

The answer is AI, now what's the question?

Highlights



Background

‘Where AI is today and where it’s headed is a function of two things coming together: computer capacity and the ability of these algorithms to recognise patterns. But these neural networks need a lot of reference data so the role of data is going to be very important.’

Nirmal Kotecha, Founder and Director, Inframonik Advisory Ltd

The use of AI pervades all aspects of work and life, from the use of Microsoft Copilot to create notes from meetings to the numerous safety features in our cars. Yet, in reality, AI is not actually that new, having been discussed and experimented with by mathematicians, physicists and philosophers since the 1950s.

But with smart phones in our pocket now having 100,000 times the computing power of the Apollo 11 Moon Mission, the technology, complex neural networks, mathematics and pattern recognition that sit behind AI have turned Arthur C. Clarke’s ‘HAL 9000’ aspiration in *2001: A Space Odyssey* into an everyday reality.

As such, it is easy to imagine the things that AI – in particular generative AI which uses models trained on vast amounts of data to create new content – could do for major projects in terms of improving efficiency and driving better outcomes. But as humans, we typically fear change and complexity; AI is both a huge change and also hugely complex, and so without greater understanding is capable of driving caution and stifling the innovation needed to transform major projects delivery.

The key question, therefore, is what should the major projects sector – and the teams that sit within it – be doing now to catch up or even get ahead in terms of exploiting this powerful and pervasive technology?

This Major Projects Association Annual Conference took a deep dive into the current state of play, looking at the capabilities that gives AI its superpowers and then attempting to match them to the most stubborn issues or most irresistible opportunities faced by major projects and major project professionals.

The conference discussed a number of key issues, including:

1. How is the UK Government already embedding AI tools in its strategy to rethink and boost the services delivered to the public?
2. Finding and understanding the AI sweet spot for major projects.
3. The unintended consequences of an AI-driven future.
4. The impact on the major projects profession.
5. Understanding and using the tools that are available now.

‘There are three unstoppable trains that are heading towards business: the impact of geopolitics, the impact of climate change and the impact of AI.’

Jenn Barrett, Head of Equity, Diversity & Inclusion (ED&I) and ESG, Grant Thornton

1. Using AI to improve public services

The UK Government’s interest in using data to drive decision-making really took off during the Covid-19 pandemic. This saw data and modelling used to make decisions around the roll-out of vaccines to avoid hospitals overflowing. While this spawned the creation of the the No 10 Data Science unit (10DS) the idea of using data more generally in the centre of Government was still quite new.

With tools such as ChatGPT now mainstream, the Government’s interest in AI has surged, prompting a wave of excitement about how this ability to extract value and insight from data could help to improve efficiency, deliver better services to the public – from healthcare to education to the environment – while boosting equality and ensuring greater equity and fairness.

This excitement was followed almost immediately by major concerns about the risks and what might go wrong from the widespread use of this new technology – concern, often legitimate, that AI would make life worse not better.

The key to embracing the opportunity successfully, and the approach being taken by the Government, is to manage those risks. That means employing the right number of technically skilled professionals within the Government to leverage AI responsibly and drive the development of tools to improve public services.

The Government's **Incubator for Artificial Intelligence** now sits at the heart of government with the mission to harness the opportunity of AI to improve lives, drive growth and deliver better public services. In the last six months the portfolio of 39 key AI-supported projects is now being developed with 19 partners across public sector agencies and departments, for example:

- **Caddy:** A tool to help Citizens' Advice Bureaux staff provide better, more detailed responses to customer queries much faster and with greater reliability.
- **MedGuard:** A co-pilot to transform the Structured Medication Review process to ensure that patients with long-term multiple drug needs are prescribed only what they actually need – reducing the £17.2bn annual cost of prescriptions and improving health.
- **Lex:** Providing a powerful way to search and analysis UK legislation to assist with the drafting and research for new legislation.

The aim of the incubator is to kickstart the development and application of these tools and use transparent open-source code to lever in private sector investment.

The hope is to build the public's trust in these data solutions while ensuring that AI enhances government services without replacing human decision makers.

'We've got this amazing new technology. If we're only worrying about the risks, we're not taking the opportunity. We need some of the best people in government who can make sure that we are doing AI fairly and transparently – the idea is we're going to try and take the opportunity of AI to deliver better public services and take into account the risks.'

Dr Laura Gilbert CBE, Chief Analyst, Director of Data Science, '10DS', 10 Downing Street

2. Finding the AI sweet spot for major projects

'AI is proving impactful in so many different aspects of major projects. But there is no AI without consistent and well-structured data and digital processes. So to get the best from AI, we must get much better at embedding data and digital approaches right at the start and heart of all major projects.'

