



The Start of the PMO Journey in Project Data Analytics

David Belshaw – Head of Project Management, Rolls-Royce

Craig Bennett – Project Controls Specialist, Rolls-Royce

Talk Objectives

1. Learn how a PMO has implemented project data analytics and get practical tips and advice on how to apply project data analytics in your own PMO.
2. Explore how digital forms and workflows can replace paper-based processes and can save costs and time.
3. Discover the potential of project data analytics for the future and how it could affect the role of PMO.

Introductions



David Belshaw

- Leads a PM function of 450 people
- Passionate about PM, PMO and building PM capability.
- Chair of Project Data Analytics Coalition

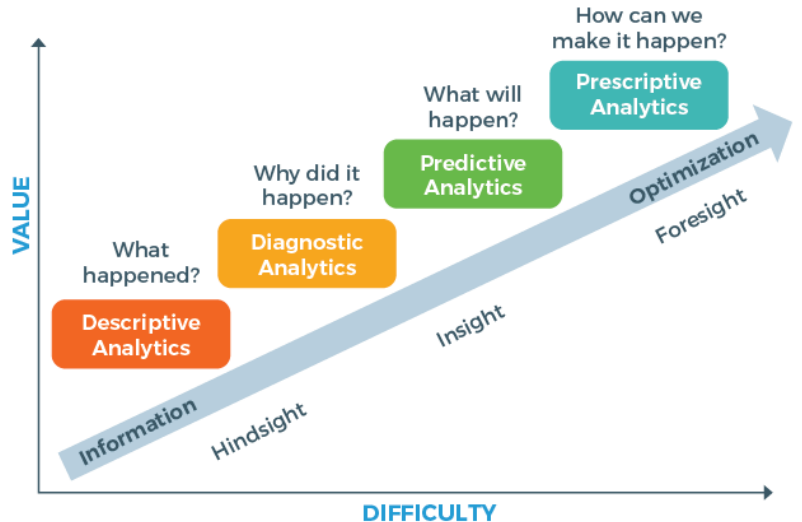


Craig Bennett

- Project Controls Specialist leading a number of digital PM improvements.
- Passionate about process efficiency, new technology and challenging the status quo.

What is Project Data Analytics?

- Project data analytics is the use of past and current project data to enable effective decisions on project delivery.
- It involves applying different types of analytics to various aspects of project management, such as resource allocation, budgeting, scheduling, risk management, quality control, etc.
- Project data analytics can help project managers and stakeholders improve project performance, efficiency, and outcomes by using data-driven insights and recommendations.



Why should RR pursue project data analytics?

- We need to do more for the same.
- We spend too much time reporting/feeding the beast.
- We are seeing increasing demand for specialist PM skills.
- New technology is available and if we don't use them we will fall behind.
- The potential benefits are immense.

How can Project Data Analytics help us?

Predictive Analytics for Delivery Performance:

- Identify factors that contribute to delays or issues in project delivery.

Resource Optimisation:

- Use data analytics to identify resource allocation inefficiencies.

Data Integration

- Integrate data from various sources, such as project management software, timesheets, HR systems, and more.

Productivity Improvements:

- Implement AI-driven tools or systems to automate repetitive tasks and streamline workflows.

AI-Powered Resource Allocation:

- Utilise AI algorithms to allocate resources dynamically based on project needs and team availability.

Real-time Monitoring:

- Implement real-time monitoring and reporting dashboards to track resource utilisation, delivery performance, and productivity.

The Rise of Low-code

Low-code platforms enable users to build applications by using graphical user interfaces, drag-and-drop components, pre-built templates, and other features that simplify the development process

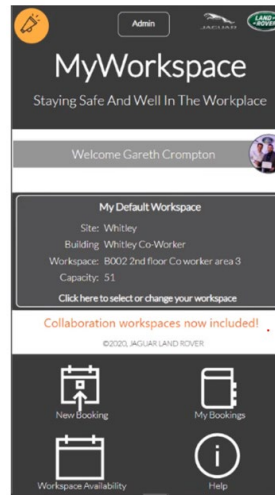
- Reduce reliance on IT or software engineers
- More flexibility and speed
- Fosters innovation and is enabled by a host of other technologies

AI tools existing that can create high quality code:

- From natural language
- Convert different programme languages
- Review code for bugs
- Identify improvements
- Add commentary

Open source technology and code:

- 1000s of AI tools
- Open Source LLMs
- Code repositories



Digital Forms and Workflows

The Problem

7

Standard Change Request forms

AX3131 [Project Change Request](#)

TX1517 [Change Request](#)

TX3014 [Change Request](#)

TX3125 [Change Request - CCA Spares](#)

TX3218 [CPC Administrative Baseline Change Request Form](#)

TX3219 [CPC Standard Baseline Change Request Form](#)

TX3315 [Change Request Form](#)

2

May-19

S Morris

PP 5

Projects and programme
s
Engineer products
Engineer products
Supply products

6

P Britton

2

Dave Bradish

1

A Scott

4

May-15

A Scott

1

Feb-20

A Heath

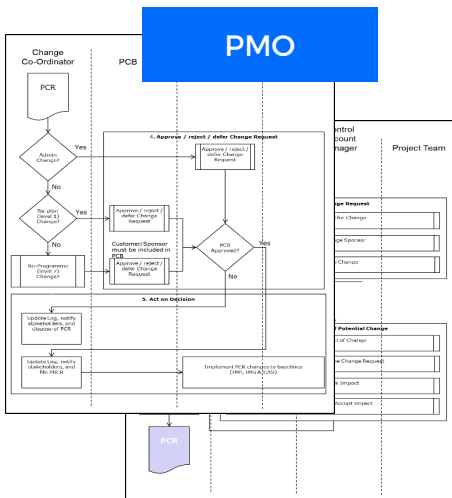
Status of Project Change Request
is unknown

Project Change Requests
completed without Baseline
Change Requests

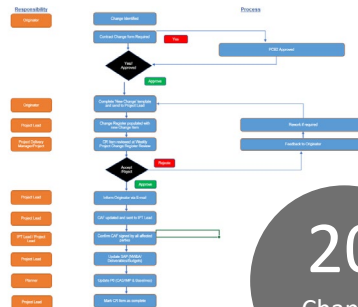
75

Fields not required or duplicates!

