Harnessing the Power of Our Data

Advanced Analytics Team

Network Rail Wales & Western Region

Project Controls EXPO London, UK

NetworkRail

Enhancing Project Management through Advanced Analytics and Visualisation

Agenda

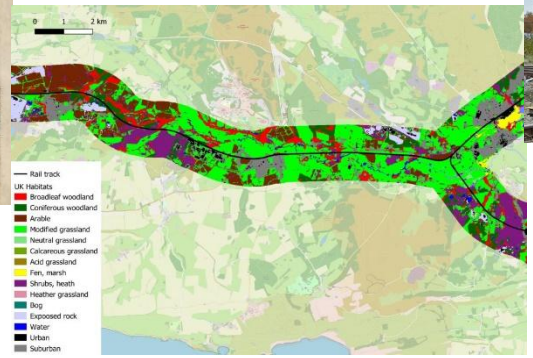
- About Our Organisation
- About Us
- About Our Work
- Summary
- Q&A

About Our Organisation

- Own, operate, maintain and develop Great Britain's railway infrastructure
- Deliver projects from minor upgrades to major infrastructure
- Wales & Western: 2,700 miles managed, £2.5bn programme (5 years)

Strategic Priorities:

- Infrastructure upgrades
- Digital transformation
- Operational efficiency



Data-Driven Delivery:

- Improved planning, cost control, risk management, and performance

About Us

Pragya Raina

Ionuț Coroian

Yamini Kumar

Milla Mazilu

Haroon Rashid

About Our Work

Why

- Maximising value and linking the data silos

What

- Change Control Database
- Phase Readiness App
- Periodic Business Review Pack
- Commentary Collector App
- Data Lake

How

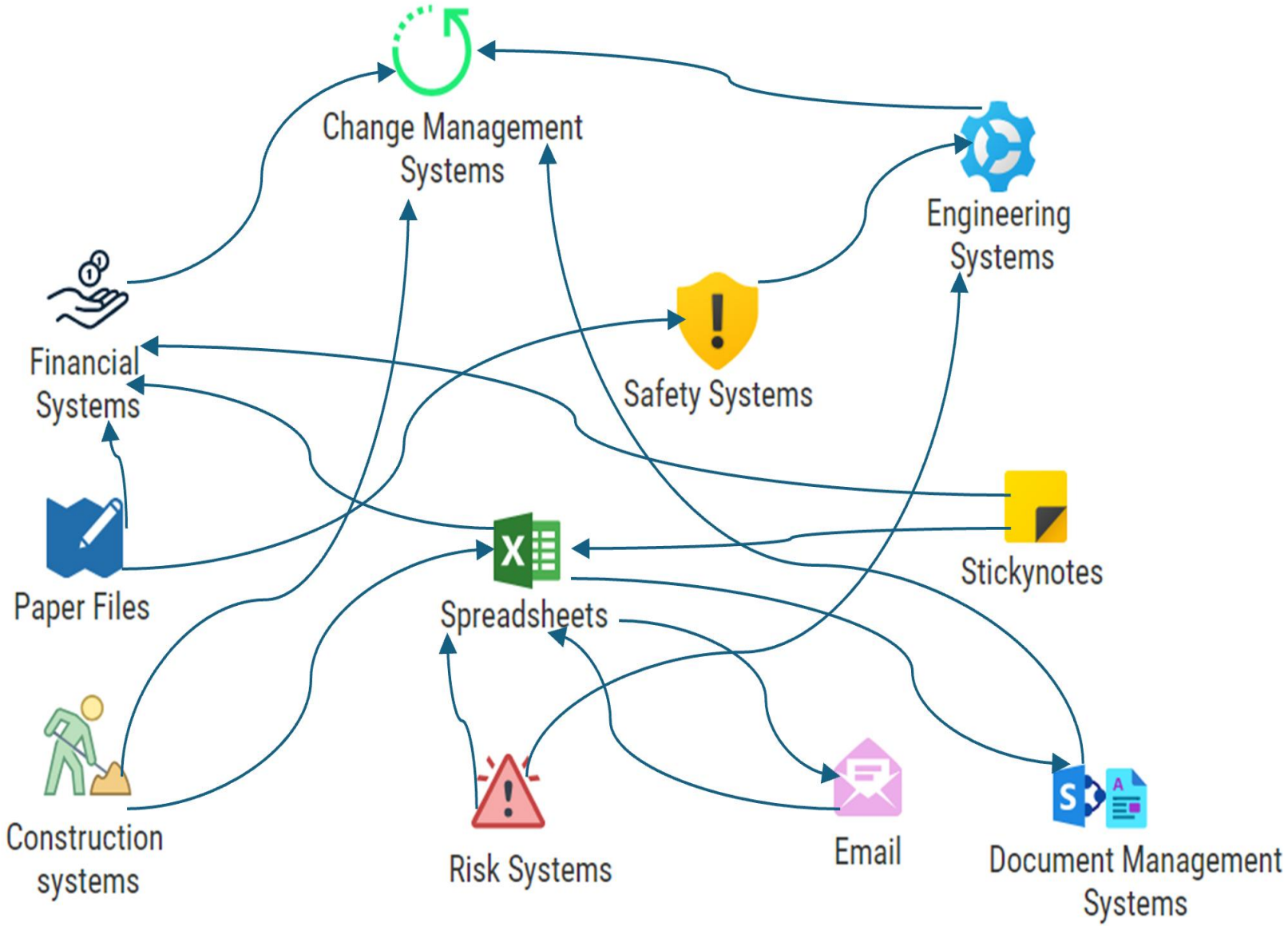
- Over to the team!