Dr Will Cavendish, Global Digital Services Leader, Arup

AI's transformative potential is already proving highly impactful across various aspects of the major project delivery process, from ecological conservation to international collaborations. With accessible computing power, even small-scale projects can now benefit from AI, driving innovation and improved outcomes across industries.

But it is its ability to augment human expertise that is really proving beneficial across areas such as transport planning, using generative design for complex structures and optimising multiple factors like sustainability and carbon emissions.

In particular, the ability to analyse vast amounts of data is proving crucial to understanding human behaviour and their day-to-day choices, improving the trade-offs made between different priorities across the design process, not least those affecting carbon emissions, air quality and biodiversity.

The ability, for example, to use the output from cameras, audio equipment and other monitoring devices now makes it possible to track and protect endangered species such as the hazel dormouse from the impact of human development.

AI is also helping to streamline construction processes by organising project data, identifying defects via computer vision, and creating digital twins for better operational management. Tools like 'project GPT' enable efficient document management, saving time in querying and decision-making.

Similarly, analytics and machine learning are being used to identify defects in existing infrastructure and help to pre-emptively address future failure or impact from weather or high demand. The tools are also enabling project managers to predict and identify potential budget and programme overruns, and so take steps early to avert these.

However, the effective use of AI relies on establishing and maintaining a large supply of accurate and up-to-date data – a process which can create a so-called ‘data monster’ for organisations as they struggle to ensure that data is high quality, not duplicated, correctly organised and relevant. Putting systems in place to capture, structure and maintain vital data is crucial to project success and requires digital leadership at senior levels to create the appropriate data environment and strategy for data management.

‘We are just beginning the journey to understand how large-scale data processing and big data, overseen by AI, can really bring together the experience of major projects, and change our approach to future projects. The technology is now within reach of individuals and teams, due to its affordability and the availability of open-source options, making it a cost-effective approach for enhancing project delivery. The opportunities to improve projects are enormous, and ten years from now we may be wondering how we ever managed with manual planning and delivery of large projects.’

Milla Mazilu BEM, Head of Advanced Analytics, Network Rail

3. Unintended consequences

‘There are many people, including myself, who now rely on AI. But you still need human judgement, a human in the loop to create the right output that is relevant, contextually aware, and ethically sound.’

Nikhil Asthana, Head of Data, RegTech and Digital, Grant Thornton UK LLP

Economics and workforce shifts: The automation of tasks is affecting not only low-skill jobs but also white-collar roles. Similarly, tasks once assigned to interns, such as industry trend analysis, can now be automated. However, it is also clear that because AI is reshaping the workforce, individuals and businesses are adapting to new roles, and innovating to new ways of operating and new ways to generate revenue.

Bias and inclusion: AI-based analysis and decision-making rely on the quality of the data that they are trained on – data which reflects past norms around gender and race roles and perception can therefore lead AI to amplify and reinforce those stereotypes. There is clear need for vigilance and efforts to neutralise discriminatory tendencies in AI models.

Security risks: AI is now integral to scheduling, financial services and infrastructure projects, bringing significant innovation. However, its widespread integration also raises vulnerabilities. A single flaw in an AI system can lead to potential cyberattacks, making it crucial to secure these systems against threats.

Ethics: With over 200 ethical frameworks developed worldwide, despite centuries of philosophical debate, there is no consensus on ethics. Yet AI providers claim to have clear guidelines. As a result, ethics is often being used simply as a checkbox to justify AI systems without real understanding, something that is akin to ‘greenwashing’ around sustainability.

Morality: The use of AI tools delivers huge opportunities for greater efficiency and outcomes for the majority of society but often does so at the expense of minorities. Is the moral solution to use or not to use AI? The so-called **trolley conundrum** highlights the on-going moral questions that persist around the use of AI.

‘I believe AI offers a significant opportunity, and we may have a moral obligation – a moral imperative – to utilise these tools where they are available.’

Mike Chatterton, Founder, AI Accelerator

Overcoming unintended consequences

The issues raised are complex and interdisciplinary so require collaboration across sectors to solve. A focus simply on the technical AI solutions should be avoided and instead an ‘accountability by design’ approach taken to ensure responsible AI deployment from the outset.

The bookending technique helps maintain the human influence in AI-based decision-making, and this was highlighted as crucial to managing the risk of unintended consequences: humans commission the task and set the rules; machines and AI tools carry out the heavy lifting to complete the task; humans check that the task is correct and to specification.

'It is very important to start by asking, "What kind of problem am I going to solve?" and then, "What are the different approaches to solving this problem?" while also considering the costs and benefits of each approach, including unintended consequences. In that case, when thinking about using AI, it's not a binary decision. It's not just about whether to use AI or not, but really about how you are going to organise its implementation and use.'