How we managed Project Change



Project A

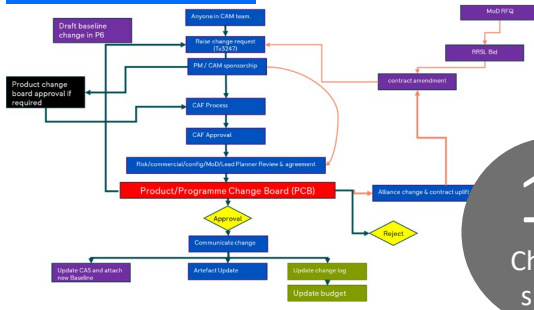


20
Change
s p/m

Project D

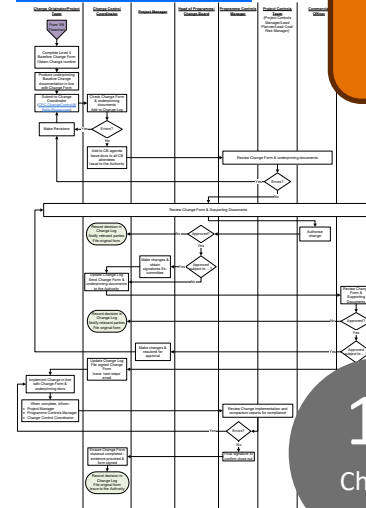
2
Change
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Project C



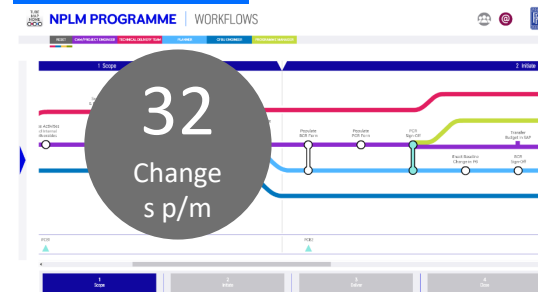
12
Change
s p/m

Project B



16
Change
s p/m

Project E



32
Change
s p/m

Process First

- Reviewed many standards, this just shows how simple it could be.
- We are closely aligned to APM.

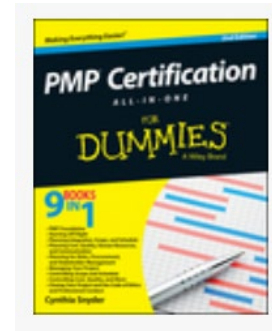
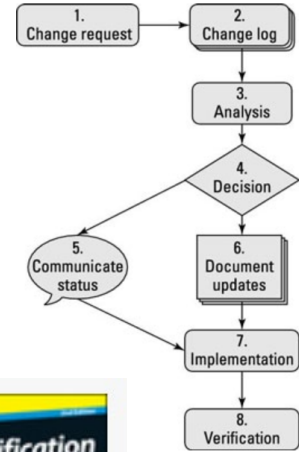
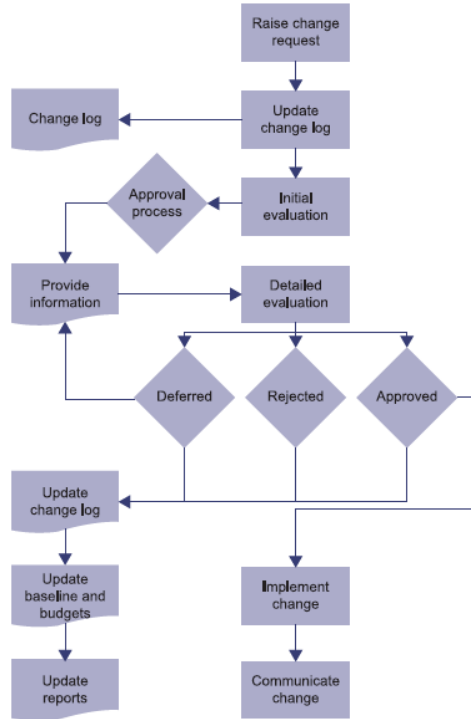


Figure 4.3.6 A change control process

Source: *Planning, Scheduling, Monitoring and Control* (2015)

Key Requirements

1

No duplication of data between BCR and PCR.
Baseline changes and project changes are both done through one form and one process.

2

Clear visibility of status.

3

P6 Baseline aligned to SAP Budget.
Project change process simplified and standardised.

Digital Forms

Why?

- Improves data quality (validation on inputs)
- Allows data to be used and accessed
- Allows for automated assurance
- Data integration with other systems
- Better, improved reporting
- Live status
- Digital Andon (where is flow stopped)

The screenshot displays the 'Project & Portfolio Change Request (PCR)' form from Rolls Royce. The form is structured with a header section containing the Rolls Royce logo, the title 'Project & Portfolio Change Request (PCR)', and a 'Classification' dropdown menu. Below the header, the form is divided into several sections for data entry. The first section includes a 'PCR Title' field and a 'Reporting Area' dropdown. The second section contains 'WBS' and 'Date Raised' fields. The third section features a 'Change Type' dropdown and a 'Status' field set to 'Draft'. The fourth section includes 'Requested By' and 'Author' fields. The fifth section has a checkbox for 'Control Account Authorisation', a 'Linked PCR' field, and a 'Get Data from Linked PCR' button. The sixth section is for 'Change Reason', with a note indicating that 'P' indicates Portfolio Authority Required for Change. The final section is for 'Budget Change Type' with a dropdown menu. The form is designed with a clean, professional layout using a light blue and white color scheme.

ROLLS ROYCE

Classification: Please select a value...

Project & Portfolio Change Request (PCR)

TX-3539

PCR Title *

Reporting Area Please select a value...

