

NEXT GEN PMO

REIMAGINING TOMORROW

HOW TO USE DATA & AI
TO SHAPE THE FUTURE OF
THE PMO PROFESSION

Martin Paver

BEng, MBA, FAPM, ChPP

Contents Page

1.0 Executive summary

2.0 Introduction to the next generation PMO

3.0 Types of PMO - a refresher

4.0 Augmenting the role of the PMO

5.0 Impact on jobs

6.0 The Centre for Project Insights

7.0 Beyond tools

8.0 Much more than 'Lessons (not) Learned'

9.0 The human implications

10.0 Leveraging high quality project data to unlock the Next Generation PMO

11.0 Managing Emergence in PMOs: Beyond Agile Methodologies

12.0 Our predictions for 2024 and beyond

“Approaching Martin’s book I’m reminded of something 1980’s management guru Tom Peters said about William Gibson (author of the seminal cyberpunk novel Neuromancer and credited with being the first person to use the term ‘cyberspace’). Peters said – “I know what Gibson is talking about is important, but I’ll be honest with you, I don’t understand it.” I find myself in a similar situation, I know what Martin is writing about is hugely significant, but it’s a little beyond my comfort zone. My choice – the same as Tom Peters, give up or start reading. I’m doing the latter and encourage you to do the same”

Steve Jenner, author ‘Managing Benefits’ and the forthcoming ‘Managing Portfolios’

Gazing through the fog of project delivery, the face of endless possibilities emerges. Embrace them.



Background: Why did I write this book?

Since 2017 I have been convinced of the transformative power of advanced data analytics and artificial intelligence (AI) in project delivery. The advent of generative AI has accelerated progress, shifting these technologies from niche to mainstream and help us to supercharge and reimagine the role of PMOs. This book aims to empower readers to embrace the power of data, driving positive change in their fields, for the benefit of the profession, society and our planet. It's an exploration of the future of project delivery, where AI and data analytics are key drivers of innovation, efficiency, and sustainable practices.

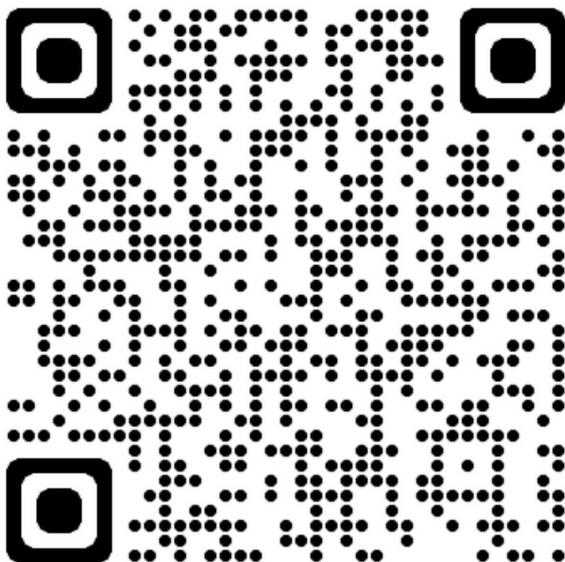
Secondly, this journey intertwines with a story of determination and hope – that of my wife, Vanessa, who is running the London Marathon (her first ever) in aid of Leukaemia Care, for a friend in our village who battled with the disease. Plus, my mum is undergoing treatment for cancer too. By writing this short book I hope to raise funds to make a difference in the lives of those who confront the realities of leukaemia every day.

I hope you enjoy it and come away inspired about the huge opportunities that lie ahead of us. Even better when we unite around shared goals so we can transform the profession together.

If you like the book, please contribute what you can. I'd also like to give particular thanks to those people and organisations who have already sponsored, referenced at the end of this book. Thank you.

Leukaemia Care
YOUR Blood Cancer Charity

If you enjoyed the book, **please donate** £5 to Leukemia Care



1. Executive Summary

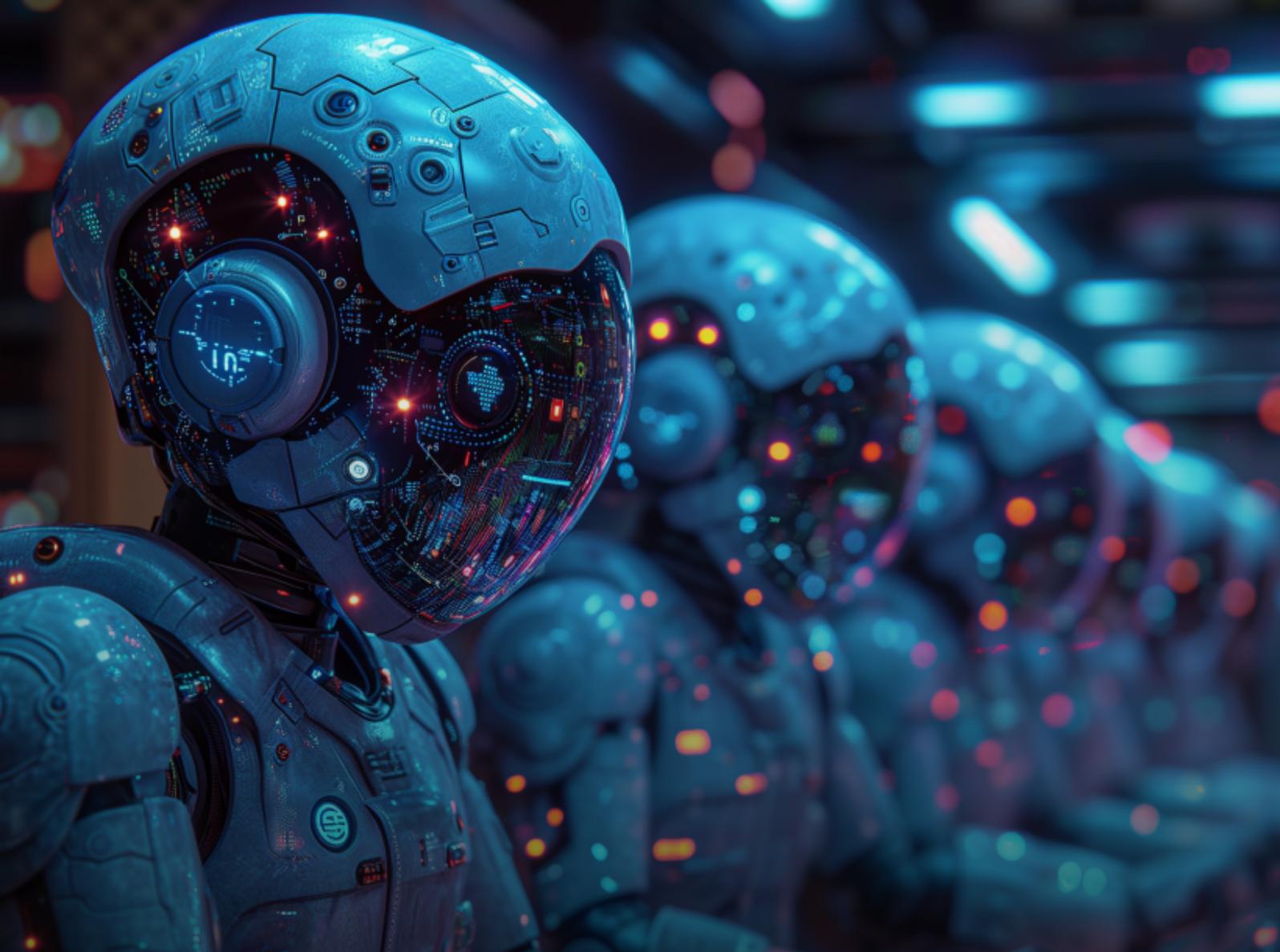
The advent of advanced data analytics and Artificial Intelligence (AI) is set to redefine the operational landscape of the Portfolio, Programme or Project Management Office (PMO). It underscores the immense productivity enhancements these technologies bring, revolutionising PMOs and enabling us to fundamentally reimagine how they work. This book explores the transformative potential of a next-generation PMO, supercharging traditional functions like project controls, risk, reporting, assurance, the Centre of Excellence and knowledge management, whilst evolving its role into the “Centre for Project Insights”. A new and critical capability that offers the potential to reimagine how we work and focus on moving the dial rather than process and ‘feeding the machine’. An opportunity for professionals in the field to embrace these changes and harness the power of AI and data analytics to lead more successful, forward-thinking PMOs.

The integration of data analytics enhances the PMO's reporting capabilities by providing more comprehensive, accurate, and real-time data reports, supported by end-to-end data pipelines. This enables stakeholders to gain a deeper and more nuanced understanding of the portfolio of projects and the systems that underpin them. Additionally, assurance processes are significantly strengthened through AI-driven assessment tools, providing a 24/7 oversight on a wide range of parameters, guiding the PMO on where supportive interventions need to be made.

A pivotal evolution within the PMO is the emergence of the Centre for Project Insights. This forward-looking entity focuses on pre-empting the need for interventions, developing scenarios, and continually suggesting optimisations for portfolios, programmes, or projects. By harnessing AI and advanced data analytics, the Centre for Project Insights can leverage data and lead indicators to predict trends, identify opportunities for improvement, and guide decision-making processes, ensuring that the organisation remains agile and responsive in a dynamic project environment.

N





Knowledge management, a critical function of PMOs, is revolutionised by AI's ability to organise, analyse, and retrieve vast amounts of data. This not only facilitates a more efficient knowledge transfer across projects but also aids in the development of a learning organisation where insights from past projects inform future strategies, plans and implementation.

The report further delves into the challenges associated with the adoption of these technologies, such as data access, data privacy concerns, integration complexities, and the need for specialised skills. It provides a balanced analysis, offering strategies for effective implementation and addressing potential barriers to successful integration.

Looking to the future, the report highlights emerging trends and developments in AI and data analytics, underlining their continued impact on the evolution of PMOs. The integration of these technologies is not merely an enhancement but a strategic necessity for organisations aiming to maintain a competitive edge in project management.

In conclusion, the next-generation PMO, augmented with advanced data analytics and AI, presents an exciting paradigm shift. The introduction of the Centre for Project Insights epitomises this change, driving a more proactive, informed, and efficient approach to project management. This report offers a comprehensive guide for organisations to navigate and capitalise on these technological advancements, paving the way for more successful and adaptive project management practices.

2. Introduction to Next-Generation PMO

The concept of a PMO has continually evolved to meet the changing demands of the business landscape. Today, we stand on the cusp of a significant transformation, heralded by the integration of advanced data analytics and AI. This section introduces the next-generation PMO, a concept that transcends traditional project management frameworks to embrace the potential of modern technology.

2.1 Evolution of the PMO In any effective organisation, PMOs should ideally play a strategic and advisory role. However, they often find themselves pigeonholed into administrative functions due to a lack of proper sponsorship and recognition of their true value. This issue is compounded by the labour intensive process of data handling, which not only consumes valuable resources but also slows down the creation of actionable insights.

- Research by the APM concluded 75% of all PMOs closed within 3 years, improving to 50% after 2010.
- Since 2008, the PMO implementation failure rate is over 50% (Gartner Project Manager, 2014).
- “30% to 50% per year failure rate is due to distinctive mismatch between organization expectations of PMO (such as reliable results, value based prioritization and delivery of change through projects)” (Gartner Project Manager, 2014).
- 68% of stakeholders perceive their PMOs to be bureaucratic (Gartner PPM Summit, 2013)

However, the increasing complexity of projects and the dynamic nature of the business environment demand a more agile and responsive approach. By taking a data driven approach PMOs can automate a lot of the handle turning, creating value faster and helping the PMO be who they need, and aspire, to be.

2.2 Defining the Next-Generation PMO When writing this book a member of the community highlighted that ‘PMOs have always been data driven’. He referenced the 2013 P3O guide where PMOs have two reasons for existing; (1) to improve the overall successful delivery of projects etc, and (2) generate information for improved decision making. While the theory sounds promising, how closely does it reflect our practical collective experience?

Firstly, consider how common is it for PMOs to establish Key Performance Indicators specifically focused on the quality of project data? Also, understanding the alignment between decision-making and data is crucial but are PMOs actively measuring it?

How often do PMOs contract their supply chains with the specific requirement of providing data, and to what extent do they engage in validating the quality of this data? How many actually have systems in place to extract insights from it and leverage that experience? How accurate are their forecasts and how does that influence interventions?

This leads us to a broader and perhaps more critical line of inquiry about the overall impact of PMOs. What tangible effects have PMOs had on the success of projects, programmes, or portfolios? Are there clear indicators that their involvement has led to better outcomes? Can we evidence it? Opening a discussion on these points can provide valuable insights into our collective direction of travel.

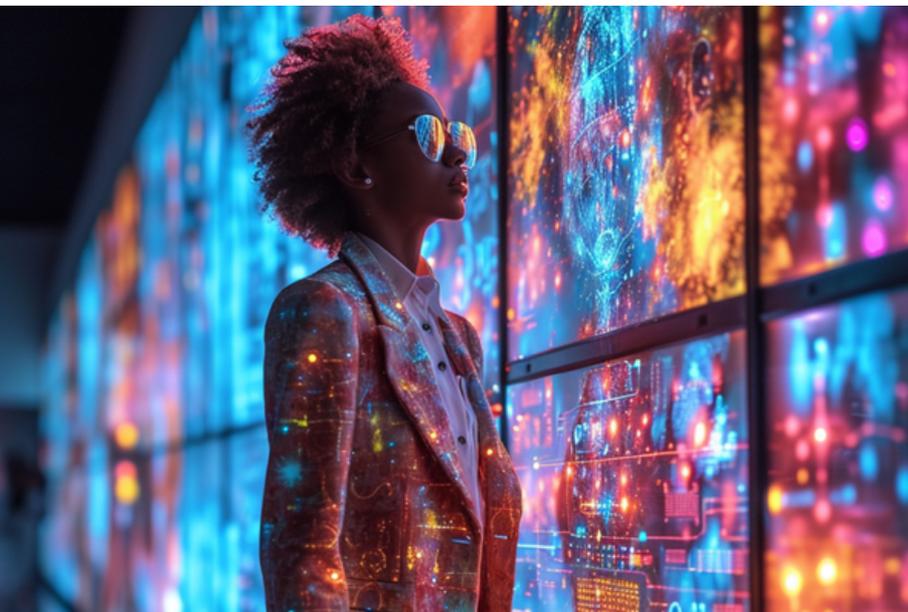
2.3 Defining the Next Generation PMO The Next Generation PMO represents a paradigm shift, integrating advanced technological tools like AI and data analytics to redefine its core functions. This new model is characterised by its ability to not only manage and oversee projects but to also provide strategic insights, drive innovation, and foster a data-driven culture within the organisation. The PMO becomes more predictive, developing game changing insights to drive improvement and optimise.

2.4 Role of advanced data analytics and generative AI In the Next Generation PMO, data analytics plays a crucial role. It transforms raw data into meaningful insights, enabling PMOs to predict trends, identify risks, and make informed decisions. This predictive capability is pivotal in proactive project management, where potential issues can be addressed before they escalate. Generative AI is already having a positive impact on centres of excellence, providing on-demand advice and insights. We are just getting started.

AI in the Next Generation PMO goes beyond automation of routine tasks. It introduces intelligent decision making processes, real time reporting, advanced resource allocation models, scenario planning, optimisation and real-time risk assessment capabilities. AI tools can analyse historical data, learn from past projects, and provide recommendations for optimising current and future initiatives.