Change Control Database

Yamini Kumar
Programme Controls Manager

Project Controls EXPO
London, UK

Challenges


Change Management Systems
Engineering Systems
Financial Systems
Safety Systems
Paper Files
Stickynotes
Spreadsheets
Construction systems
Risk Systems
Email
Document Management Systems

Implementation

- We developed a consolidated database for all change papers.

- This centralised solution has reduced manual effort and resulted in annual savings of over 9,700 hours.

- It has also improved the tracking and management of change requests across projects, ensuring greater transparency and efficiency.

Legacy - Manual Process (Before)

- Draft Change Paper
- Print Change Paper
- Review paper in Change Control Panel
- Get Manual Signatures on Change Paper
- Scan Change Paper
- Upload to Document Management System
- Update Change Paper Status on the System
- Email Teams the signed copy of the paper
- Update status of change paper in the system
- Update Meeting minutes and email teams the Meeting Minutes and Actions

New - Streamlined Process (After)

- Draft Change Paper in the system
- Review and Panel Discussions (All Stakeholders)
- Update Decision and Record Minutes in System

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Change Control Database

New Item

Paper Reference

Automatically generated after the first save.

Approving Panel *

—

Refer to Delegated Authority Limits to establish which changes can be approved at L2 and which will require L1 panel submission. If unsure, check with the Programme Controls team. The selection made in this field will affect which of the panel approval date/minuting fields are opened.

Project

This is a lookup column that displays data from another list that currently exceeds the List View Threshold defined by the administrator (5000).

Search for your project in the above search box. The project list is over 7000 entries now, so the search can be a little slow.

Paper Author *

Enter a name or email address

Paper Presenter

Enter a name or email address

The name of the person who will present at panel. This can be left blank if the author believes the pape

Related Efficiency

Select an option

Related Change Papers

This is a lookup column that displays data from another list that currently exceeds the List View Threshold defined by the administrator (5000).

If there are any prior papers which are related to this change, please select them here.

Paper Status *

Draft

To submit to panel, use 'Submit to Lx Panel' to notify the panel manager that your paper is ready for change panel. Change panel manager will review the submissions, and add papers to the agenda by using the 'Agenda Lx Panel' status. Once papers have been reviewed at panel, change panel manager will update the status to 'Reviewed at Lx Panel'. This will generate notifications for the Paper Editor, Author, and Presenter, and also CC all the PCMs. Never delete papers, just mark as 'Withdrawn'. Papers can be marked as superseded, as long as the related change paper is confirmed.