PCR No.

WBS

Date Raised

Change Type RR Initiated

Status Draft

Requested By

Author

☐ Control Account Authorisation

Linked PCR

Get Data from Linked PCR

Change Reason

Note: 'P' Indicates Portfolio Authority Required for Change

Please select a value...

Budget Change Type Please select a value...

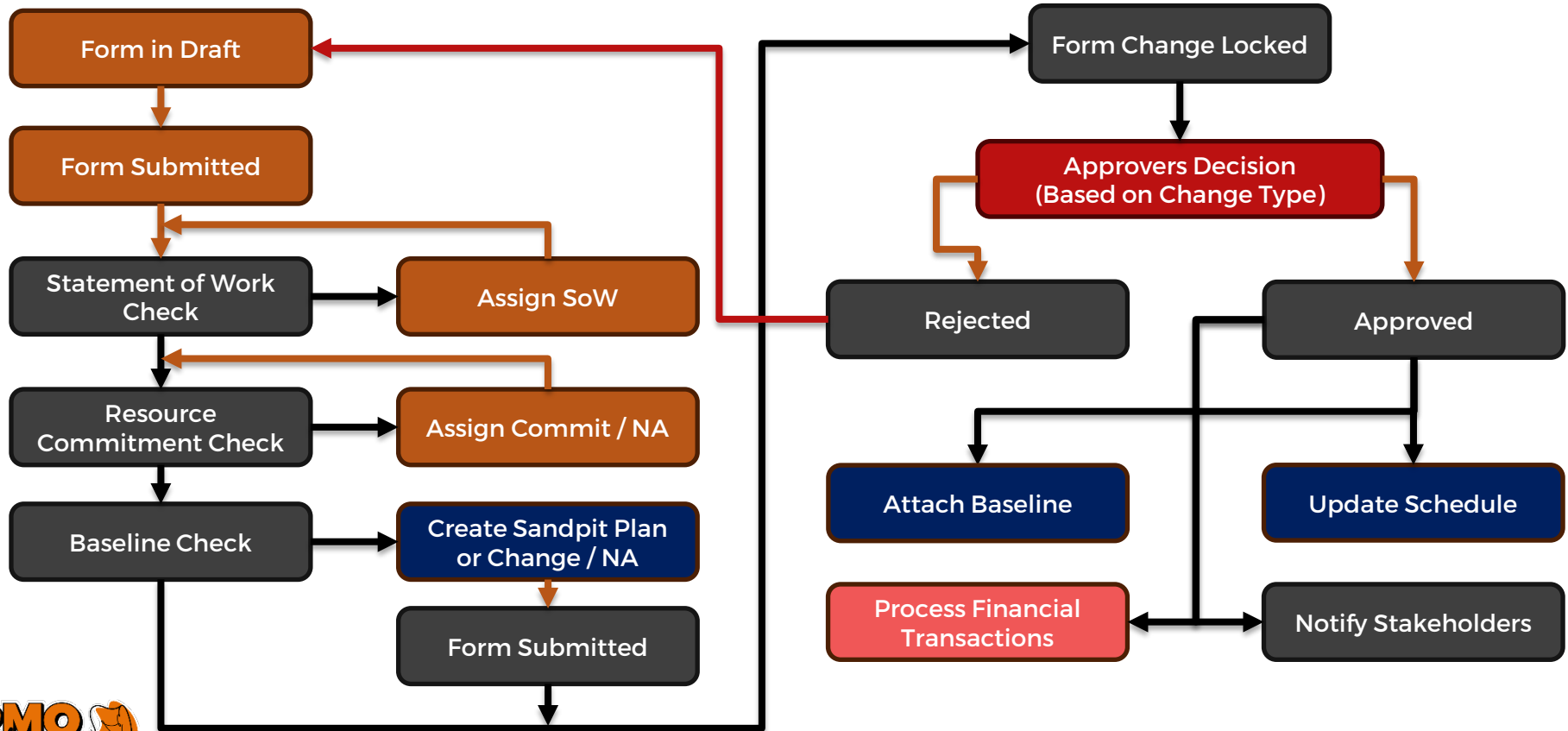
Dynamic Forms

- Required Approvers will change dependant on the level and type of change being enacted.
- The form will automatically adjust the Approvers section to inform the user of the required roles or equivalent for approval.

The image displays six overlapping screenshots of a dynamic approval form system. Each form is titled 'Approvals' and contains a section for a specific type of change, followed by a table of required approvers with input fields and approval dates.