2.6 The synergy of AI and human expertise While AI and data analytics offer immense potential, the human element remains irreplaceable. The Next Generation PMO blends the predictive power of AI with human expertise and intuition. This synergy ensures that while data driven insights guide decision making, the nuanced understanding and experience within the domain drive successful project outcomes. The productivity improvements will be significant, with some organisations predicting 40% of professional service and administrative tasks being automated. Only time will tell whether this translates into a headcount reduction or whether that effort can be redeployed further up the value chain, by leveraging the power of project data analytics.

2.7 A glimpse into the future The Next Generation PMO is not a distant future concept but a rapidly emerging reality. On 28 February 2024 Projecting Success are launching a niche cohort of the Project Data Academy to upskill PMO professionals in the power of data and AI. As part of the course, each person will be required to develop 3 projects, or modules of capability, to advance the PMO profession. With up to 25 delegates on the course, this provides an opportunity for us to co-create 75 modules, from dashboards to AI models, data pipelines to large language models. It has the potential to be game changing. More niche courses are planned.



***“Logic will get you
from A to B.
Imagination will take
you everywhere”***

Albert Einstein

3 Types of PMO - A refresher

3.1 Supportive PMOs: A supportive PMO acts as a central repository and support hub for an organisation's projects, supplying standard templates, best practice guidelines, and conducting training. It plays a key consultative role, offering tailored advice and facilitating organisational learning through systematically tracking lessons from completed projects.

With a focus on enhancing project management skills, these PMOs organise workshops and sessions aimed at improving team competencies. Their approach is particularly beneficial in Functional or Weak Matrix organisational structures, where project management is not the primary focus but requires centralised support.

Exercising minimal control over projects, supportive PMOs work closely with project managers, providing necessary tools and information. They adapt their support to each project's specific needs, ensuring managers are well-equipped to apply these tools effectively. This balance of providing essential support while allowing project teams autonomy fosters a collaborative environment, promoting continuous improvement in project management practices.

3.2 Controlling PMOs: A controlling PMO exercises enhanced oversight over projects, ensuring adherence to organisational standards through regular audits and reviews. It enforces compliance, going beyond the advisory role of a Supportive PMO. This PMO is suitable for Balanced Matrix structures and is vital in industries like finance or construction, where strict regulatory compliance is crucial.

It mandates the use of specific project management frameworks, templates, and tools, often perceived as the "PMO police." To support its functions, it fosters a community of practice, offering training and consistent communication to reinforce its methodologies. However, its success hinges on securing executive-level support and embedding quality and consistency in its projects, aligning with organisational goals. A controlling PMO is crucial in environments where risk management and standard adherence are paramount. Directive PMOs: Directive PMOs adopt a proactive, hands-on approach in managing projects within an organisation. They extend beyond providing methodologies and tools, taking direct control of project management. Typically, project managers in this model report to the PMO, ensuring a uniform approach across all projects.

This type of PMO assigns professional project managers to oversee projects, enhancing the professionalism and consistency in project execution. It's particularly effective in larger organisations with a matrix structure, aligning well with cultures that require centralised project oversight.

With a high level of involvement in company projects, directive PMOs manage not just the tools and training but also the specific resources and schedules for each project. This model is suitable for companies with limited project management experience, needing comprehensive management of both high-level and detailed project requirements.

3.3 Strategic PMOs (SPMO): An SPMO acts as a crucial conduit between project execution and organisational strategy, aligning projects with strategic objectives and ensuring they contribute to the broader goals of the organisation. Its establishment requires careful planning, a clear vision, and a systematic approach, treating it as a project-centric business unit akin to other departments, with goals set by enterprise leadership.

Key areas of focus for an SPMO include portfolio management, encompassing the entire project lifecycle from conception to benefits realisation; financial management, ensuring project investments align with business goals and are managed responsibly; and enterprise-wide project-related processes, including strategic risk management and maintaining consistent quality standards. Additionally, proactive resource management is crucial, involving capacity planning and skills inventory management.

The SPMO also serves as a strategic partner within the organisation, much like the evolution of IT from a service provider to a business enabler, advocating a cultural shift to establish the PMO as an independent, objective consultant on project execution and a business leader supporting the organisation's wider objectives.

3.4 Enterprise PMOs (EPMO): EPMOs operate at the highest organisational level, overseeing all projects and PMOs, ensuring alignment between the organisation's strategy and its projects, while standardising processes across the organisation. Unlike traditional PMOs, EPMOs collaborate with executive management strategically, focusing on aligning projects with overall business goals. According to the Project Management Institute's "Pulse of the Profession 2017: Success Rates Rise", this approach has been shown to significantly reduce project failures, with organisations establishing an EPMO experiencing 33 percent fewer failures.

EPMOs provide centralised guidance, governance, and standardised project portfolio management practices across the company. They address challenges like ambiguous PMO direction, underutilised resources, high costs with low performance, and lack of strategic alignment. PMI's research highlights that EPMOs improve portfolio reporting services by 20 percent, strategic alignment services by 23 percent, confirmation of strategic priorities by nearly 10 percent, and project alignment with strategic objectives by 10 percent.

Project-Specific PMOs: Project-Specific PMOs are established to support a specific, often large-scale project or programme. Their focus is exclusively on the unique needs of that project, offering customised support and governance. Once the project concludes, these PMOs typically disband.



***“Believe you can and
you’re halfway there”***

Theodore Roosevelt

“Our intelligence is what makes us human, and AI is an extension of that quality”

Yann LeCun
VP & Chief AI Scientist at Meta



In contrast to other PMO types that might operate across various projects with differing objectives, Project-Specific PMOs are uniquely tailored to the singular project they oversee. This targeted approach can significantly enhance the project's success rate, reduce overall costs, and improve delivery time, as found in various studies. This is particularly relevant in environments where firms are adopting project-based structures and strategies.

Moreover, Project-Specific PMOs are an effective way to optimise resources for a specific project, especially when it comes to staffing and executing various project functions. While PMOs across different organisations can vary greatly in their activities, a Project-Specific PMO has a clear, singular focus.

3.5 Hybrid PMOs: Hybrid PMOs provide a more versatile and adaptive model, combining elements from different PMO types to suit specific organisational needs. They might directly manage some projects while providing support and standards for others, offering a flexible approach to project management. This adaptability is crucial as PMOs in different organisations display little similarity to each other, with a broad range of activities and functions they can perform.

The introduction of agile methods in firms has led PMOs to evolve their roles. While they traditionally involved activities like monitoring, controlling, and standardising project methodologies, the advent of agile has seen a shift towards more supporting and serving roles. This change is attributed to the shared responsibilities with agile teams and the PMO's role in bridging traditional and agile sectors within firms.

The modern PMO tends to focus on supporting and serving roles, standardising processes without mandating their adoption. This approach allows development teams the flexibility and innovation encouraged by agile methodologies, while avoiding the unnecessary effort of standardising routine tasks. In larger firms, especially those working extensively with agile teams, there's a growing need for a PMO that coordinates and integrates different project activities across the organisation.

4 Augmenting the role of the PMO

In the past couple of years Large Language Models (LLMs) such as ChatGPT have moved into the public consciousness. These tools have become increasingly accessible, including models that are integrated into search engines such as Bing. Employers were initially hesitant because of concerns about data leakage, the unintentional exposure of sensitive or private information that the model might have learned during training. But many of these concerns can now be resolved by using locally hosted models, commercial models which guarantee privacy or tools such as Bing Chat that specifically state “Your personal and company data are protected in this chat”.

Many organisations have sought to mitigate the risks around LLMs by banning them. In 2023 Salesforce conducted a survey of 14,000 people globally and discovered that 40% of workplace generative AI users have used banned tools at work and 55% have used unapproved generative AI tools at work. Banning them often forces the issue underground. Is it better to let people experiment and become aware of the potential of LLMs, but to do so safely by educating them? However, Salesforce concluded that nearly 70% of global workers have never completed or received training on how to use generative AI safely and ethically at work, so there is much more to be done.

It is clear that LLMs will become a crucial part of a Next Generation PMO by automating and improving various tasks. Here's how LLMs can help with different types of PMOs:

4.1. Supportive PMOs: Supportive PMOs provide a consultative role to projects and supply templates, best practices, training, and access to information. LLMs can assist Supportive PMOs by:

- **Tailored Project Templates:** By leveraging advanced methods to create, maintain and complete project templates and documentation that are specifically tailored to the unique context of each project. By analysing historical project data, these language models can assist in the automatic generation of templates and populating them to align with the project's goals, scope, and requirements..
- **Efficient Complex Information Handling:** LLMs possess the remarkable ability to comprehend and distil intricate information from extensive reports and documentation.



Their capability to extract essential insights, significant findings, and crucial data points from large and complex documents is invaluable. This proficiency saves valuable time and enables PMOs to swiftly grasp the critical information required for informed decision-making.

- **Providing on-demand expertise and information access:** These language models serve as comprehensive knowledge repositories, offering instant access to pertinent information and expertise. Through adaptive workflows and interactive chatbots, they empower project managers and team members with real-time insights into project delivery processes. For instance, when a project manager encounters a specific challenge or query, they can consult an AI-driven chatbot that provides expert guidance, suggests best practices, and offers a treasure trove of relevant resources—all within the context of the ongoing project.
- **Developing code.** Writing Python scripts or DAX code for PowerBI dashboards, to accelerate the deployment of new tools.

4.2. Controlling PMOs: Controlling PMOs provide support and require compliance with organisational practices. They enforce compliance through various means such as specific forms, tools, and templates. LLMs can assist Controlling PMOs by:

- Enforcing compliance to organisational practices. This could include using LLMs to summarise and interpret data, then feeding this data into dashboards on process compliance, monitoring how frequently documentation is updated and assessing the quality of project management rigour.

4.3. Directive PMOs: Directive PMOs take over projects, allocating their project managers to them. They provide direct management of projects. LLMs can assist Directive PMOs by:

- Curating the portfolio dataset to train models to pre-empt variance, moving beyond traditional risk management methods. Additionally, they are capable of extracting and utilising data that has been structured and stored in interconnected databases. For instance, LLMs can assist in completing documentation more efficiently by automating the generation of reports, contracts, or other written materials. This not only saves time but also reduces the risk of human errors.
- They can be used to swiftly retrieve source documentation. This can be particularly valuable during audits, compliance checks, or project evaluations, as it ensures that the necessary information is readily available for review, peer reviewed by a specially trained model.
- LLMs and similar tools are meticulous when it comes to data quality. They validate data at its source, ensuring that it meets predefined quality standards. This validation process includes checks for completeness, accuracy, consistency, and timeliness.
- Python scripts and LLMs can be used streamline data assurance processes. By automating tasks related to data validation, reporting, and monitoring, they free up valuable human resources to focus on more complex and strategic tasks.

Other PMOs, such as Enterprise PMOs, can leverage knowledge networks to interlink strategic objectives, projects, benefits, dependencies and the data required to deliver them. When we link this information together and apply optimisation algorithms, we move the role of the PMO further up the value chain.

In conclusion, LLMs can provide significant benefits to all types of PMOs by automating routine tasks, providing on-demand expertise, and improving the efficiency and effectiveness of project management processes.

Shortly before publication of this book OpenAI announced the release of ChatGPT for Teams, providing organisations with the ability to co-create GPT models within organisation or project specific libraries. Microsoft have also put their co-pilot capability on general release. These capabilities continue to become more accessible and proliferate





4.4 Evolution in roles

The traditional practice of manually handling data is swiftly becoming obsolete. McKinsey reports that, up to 90% of tasks related to data processing and reporting are on the cusp of automation.

This technological shift will free up scarce resources, enabling a deeper focus on deriving valuable insights from data and developing proactive strategies. Consequently, professionals will find themselves climbing the value chain, transitioning into more fulfilling and dynamic roles such as project analysts.

In this evolving landscape, a new, crucial career path is emerging: that of the analyst problem solver. The problem solver will play a pivotal role. Someone who understands the domain, has the expertise to interrogate and challenge the analysis, then solve problems by directing the analysis and making trade offs. We are stepping into a transformative era in data driven project delivery.

On 18 Jan 2024 Mark Zuckerberg announced his intent to double down on AI, including the development of Llama 3, an open source model . He remarked *“our ambition is to build things that are at the state of the art and eventually the leading models in the industry”*. The race is certainly heating up and will only accelerate.

Risk management is the human process of guessing what is likely to go wrong on a project

Yet we have vast amounts of data that provides insights into what is likely to go astray and when. Why do we struggle to leverage this data, and hard won experience?

To expand our understanding, let's embark on a thought experiment. What if we were to eliminate the term 'risk' from our vocabulary and replace it with an alternative concept? Consider redefining risk management as a process of '**minimising the downside while maximising the upside**'. Such a redefinition not only alters our perspective but also broadens the scope of what risk management entails.

Adopting this new definition, risk management no longer remains confined to a single functional silo. Instead, it becomes an integral part of various other aspects like change control, logistics, technical queries and the day to day noise of project delivery. We also stretch into the realms of the avoidable 'known knows' and surface the 'unknown knows', which may be known to others but not to us.



By embracing this expanded view, we can approach risk management in a more holistic and integrated manner, leveraging the data, combined with the specific context of our project. This approach fosters a more proactive and comprehensive strategy in project management, enhancing both efficiency and success rates.

Rather than being driven by process, we become driven by data, statistics and analysis, tempered by human insight and intuition.

Unknowns unknowns will still emerge, but we can deploy systems to help us to anticipate them, then deploy methods, or probes, to look out for them. We create a new way of working, that is much more fulfilling and evidence based.

Risk management, as we know it today, is on the verge of becoming obsolete. If I am wrong, it probably doesn't matter. However, if I am right, how will this impact your career?

How will you mitigate it?

5 Impact on jobs

AI and advanced data analytics are expected to have significant impacts on future jobs and employment.

5.1 Jobs most impacted by AI: AI has made significant progress in tasks related to organising information, memory, quick perception of patterns, and logical reasoning. This progress has had a bigger impact on high-skilled, office-based jobs, such as business professionals, managers, science and engineering professionals, as well as legal, social, and cultural professionals. These occupations are more vulnerable to changes and automation brought about by AI.