Attach

Add attachments

Save Cancel

Results

Project Performance

Time Savings

Cost Reductions

Phase Readiness Review

Haroon Rashid
Programme Reporting Specialist

Project Controls EXPO
London, UK

The Picture

- The team renews the Track infrastructure
- We go to site every weekend
- We plan 2 years ahead
- Sometimes we deliver 2 projects over a weekend
- Every project has a Project Lifecyle
- Every Project has 6 Phase Gates that total 100+ deliverables
- Every day we are in every Phase within a Project Lifecyle
- We undertake around 18 Phase Gates a week across all stages of the Project Lifecycle

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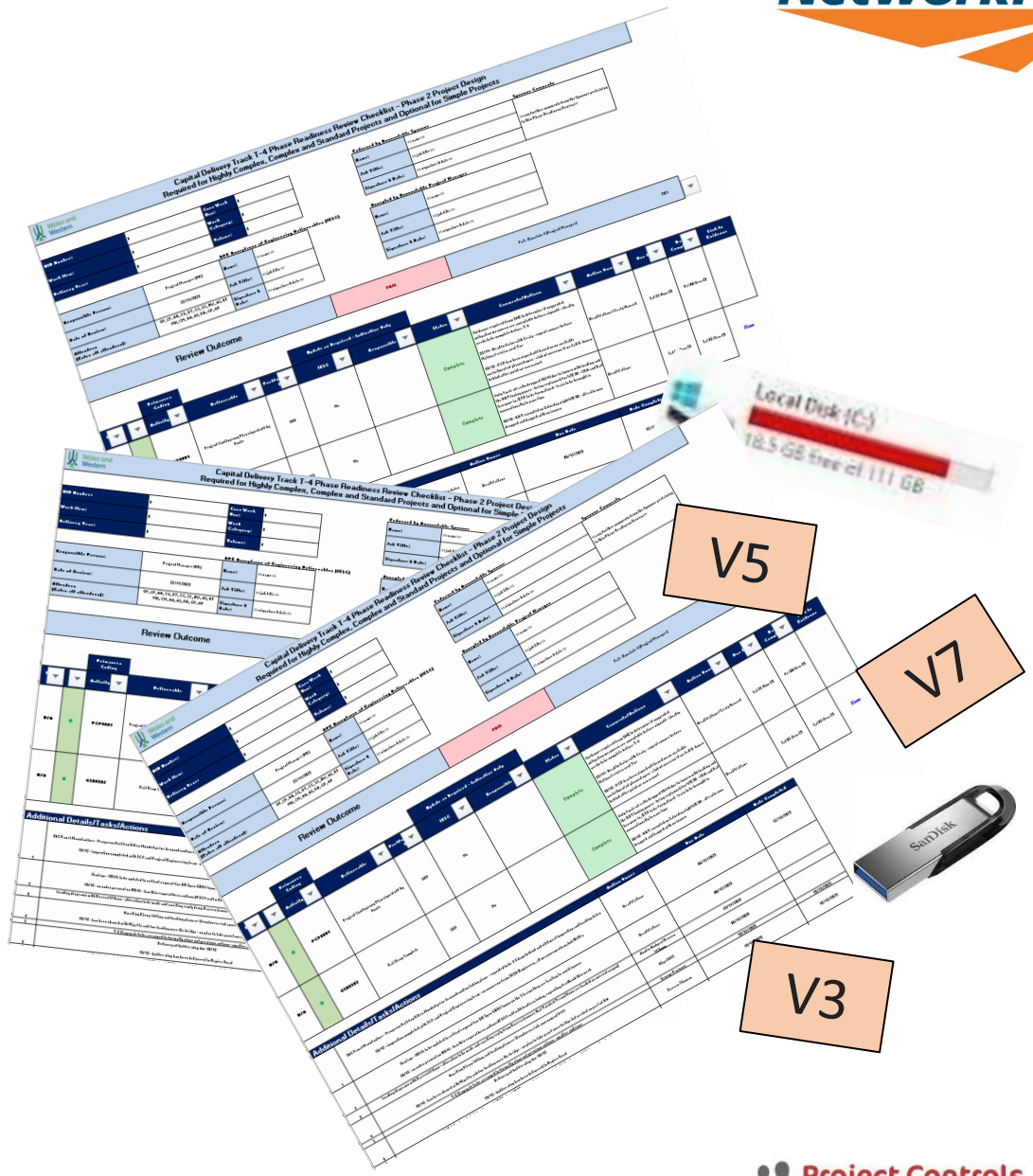
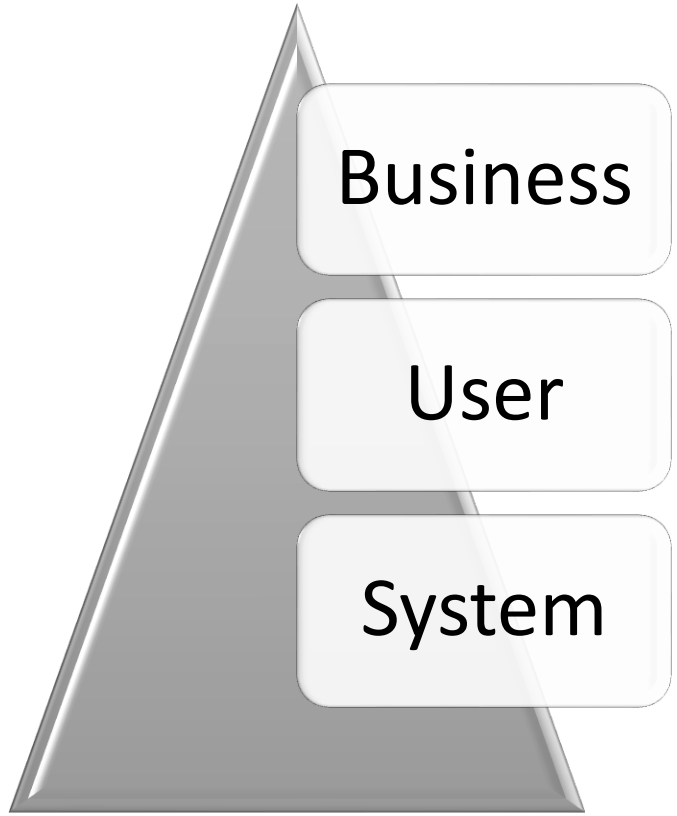
So, what is the problem?

