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CIONET UK COMMUNITY PROGRAMME 2024

DIGITAL BRITAIN

HOW CAN WE SUCCEED GLOBALLY IN THE COMING AI ERA?

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For the past two decades, we've embraced digital innovations like e-commerce, cloud computing, mobile apps, and social media. However, the stakes are higher as we transition into the age of artificial intelligence (AI). The USA and China have led the digital revolution—now, it's time for Britain to rise to the challenge and become a leading player in AI.

At our final Community Event for 2024, experts from academia, government and industry discussed and debated the critical success factors in the AI economy. During a keynote and panel session, our members discovered the state of play in Digital Britain and learnt how the UK can succeed in the coming AI era. Here are the five key take-away points:

1. We need a sustainable national IT and energy infrastructure (data centres and power stations) that can accommodate AI at scale.

2. We need an education system that enables lifelong learning to help ensure people of all ages and backgrounds are included in the AI revolution.

3. We need new value metrics that recognise and encourage investment in AI, both at a private and government level.

4. We need changes in leadership and organisational cultures that promote risk-taking and scale-up thinking.

5. We need to take a positive approach and promote best-practice techniques that will help the UK become an AI pioneer on the global stage.

Keynote with Professor Alan Brown

CIONET Research Director Roger Camrass and Alan Brown, Fellow of the Alan Turing Institute and Professor at Exeter University, examined how lessons learnt in the digital era apply to the UK's future in an age of AI.

1. What did we learn from the last 25 years of digital activity?

Alan spent almost 20 years in the US, working in large and small organisations. He started companies, sold businesses and helped build cloud-based infrastructures for the digital age. This period included a massive boom in digital technologies. The important legacy of the period is the investment in technology. The growth of the cloud would not have been possible without investments in telecoms and IT infrastructure.

These investments were accompanied by huge skills developments, where vibrant individuals built the capabilities to move forward. These individuals started to understand more about venture capital funding and investment cycles. The result was the generation of ideas for spinning up new companies through agile techniques. Alan referred to key individuals, such as Steve Blank and Eric Ries, and the rise of Innovation Accounting. This approach analyses the measurement of innovation in a fast-moving environment. In totality, this nascent digital era laid the foundations for the cloud era, the IoT era, and the new AI era.

2. Did we go the full course in digital transformation or fall short?

Alan used the analogy of a glass of water. He said the dot com boom and the period after allowed us to put a digital wrapper around any analogue device, including Alan's glass of water.

It became possible to use the technology in digital wrappers to do more with analogue devices. You can use GPS to locate the glass or a sensor-connected app to monitor the glass and its contents. You can analyse who's used the glass, where it's been, and you can constantly track it. You can then use this data to track how you use the glass to boost your performance, such as staying hydrated, refreshed and healthy. When the glass is broken, you can receive an alert to repair it, improve the design and boost sales performance.

This focus on data analysis represents a shift from digitising to digital transformation. The concept of the glass is digitally transformed, with business models flipped to focus on new forms of value generation. Rather than just being a physical product, a glass is a vessel for delivering hydration. This digital transformation makes the product a more valuable business proposition for which consumers will pay more. The business model is flipped, so manufacturers want to sell high-quality products with high-value services and profits. This business transformation has occurred because of the digital wrapper.

3. What can we expect from the AI revolution?

Alan used the example of someone pushing hard on a car brake. In traditional combustion engine-powered vehicles, a pedal is pressed, and compressed liquid in a pipe activates the brakes. Today, the driver presses the brake, software runs, and a bunch of algorithms assess multiple variables, such as the state of the disc brakes, the weather and the driver's physical condition. The software uses this data to decide when to brake and how quickly.

Alan used this story to suggest that a transition has taken place that has converted computational challenges to predictive challenges. Every millisecond or more, our digitised systems and services ask, 'What should we do now?' Predictions run constantly in the background based on environmental factors and algorithms that are programmed and guided by moral and ethical choices.