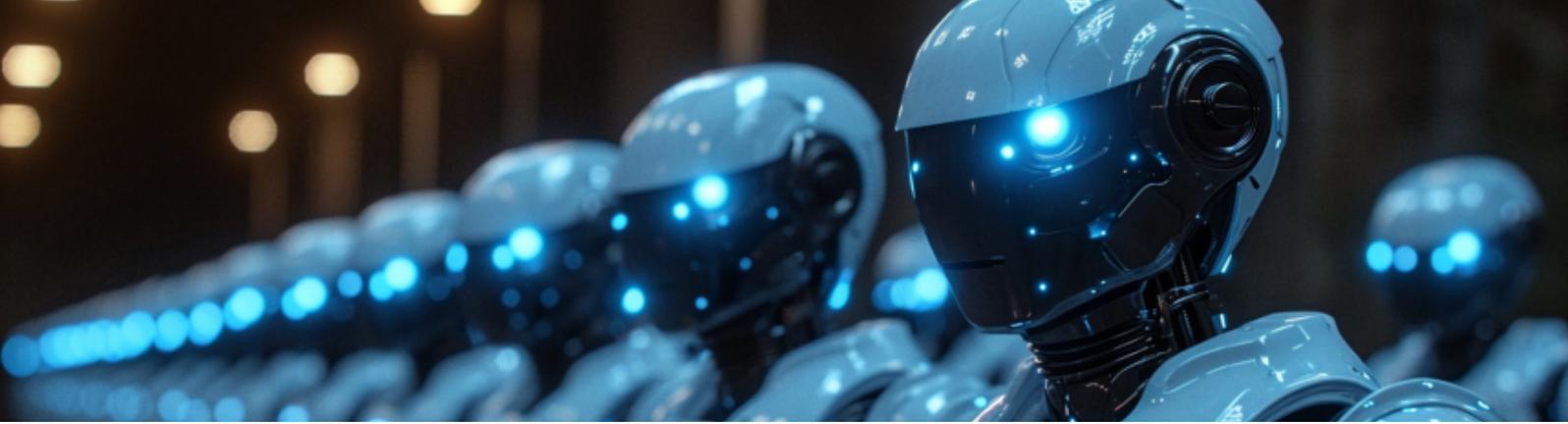
In 2023 [Bain](#) reported that knowledge-based roles will see the greatest leap in productivity from generative AI. They estimated that 41% of the ‘percentage of labour time’ of professional service roles can be automated using generative AI, and 40% for administrative roles. The impact on PMOs will be significant.

5.2. Creation and displacement of jobs: Between 2023 and 2027, the majority of [companies surveyed](#) worldwide expect big data to have a more positive than negative impact on the global job market and employment, with 65 percent of the companies reporting the technology will create jobs and 7 percent expecting the technology to displace jobs.

The [Department for Business, Energy & Industrial Strategy](#) commissioned PWC to undertake research on the potential impact of AI on the UK labour market. The report, published in October 2021, found that 7% of jobs were at high risk of being automated in the next 5 years, rising to 30% after 20 years. But with the acceleration in generative AI, these forecasts appear out of date. Indeed, research by [McKinsey](#) experts assess that technology could achieve human level performance in some technical capabilities in the next 2-10 years, up to 40 years sooner than previously thought.

At the time of publication of this book, significant workforce reductions were announced at [Google](#), as the tech giant let go of hundreds of employees across various departments. Reporting from [The Information](#) highlights that these reductions, particularly within Google's advertising sales division, are linked to advancements in AI, which have automated aspects of the ad sales workflow. Additionally, Duolingo, the language learning platform, has parted ways with [10% of its contractors](#). The company attributes this decision to the increased efficiencies brought about by content generated through AI technologies.

AI won't take your job,
It is somebody using AI that will take your job



5.3 Technological disruption precedes employment creation: Historically, technological progress has led to fears of prolonged unemployment. However, despite these fears, technological innovations have always given rise to new jobs that provided employment. The labour-replacing element of technological progress has not led to mass unemployment. In fact, employment in OECD countries has risen. Technological advancement through increased adoption of new and frontier technologies and increased digital access are expected to drive job growth in more than half of surveyed companies.

5.4 Delay in New Role Creation: While AI and automation can augment the productivity of some workers, they can replace the work done by others and will likely transform almost all occupations at least to some degree. However, the transitions will be very challenging—matching or even exceeding the scale of shifts out of agriculture and manufacturing we have seen in the past.

5.5 Emergence of new roles: Despite the disruption, AI is also expected to create new fields of work and lead to large expansion in others. Furthermore, AI is likely to require professionals with all-new skill sets to manage it, as well as enhance the need for the creative work produced by millions of skilled professionals already in the workforce.

I had a discussion with a senior leader in a large project delivery company recently and they highlighted that whilst many of the data entry and management roles will be automated, they will need more people who can mine the data and provide insights. Most importantly, they will need people who are problem solvers; people who understand the domain, can delve into and challenge the analysis and navigate a way ahead. These people are in scarce supply.

5.6 Economic impact: A report by McKinsey estimates that generative AI could add the equivalent of \$2.6 trillion to \$4.4 trillion annually across 63 use cases they analysed. Goldman Sachs predicted that generative AI could raise annual global GDP by 7% within a decade, which translates to a roughly \$7 trillion increase.

In conclusion, while AI and advanced data analytics are expected to automate certain tasks, they are also predicted to create new jobs, especially for those with strong digital skills. However, there may be disparities in the job market between workers who have the skills to use AI effectively and those who do not. With the potential for 41% of professional services based effort to be automated, the impact on the PMO job market will be vast.

But new roles will emerge as we pivot towards a new future, when the Centre for Project Insights becomes a credible reality.

Impact on jobs

Key takeaways



1 SCALE

The implications for PMOs is huge. With >40% productivity improvement, acceleration in deployment of new tools and a quest for deeper insights, the impact on the PMO will be significant



2 OPPORTUNITY

AI and advanced data analytics will unlock new job opportunities, particularly in fields that leverage these technologies to enhance project delivery performance. As these innovations are integrated into business operations, the PMO is poised to become the central nervous system of the business, driving efficiency and strategic decision-making.



3 JOB LOSSES?

Noting the scale of the change, there will be job losses, particularly for those operating at the data entry/reporting end of the value chain. But new, better paid roles will emerge. The challenge for PMO professionals is how to ride the wave rather than getting crushed by it.



4 ACCELERATING

We are at the beginning of the adoption curve. The rate of change will accelerate, particularly as the battle between the major tech companies heats up. We live in an era of exponential change.

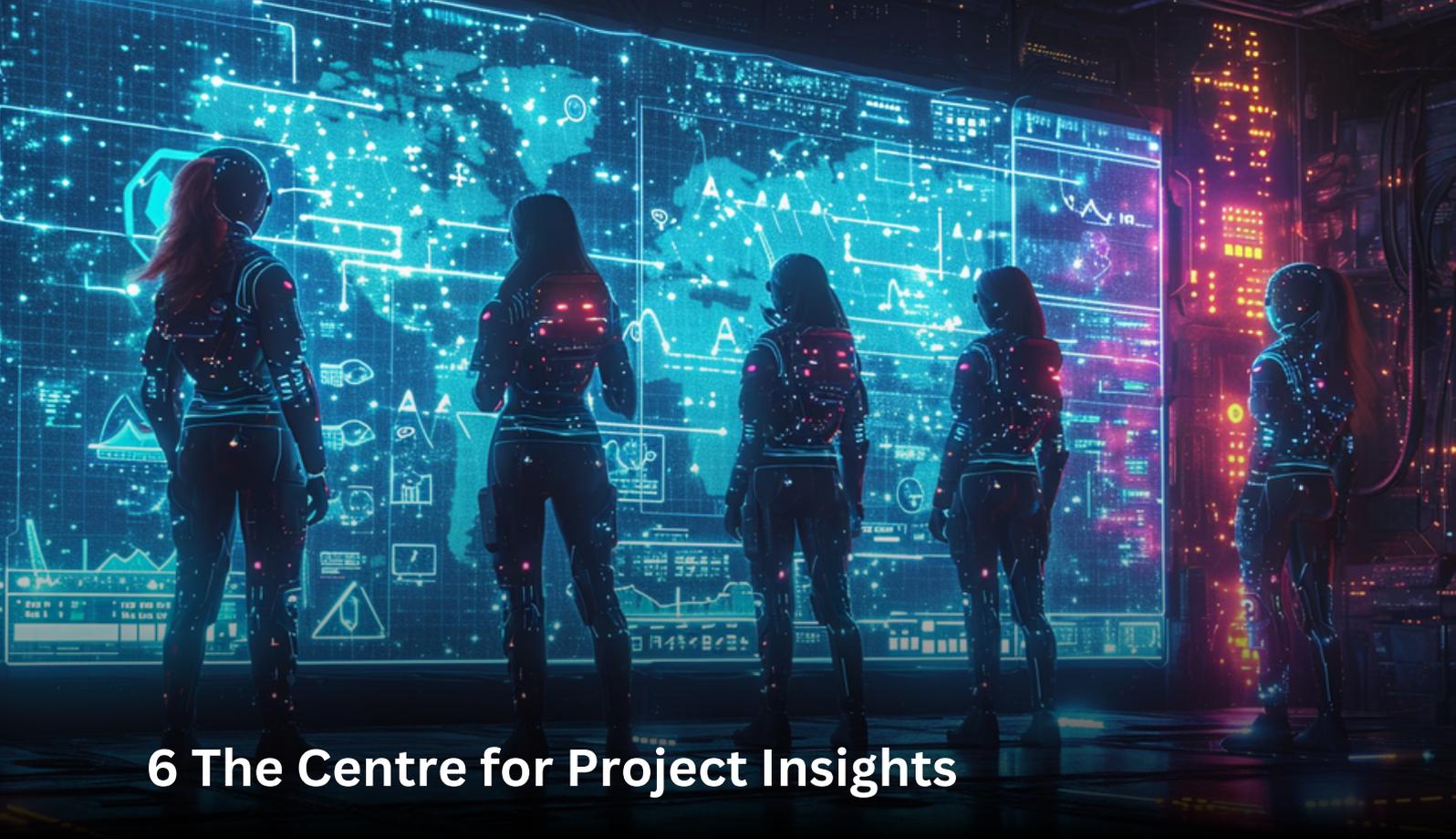


5 A NEW ERA

The rise of AI and advanced data analytics is leading to the creation of new jobs that require a mix of technical data skills, PMO and domain specific knowledge. These higher value roles will focus on automating the mundane, enhancing data pipelines and extracting insights that would, until recently, been out of reach.

“We’ve never seen a technology move as fast as AI has to impact society and technology. This is by far the fastest moving technology that we’ve ever tracked in terms of its impact and we’re just getting started”

Paul Daugherty,
Chief Technology and Innovation
Officer, Accenture



6 The Centre for Project Insights

In a future shaped by AI, the "Centre for Project Insights" will emerge to revolutionise PMOs through its ability to intervene, scenario plan, optimise, and shape supportive interventions. Here's a glimpse into what this could look like:

6.1. Proactive intervention: Utilising sophisticated AI algorithms, the Centre for Project Insights will proactively identify potential project pitfalls or opportunities. This early detection allows for timely interventions, ensuring projects stay on track and within budget. The Centre would not just wait for issues to arise but actively seek them out, using predictive analytics to prevent problems before they occur.

Let's take an analogy. Imagine a car equipped with an advanced lane departure warning system. This system, much like the Centre for Project Insights utilising AI algorithms, constantly monitors the car's position on the road. If the car begins to drift out of its lane without an intentional signal, the system alerts the driver, allowing for a timely correction to avoid potential accidents. Just as this system proactively identifies and warns of deviations, the Centre for Project Insights proactively identifies potential project pitfalls or opportunities.

In this analogy, the lane represents the project's planned path, staying within budget and on schedule. The Centre for Project Insights functions like the lane departure system, not merely waiting for the project to veer off course but actively monitoring its trajectory. By using predictive analytics, it detects early signs of deviation – akin to the car edging towards lane markings – and alerts project managers. This early detection allows for timely interventions, steering the project back on course, much like a driver correcting their steering in response to the warning.

Thus, the Centre for Project Insights, equipped with sophisticated AI, acts as an essential safeguard, ensuring that projects, like cars on a highway, maintain their intended course, reducing risks and enhancing the likelihood of successful, timely, and budget-conscious completion.

6.2. Advanced scenario planning: Leveraging AI’s capability to process vast datasets, the Centre will excel in scenario planning. It will simulate a range of potential future scenarios based on varying inputs and external factors. This will enable project teams to prepare for different outcomes, ensuring resilience and adaptability in the face of uncertainty.

6.3. Optimisation of Resources and Processes: The Centre for Project Insights will continuously analyse project data to identify areas for optimisation. Whether it's reallocating resources more effectively, streamlining processes, or identifying efficiencies, the Centre will ensure that projects are run in the most efficient manner possible.

Resource Allocation with pandas and matplotlib: Consider a PMO overseeing a portfolio of projects. They can utilise the pandas library to analyse historical project data, including resource allocation, project timelines, and budgets. By using pandas to organise and evaluate this information, they can identify which projects consistently adhere to their resource allocations and timelines. PowerBI or Matplotlib can help create visualisations to provide real time updates, identify where resource ‘velocity’ may be degraded and extract resource allocation trends. If, for instance, Project A consistently exceeds budget and is late, the PMO may adjust the initial resource allocations and develop lead indicators to drive up efficiency.

Optimisation scenario: Imagine a PMO overseeing a portfolio of construction projects. Each project requires a specific set of resources, such as labour, machinery, and materials, to complete. However, delays in some projects have tied up these resources, making them unavailable for other projects. The PMO needs to develop an optimal resource allocation strategy to minimise delays and maximise resource utilisation.

1 Data Collection: Begin with data sources (e.g., project databases, real-time project tracking tools, corporate data, external data).

2 Data Processing: **Extracting** data from different source systems, then it is cleaned and **Transformed**. This might include cleansing, aggregating, formatting, and applying business rules to make the data consistent and suitable for analysis. Finally, the transformed data is **Loaded** into a target data repository. Known as **ETL**

3 AI Model Development: This might involve training machine learning models on historical project data to identify patterns or predict outcomes.

4 Scenario Generation: Use AI models to generate various project scenarios. This could involve simulating different project paths, resource allocations, timelines.

5 Optimisation: Apply optimisation algorithms to evaluate scenarios. Highlight how the AI chooses the best scenario based on certain criteria (cost, time, resources). Change weightings, with sliders, to prioritise those criteria

6 Decision-Making: End with how these insights aid project managers in making informed decisions.

Jargon Buster

- **Python:** is a user-friendly programming language, renowned for its simplicity and efficiency in handling a wide array of tasks from web development to data science. Its extensive libraries and strong community support make it easy to deploy for beginners through to professional software engineers.
- **PuLP:** is an open-source linear programming library in Python, used for optimising linear programming problems. It allows users to tackle resource allocation or scheduling problems, and solve them using various solver options.
- **scikit-learn:** provides a wide range of tools for various machine learning tasks. This includes classification (identifying which category something belongs to), regression (predicting a continuous value), clustering (grouping similar items), and dimensionality reduction (simplifying data to make it easier to work with).
- **Pandas:** is a popular and versatile library in Python, primarily used for data manipulation and analysis. It's especially well-suited for handling structured data, like tables or time series.
- **Matplotlib:** is a tool that lets you create charts and graphs in Python. It turns complex data into visuals that are easy to understand and share.
- **Power BI:** is part of the Microsoft Power Platform suite that helps to turn data into visuals and dashboards. A high-tech control panel that helps to visualise data and inform decisions. **DAX** is a language used in Power BI for creating custom calculations and analysing data in more advanced ways.

EXAMPLE

Example: The PMO is currently managing three construction projects: Project A, Project B, and Project C. Each project has its own timeline, resource requirements, and associated penalties for delays. Due to unforeseen delays in Project A, certain resources are still allocated to it even though they are not actively utilised.

- Project A: Requires 10 labourers, 2 bulldozers, and 100 tons of concrete. It has a penalty of £5,000 per day for delays.
- Project B: Requires 8 labourers, 3 excavators, and 80 tons of steel. It has a penalty of £7,000 per day for delays.
- Project C: Requires 12 labourers, 1 crane, and 120 tons of bricks. It has a penalty of £6,000 per day for delays.

Once the objective function, constraints, and decision variables are defined, the PMO can use PuLP to solve the linear programming problem. The algorithm will find the optimal delay days for each project that minimises the total penalty cost while adhering to resource constraints.