- Current Process is using Excel
- Version Control is poor
- Inconsistent Document Control
- Missing Information
- Actions unmanaged
- Tabs missing on the Excel Sheet
- Late submissions
- Systems are out of date

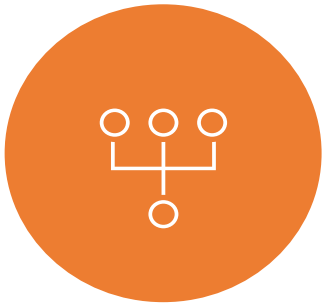


What did it need to do?

- Conform to the Business Management Processes and Standards
- One system in one place
- Action tracking through notification reminders
- Outcome and review summary notifications
- Digital approvals & signatures
- Improve data analytics through Power BI
- Hyperlink direct to the Business Document Control System
- Version control over and template control



Phase Readiness Review



Hold the Phase Gate, update deliverables, record and assign actions

Select the Phase Gate Outcome and submit the form to commence Sign Off process

Depending on the outcome the Phase Gate will follow a sign off process

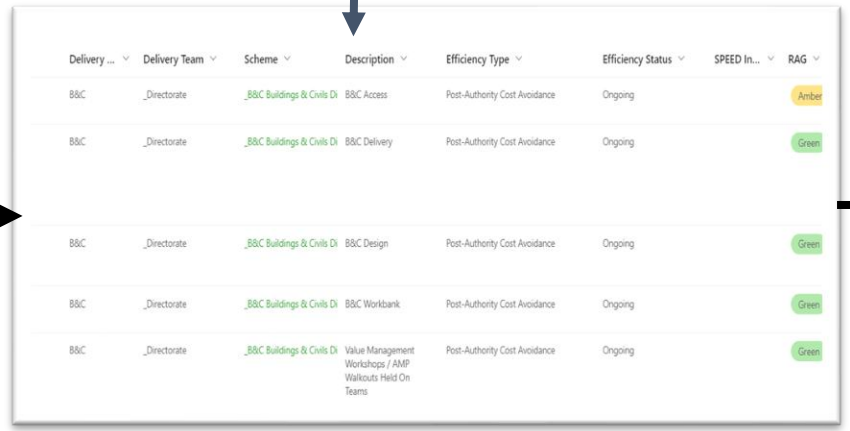
Email Notifications released to advise Outcome and actions to Project Members