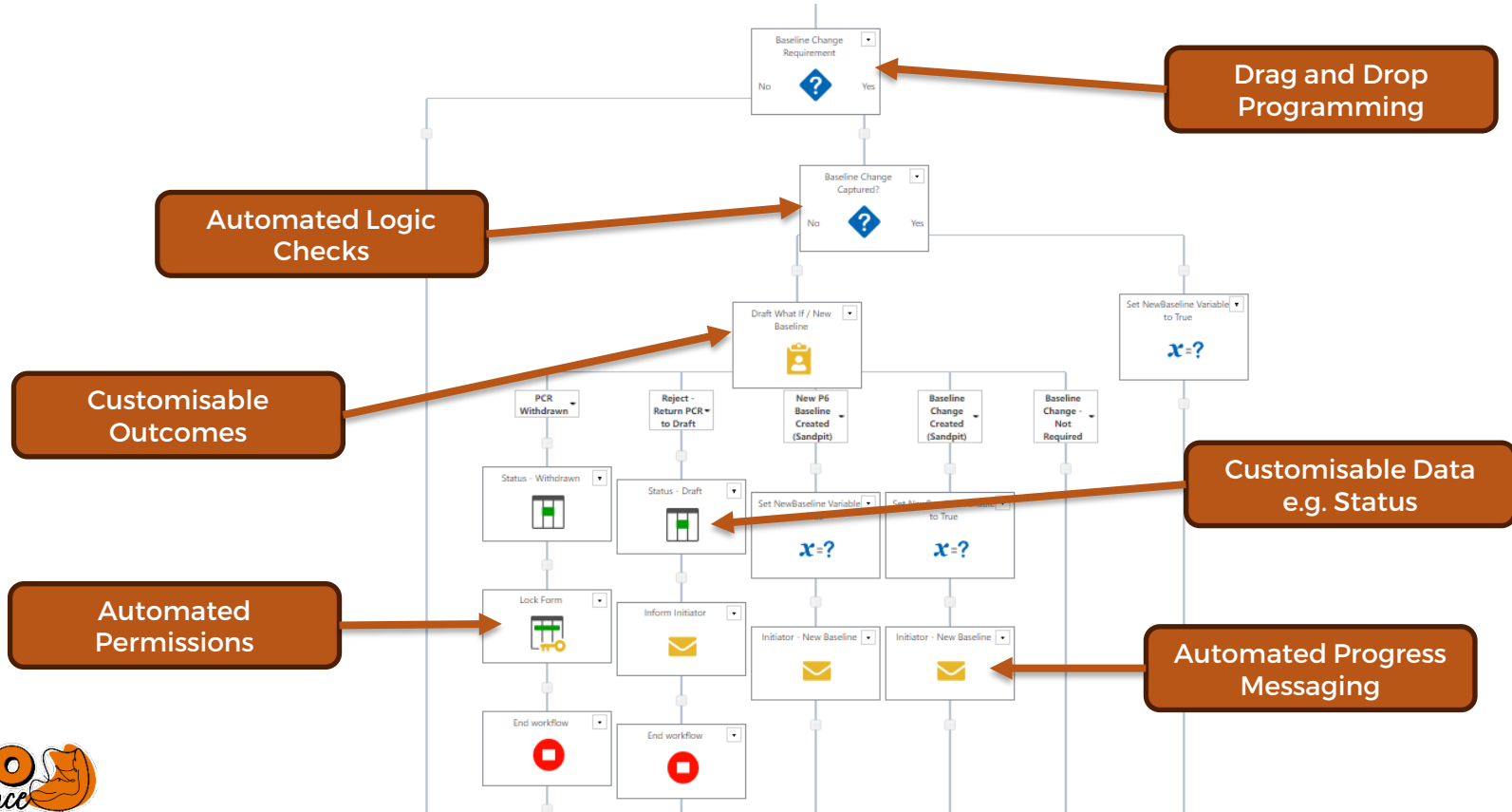
- Portfolio Major Change:** Requires Portfolio Council Secretary (with a date of meeting field) and Portfolio Council Chair.
- Portfolio Admin Change:** Requires Portfolio Change Co-Ordinator (with a 'Pending' status).
- Project Major Change:** Requires Head of Programme and Chief Engineer (if product Related).
- Portfolio Minor Change:** Requires Portfolio Executive.
- Project Admin Change:** Requires Change Co-Ordinator and Lead Planner.
- Project Minor Change:** Requires Project Manager and Assistant Chief Engineer (product related), both with a fixed approval date of 01/01/2024.

Understanding the Workflow



Automated Workflow

Low Code Solution



Workflow Tasks - Notification

SoW - Technical Authority Approval Required - Training Example - Programme



Bennett, Craig (RDN) <Craig.Bennett2@Rolls-Royce.Com>
To ● Bennett, Craig (RDN)

 Reply


Your approval is required on the following Statement of Work:

[Training Example - Programme](#) - E.T010.01.02.03 - Training - Programme

Click [here](#) to respond to the task.
Click [here](#) to view the workflow status.

Auto Generated Email

Workflow Tasks

 [EDIT LINKS](#)

Technical Authority - Statement of Work Approval

Forms Home

Forms and Workflow Area

Controlled Forms Index

Recent

- WBS Dictionary
- AX3241 Sourcing Review Board
- AX3240 BPSS Access Request
- RRSL Medical Parking Permit
- AX3236 - RRSL Medical Parking Pass Request

[Recycle Bin](#)

[EDIT LINKS](#)

Use this page to respond to a workflow task. [Learn about requiring approval.](#)

Approval of Statement of Work

Outcome *

Select an outcome for this task.

☐ Approve

☐ Reject

Or you can [delegate](#) this task to another person.

Comment

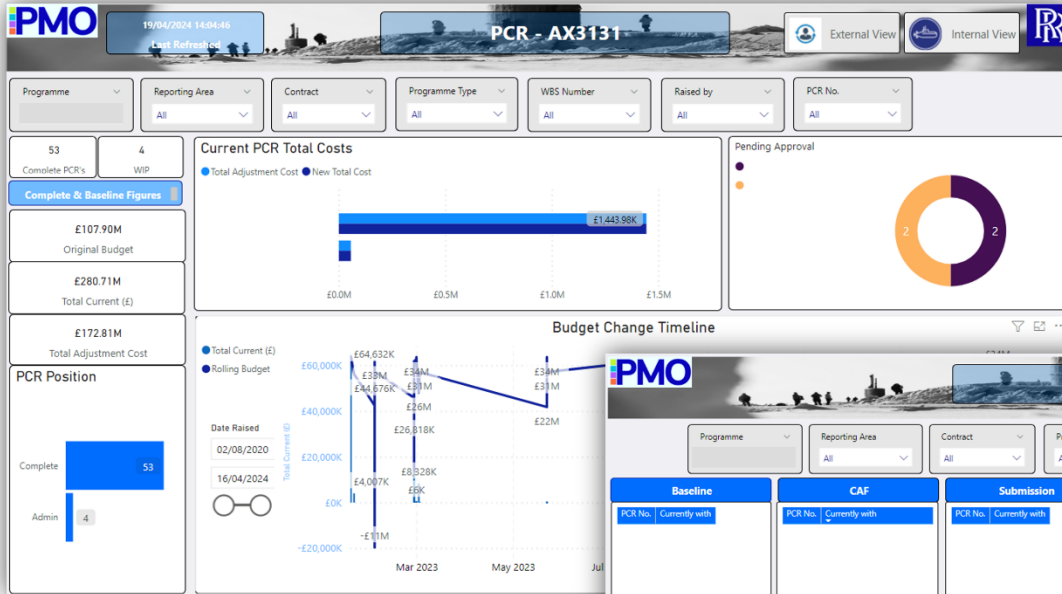
Use this field to enter any comments regarding this task.