Members of the community are also developing portfolios of GPT models to tackle project prioritisation, scenarios, option analysis and much more.

6.4. Shaping Supportive Interventions: With a deep understanding of the project landscape, the Centre for Project Insights will craft bespoke supportive interventions. These could range from targeted training and development programmes for project staff to strategic advice for steering committees. The goal would be to support not just the project’s technical aspects but also the human elements critical to its success.

- **Predictive analytics for project health:** AI algorithms can analyse project data to create predictive models that assess the health of ongoing projects. For instance, machine learning models can predict potential project delays, cost overruns, or resource shortages by analysing historical project patterns, milestones, and external factors. If a project is at risk, it can be flagged for special attention. Organisations such as nPlan and Nodes and Links have advanced capabilities to pre-empt delays and optimise, developed from vast datasets specific to the domain, such as construction.
- **Natural Language Processing (NLP) for stakeholder sentiment analysis:** NLP can be employed to analyse written feedback and communication channels to gauge stakeholder sentiments. By monitoring emails, chat messages, and other text-based interactions, the system can identify concerns or issues that may affect project success. For instance, if stakeholders express frustration in emails or meetings, the system can detect this sentiment and flag it for further investigation.
- This [LinkedIn post](#) helps to demonstrate the potential of using network analysis, linked to email or teams messages. We can transform the very nature of stakeholder engagement.
- **Machine learning-powered skills assessment:** The Centre for Project Insights can use machine learning algorithms to assess the skills and competencies of project staff. By analysing employees' past performance, training records, and certifications, the system can identify areas where additional training or development is needed. For example, if the analysis reveals that a project team lacks expertise in a specific technology, the system can recommend targeted training programs. LLMs can be used to run adaptive quizzes and tailor the learning journey based upon their replies.



“AI is probably the most important thing humanity has ever worked on. I think of it as something more profound than electricity or fire”

Sundar Pichai, CEO of Google

EXAMPLE

An analogy. Imagine a team of doctors in a hospital, managing the health of their patients. In the medical field, there is a wealth of health data and extensive research underpinning it, much like the ideal scenario for project data. However, in project management, we often face challenges due to the lack of sufficient data to underpin hypotheses about a project or work package's predisposition to variance in scope, cost, schedule, quality, or performance.

In our analogy, the doctors have access to a vast array of health data, from detailed patient histories to comprehensive results from diagnostic tools like radiographer scans. This data is often consistent and well-structured, allowing for precise analysis and diagnosis, underpinned by decades of well-funded research. In contrast, project data frequently lacks standardisation and consistency. It's akin to if medical data came from multiple sources in varied formats – some as clear as a high-resolution scan, others as vague as handwritten notes.

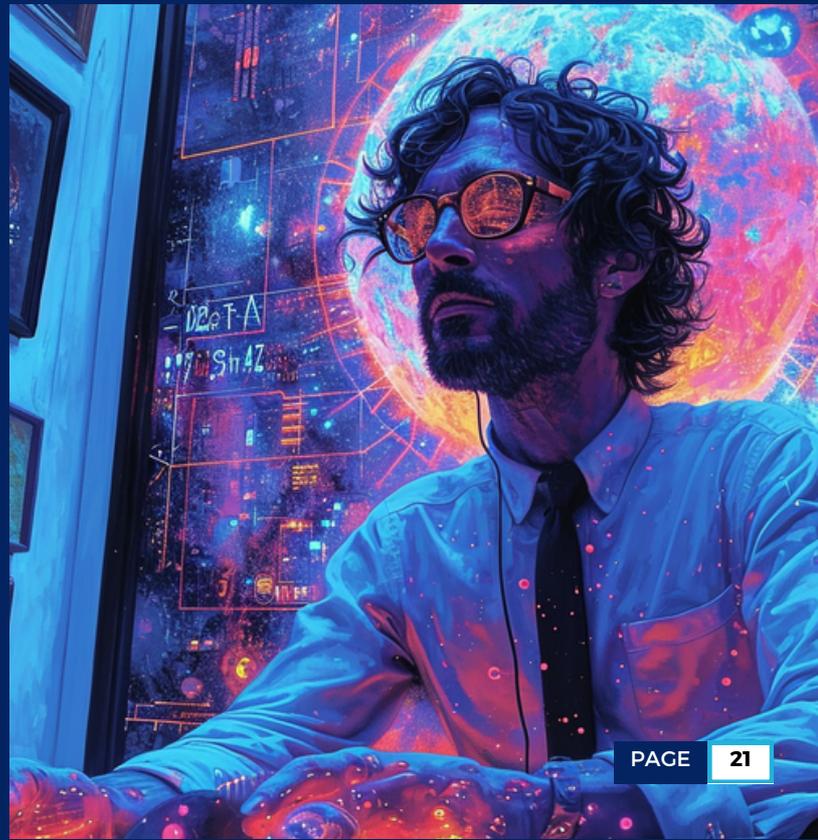
The consistency and structure of medical data enable doctors to predict and manage health risks effectively. They can identify predispositions to specific conditions based on robust data, and implement targeted interventions. Conversely, in project management, the often unstandardised and inconsistent nature of project data makes it challenging to accurately predict and manage predispositions to variance. Like a doctor trying to diagnose a condition without clear, consistent medical imaging or history, project managers might struggle to identify and mitigate potential issues without standardised, reliable data.

This analogy highlights the importance of not just having data, but having data that is structured, consistent, and of high quality. Just as consistent and well-structured health data underpins effective medical interventions, standardised and reliable project data is crucial for accurately predicting and managing project variances. The goal in both scenarios is to anticipate and address issues proactively, ensuring the well-being of patients or the health of projects, respectively.

But....

Imagine a radiographer using an MRI scanner that uses AI to identify specific conditions. The scanner is using the laws of physics to operate, within what could be regarded to be a closed system. The machine learning model is trained on huge quantities of highly structured and high quality data.

In a project delivery context, we aren't constrained by physics. There are a large number of variables and we effectively have an open system. The challenges are very different and we need to tailor the approach accordingly.



6.5. Data-Driven Decision Making: Decisions will be rooted in comprehensive data analysis, moving away from intuition-based to evidence-based decision-making. The Centre's insights will guide everything from day-to-day management decisions to long-term strategic planning. We have heard people say that AI will not replace human decision making, but we disagree... to an extent. Take a traffic light for example, the days of a policeman controlling the traffic are long gone and traffic is now managed by an intelligent system that often has sensors in the road. The same will apply to project based decision making. If we have confidence in the logic that underpins the decision, and confidence in the underpinning data, then we can defer control to a machine. If it requires intuition, we can leverage data and insights to augment that decision.

6.6. Continuous Learning and Evolution: AI systems are designed to engage in continuous learning and evolution, a crucial aspect of their functionality. With each project they encounter, these AI systems gather valuable insights, enhancing their ability to predict outcomes and refine their intervention strategies. This dynamic machine learning capability empowers the Centre to steadily enhance its efficiency and effectiveness over time, adapting its approaches based on real-world outcomes and experiences.

However, a key prerequisite for this continuous learning process is access to a substantial volume of high-quality data. Unfortunately, in many cases, assessing the quality of available data can be challenging. Issues such as data accuracy, completeness, and relevance often pose significant obstacles to leveraging machine learning effectively. This data extends beyond organisational boundaries and we often don't have KPIs on the validity or accuracy of the data.

Addressing this challenge is where the concept of "data trusts" becomes relevant. Data trusts are mechanisms that facilitate the secure sharing of data among multiple parties while maintaining data privacy and quality. These trusts provide a framework for collecting, curating, and storing data in a standardised and trustworthy manner.

The utilisation of data trusts can help resolve the data volume issue by promoting data sharing and collaboration among relevant stakeholders. By pooling data resources from various sources, the Centre can access a more comprehensive and diverse dataset. This, in turn, enhances the AI systems' ability to learn and adapt, as they can draw upon a larger and more representative sample of real-world scenarios.

In summary, continuous learning and evolution through AI systems rely on access to well-curated data. PMOs will need to consider how they gain access to that data and introduce measures to characterise data quality.



6.7. Stakeholder engagement and management: By processing large datasets, AI algorithms can identify trends, sentiments, and key influencers within stakeholder networks. An advanced technique like graph network analysis can measure centrality, highlighting stakeholders who hold pivotal positions within the network. Recognising these central figures allows project managers to prioritise their communication efforts.

- **Strategic communication strategies:** Leveraging AI-generated insights, project teams can develop more effective communication strategies. By understanding stakeholder preferences, pain points, and communication channels, they can tailor messages and engagement approaches accordingly. LLMs can be used to tailor messages for specific personas. AI-driven data can help project managers identify which stakeholders require specific information, ensuring alignment and support throughout.
- **Measuring communication effectiveness with graph networks:** Graph networks can be used to visualise and measure communication dynamics. They can reveal the flow of information within stakeholder networks, highlighting bottlenecks or gaps in communication. By monitoring these network structures, linking to emails or teams messages, project teams can identify areas where communication needs improvement and make adjustments to ensure information flows smoothly.
- **Pulse surveys:** Utilising tools like Meeting Quality can help to gauge team sentiment and divergence in opinions during project interactions, via short pulse surveys. These surveys can be integrated into meetings or collaboration platforms to capture real-time feedback. AI algorithms can then analyse the survey data, providing insights into team dynamics, potential conflicts, and areas of consensus or divergence. This information guides project managers in addressing issues promptly and fostering a positive team environment.

“Organisations should examine their own, and their contractors’ culture and behaviours to ensure that they allow an effective line of sight from the working level up to the decision-makers, as well as to the wider public. They should also ensure that commercial arrangements incentivise transparency and honesty within the supply chain”

National Audit Office



7 Beyond tools

The challenge for PMOs in leveraging data-driven project delivery presents a critical choice: relying on centralised data teams or federating data skills directly into the PMO, supported by a centralised Centre of Excellence. This decision has far-reaching implications for the structure and operation of PMOs:

7.1 Centralised data teams: In this model, a dedicated team of data specialists handles the organisation's data needs. PMOs would depend on this centralised unit for data analysis, insights, and reporting. While this approach benefits from specialised expertise and consistency in data handling, it may create a disconnect between data analysis and the domain context. It is likely that PMO roles will gradually be hollowed out, with the higher value activity conducted by the data teams.

7.2 Federating data skills into the PMO: Alternatively, embedding data skills within the PMO involves upskilling project management professionals in advanced data analytics and AI. This approach fosters a more direct integration of data insights into project planning and execution. PMO professionals who are adept at data analysis can curate and leverage their data, more swiftly and contextually to their projects. This model promotes a more agile and responsive approach, as PMO members can independently interrogate and utilise data.

7.3 Supported by a Centre of Excellence: In either scenario, the presence of a central Centre of Excellence (CoE) can provide overarching guidance, best practices, and advanced support. The CoE would serve as a hub of data expertise, offering training, tools, and strategic insights, ensuring consistency and quality in data practices across the organisation.

7.4 Balancing expertise with agility: The choice between these models represents a balance between deep data expertise and agile, context-aware data application. Centralised data teams offer expert-driven insights but may lack the immediacy and domain context that PMO professionals can provide. Conversely, federating data skills into the PMO promotes agility and relevance but may lack the depth of a specialised data team.

7.5 Collaboration and integration: Regardless of the chosen model, collaboration between PMO and data specialists is vital. A synergistic relationship where data insights inform project management decisions, and project feedback refines data analysis, is key to achieving optimal outcomes.

7.6 Cultural shift towards data literacy: Both approaches necessitate a cultural shift towards valuing and understanding data. For PMOs, this means fostering a data-literate environment where the importance of data in decision-making is recognised and promoted.

In conclusion, the decision between centralised data teams and embedding data skills within the PMO, supported by a Centre of Excellence, hinges on the specific needs, capabilities, and strategic direction of the organisation. Both approaches have merits and challenges, but we are seeing greatest success when the data skills are federated, people have access to low code tools and they begin to increase their focus on high quality data.

But this isn't just about learning how to use new tools. It requires a cultural shift. In his 2023 blog, [Thomas Davenport](#) highlighted that “The human side of data continues to challenge companies, and data leaders appear reluctant to change their paradigms toward more emphasis on these issues”. He expanded further “*Every year in recent surveys, the great majority (80% this year) of respondents report that the principal challenges to becoming a data-driven organization are human – culture, people, process, or organization – rather than technological. Not surprisingly, respondents report making little progress toward that goal. Just 24% of respondents characterize their companies as data-driven, and only 21% say that they have developed a data culture within their organizations*”.

The challenge of pivoting to a Next Generation PMO is not an insignificant one and will require commitment and focus. More importantly, it requires the headspace and capacity of key people to drive the vision. They also need to articulate their level of ambition, underpinned by board level support.

7.7 Releasing capacity Step 1 on this journey is all about releasing capacity. Automating the mundane tasks that can easily be delivered by project data analytics, then leveraging this capacity to drive the transformational change. Without this capacity, data driven project delivery will always be a secondary or tertiary priority to the core role of managing the PMO or delivering projects.

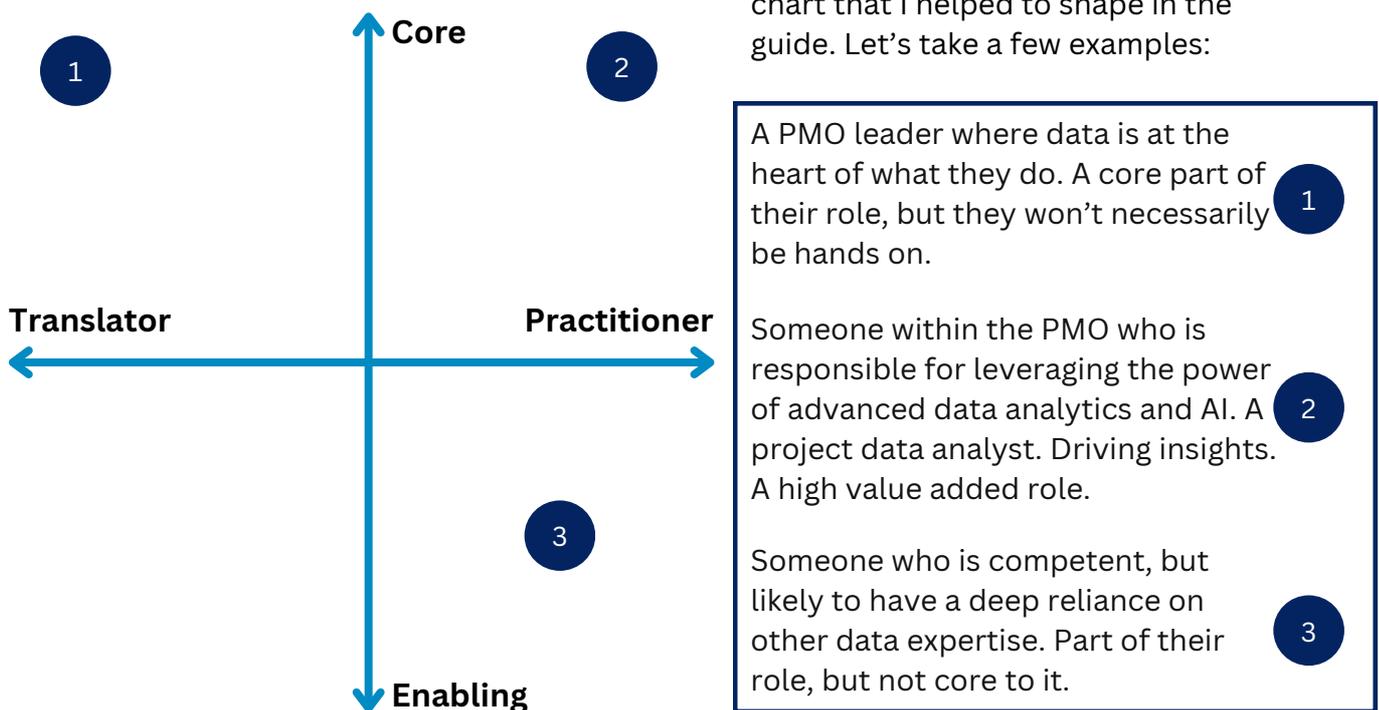
7.8 Quick Wins These are initiatives that can be rapidly implemented and yield tangible results, serving as a catalyst for broader transformation. Quick wins are essential not only for demonstrating the immediate value of data-driven project delivery but also for building momentum and confidence among the team. By focusing on achievable, impactful changes, PMOs can create a positive feedback loop that energises and motivates the team for the more significant changes ahead.