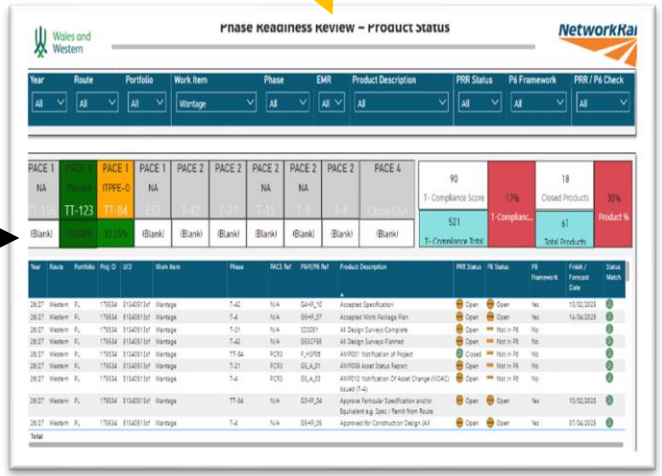
Phase Readiness Review

PowerApps

Microsoft Lists

Power BI





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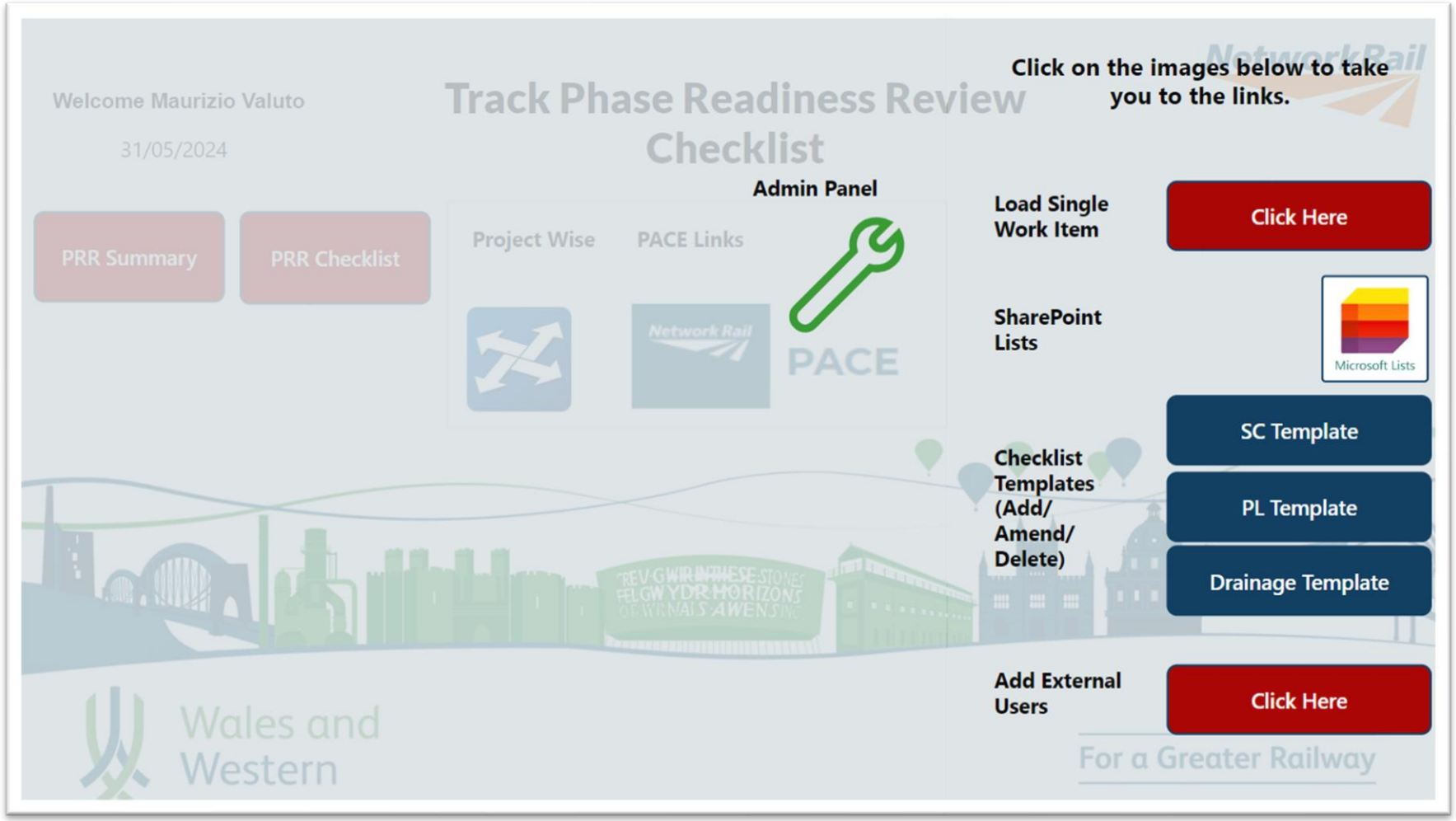
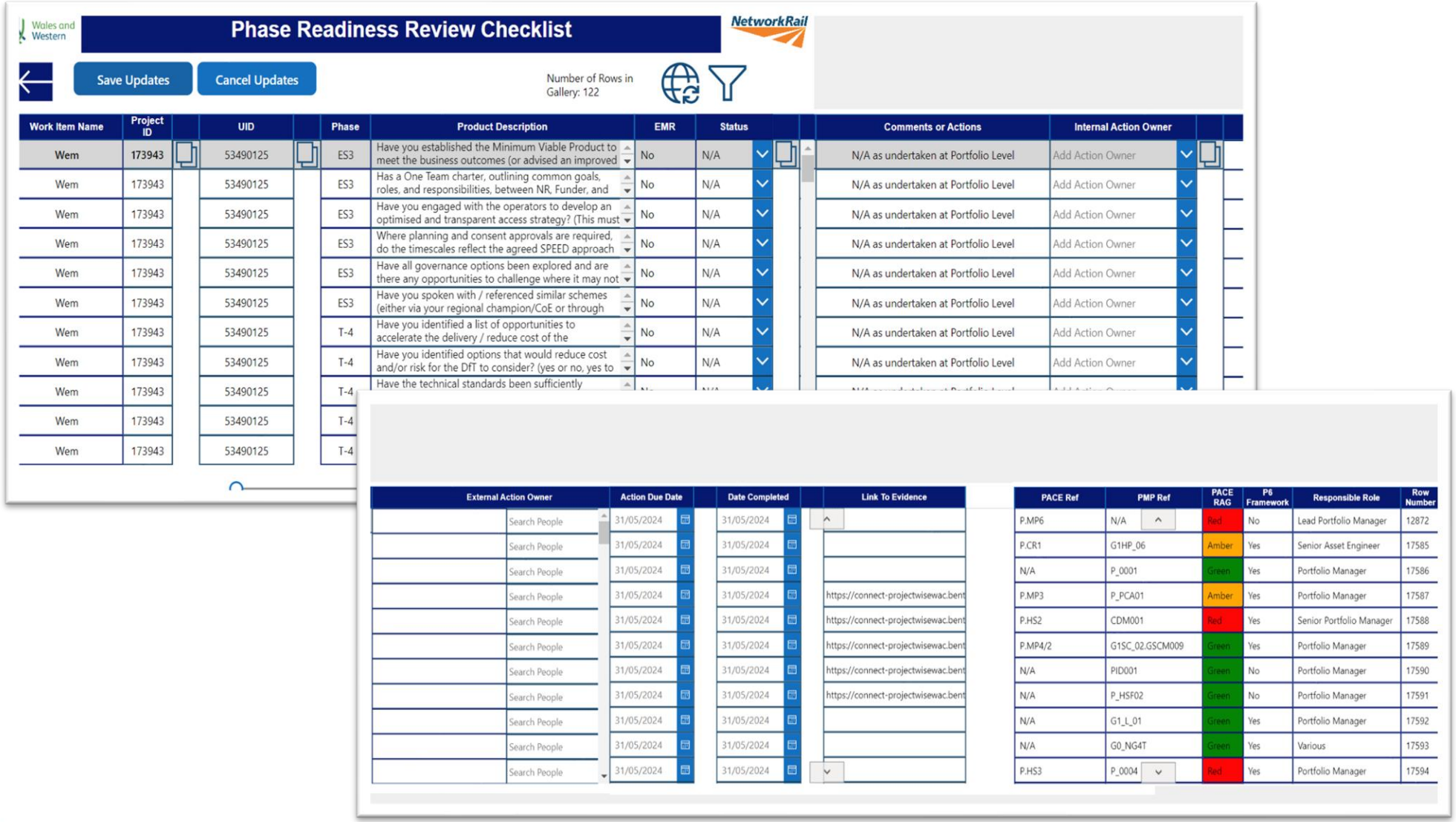
Phase Readiness Review