4. How can we use digital transformation to manage public service backlogs and skills crises?

Alan said we won't overcome these challenges by digitising today's structures. That's an impossible path. Therefore, the UK has to transform to a new way of working. He gave the example of healthcare provision, saying the NHS must switch from dealing with sickness to delivering wellness. We want to help people be healthy and productive for longer. That's only possible when we put a digital wrapper around every analogue device and use digitisation to revolutionise products, service delivery and value creation.

He said that digitisation defines Digital Britain. A slow transformation in education, transportation and healthcare services will not allow us to reach the right destination. We must have different leadership, skills and organisations delivering products and services and a different awareness within the public about what that shift means. The big question is, 'How do we get there?' And the answer is, 'We don't know,' and getting there will be hard.

5. Should we manage the current state while building the new state?

Alan has worked with the National Audit Office (NAO) to assess value for money in large government programs. The NAO has just finished studying AI in government. The research discovered the big challenge isn't running experimental pilot programs but transitioning those pilots to large-scale use, which he said is a consistent issue with technology initiatives. Government programmes often generate code and new ideas in the name of experimentation. The government wants to use AI to boost efficiency, while the civil service, unions and citizens are sceptical.

Alan said these conflicting interests are part of a substantial debate about using AI. How do we deal with the paradoxes that we face right now in driving digital-driven societies forward at pace? He presented three considerations: how should we deal with the risk-based issues of introducing AI, what is the correct speed of implementation, and what should we do about replacing humans with autonomous decision-making processes?

6. What does the AI revolution mean for CIOs?

Alan said CIOs should focus on five areas. The first area is productivity. Our productivity measures, such as sales targets and rankings, are focused on traditional metrics. AI will lead to automation, and we need to change our productivity targets. The second area is value. Our value systems are shifting in an age of AI, and we need to think about what is valuable. The third area is ethics. Five years ago, businesses focused on collecting data. Businesses today are so concerned about ethical issues that they don't collect data unless they know how to use it efficiently and effectively because it's a potential liability.

The fourth area is leadership. The pace of change is so fast that experienced leaders are unsure whether their expertise is an advantage or an anchor holding them back. That conundrum means the traditional definition of leadership is contested. The final area is human issues. The first thing that breaks in digital transformation is not technology but people. People struggle to deal with concerns like work/life balance and workplace monitoring. We must deal with the human elements of change to exploit AI successfully.

Panel discussion

Craig Walker, Executive Advisor and former Global CIO of Shell Downstream, led a panel debate with four high-profile experts:

- **Right Honourable Jonathan Berry**, Viscount Camrose, Shadow Minister for AI
- **Rachid Hourizi**, Director of the Institute of Coding and Professor at Bath University
- **Louise Smiths**, Chair of the Board at Innovate Finance
- **Daniël Rood**, Head of Google Cloud AI GTM, UK & Ireland

7. How do you get boards involved in discussions about AI?

Daniël said CIOs should focus on a few key areas. Don't build for the past while accommodating the future. Instead, build for the future while accommodating the past. That focus has consequences for how you run your organisation, and that impact starts with people. It's important to recognise that people are excited about AI because it's the first time we have a technology that can create new things we don't have yet. He said it's also important to temper the excitement. Get your data organised and focus on the right use cases. Ensure your business has access to generative AI technologies safely and responsibly.

8. How has funding changed for entrepreneurs in the last five years?

Louise said about £12bn of investment was directed to FinTechs in 2022. That figure dropped to £5m in 2023 due to organisations targeting new areas, including AI. She understands that people are excited about AI. However, executives must recognise that AI exposes everything in your business model and creates new risks. We must create an accessible narrative that allows AI to get into many people's hands so they can solve use cases. It's difficult for people to develop a narrative that helps boards, VCs, and capital providers target use cases correctly. We must improve the culture and narrative to engage more people in the conversation. The good news is the UK only trails the US for investments in AI.