7.9 Upskill and Reskill Central to the evolution into a Next Generation PMO is the need to upskill/reskill the workforce. As the landscape of project delivery shifts towards data-driven methodologies, it is imperative that team members are equipped with the necessary skills to navigate and leverage these new tools effectively and reimagine how they work. This means investing in training and development programs that focus on data analytics, AI integration, and other relevant digital competencies. Upskilling and reskilling not only ensures that the PMO remains competitive and efficient but also empowers the team, making them integral contributors to the transformation journey.

The [APM skills guide](#) provides a helpful framework for organisations looking to upskill or reskill in project data analytics. One of the most helpful starting points is the following

chart that I helped to shape in the guide. Let's take a few examples:



7.10 Define the Level of Ambition is a critical step in transitioning to a Next Generation PMO. This involves setting clear, strategic goals that align with the broader vision of the organisation. It's about understanding the extent to which data-driven methodologies will be integrated into the PMO processes and how these changes will redefine the role and impact of the PMO. Establishing a well-defined level of ambition, supported by board-level backing, provides a roadmap for the transformation and sets measurable targets. This clarity in direction ensures that all efforts are focused and aligned, making the ambitious goal of a fully data-driven PMO attainable.

A translator is a critical link between the technical expertise of practitioners, data engineers and data scientists, and the operational expertise of frontline people in PMO and project roles. They are not necessarily dedicated analytics professionals, nor do they possess deep technical expertise. Translators play a crucial role in ensuring that the insights generated through analytics translate into impact, at scale. They help business leaders identify and prioritise their business problems, based on which will create the highest value when solved. Then convey these business goals to the practitioners who will create the models and solutions. Finally, they ensure that the solution produces insights that the business can interpret and execute on, and they communicate the benefits of these insights to business users to drive adoption.





Reskilling to underpin the Next Gen PMO

When we founded the Project Data Analytics Community in 2017 it was evident that there were a dearth of skills to underpin it, so we founded the Project Data Academy. We realised that project data is very different to the data that emerges from a supermarket till. It is often unstructured, disconnected from the problems we aspire to solve and of unknown quality. This is a challenge that no single organisation can solve together, it will require a herculean collective effort. Our vision has always been that the Project Data Academy provides the catalyst to underpin that ambition, leveraging the course assignments and projects to deliver modules of capability.

But many PMO professionals lack the training budget, so we aligned the syllabus with the UK government apprenticeship programme, meaning that organisations would only pay a maximum of 5% of the training costs. Also, we appreciate that many project professionals are time poor, stuck in the challenges of the here and now. This isn't something we can resolve easily, but as this document illustrates, we should see personal and team productivity transformed via the application of these skills, methods and tools.



We can go further still and use the course to seed a movement. If we can unite 25 people on the course around a shared roadmap, we have an opportunity to develop 75 Lego bricks of capability that collectively will transform the profession. Imagine if we can amplify this over the coming months and years. We develop something very special and compelling. The journey will not be an easy one. But by pooling our resources and sharing our experience, we can progress 100x quicker together than alone.

Reimagining tomorrow - Pioneering a transformation in PMOs



Programme Guide:
Level 4 Data Analytics for PMO Professionals
Project Data Academy (PDA)

CREATING THE NEXT GENERATION PMO

Course Outline: Tailored for PMOs
Learners will work with some of the leading minds in Data Science and Engineering to explore emerging approaches to next generation PMOs and help to solve real problems in project delivery.

Module	Overview
Introduction to Project Data Analytics	Welcome and introduction to Project Data Analytics.
Data Fundamentals	A complete guide to data analytics, domain and business function contextualisation.
Data Visualisation with Power BI	Learn the principles of visualising data and start your journey with Power BI from beginners to intermediate.
Programming	Unlock your programming skills using Python.
Data Analysis and Machine Learning	Use Power BI alongside machine-learning algorithms that use data to predict outcomes.
Data Modelling	Learn how to manipulate relationships between different data sources.
Power Platform	A complete guide to automating your tasks and workflows to save time and money.
Applied Machine Learning	Learn about new developments and how to apply machine learning in your role.
Data Security	Learn the key fundamentals of data security and how to apply it to your role.
Customer (CX) and User (UX) Experience	Understand how to meet customer and user requirements in a 'data driven' world.
Analyst Presentation Skills	Use techniques to tell a story that gives significance to your data.
Project Planning	Plan your projects to achieve the best outcomes.
Data driven project delivery	Explore project data analytics and the current market.
Frontier Technology	Explore the latest and greatest new tech on the market.
Advanced Project Planning	Finalise project planning ready for your forward journey.

Key Facts:

- 15-month programme, plus end point assessment.
- Tutor-led training via remote online lessons.
- Off the job learning.
- Award of a nationally recognised **Level 4 Data Analyst** qualification.
- The apprenticeship is either:
 - 100% funded for levy payers (free for employers and learners)
 - 95% for small medium employers and learners (employers only have to pay 5%)
- Cohorts have varying age groups, from 18 to >60 years old.

Who is Eligible?
Core Entry Requirements (Mandated by UK Education and Skills Funding Agency)

Possess a valid passport / birth certificate / residence permit and NI number. Must be in employment.

Must have lived in the UK and/or EU 3 years prior to start date. Must spend 50% of time in England when undertaking the apprenticeship.

Must not be undertaking another apprenticeship or any other form of education at the same time.

The apprenticeship must offer substantive new skills & knowledge in your existing or new role.

If you cannot evidence GCSE English & Maths (or equiv) at grade C or above, then you will be required to complete additional training in functional skills as part of the course.

We take account of previous relevant experience and work with you to tailor the course. Ultimately, employers will assess the suitability of their staff for training.

Example: Reimagining Assurance

EXAMPLE

The integration LLMs like ChatGPT in project management is revolutionising the development of open-source code, particularly for critical tasks such as DCMA schedule quality assessments. ChatGPT's advanced capabilities in language processing and understanding enable it to adeptly write code that is precise and compliant with DCMA standards, thereby streamlining the process of schedule evaluation. This ensures a higher level of accuracy and consistency in meeting rigorous project management criteria.

Adopting an open-source model for this purpose enables a global collaborative effort. Developers and project managers worldwide can contribute to, refine, and enhance the code, ensuring it remains robust and versatile. This shared development not only democratizes access to advanced technology but also elevates the standards of the project management industry as a whole. The use of LLMs like ChatGPT in project scheduling marks a significant step towards a more innovative, efficient, and community-driven future in project management.

You
summarise the DCMA 14 point assessment for reviewing schedules

ChatGPT
The Defense Contract Management Agency (DCMA) 14-Point Assessment is a tool used for evaluating the quality and reliability of schedules in project management. This assessment focuses on ensuring that schedules are well-constructed, realistic, and adhere to best practices in project planning and execution. Here's a summary of the 14 points:

1. **Logic:** Ensures there are no breaks in the logic of the schedule, such as missing dependencies between tasks.
2. **Leads:** Looks for and minimizes the use of leads, which are situations where a successor activity starts before its predecessor activity has finished.
3. **Lags:** Evaluates the use of lags, which are delays between the end of one task and the start of another.
4. **Relationship Types:** Reviews the types of dependencies used (like Finish-to-Start, Start-to-Start, etc.) to ensure they are appropriate.
5. **Hard Constraints:** Identifies and minimizes hard constraints that can restrict the schedule's flexibility.
6. **High Float:** Checks for tasks with high float values, which might indicate scheduling issues or excessive slack.
7. **Negative Float:** Looks for negative float, which occurs when a task's end date is later than the project's finish date.
8. **High Duration:** Identifies tasks with durations that are too long, suggesting potential planning issues.
9. **Invalid Dates:** Checks for tasks with start or end dates that fall outside the project's time frame.
10. **Resources:** Ensures that resources are allocated appropriately and realistically.
11. **Missed Tasks:** Identifies tasks that have been missed or overlooked in the schedule.
12. **Critical Path Test:** Evaluates the validity of the critical path, ensuring it is the longest path through the schedule.
13. **Baseline:** Checks if the schedule has a baseline for tracking and comparison purposes.
14. **Variance:** Assesses any variance between  ned and actual progress.

You
write a python script to help me to resolve bullet 1.

ChatGPT
To address bullet 1 of the DCMA 14-Point Assessment, which involves checking for breaks in the logic of a project schedule, such as missing dependencies between tasks, you can use Python. This typically involves analyzing a project schedule file, often in formats like Microsoft Project, CSV, or Excel.

For this example, let's assume we have the schedule data in a CSV format where each task has an ID, and the dependencies are listed as a comma-separated list of IDs. The script will read this data and check for any tasks without dependencies, indicating potential breaks in logic.

Here's a basic Python script to get you started:

```
python  Copy code

import csv

def read_schedule(file_path):
    tasks = {}
    with open(file_path, mode='r', encoding='utf-8') as file:
        reader = csv.DictReader(file)
        for row in reader:
            task_id = row['TaskID']
            dependencies = row['Dependencies'].split(',') if row['Depen
            tasks[task_id] = dependencies
    return tasks

def find_tasks_without_dependencies(tasks):
    no_dependencies = [task_id for task_id, deps in tasks.items() if no
    return no_dependencies

def main():
    file_path = 'your_schedule_file.csv' # Replace with your file path
    tasks = read_schedule(file_path)
    tasks_without_dependencies = find_tasks_without_dependencies(tasks)
```

Next Generation PMO

Key takeaways

1

AMBITION

Set your level of ambition. Will you fundamentally reimagine the PMO by taking a data driven approach, or bolt on tools?

2

RELEASE CAPACITY

Focus on some quick wins via automation and data pipelines. Release capacity, and headspace, to energise the broader goals

3

EXPERIMENT

Try things out. Have a growth mindset. Become familiar with the tools, your data and surface the advocates. Then iterate

4

REIMAGINE

Be the best you can be. Imagine what this could look like, then plot a route to get there. Collaborate with others to accelerate

5

UPSKILL / RESKILL

This isn't going away. Embrace it, open up new opportunities and prepare for a new era in data driven PMOs. Take a lead role in shaping the **Centre for Project Insights**

8 Much more than ‘Lessons (not) Learned’

We will also fundamentally transform how we manage knowledge, moving beyond the concept of ‘lessons learned’, whose ineffectiveness has been documented through decades of research, including our [own paper](#) from 2019, and [presentation](#) via the APM in 2017. As part of this work I pulled together over 20,000 lessons and concluded that the process needs to be fundamentally reimaged.

In the Centre for Project Insights the transformation of knowledge management will be profound, leveraging the capabilities of Large Language Models (LLMs) and advanced workflows. This transformation will involve moving beyond traditional repositories like wikis and lengthy process documents, towards a more dynamic, interactive, and context-aware system.

8.1. Integration of LLMs in knowledge management: LLMs, with their ability to process, understand, and generate human-like text, will be integral in transforming knowledge management. They will interact with users to provide specific information and guidance, effectively replacing static wikis and documents. Imagine querying an LLM with a specific project issue and receiving a tailored response that draws from the latest, most relevant knowledge. This capability is available today. In a recent assignment, we developed an LLM for a client in an hour by ingesting their process documentation.

But LLMs can be prone to ‘making things up’ or hallucinations. This could be business critical in some instances, so we need to have sufficient domain expertise to understand when it is giving us fact vs fiction. Methods are emerging on a weekly basis to tackle this issue, including the use of knowledge networks or graphs, where the LLM can query hard facts.

8.2. Dynamic workflows: Workflows will evolve to become more dynamic and intelligent. Instead of following rigid, pre-defined processes, workflows will adapt in real-time, guided by the data and context of the current project situation. This means that project teams will be navigated through processes that are most relevant to their immediate needs and circumstances.

LLMs will augment the creation of documentation too. In January 2024 we are updating our [community chatbot](#), ‘Marvin’, to walk users through the process of creating standard documentation. Rather than having templates, Marvin will interact with users to help to complete the document, ensuring compliance with process. We can also train the model on a corpus of similar documents so it understands the specific context or language of an organisation or domain. We can use machine learning to rate the quality of the documents, when compared to a training data set of exemplars.



[Sign up](#)

[Login](#)



“To utterly fail to learn from mistakes over decades, to spectacularly repeat the same mistakes at huge cost to the taxpayer – and at huge cost to confidence in our defence capabilities – is completely unacceptable.

We see too often these same mistakes repeated. The Department knows it can't go on like this, it knows it must change and operate differently. The test now is to see how it will do that, and soon”

Dame Meg Hillier, Public Accounts Committee



8.3. Seamless integration of lessons learned: In this new paradigm, lessons learned will no longer be a retrospective process, conducted at the end of a project or at key gates. Instead, they will be continuously captured and integrated into the project's data stream. AI systems will constantly analyse project data, identifying successes, failures, variance events and opportunities for improvement in real-time. This continuous learning loop ensures that lessons are immediately applied and disseminated across the organisation, codified into the very fabric of project delivery.

8.4. Contextual data collection and application: The system would not just collect data; it would understand and apply it in context. This means that every piece of information, from project metrics to team feedback, would be analysed in light of the specific circumstances of the project, ensuring that insights and recommendations are always relevant and applicable. Rather than logging a lesson in a spreadsheet, we'll be able to understand the context, such as resource availability, schedule pressure, performance of the supply chain etc.



Analogy: Driving with Google Maps vs. Traditional Lessons Learned



The traditional approach to lessons learned in project management can be likened to a driver who completes a journey and then writes down notes about the route, traffic conditions, and obstacles they encountered. This information is valuable, but it's historical and static – it may or may not be useful for future journeys.

In contrast, the transformed approach to knowledge management with LLMs and real-time workflows is like using Google Maps while driving. As you travel, Google Maps provides real-time data on traffic conditions, suggests alternative routes to avoid congestion, and updates your estimated time of arrival based on current conditions. It's dynamic, context-aware, and continuously learning from data collected from various sources. Similarly, in project delivery, this approach would mean constantly adjusting strategies and processes based on live data feeds, ensuring that the project is always on the most efficient path to success. This method doesn't just record lessons; it actively applies them in real-time, ensuring that every decision is informed by the latest and most relevant information.

9 The Human Implications

This shift isn't just about integrating technology into project delivery; it's fundamentally about people. Data can lead to greater efficiency and clearer decisions, but it also raises concerns about privacy and trust. It can change behaviours and have unintended consequences. The human implications are where the challenges will be greatest - the technology elements are relatively easy to resolve. The World Economic Forum describe this as a “human-centric approach to data”.