Anna Ida Hudig, PhD Researcher, University of Cambridge

4. Understanding the impact of AI

On the profession: The transformative impact of AI on project management will significantly enhance how projects are planned, managed and delivered, and will present an opportunity for the profession to assert a leadership role within organisations, potentially elevating project managers to the C-suite. A five-point plan is suggested to harness this potential:

- Develop comprehensive data strategies across the project life cycle, emphasising governance, quality, and security.
- Enhance data literacy to make informed, data-driven decisions.
- Understand the capabilities and limitations of generative AI and machine learning.
- Encourage controlled experimentation with AI technologies to discover new efficiencies.
- Lead AI adoption within organisations, positioning project managers as key agents of change.

On Government: The impact of AI emphasises the importance of clearly defining the scope of work to include the need for a new focus on managing project data. That means establishing standards for trustworthy, FAIR (Findable, Accessible, Interoperable, and Reusable) data and improving data literacy within Government agencies.

A key objective is to equip decision makers with data skills to ensure that they understand biases and can make informed choices in procurement and project management. Recognising that AI will not replace project managers but will require them to possess new skills, the Government plans to refresh its competency frameworks and training programmes. Collaboration and increased data sharing across Government departments is vital to address shared challenges and enhance experimentation in data usage.

'We are changing our thinking across government around how we're using data to help make better decisions and pull data together so that we can use it in project delivery in a more consistent way. We're not there yet, but we are certainly getting there.'

Karina Singh, Director of Function, Insight and Professions, Infrastructure and Projects Authority

On organisations: AI's potential lies not just in the technology but in reshaping workforce roles, enhancing productivity, and driving industry transformation with a people-first approach. A strategy centred around four key pillars – continuous reinvention, workforce efficiency, automation in IT operations and becoming a showcase for generative AI – is key to helping organisations embrace change as a core part of its identity, driving transformation across all aspects of its business. Investment is needed to develop expertise and help demonstrate to clients how AI can be integrated effectively to projects while ensuring ethical use and practical outcomes.

'AI is not going to fix everything, but absolutely it can help in a lot of the early work and the assessments, and help us to fail fast and then scale up if it works. But I think the important point is that that data is always going to be the thing that helps us drive better decisions and productivity in a complicated political environment.'

Huda As'ad, Managing Director – Capital Projects and Infrastructure UKI, Accenture

5. Understanding current tools

This rapid advance of AI tools means that professionals and industries do not have the luxury of time to adapt; they must engage with these technologies now to stay relevant.

Available AI tools can be likened to Russian dolls, starting with broad AI, narrowing down to machine learning, deep learning, large language models and ultimately generative AI, which includes powerful technologies like ChatGPT that generate content, such as text, image, audio or video, and which are offered largely free to use and so available for all to learn and experiment with. But by utilising tools such as ChatGPT as thought partners or co-pilots, professionals can shift from reactive to proactive approaches, using predictive analytics to anticipate and mitigate issues before they arise.

Communication with these generative AI tools is via natural language inputs or prompts. The key to finding the best outcomes from the tools is to construct the most effective prompt or starting point for the tool to create a helpful and relevant response. Writing good prompts is important because it helps get the best and most accurate answers from the model.

Tips include the need to:

- Be specific and detailed.
- Use clear, concise language.
- Ask follow-up questions to refine answers and clarify.
- Give context.

ChatGPT is not the only tool available – new ones are springing up continuously to serve specific interests and needs such as creating music, artwork, video or PowerPoint presentations.

Others are already contained in existing tools provided by software suppliers such as Google, Adobe and Microsoft and industry-specific firms such as Autodesk.

It is critical to maintain human control and moderation over the output from AI tools as the quality of solutions is highly dependent on the quality and specificity of the prompt. The bookending technique of always starting and finishing tasks with human intervention is essential.

‘With the internet, it took a long time from first hearing about it to get internet at home. ChatGPT took ten months to get to mass adoption. So we don’t have that luxury of waiting to see what happens. We’ve got to actually keep up with it this time.’

James Garner, Senior Director, Global Head of Data, Insights & Analytics, Gleeds

Points for further discussion

- What do major projects professionals need to do to upskill themselves to cope with the AI revolution?
- How can project professionals improve their ability to establish the right systems needed to tame the ‘data monster’?
- What steps should project managers and their businesses take to understand the ethical consequences of decisions around the use of AI?
- How is the use of AI set to reshape the major projects supply chain?
- What can be done to build public trust in the use of AI tools?
- How should businesses create a robust AI and data strategy?

Chair

Nirmal Kotecha, Founder and Director, InframoniK Advisory Ltd

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