1. Select an Outcome

2. Provide
Commentary if
applicable

3. Press OK once
complete

Automated Reporting



- Fully automated reporting for change and budget, including live in-process status.

PMO Kanban

Programme: All Reporting Area: All Contract: All Programme Type: All WBS Number: All Raised by: All PCR No.: All

Baseline	CAF	Submission	Approval	Admin	Complete
PCR No. Currently with	PCR No. Currently with	PCR No. Currently with	PCR No. Currently with	PCR No. Currently with	PCR No. Completed
				PCR2031 Administrators\ID#...@rad... 6	PCR2275 26 March 2024
				PCR2032 Administrators\ID#...@rad... 6	PCR2287 26 March 2024
				PCR2034 Administrators\ID#...@rad... 6	PCR2286 26 March 2024
				PCR2035 Administrators\ID#...@rad... 6	PCR2223 01 February 2024
					PCR2222 01 February 2024
					PCR1712 01 February 2024
					PCR2158 26 January 2024
					PCR2159 26 January 2024
					PCR2160 26 January 2024
					PCR2162 26 January 2024
					PCR2149 26 January 2024
					PCR2152 26 January 2024
					PCR2151 26 January 2024
					PCR2150 26 January 2024
					PCR2153 26 January 2024
					PCR2154 26 January 2024
					PCR2155 26 January 2024

PMO

State: All Reporting Area: All

PCR No.	WBS Name	Title	Date Raised	New Total Cost
PCR2295			20/03/2024	£291,144.14
PCR2231			29/01/2024	£209,460.11
PCR2028			16/08/2023	£459,574.89
Total				£960,179.14

Current State

The image shows three overlapping screenshots of the Rolls Royce Project & Portfolio Change Request (PCR) system interface. The top screenshot is 'Statement of Work', the middle is 'Commit Accept Form', and the bottom is 'Project & Portfolio Change Request (PCR)'. Arrows point from the PCR form to the 'Accessible and useable data across the entire contract' box.

Accessible and useable data across the entire contract

- Assumptions
- Exclusions
- Dependencies
- Scope

Integrated Data between CAF, SoW and PCR

- CAFs linked to each budget change
- Auditable comparable trail of SoW Changes
- SoW Scope changes comparable to PCRs.

Live Reporting

- Automated Budget Logs
- Live Approval Status
- Process Flow Statistics to feed future improvements
- Electronic Signature and Approval

Automated Process Assurance

Future State



- Automated SAP Budget Transfers
- Whole contract automatic Assumptions and Exclusions summarised from all Control Accounts and Projects
- CAF Efficiency and Performance tracking
- Scope to Budget and Resource comparison
- Stability Assessments
- Whole Contract Scope Summary
- All Control Accounts SoW scope to IUR automated gap analysis

Other Project Data Analytics Improvements

RR GPT



DeepDiveDocs

A project management assistant, guiding you through documentation and processes.

By Projecting Success

How do I create a WBS and CBS?

What are the steps to ensure a programme's perform...

How do I create Control Account Schedules?

What do I need to know about managing infrastru...

Message DeepDiveDocs...



ChatGPT can make mistakes. Consider checking important information.



You

How do I create Control Account Schedules?



DeepDiveDocs

Creating Control Account Schedules (CAS) is a structured process that involves several key steps. According to the information in your provided documents, specifically from the file "Process 2.docx," the process for creating CAS in the context of the Submarines business is as follows:

Step 1: Create Control Account Schedules

Role: Control Account Manager (CAM)

1. **Create CAS in P6:** Each Control Account (CA) should have one CAS, created in P6.
2. **Alignment with SAP WBS ID and Budget:** The CAS should align with the SAP Work Breakdown Structure (WBS) ID and the budget.
3. **Inclusion of Milestones, Deliverables, and Resources:** The CAS must include all milestones, deliverables, and resources needed to deliver the scope outlined in the CA's Statement of Work (SoW).
4. **Correlation with the Integrated Master Plan (IMP):** Ensure that the CAS is directly correlated with the milestones and timescales within the IMP.
5. **Scope Representation:** Include all scope in the CAS, even if it is not yet funded but is part of the contract.
6. **Detailing Supplier Effort:** Include supplier ort at an appropriate level of detail, ensuring traceability with supplier information.



Message DeepDiveDocs...



ChatGPT can make mistakes. Consider checking important information.

Schedule Health

python

Copy code

```
import xml.etree.ElementTree as ET

def parse_xer_file(file_path):
    tree = ET.parse(file_path)
    root = tree.getroot()
    return root

def check_schedule_health(schedule_data):
    # Perform DCMA 14-point schedule health check
    # Add your specific checks based on the DCMA guidelines

    # Example check: Check for the presence of a project start date
    start_date_element = schedule_data.find("://ProjectStartDate")
    if start_date_element is None or not start_date_element.text:
        print("Error: Project start date is missing.")

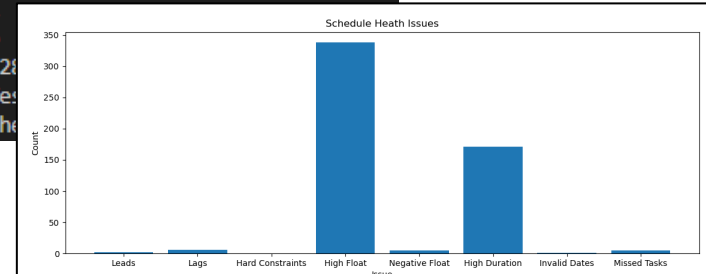
    # Add more checks as needed

def main():
    # Specify the path to the Primavera P6 .xer file
    xer_file_path = 'path/to/your/file.xer'

    # Parse the .xer file
```



```
Relationship Count255
Relationship count FS = 0
Resources Count =241
Resources with RSRC=225
Missed Tasks = 246
Missed Tasks (no base) count = 0
Missed Tasks (late start) count13
Project Duration = 4981 days 08:00:00
Longest path duration = 71 days 00:00:00
Critical Path Length=68 days 00:00:00
Tasks Completed Count=246
Tasks Planned Count=326
Logic: 89.21
Leads: 2
Lags: 6
Relationship Types: 0.0
Hard Constraints 0
High Float 338
Negative Float 5
High Duration 171
Invalid Dates 1
Resources 93.36
Missed Tasks 5.28
Critical Path Te
The score for the
```