In a 2022 survey organisations 92% identified culture (people, processes, organisation and change management) as the biggest barrier to becoming data-driven. This has reduced to 80% in their 2023 survey which suggests that the industry may be turning a corner. However, are current business transformation processes keeping up with the rate of change in an exponential world?

9.1. Information Asymmetry: Data driven decision making can lead to information asymmetry, where one party has more or better information than another. This can lead to power imbalances and unfair practices. Imagine a situation with a dominant client who sets all the rules and builds data requirements into future contracts. How will they leverage this data in the future? Will it be fair and equitable?

Conversely, one of the greatest opportunities for impact with human-centric approaches to data is rearranging power relations to be fairer and more equitable. For example, by opening up project data on public projects barriers to entry and reduced and innovation is turbocharged.

9.2 Lack of Context: Data driven decisions can often lack context, such as a lessons learned register, which can lead to misinterpretations and incorrect conclusions. Understanding the context in which data is collected and used is crucial for effective decision-making. Algorithms can help to bring this context, humans can help to interpret it and adjust for relevance.



9.3 The all-seeing nature of data: Nowhere to hide One of the most implications of a data-driven approach is the perception that "there is nowhere to hide." Data, creates a transparent work environment where every decision, action, and outcome is recorded and analysed. This transparency can be both empowering and intimidating.

On the positive side, this level of transparency ensures a high degree of accountability. Decisions are no longer made in a vacuum; they are informed, justified, and traceable. This can lead to more ethical and responsible project management. However, the feeling of being constantly monitored can be daunting. The pressure to perform flawlessly, knowing that every action is recorded, can lead to stress and a risk-averse culture. The challenge is to balance transparency with trust, ensuring that data serves as a tool for improvement rather than a mechanism for excessive surveillance.

9.4 Biases in decision making: Data driven decision making does not guarantee that decisions aren't still biased in some way. Biases in the data can lead to biased decisions, even when the decision making process is data driven. People may interpret or manipulate data in a way that confirms their pre-existing beliefs. I see this often quoted as a reason not to use advanced, data driven methods.

However, as human beings we are predisposed to over 180 biases, beautifully presented in the Wikipedia cognitive bias codex. Human decisions are naturally swayed by bias, Bent Flyvbjerg highlights the impact on project delivery in his paper. But data analytics can help to challenge it. Expert practitioners will analyse their data and understand where these biases are likely to exist and adjust accordingly. The human biases can be more difficult to surface.

9.5 Over-reliance on data: There's a risk of over-reliance on data, potentially leading to a situation where human judgement is overlooked. This can result in a "word-of-machine" bias, or to quote Little Britain "computer says no", where AI recommendations are assumed to be valid without question.

The APM also reports on the risk of over-reliance on data, potentially leading us back to process-oriented project management where people aspects were non-existent. It requires a careful balance.

9.6 Erosion of skills: The more people rely on data-driven tools like GPS, the more it erodes their internal navigation capabilities. Decades ago I could navigate around major roads around the UK without a map, but now I am dependent on Google maps. This increased reliance on data driven tools can lead to a decrease in the development and use of certain skills.

As we introduce more automation and AI, we begin to collapse the bottom 2 or 3 rungs of the traditional PMO career ladder. New career pathways will emerge, but we need to work collectively to shape them and ensure we provide a route for progression and retention, without collapsing the career pyramid.

9.7 Lack of transparency: PMOs can sometimes be regarded as a black hole, sucking in vast amounts of data, but there often isn't sufficient time to underpin the feedback loop. Transparency issues regarding how the scores are derived nor what data are used to determine them can lead to mistrust and misuse of data-driven systems.

9.8 Surveillance: When does assurance become surveillance. Imagine a world where we can rate the effectiveness of a risk manager, stakeholder manager or others. How effective were they at managing the downside? How many actions did they close out on time? We create 'Fantasy Football' level stats on the performance of each team member. Microsoft Viva can also provide insights into team and individual productivity. The issue isn't the availability of the data, the challenge for the PMO is how the data is used and the ethics.

9.9 Malign actors: Some people might want to "bury the evidence", which could be a significant concern in a data driven environment. When data reveals problems or failures, the instinct might be to conceal rather than confront these issues. There are a number of other challenges to be alert to.

- **Data deception:** Data can be manipulated or misrepresented to support a particular narrative, leading to deceptive practices and misguided decisions. Even worse if senior leaders are trying to disrupt the 'forensic data plume' that can be used to hold them to account.
- **Data manipulation:** Data manipulation involves processing, organizing, and cleansing data so that businesses can easily understand it when making strategic decisions. However, if done with ill intent, it can distort the reality and lead to incorrect conclusions. How many projects have you worked on where you have had to manipulate the answer to fit the predetermined view?
- **Data deletion:** Deleting data can lead to a lack of transparency and accountability.
- **Misuse of data:** Data can be misused for personal gain or to harm others. This isn't black and white... there is a scale, some of which may be unconscious.

A Next Generation PMO can deploy agents or scripts to stay alert to these concerns, developing a rich picture of independent oversight, which would otherwise remain hidden out of sight. Like speeding on a motorway, if someone knows that they may be caught out, it can drive behaviour to ensure that the integrity of the data driven process is maintained.

The human perspective – intuition, experience, and creativity – remains invaluable. Data should inform and guide, but not override, the human element in project delivery. Conversely, if someone is continually overriding the data it may be indicative of deeper issues.



In a properly automated and educated world, then, machines may prove to be the true humanizing influence. It may be that machines will do the work that makes life possible and that human beings will do all the other things that make life pleasant and worthwhile

10 Leveraging high quality project data to unlock the Next Generation PMO

In the evolving landscape of project delivery, the role of PMOs has expanded beyond its traditional scope. As we transition into an era where data is a pivotal asset, PMOs must place a strong emphasis on curating data, ensuring data quality, validating data, and developing end-to-end data pipelines. This focus is not merely a matter of efficiency but a strategic imperative for several reasons:

10.1 Enhanced decision-making: High-quality, well-curated data is foundational for informed decision-making. In the context of PMOs, where decisions can have wide-ranging impacts, reliance on accurate and timely data is paramount. This necessitates a robust framework for data curation and validation to ensure that information used to guide project directions and strategies is reliable and pertinent.

10.2 Compliance and governance: With increasing regulatory demands and governance standards, PMOs must ensure that their data practices comply with legal and ethical guidelines. This underscores the need for stringent data quality and validation processes. Managing sensitive information and controlling access is paramount in maintaining data security and confidentiality. PMOs must implement robust data governance policies to safeguard sensitive information and define clear protocols for data access and sharing. In some organisations, this will be the responsibility of the Chief Data Officer or Chief Information Security Officer, but the PMO must have a level of understanding to ensure that the data pipelines are optimised, safely.

10.3 Data alignment: PMOs will become repositories of vast and varied data streams, providing a wealth of information that could be pivotal in solving complex project challenges. However, a common obstacle faced by many PMOs is the misalignment of this data with the specific problems they are endeavouring to address. This misalignment can manifest in several ways:



- **Scope misalignment:** Often, the data collected or accessible by PMOs is either too broad or too narrow in scope, making it challenging to apply effectively to solve specific project issues. For instance, overly broad data can lead to an overwhelming amount of information, much of which may be irrelevant to the task at hand. Conversely, data that is too narrow can overlook critical insights that could be crucial for comprehensive problem-solving. This makes it difficult for project professionals to know where to focus attention.
- **Data quality issues:** Another significant issue is the quality of the data. In many cases, data may be outdated, incomplete, or inaccurate, or of poor quality (see [data quality dimensions](#)) which prevent organisations from unlocking the potential of advanced data analytics and AI. The lack of standardisation in data collection and processing further exacerbates this issue, leading to inconsistencies and unreliable datasets.
- **Lack of strategic data alignment:** Beyond the scope and quality, there is often a disconnect between the strategic objectives of the PMO and the data being collected. Data must not only be relevant and of high quality but also aligned with the overarching goals and challenges of project delivery; getting to the very essence of the PMO's purpose. This requires a strategic approach to data management, ensuring that the data collected and analysed directly contributes to solving the PMO's most pressing problems.
- **Inadequate data integration and analysis:** The potential of data is not fully realised when it is siloed or poorly integrated. Effective problem-solving necessitates the integration of data from various sources and its comprehensive analysis. PMOs need to implement advanced data analytics tools and techniques to synthesise and interpret data, deriving actionable insights relevant to their specific challenges.

10.4 Leveraging external data sources and supply chain integration: To maximise effectiveness, PMOs should not only focus on internal data but also leverage data from external sources, including supply chain partners and the broader community. Integrating and analysing data across organisational boundaries can help to train models, delivering insights that simply cannot be delivered using single organisation data sets.

In conclusion, for PMOs to remain effective and competitive, a strategic approach to data management is essential. This involves not just the technical aspects of handling data but also an organisational commitment to data quality, integrity, and security. By prioritising these areas, PMOs can enhance their effectiveness, agility, and resilience in the face of complex project management challenges.

‘Support the development of a thriving intermediary ecosystem that enables responsible data sharing’

UK National Data Strategy

10.5 Smaller organisations: Throughout my journey in data driven project delivery I have been challenged by smaller organisations about whether it will apply to them because they often lack the volume of data to train the machine learning models:

Arguments for:

- **Increased efficiency:** Small organisations can leverage the efficiency improvements provided by AI and data analytics, such as automating routine tasks, optimising resource allocation, and enhancing project planning. Over the long term, investment in these technologies can lead to cost savings by reducing inefficiencies, preventing expensive errors, and optimising operations.
- **Collaboration:** Several of these capabilities require the configuration of low code tools, code or systems. Emerging communities of practice are pooling capabilities for the benefit of all, reducing barriers to entry; including Project Hack. No single organisation will possess enough data to dominate. Data pooling will grow.
- **Scalability:** AI and data analytics can help small organisations manage growth effectively, as these technologies can scale with the business, accommodating increasing data and complexity over time. Smaller companies are also more agile, deploy new capabilities and ways of working very quickly.
- **Competitive edge:** Employing AI and data analytics can give small organisations a competitive advantage, enabling them to make informed decisions typically only possible for larger companies with more resources. New roles and services will also emerge, disrupting the commercial models of the larger companies (see [Innovator's Dilemma](#)).

Arguments Against:

- **Substantial Initial Investment:** The upfront cost for AI and data analytics tools, along with necessary training and implementation, can be significant, posing a hurdle for small organisations with limited budgets. Conversely, it can be relatively easy to get started via the Microsoft Power Platform and similar low code tools.
- **Complexity and expertise required:** Implementing these technologies often demands specialised knowledge and skills. Small organisations may not have staff with the required expertise and might struggle to afford or attract such talent.
- **Data access, quantity and quality issues:** Effective AI and analytics require large amounts of high-quality data. Small organisations may not produce enough data, or their data might be too fragmented or of poor quality. They may lack the leverage over the supply chain, or contracting mechanisms, to gain access to data
- **Data security and privacy concerns:** Smaller organisations might not have the infrastructure and resources necessary to ensure the security and privacy of the data used in AI and analytics processes, potentially creating vulnerabilities.

Will a two tier project delivery ecosystem emerge? Those who are project delivery organisations will be compelled to act. For smaller companies, where project delivery is a side salad rather than a main course, it is likely that they will increasingly fall behind. Market forces will shape individual strategies.

11 Managing Emergence in PMOs: Beyond Agile Methodologies

PMOs must adeptly manage the emergence and complexity inherent in projects of all scales, including large infrastructure projects which are subject to frequent change and uncertainty. This section of the report explores the strategies PMOs can employ to navigate the multifaceted nature of project emergence, extending beyond the confines of Agile methodologies.

11.1 Agile PMOs: For some, the answer will be an Agile PMO that adopts and promotes Agile methodologies within an organisation. Unlike traditional PMOs, which can often focus on governance, standardisation, and control of project processes, an Agile PMO emphasises flexibility, adaptability, and the rapid delivery of value.

The Agile PMO embraces the core principles of Agile, such as iterative development, continuous feedback, and a high level of team autonomy. It encourages project teams to adopt these principles in their workflows. It offers support and guidance to project teams in implementing Agile practices. This can include training, coaching, and the provision of resources and tools necessary for Agile project management.

Agile PMOs facilitate collaboration across different teams and departments. They help break down silos within the organisation, promoting a culture of open communication and collective problem-solving. They prioritise delivering value to customers and stakeholders. Agile PMOs work to ensure that projects align with business goals and deliver tangible results in a timely manner. They support adaptive planning processes, acknowledging that change is constant and inevitable. They help teams adjust their plans dynamically in response to emerging information and changing circumstances.

Although less rigid than traditional PMOs, Agile PMOs still track performance and progress. However, the metrics used are typically more aligned with Agile principles, focusing on deliverables, team velocity, and customer satisfaction rather than just adherence to schedules and budgets.

In larger organisations, the Agile PMO may also play a role in scaling Agile practices beyond individual teams to larger, more complex projects and programs, ensuring consistency and coherence in Agile adoption across the organisation.

In essence, an Agile PMO is more of a facilitator and coach than a controller, shifting the focus from enforcing compliance to empowering teams.

EXAMPLE

Imagine you're playing a video game where the world changes every time you make a move, and there's no set path to win. Project emergence is like playing this game. It means that when working on a project, especially in situations where things are uncertain and keep changing, you can't plan everything from the start. Instead, you try different things, see how they work out, learn from them, and gradually figure out the best way to go. It's like learning and adapting as you go, rather than following a strict plan.

11.2 The case for a hybrid PMO. The Agile approach, while highly effective for many projects, may not be ideal for all, particularly large infrastructure projects. This is due to several factors:

- **Complexity and scale:** Large infrastructure projects often involve complex systems, extensive regulations, long timelines, and numerous stakeholders. These elements can make the flexible, iterative approach of Agile challenging to implement effectively.
- **Predictability and planning:** Infrastructure projects typically require detailed upfront planning due to factors like budget constraints, safety regulations, planning permission, environmental impact assessments, and coordination with multiple contractors and agencies. Agile's emphasis on adaptability and evolving requirements misaligns with this need for certainty.
- **Regulatory and compliance issues:** Such projects often have strict regulatory and compliance requirements that demand a high degree of documentation and process control, which is more characteristic of traditional project management methods.
- **Resource allocation and logistics:** The large-scale allocation of resources (like materials, machinery, and labour) in infrastructure projects requires careful, long-term planning that might not align well with the short-term, iterative cycles of Agile methodologies.

This is where the Cynefin framework can help in understanding the nature of the project and deciding the appropriate management approach. Cynefin categorises problems into five domains: Simple, Complicated, Complex, Chaotic, and Disorder.

For large infrastructure projects, rather than regarding the entire project as complex, or emergent, it can be helpful to categorise the specific work package or challenge ahead. Some of these challenges might often fall into the **Complicated** domain (requiring expert knowledge and good practice) or **Complex** domain (where outcomes are unpredictable, and emergent practice is needed).

For the **Complicated** aspects, a more traditional, plan-driven approach might be more effective, while for the **Complex** aspects, a more flexible approach may be required.

