as the 2018 Young Professional of the Year has definitely been beneficial to Kelly. "I met a lot of new people in the industry at the award ceremony which was great and since getting the award I have been promoted to Senior Software Engineer in Kainos," she said. The award also helps to hold Kelly up as an example for younger students who will follow in the years to come, and may encourage more people to enter the field.

"I really enjoy programming and would like to stay on the Engineer path," Kelly said. Speaking about future plans, she added "Possibly aiming to be a Technical Architect developing and designing technical solutions, but who knows what the future holds!"

Upcoming Events

syncni.com/events



Big Data Belfast 2019

WHEN 24th October
WHERE ICC Waterfront Belfast



Liberty IT Tech Carnival Belfast

WHEN 24th October
WHERE Adelaide Street, Belfast



How to have a real conversation

WHEN 25th October
WHERE Online webinar



AI NI Datathon

WHEN 26th October
WHERE QUB Belfast and UU Magee



Ladies that UX Belfast meets UX Bookclub

WHEN 6th November
WHERE Linenhall Street, Belfast



IoT Belfast 26 - Intelligent Transport

WHEN 13th November
WHERE High Street, Belfast



Engaging Audiences on Facebook and Instagram

WHEN 14th November
WHERE Victoria Street, Belfast



IMS Internal Auditor

WHEN 26th November
WHERE La Mon Hotel & Country Club, Comber



ISO 45001:2018 Migration

WHEN 3rd December
WHERE La Mon Hotel & Country Club, Comber

Promote your events to Northern Ireland's technology & business community

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- > Advocating for and serving the local NI technology community
- > Shining a spotlight on the success stories and achievements of local technology heroes
- > Encouraging and highlighting the opportunities available to all who wish to forge a career within the local technology sector
- > Supporting initiatives that promote the uptake of STEM education at every level
- > Showcasing jobs for those wishing to work within the technology sector
- > Promoting major events and casual meet-ups to build an exciting community of innovators for future generations

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Sync NI is Northern Ireland's leading technology focused multi channel media platform combining Print, Digital and Social Media to reach a captive audience of over 75,000 local IT professionals and tech enthusiasts