Developing Capability and Capacity

Experiential

- Project:Hacks
- Automate Processes
- Create New Tools
- Start Small, Sandbox, Test, Scale

Formal

- Data Analytics Apprenticeships
- Online Courses like EdX and others
- Formal events through the APM and others

Social

- Engage our Apprentices
- Engage within our sector
- Engage with wider industry through the Coalition
- Engage with our internal teams MIS, Digital, IT.

Apprentices

[Here is the link to sign up.](#)

Not a training course....

- It's a chance to develop strong capability in RR
- The projects delivered by apprentices can deliver real value
- It is creating a group of people who think differently
- It allows people time to develop their skills and **apply them**

It is a vehicle to reimagine project delivery ... and its free!!!

Note: other apprenticeships are available e.g. Multiverse.

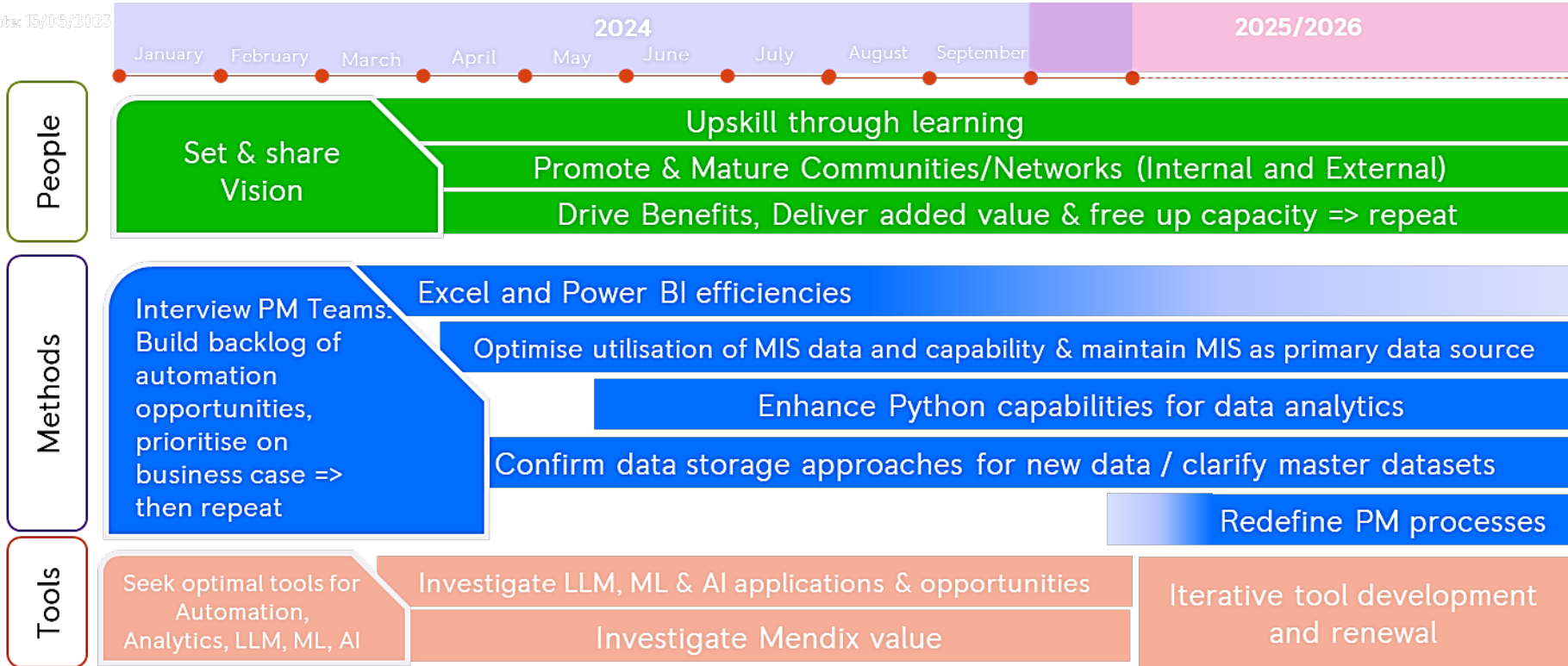
Our apprentices have a COP that is PMO led.

- Share the latest news in AI.
 - Request and receive support from each other.
 - Problem solve as a community.
 - Share our successes and our lessons
- Allows barriers to be escalated to senior management.

Course Outline:	
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.

Capability Roadmap

Up date: 15/06/2023



Cross enterprise Coalition: Babcock, Sellafield, MoD, National Highways, EDF, United Utilities

What could the future look like?
What is here and now?...

David's and Craig's View

PMO

- Two types of PMO will emerge those enabled by project data analytics and those that aren't.
- Supporting and Controlling PMOs will be automated.
- More C-suite influence of PMOs enabled with project data analytics.
- Interactions with professional bodies will change – PMI Infinity. Certifications to prove knowledge will be replaced.

People Capability

- Fundamentally change the project management organisational design.
- Training and Capability Development will be enabled by AI.
- People will learn as they do tasks with Project Assistants.
- There will still be a role for SMEs but they will shift to be focussed on outcomes not process or system knowledge.