Thus, a **Hybrid PMO** approach may be the answer. This approach combines the strengths of both Agile and traditional project management methodologies:

- **Use of Agile where appropriate:** Apply Agile methodologies to components of the project that benefit from flexibility, such as software development for control systems, or in areas where requirements are expected to evolve.
- **Traditional methods for stability:** Use traditional project management for aspects that require detailed upfront planning, strict compliance, and coordination on a large scale.
- **Adaptive and responsive:** The Hybrid PMO remains adaptive, using the most appropriate methodology for each aspect of the project, depending on its nature and requirements.
- **Balanced metrics and control:** Implement a balanced set of metrics and control mechanisms that cater to both Agile and traditional project needs.

In conclusion, while a purely Agile PMO might not be suitable for all projects, particularly large infrastructure projects, a Hybrid PMO that judiciously applies both Agile and traditional project management principles as guided by the Cynefin framework can provide a more effective and flexible approach.

A refresher....

11.3 Cynefin Framework The Cynefin framework is a conceptual tool used to aid decision-making by categorising problems and situations into distinct domains based on their level of complexity. Developed by Dave Snowden in 1999, it helps leaders understand the context they are operating in so they can choose the most appropriate approach to decision-making and problem-solving. The framework consists of five domains:

- **Simple (or Obvious):** In this domain, the relationship between cause and effect is clear, and the right answer is self-evident. Problems are straightforward, and solutions are easy to identify. The approach is to Sense - Categorise - Respond, and best practices can be applied.
- **Complicated:** Here, the relationship between cause and effect requires analysis or expertise; there are right answers, but they are not self-evident. This domain requires experts to analyse situations and suggest solutions. The approach is to Sense - Analyse - Respond, and good practices are often used.
- **Complex:** In the complex domain, the relationship between cause and effect is only clear in hindsight. There are no right answers, and outcomes are unpredictable. The approach is to Probe - Sense - Respond. This domain requires experimentation and understanding emergent patterns. It often benefits from an Agile approach.
- **Chaotic:** In this domain, there is no clear relationship between cause and effect. The focus is on finding a way to stabilise the situation. The approach is to Act - Sense - Respond. Quick, decisive action is required to establish order.
- **Disorder:** This is the central domain where it is unclear which of the other four domains applies. Here, leaders need to break down the situation into constituent parts and assign each to one of the other four domains.

The Cynefin framework is particularly useful in complex or uncertain situations, helping leaders to avoid applying a 'one-size-fits-all' approach. It emphasises that different situations require different management and decision-making styles.

Navigating complexity and chaos with probes and sensemaking For projects that fall into the Complex and Chaotic domains—where predictability is low and the relationship between cause and effect is understood only in retrospect—PMOs need to employ exploratory methods such as probes, sensemaking, and the detection of weak signals. These approaches allow for the identification of patterns and emergent pathways that can inform decision-making. By initiating small-scale interventions (probes), PMOs can test the waters, learn from the interventions, and sense the changes to navigate through complexity and disorder.

Sensemaking in these domains is crucial for interpreting the data collected from these probes, enabling PMOs to craft appropriate responses to unexpected events and emerging trends. Monitoring weak signals helps in anticipating disruptions, while understanding lead and lagging indicators can provide early warnings and post-occurrence insights essential for managing unpredictable project landscapes.

Optimising the clear and complicated parts of projects In the Clear and Complicated domains, where outputs and outcomes are more predictable and the cause-and-effect relationships are more discernible, PMOs can leverage data from past projects to train predictive models and derive valuable insights. By harnessing historical data, PMOs can optimise processes through enhanced data analytics, significantly improving efficiency and effectiveness in planning, execution, and monitoring phases. Predictive models, trained on rich datasets from past projects, can help PMOs and projects to more accurately forecast project timelines, resource utilisation, and potential bottlenecks. This data-driven approach empowers PMOs to apply best practices and expert knowledge more effectively, ensuring that decision making is grounded in evidence and past experience.

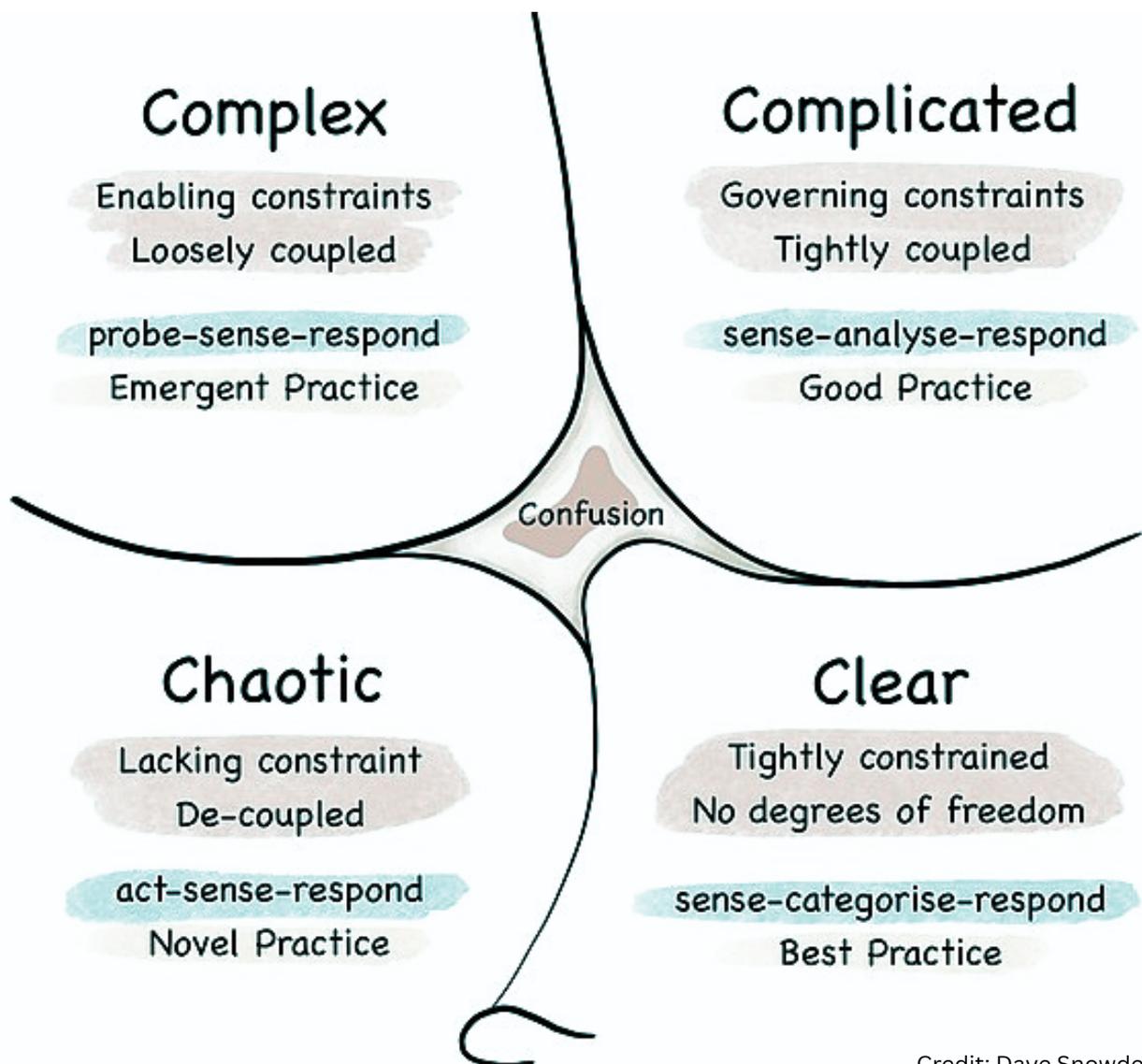
In the context of transformation projects, consider the example of a major healthcare system overhaul. This project, inherently complex and at times chaotic, will require the PMO to navigate through a myriad of unforeseen challenges and stakeholder needs.

During the initial phase, the PMO can employ the Cynefin framework to categorise various aspects of the project. For the system's digital transformation component, which may be largely unpredictable and involves rapidly changing technology and user requirements, methods applicable to the Complex domain may be more appropriate. Here, the PMO will utilise exploratory probes such as pilot programs to test new systems, leveraging early solutions (Minimum Viable Products). These small-scale interventions can provide invaluable insights into user behaviors and system responses in real-world settings. Sensemaking is critical in this phase, as the PMO will have to interpret the results from these pilots, often understanding the cause and effect in retrospect, to adapt their approach continually.

In contrast, the infrastructure upgrades of hospital buildings can be classified in the Complicated domain. Here, the relationship between cause and effect is more straightforward, though expert knowledge is required. The PMO can leverage data from past infrastructure projects to predict timelines and resource allocation. Predictive models can help in identifying potential bottlenecks, allowing for preemptive planning. But if the infrastructure is being used as a catalyst to transform how medical services are delivered, it can begin to transition into the complex domain.

Infrastructure projects Even in the traditionally rigid domain of large infrastructure projects, PMOs must adapt to emergence. The Cynefin framework guides PMOs in these scenarios by identifying when to apply traditional project management techniques and when to embrace adaptive strategies. This adaptive approach ensures that PMOs are not caught off-guard by emergent issues and are always prepared to recalibrate their strategies in response to the project's evolving context.

Summary Managing emergence effectively requires PMOs to be versatile, adopting a range of methodologies tailored to the nature of the project environment. By utilising the Cynefin framework, PMOs can categorise project challenges and apply data-driven strategies that are both responsive to emergent conditions and optimised for more stable project domains. This adaptive capability is essential for PMOs to deliver projects that meet and exceed the dynamic needs of their organisations



Credit: Dave Snowden and the Cynefin Company

Illustrative example: The bridge construction project

Consider the construction of a major bridge—envisioned to be critical to connect two major economic zones. In the initial phases, the project seems Clear, with established best practices ensuring a straightforward path to completion. As the project progresses, unforeseen geological complexities push it into the Complicated domain, requiring expert analysis and updates to the implementation plan.

However, during construction, unexpected extreme weather events and ecological concerns shift the project into the Complex domain. Here, the PMO deploys probes to understand the impact on the project and the effectiveness of interventions within the supply chain. The detection of weak signals, such as minor shifts in wildlife patterns or community concerns, may indicate larger underlying issues that could escalate into significant obstacles.

Finally, a sudden political upheaval via an election thrusts the project into the Chaotic domain. The PMO must rapidly respond with crisis management strategies, employing real-time data to navigate through the turmoil and to find a path to stabilise the project.

Illustrative example: The vaccine rollout project

Imagine a project centred on the rapid development and deployment of a vaccine in response to a global health crisis. Initially, the project might seem Chaotic, with high urgency and limited information. The PMO responds with crisis management protocols, quickly mobilising research teams and securing funding.

As the vaccine is developed and tested, the project moves into the Complex domain. The PMO utilises iterative testing and feedback loops, constantly adapting to new information about the vaccine's efficacy and safety. Data analytics play a critical role in sensing patterns from trial results and public health data, guiding the adaptive management of the project.

Upon successful trials, the project transitions into the Complicated domain, navigating the regulatory landscape. Expert knowledge is leveraged to ensure compliance with health regulations and to secure necessary approvals.

Finally, with the vaccine approved, the project enters the Clear domain. The focus shifts to optimising the manufacturing process and distribution. Data analytics ensure that production is scaled effectively, with efficient distribution.



“Foresight is not about predicting the future, it’s about minimising surprise”

Karl Schroeder

12 Our predictions for 2024 and beyond

12.1 The exponential rate of change Eddie Obeng's concept of the 'World After Midnight' addresses the rapid pace of change in the modern world, which often outstrips our ability to fully understand and adapt to it. He suggests that many of our traditional ways of thinking, learning, and working are based on outdated understandings of the world. Obeng urges a re-evaluation of these outdated practices and he advocates for more agile and adaptive approaches to learning and problem-solving in order to keep up with the constant and rapid changes in today's world.

Azeem Azhar's book, Exponential, makes the argument that we are living in an exponential era and technology is evolving much faster than traditional systems can adapt. Azhar discusses the challenges and opportunities these changes present, emphasizing the need for a new understanding and approach to governance, business, and societal structures. The book is a call to action to harness the potential of exponential technologies responsibly and equitably, ensuring they benefit society as a whole.

More recently, in 2024, a survey of 2,778 researchers concluded that “*if science continues undisrupted, the chance of unaided machines outperforming humans in every possible task was estimated at 10% by 2027, and 50% by 2047. The latter estimate is 13 years earlier than that reached in a similar survey we conducted only one year earlier*”.

In 2024, we will start to see a coalition building to co-create data driven solutions to PMO challenges, at pace.

12.2 Getting to critical mass In 2023 the UK's Infrastructure Project Authority set out a strategic objective, to enable data driven performance by 2025 by “using data, analysis and experience to drive continuing improvement in government project delivery planning, performance and outcomes”. A bold ambition, but 2025 isn't that far away and progress is hard won. We anticipate that the professional bodies, project data analytics community and other groups will unite around this vision and help to drive it forward, coalescing around a series of shared goals and objectives.

We will also see a tenfold increase in the number of project professionals getting upskilled to help to underpin this objective; with Projecting Success' Project Data Academy being at the heart of this initiative. Organisations such as the UK Ministry of Defence, Rolls Royce, EDF and many others are committed to this journey and understand the transformational power of data driven project delivery.

12.3 Data enabled or traditional In 2024, we're witnessing a significant shift in the project management industry, propelled by an unstoppable wave of data-driven transformation. Across various sectors, roles that were traditionally not associated with data analytics are now rapidly evolving, integrating data into their core functions. Marketing professionals, for instance, are no longer just crafting creative campaigns; they're using data to tailor messages to specific audiences and measure impact in real-time. Similarly, human resources departments are leveraging data to make better hiring decisions and predict employee trends.

In stark contrast to these advancements, traditional PMO professionals seem to be lagging. Historically, PMOs have relied on conventional methods such as experience-based decision making and standard project management techniques. These methods, while valuable, lack the predictive power and efficiency that data analytics bring. The new breed of data-driven PMOs is setting a different standard. They use tools that analyse project data to predict outcomes, identify variance early, and optimise resource allocation

However, many traditional PMOs are still catching up with this trend. The gap between data-enabled and traditional PMOs is widening, not because traditional methods are ineffective, but because they are not evolving fast enough to incorporate data-driven strategies. This gap represents a significant challenge for traditional PMOs. To remain relevant and effective, they need to embrace data analytics, integrate it into their existing methodologies, and learn from the successes of other roles that have already made this transition.

The industry's shift towards data-driven practices is not just a trend; it's a fundamental change in how decisions are made and projects are executed. PMOs that can adapt and integrate data into their strategies will lead the way in the new era of project management. Those who cannot will find themselves increasingly sidelined in an industry that values data as the key to efficiency, innovation, and success.



In a recent conversation, someone posed an intriguing question: **who owns the intellectual property** of the solutions we collaboratively create? My response was straightforward: **no one**. We choose to open source these solutions, sharing them for the collective benefit. This approach stems from a simple realisation – many of us are independently developing similar solutions, when, in fact, we could be joining forces, combining our resources to achieve progress at a speed 100 times faster.