9. Which skills will the UK need, and what's the role of universities?

Rashid said digital skills are immature in the AI era. We don't know which skills will be key, and some underpinning questions matter. Do we focus on development, adoption or literacy? If we focus on adoption, what kind of adoption? Do we mean top-down and planned projects that require change and project management skills alongside technical AI skills? Or do we mean bottom-up adoption that requires ethics and risk awareness among the population? And who are we trying to train? Executives suggest mid-career hiring is more important than for junior employees. Educators will have to train people to do things differently with technologies that are still changing. Universities must be involved in this kind of upskilling. However, the concept of lifelong learning hides a series of pain points that universities must address, possibly via a different relationship with the private sector.

10. Where will AI have the biggest impact on public sector organisations?

Viscount Camrose said the government's focus on improving public sector efficiency is important. However, he believes that's a narrow goal. This technology wave is different to others. If you look at the e-commerce boom of the early 2000s, the focus was on private industry finding amazing ways to do new things. Today, the three defining scarcities in the age of AI are skills, data and compute. He said interesting data, such as healthcare, education or geospatial information, is publicly held. There needs to be a big shift in the sophistication and capability of the public and the private sectors working together to exploit this data. We're not good at that type of collaboration in the UK and must improve. He's optimistic we can, but the challenge is significant.

11. Will the impact of AI on private sector organisations be incremental or sudden?

Daniël said Google has 67,000 software developers. As much as 25% of new code is developed by AI, reports CEO Sundar Pichai. While AI augments the work of software developers, he said it's also fair to conclude the technology will replace mundane tasks. He said the underlying search function on gov.uk has changed recently. This update has helped to deflect 14% of traffic previously going to supporting functions, such as contact centres or email inboxes. Similar efficiencies could be produced in other areas. He gave the example of AI models used to digitise nurses' hospital notes. We must focus on the value emerging technologies create and how they can provide new superpowers. He polled the audience and found two-thirds of attendees use generative AI tools in their daily activities and could not imagine doing their work without these models. Google research suggests that 28% of employers have enabled AI models. However, 78% of employees said they already use these tools.

12. Are customers struggling to work out the value of emerging technologies?

Daniël said people started experimenting with generative AI two years ago without metrics. When he spoke with board-level executives, they wanted Google to help them create an AI strategy. However, boards have concluded that the business strategy is the AI strategy. There's no such thing as a separate AI strategy. The key business metrics, such as effectiveness, customer experience and profit, are still crucial measurements in an age of AI.

13. Do UK entrepreneurs need to make themselves more attractive to entice funds?

Louise said the UK isn't good at supporting talent. We do everything we can to point out how talented people do certain things wrong. She said Revolut has 50 million customers, meaning the bank must be doing something right. Louse spends a lot of time working with entrepreneurs and the Scottish Government. She said the UK has incredible talent, but we often make things hard for entrepreneurs via funding and policies. Her organisation has created the Unicorn Council for UK Fintech. This council includes executives from firms like ClearBank and Zilch and is chaired by Francesca Carlesi of Revolut and Innovate Finance's CEO, Janine Hirt. This council and other similar bodies are focused on lobbying, convening and networking to support the next series of entrepreneurs. Success is about attacking support for entrepreneurship at several levels. Innovate Finance was set up by the Conservative government and is supported by the current Labour administration. She said the UK must continue to push in these areas, and her organisation needs help from the private and public sectors to support entrepreneurs.

14. How can the education sector help to develop people with an entrepreneurial mindset?

Rashid said the private sector can innovate faster and bring good ideas to market. However, the public sector is bigger in scale and must be involved in supporting entrepreneurs. In terms of supply, he said it wouldn't be possible to re-educate and re-skill people without the public sector. When it comes to demand, there are large groups of people in the country for whom the public sector is the natural solution to upskilling and education. Some areas of inclusion do not fall neatly on the plate of one commercial organisation or another, including boosting the number of women in IT and improving social mobility. The public sector will play a key role in solving these challenges. However, universities can't survive in their current state. Universities don't do a good job with short, agile education. They don't move in lockstep with large-scale technical or social changes.