Process

- Workflows will change how we think about process.
- Process and cross-functional interactions will be better understood.
- Artefacts and reporting will be automated.
- Assurance will fundamental shift to review how effective decisions and governance change project outcomes.

Tools and Systems

- A number of tools will be replaced by community development apps/ software.
- These tools will allow the exact functionality to be created. It will also allow PMOs to adapt to new challenges.
- Real-time understanding of project progress, risks with different options based on different optimisation goals (delivery, cost, resource).

Visions

Reimagining: Risk Management

North Star Vision:

Variance Analytics

Horizon 1: Refine

Improve core process functionality and insights

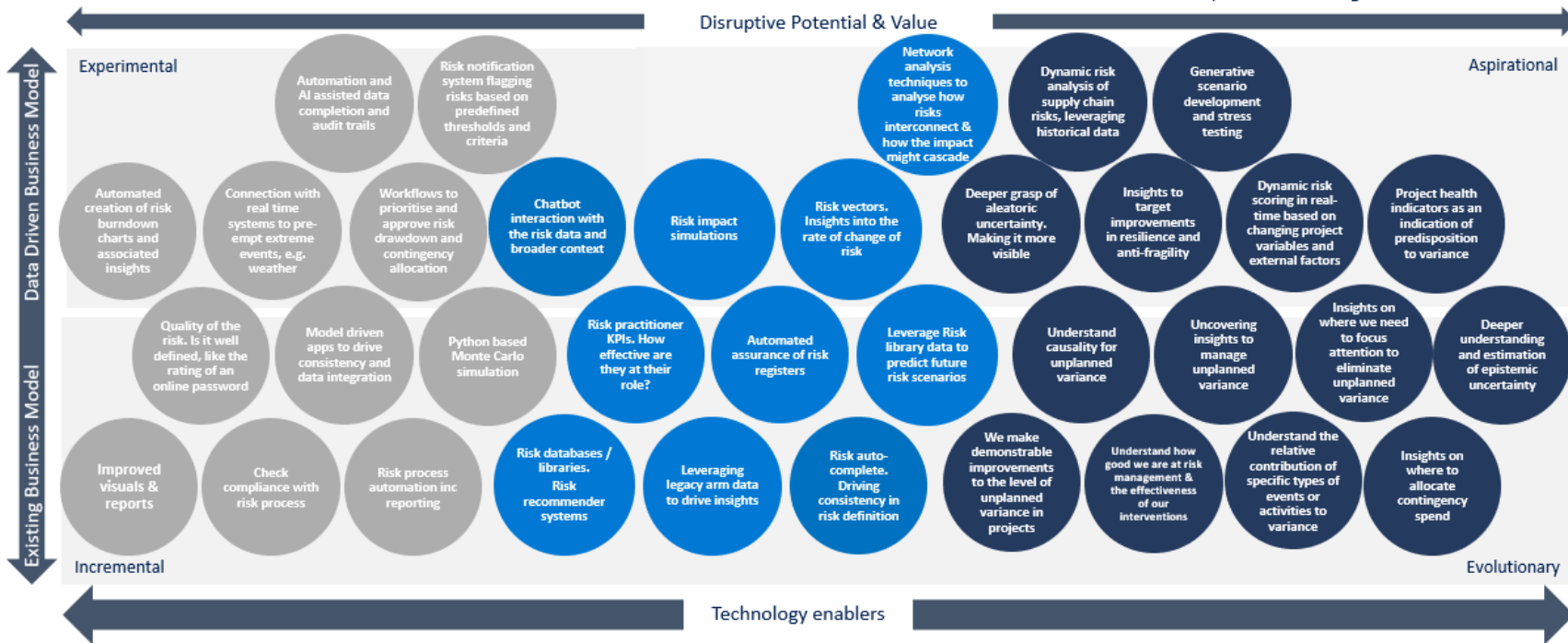
Horizon 2: Enhance

Introduce new methods and explore a step change in how we work

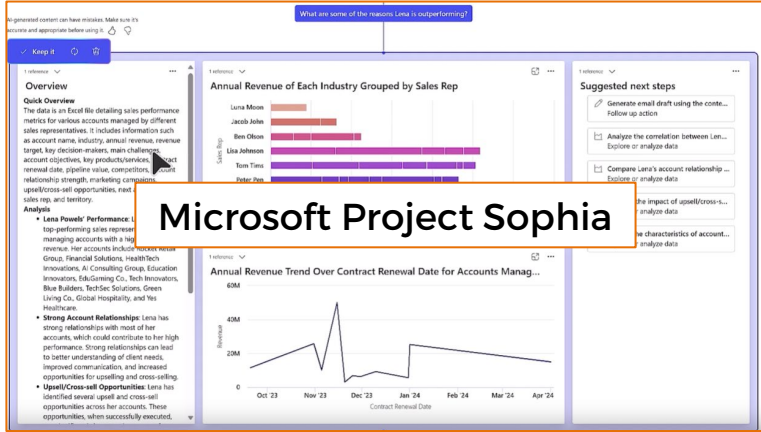
Horizon 3: Reimagine

Reimagine the functional process. Integrate data and experiment with high end solutions.