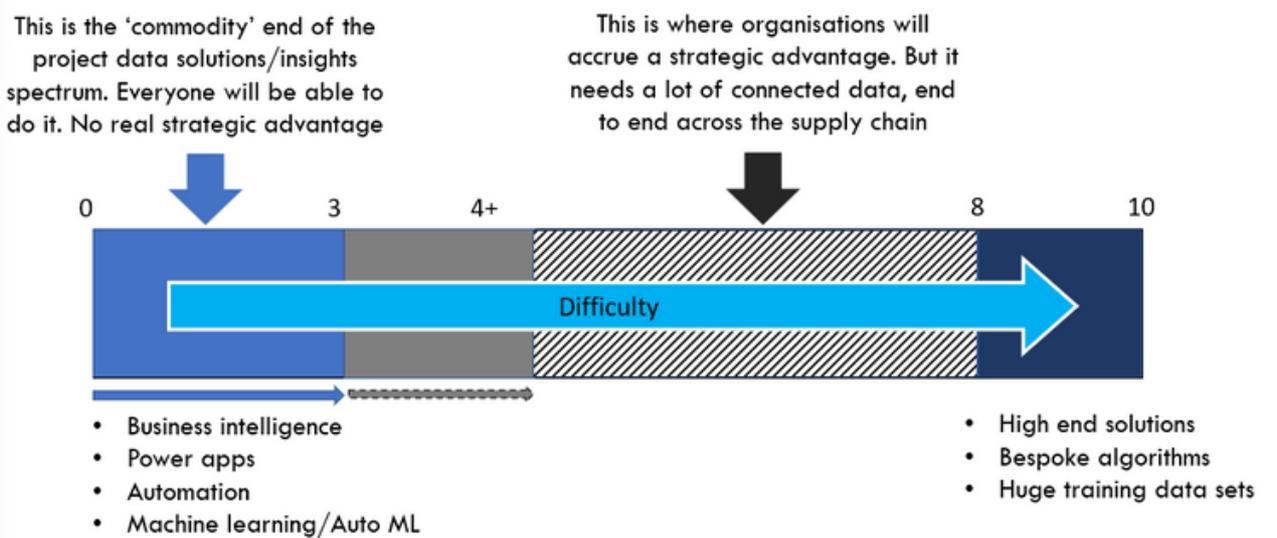
But why adopt this open-source philosophy? The answer lies in the accessibility and adaptability of modern technology. Most of these solutions can be rapidly deployed, often within a few days, by smartly configuring existing platforms like the Microsoft Power Platform, leveraging readily available code from repositories like GitHub, or employing LLMs to craft these solutions. This methodology not only expedites solution development but also democratises the process, making it accessible to a broader range of contributors.

The accompanying image, a part of my teaching curriculum at the Project Data Academy, illustrates a spectrum of solutions varying in complexity. While some solutions demand extensive data and analysis at a PhD level, others are more straightforward, requiring just the right tweaks to existing systems – provided you have the know-how.

Let's consider a spectrum where the low-code, common solutions are rated as 0 and the high-end, sophisticated solutions like those offered by nPlan are rated as 10. This framework helps us identify areas for collaboration that don't impinge on proprietary interests or commercial advantages.

By focusing our collective efforts on developing solutions in the 0-4 range, we can achieve exponentially more with the same level of investment. What's even more exciting is how we can use these tools to standardise our approach. Instead of pushing for universal adoption of official standards, which can be challenging, we drive consistency through the input data and the tools themselves. This approach not only streamlines the process but also fosters a more cohesive and efficient standardisation, tailored to the practical realities of our field.

In essence, by sharing resources and knowledge openly in the lower complexity range, we not only accelerate innovation but also establish a foundation of standardisation that benefits everyone involved, creating a ripple effect of efficiency and progress across the industry.



12.4 Data or tool driven We are on the cusp of witnessing a split in industry approaches towards project management. On one track, there are organisations that deploy specific tools as solutions for their project delivery challenges. On the other, a rising number of entities are adopting a data-first approach, supported by a tool-agnostic strategy. This latter approach represents a fundamental shift in perspective, prioritising the understanding, curation, integration, and leveraging of data over the tools used to manage it.

The data-first approach suggests that the key to successful project management lies not in the tools themselves, but in the quality and application of data. This approach aligns with the growing recognition of data as a valuable asset, one that, when effectively harnessed, can offer unparalleled insights into project management. Organisations adopting this strategy focus on developing robust data infrastructures, ensuring data quality, and employing analytics to gain actionable insights. They are less concerned with the specific tools used, as long as they support the overarching data strategy.

However, this approach is not without its challenges. It requires a significant investment in data infrastructure and expertise. Organisations must cultivate a culture of data literacy and may need to overcome initial resistance to shifting away from traditional tool-centric methodologies. Despite these hurdles, the data-first approach is anticipated to yield superior outcomes. By placing data at the core of project management, organisations can make more informed decisions, anticipate and mitigate risks more effectively, and ultimately drive project success.

In contrast, organisations that continue to focus primarily on tools may find themselves constrained by the limitations of those tools. While tools are undoubtedly important, they are only as effective as the data they process and the insights they generate. As such, a tool-centric approach may lead to suboptimal decision-making and hinder an organisation's ability to adapt to the evolving landscape of project management.

In conclusion, the trend towards a data-first approach in project management is reflective of a broader shift towards data-driven decision-making in business. This approach, supported by tool-agnostic strategies, is poised to offer significant advantages, enabling organisations to more effectively navigate the complexities of project management and achieve better outcomes.

12.5 Democratisation of solutions In 2024, the landscape of PMO solutions is expected to be revolutionised through the principles of co-creation and democratisation. The development and refinement of PMO tools, such as interactive dashboards, bespoke code for automation, sophisticated data pipelines, and user-centric apps, will be increasingly driven by community collaboration and open innovation.

Initiatives like Project Hack will play a pivotal role in this transformation, harnessing the power of the community to crowdsource solutions, share knowledge, and accelerate development cycles. These hackathons will bring together project managers, data scientists, developers, and other stakeholders to tackle real-world challenges and prototype new tools in a creative, collaborative environment.

Meanwhile, the Project Data Academy will serve as an incubator for talent and ideas, where delegates will hone their skills in data analytics and software development. Empowered by their learning, these individuals will contribute hundreds of fresh solutions, further expanding the repository of resources available to PMOs across industries. The synergy of communal expertise and focused education will pave the way for a new era of PMO solutions that are more accessible, adaptable, and aligned with the evolving demands of project management.

12.6 Large Language Models Despite the widespread popularity of ChatGPT, forecasts suggest a movement towards a more varied landscape of AI assistants, with platforms such as Bard, Claude, Llama, and Mistral gaining increased recognition. Some of these are open source tools and can be deployed locally and securely, trained on local data sets and as such, are intrinsically secure.

In collaboration with the Praxis Framework, Projecting Success were one of the first organisations in the world to develop a community bot, Marvin, trained on >1000 documents specific to the project delivery domain.

We anticipate these models proliferating within organisational boundaries, leveraging the corpus of documentation and data that typically resides behind firewalls. Their performance will be supercharged as they are integrated with databases and graph networks; a source of the truth.

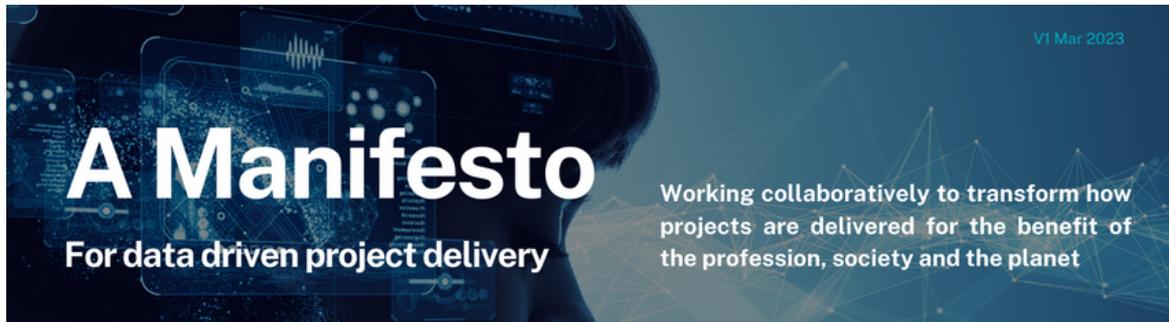
12.7 Getting hold of data An increased emphasis on data integrity and legal considerations: The significance of high-quality training data for the advancement of LLMs is gaining increased recognition. As the field of AI continues to evolve, aspects such as data integrity, observability, and legal considerations including licensing and privacy are becoming increasingly important. For generative AI, which is a data product in its own right, the availability of reliable, high-quality data is crucial for its effective operation.

We anticipate a split in the profession. Some organisations have strategies to hoard as much data as possible to train their models or gain an upper hand on their competitors, particularly software and tool vendors. Conversely, it is in the interest of major clients to leverage the data and insights from their projects to make projects more investable and certain. Public sector clients also have a legal mandate around social value, which should reward those suppliers who work in the collective interest rather than more narrow interests. Data trusts provide an effective mechanism to underpin data pooling, whilst respecting commercial sensitivities. Data trusts are likely to achieve critical mass in late 2024.



I anticipate these models proliferating where public sector clients also have a legal mandate around social value, which should reward those suppliers who work in the collective interest rather than more narrow interests. Data trusts provide an effective mechanism to underpin data pooling, whilst respecting commercial sensitivities. Data trusts are likely to achieve critical mass in late 2024.

The Manifesto for data driven project delivery, developed by the Task Force and supported by government and the professional bodies, reinforces many of these principles. It will become increasingly important in the coming months.



-> Better together than alone ->

1. We use data analytics to bust project management myths and beliefs.

Data analytics is used to reimagine how we work and discover new and effective project management practices rather than simply automating ineffective practices of the past.

2. All projects are data designed and enabled.

The project and its host organisation have a data strategy, ensures their data is safe and secure, understands their data analytics culture/maturity and have a plan to improve. Complex multi-organisational projects have a data integrator.

3. We pool our data to maximise insights.

Project budgets and contracts are set up to ensure data pooling end-to-end across the project ecosystem to maximise insights. We contribute to and use data trusts to safely and securely collaborate across organisational boundaries and benefit from bigger data sets to leverage on current and future projects.

4. We collaborate on opensource data analytics solutions tackling priority challenges.

The numerous opensource solutions already available through the commons* are used to avoid reinventing the wheel. Everyone contributes to the commons and develops a shared understanding of the priority project delivery challenges that we aspire to solve.

5. We re-skill for a digital and data-enabled world.

We improve data literacy by investing in data analytics skills at all project levels and across all roles. New roles emerge, some change and some go as project management practices become data enabled.

6. Data Analytics is codified in all aspects of project delivery best practice and culture.

Our professional bodies include data analytics in their respective Bodies of Knowledge, competency frameworks, qualifications and methodologies. They align on data standards to drive up data quality and increase the trust we place in data.

* "Commons" is a social practice of governing a resource not by state or market but by a community of users that self-governs the resource through institutions that it creates. An example of an intellectual commons is Wikipedia.

Better data -> better insights -> better decisions -> better projects -> better outcomes

In 2018, I embarked on an arduous journey to gain access project delivery data. I tried to access the data directly, but was unsuccessful. With no other routes open to me I filed a series of Freedom of Information requests. I experienced a mix of positive and negative replies, but persevered with appeals, ultimately achieving success in the Crown Court.

This was a landmark in establishing the principle that the government is a custodian of public data, not its owner. I really believe in the transformative power of data-driven project delivery. While we may have limited sway over private sector data, public sector data is a treasure trove for the common good, which we have a collective responsibility to leverage, safely and in a measured way.

There's been a positive shift in government policy, making it more supportive of this vision. Although the path to fully unlocking this potential is still being paved, I'm optimistic about the future. Data trusts are already laying the groundwork for secure data pooling, balancing individual project concerns with broader public interests. I'm excited for what 2024 holds. The following quote, fresh from the centre of government, sheds light on the promising developments ahead.

“And since both local and national government are among the largest data holders in the country, we are sitting on a potential goldmine of useful information that could be the key to growth for so many businesses. So today, I am committing to the data-driven scale-up agenda and will be making data access a government priority this year – looking at ways of improving data access and data use in order to fuel even faster growth in scale-ups, whilst of course continuing to prioritise data privacy and data consent“

Michelle Donelan Science, Innovation and Technology Secretary. 16 Jan 2024



A coalition of the willing

In 2024, a transformative movement is reshaping project delivery: the '**coalition of the willing**'. This alliance, a diverse mix of organisations, is united in its mission to become the motive force behind data-driven project delivery. Together, they're pooling resources and expertise to catalyse a monumental shift in the industry, harnessing the power of data to redefine project management.



At the heart of this coalition are the members of the Project Data Academy. Using their apprenticeship projects, they're creating modules of capability, each a crucial piece of the larger jigsaw. Their solutions will be pooled within the coalition, and hopefully beyond, driving forward the coalition's mission.

This coalition is more than a collaboration; it's a movement. We invite you to participate. Whether you're part of a company, a startup, or an individual with a passion for project delivery, your contribution is essential in co-creating the future.

Join us in this revolution. It's not just about accelerating change; it's about transforming the way we manage projects. This is a call to those who believe in the transformative power of data-driven solutions. Together, let's create a more efficient, impactful future in project management.

Your involvement means joining a community that values innovation, collaboration, and open sharing. Let's unite to shape the future of project management, making history one data-driven solution at a time.



“Find a group of people who challenge and inspire you, spend a lot of time with them, and it will change your life forever”

Amy Poehler

About....

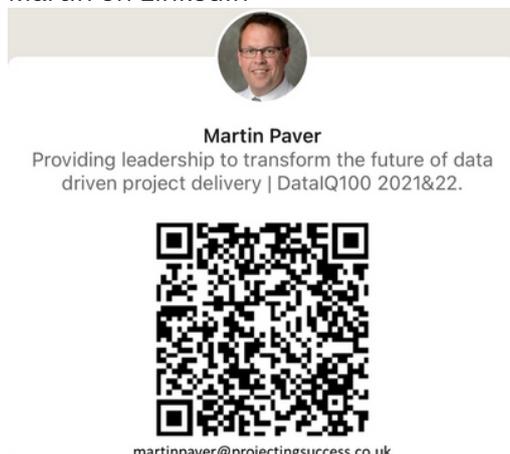
*“Give a man a fish, and you feed him for a day;
teach a man to fish and you feed him for a lifetime”*

This book was written by Martin Paver, CEO and founder of Projecting Success. In 2017 he proudly founded the Project Data Analytics Community, bringing people together to champion the cause for data driven project delivery. He is a Chartered Project Professional and Fellow of the APM. A member of the APM Data Advisory Group and founding member, and ex-Chairman, of the Project Data Analytics Task Force. Plus, he loves this stuff!

At Projecting Success we have a mission to improve project delivery by leveraging the power of data. Momentum is building, but it is slower than it could and should be. We help organisations to accelerate the rate of change, build rapid solutions, and build internal data capability. We blend our wide breadth of experience in delivering \$billion projects and portfolios with an in depth knowledge of data science, data engineering and analytics. We have a dynamic team of highly qualified professionals working at the leading edge of the industry. We are proud to be shaping the future of the profession.



Martin on LinkedIn



Martin in a parallel Monsters Inc reality



If you are interested in learning more about next generation PMOs then please contact us!
enquiries@projectingsuccess.co.uk

Please share my thanks to the following organisations and individuals who have kindly contributed to, or reviewed, this book and have kindly made a donation to Leukemia Care

Leukaemia Care
YOUR Blood Cancer Charity



Please donate



James Garner
Donnie MacNicol
Nermeen Latif
David Belshaw
Stephen Jenner
Simon Evison
Garry Hart



THANK YOU