15. Can the UK move faster now it's outside the EU?

Viscount Camrose said he was against Brexit but has seen potential benefits during the last few years. He believes the EU has created an unfortunate approach to technology regulation. There's a link between data and human rights legislation that limits the ability to share data. He said the EU's AI Act is 900 pages of text that takes a rigorous approach to regulating a far-from-static technology. The UK has an opportunity to carve out a niche position aligned with the American orbit, where we can express our inventive and pro-technology culture. We are where we are as a country and must take advantage of our new place in the world.

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17. Why has Google chosen the UK as a favoured partner for developing AI?

Daniël reminded the audience that DeepMind, which has been at the forefront of AI research, has its headquarters in London. The explosion of generative AI models was based on a paper written by DeepMind in 2017 about the transformer architecture. The open-sourcing of those ideas led to an innovation explosion and an ecosystem of startups. However, it's important to acknowledge that innovation requires energy. The UK must consider developing a sustainable solution to the energy appetite that will continue to grow. We must also consider how we retain and evolve entrepreneurial talent. Finally, the UK must think about its focus. Daniël also said it used to take five years to map one protein used in medical research. DeepMind developed a model that has 3D-mapped 200 million proteins in a year. That knowledge has been open-sourced, with two million active database users. The UK needs to support entrepreneurialism and export the outcomes as a product.

18. Does the UK present special challenges when developing high-growth companies?

Louise said the UK has the talent to progress quickly. She pointed to the University of Edinburgh's pioneering work on data and AI, the entrepreneurs generating new ideas across the UK, and increasing alignment between the government and organisations, including her own. However, a key challenge is regulation. The UK led financial services regulation but has fallen behind as other countries have copied our model. The Unicorn Council is focused on sharing lessons so the next set of startups comes through faster. Leaders like London Stock Exchange CEO Julia Hoggett are asking how capital markets can support innovation. Let's convene and get behind our entrepreneurs because we have a great opportunity.

19. Is the concept of lifelong learning being taken seriously enough?

Rashid said our current view of how education should work is based on the idea that we're born, learn, work, and then die. If we don't believe that that's an accurate model, we should create entry points into new careers in life. Learning should be tailored to the lives we lead. The focus on the current government skills agenda on lower skill levels and low-age groups isn't appropriate. So, no, we're not doing enough about lifelong learning and being needs-driven rather than structure-driven. It will be painful to shift our current education system from what educators know how to do to what they need to do.

20. What's the most productive thing the government could do to support this new AI era?

Viscount Camrose said there's a question of mindset. Our mindset has to shift away from seeing AI as a great new technology that allows us to do things for less money or more efficiently. Instead, we need to see this new technology as a way of doing 10 times more than yesterday. If we can move into that mode, we can start thinking of the productivity boost this shift would produce for the UK. Governments can create a mindset shift away from cost savings and efficiency and towards doing more with the same resources.

Conclusion: Let's focus on what we can do

Roger Camrass concluded the evening by thanking Cognizant and other CIONET sponsors, including Orange Business Services, Thoughtworks, Intellect, and ITDS. He said one of the key lessons emerging from the evening is that the UK lacks the confidence to succeed in the AI era. We're good at talking ourselves down. Let's take a different approach and focus on what we can do. The UK is home to great entrepreneurs and pioneering organisations. Let's convene and work together to exploit the opportunities AI presents.

Authors

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A pioneer of today's Internet as an ARPA research fellow at MIT in the seventies, Roger has spent over fifty years helping corporations harness the power of new technologies such as AI, cloud, mobile communications, e-commerce, voice recognition and satellite. He was a partner at EY responsible for e-commerce during the dot.com boom. He is a Cambridge University and MIT graduate and a visiting professor at the Hebrew University in Jerusalem.

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