Phase Readiness Review



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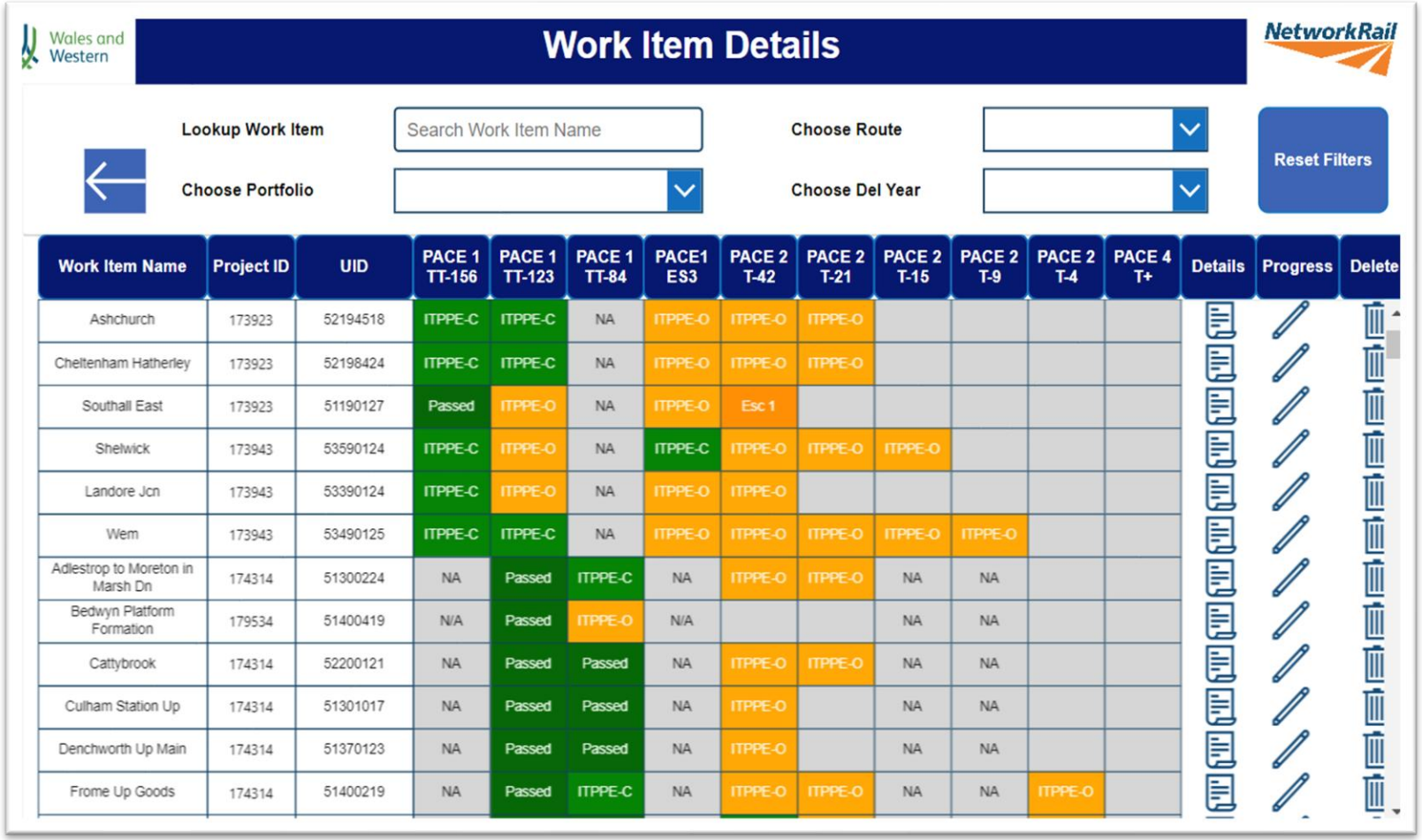
Phase Readiness Review