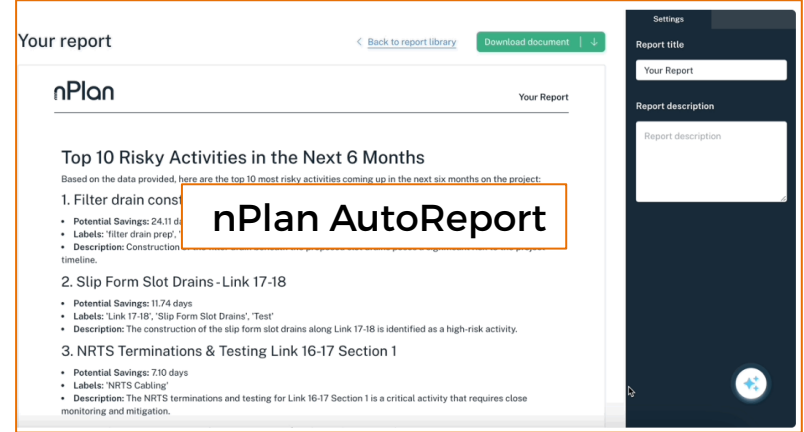
Disruptive Potential & Value



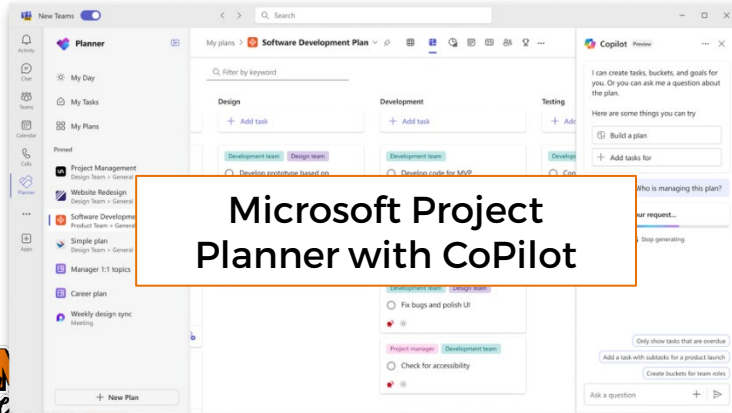
Cool Stuff



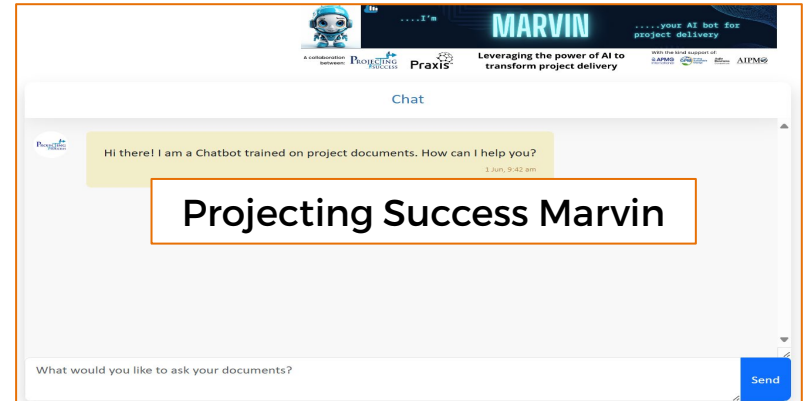
Microsoft Project Sophia



nPlan AutoReport

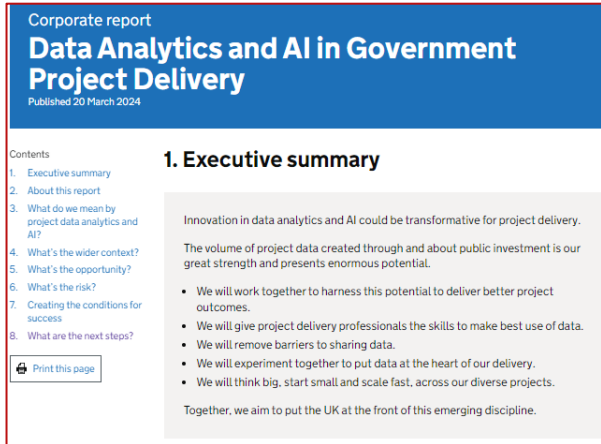
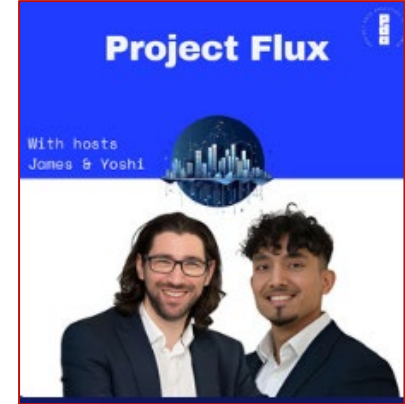
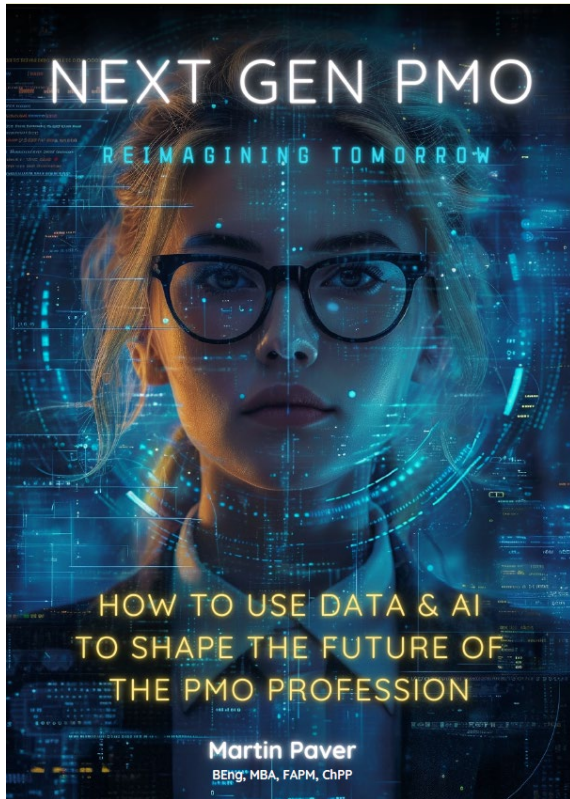


Microsoft Project Planner with CoPilot



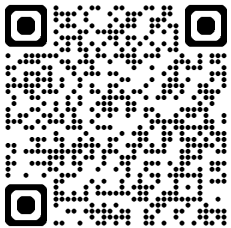
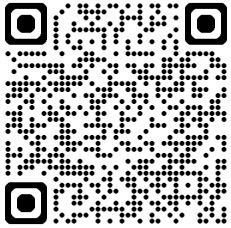
Projecting Success Marvin

Recommended Resources



Thank you for listening.

Connect with us:



Any questions?