Wales and Western

Work Item Details

NetworkRail

Lookup Work Item: Search Work Item Name

Choose Route:

Choose Portfolio:

Choose Del Year:

Reset Filters

Work Item Name	Project ID	UID	PACE 1 TT-156	PACE 1 TT-123	PACE 1 TT-84	PACE1 ES3	PACE 2 T-42	PACE 2 T-21	PACE 2 T-15	PACE 2 T-9	PACE 2 T-4	PACE 4 T+	Details	Progress	Delete
Ashchurch	173923	52194518	ITPPE-C	ITPPE-C	NA	ITPPE-O	ITPPE-O	ITPPE-O							
Cheltenham Hatherley	173923	52198424	ITPPE-C	ITPPE-C	NA	ITPPE-O	ITPPE-O	ITPPE-O							
Southall East	173923	51190127	Passed	ITPPE-O	NA	ITPPE-O	Esc 1								
Shelwick	173943	53590124	ITPPE-C	ITPPE-O	NA	ITPPE-C	ITPPE-O	ITPPE-O	ITPPE-O						
Landore Jcn	173943	53390124	ITPPE-C	ITPPE-O	NA	ITPPE-O	ITPPE-O								
Wem	173943	53490125	ITPPE-C	ITPPE-C	NA	ITPPE-O	ITPPE-O	ITPPE-O	ITPPE-O	ITPPE-O					
Adlestrop to Moreton in Marsh Dn	174314	51300224	NA	Passed	ITPPE-C	NA	ITPPE-O	ITPPE-O	NA	NA					
Bedwyn Platform Formation	179534	51400419	N/A	Passed	ITPPE-O	N/A			NA	NA					
Cattybrook	174314	52200121	NA	Passed	Passed	NA	ITPPE-O	ITPPE-O	NA	NA					
Culham Station Up	174314	51301017	NA	Passed	Passed	NA	ITPPE-O		NA	NA					
Denchworth Up Main	174314	51370123	NA	Passed	Passed	NA	ITPPE-O		NA	NA					
Frome Up Goods	174314	51400219	NA	Passed	ITPPE-C	NA	ITPPE-O	ITPPE-O	NA	NA	ITPPE-O				

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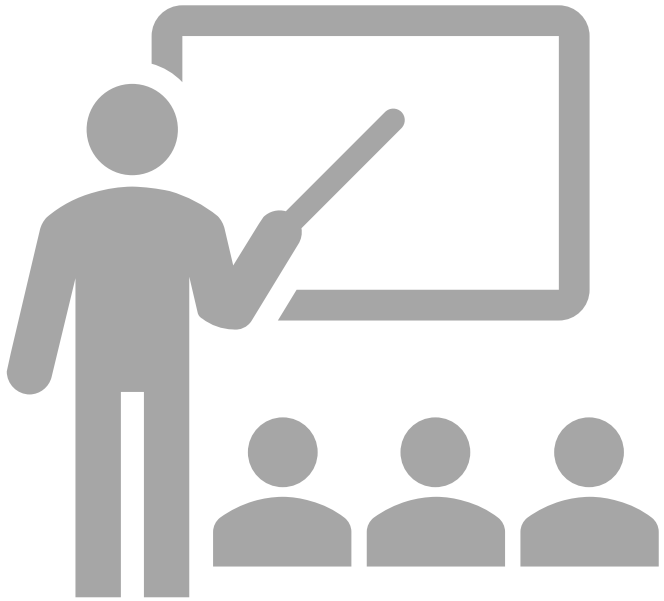
What were our challenges?

- External Access to Network Rail Systems
- User Buy in
- Resilience to change
- Updating new Deliverables that were Business Driven
- Bulk Uploading
- Extending system to other areas of our business (Compatibility)

What our users say

- Much more secure and formal Process
- Action Tracking has made a huge difference
- Links to deliverable evidence has saved time on Assurance Checks
- External user Action Notification was a huge hit
- Easy Navigation and use of Filters
- Bulk Uploading of projects made easy

Lesson and Reflections



Periodic Business Review

Pragya Raina
Senior Business Reporting Analyst

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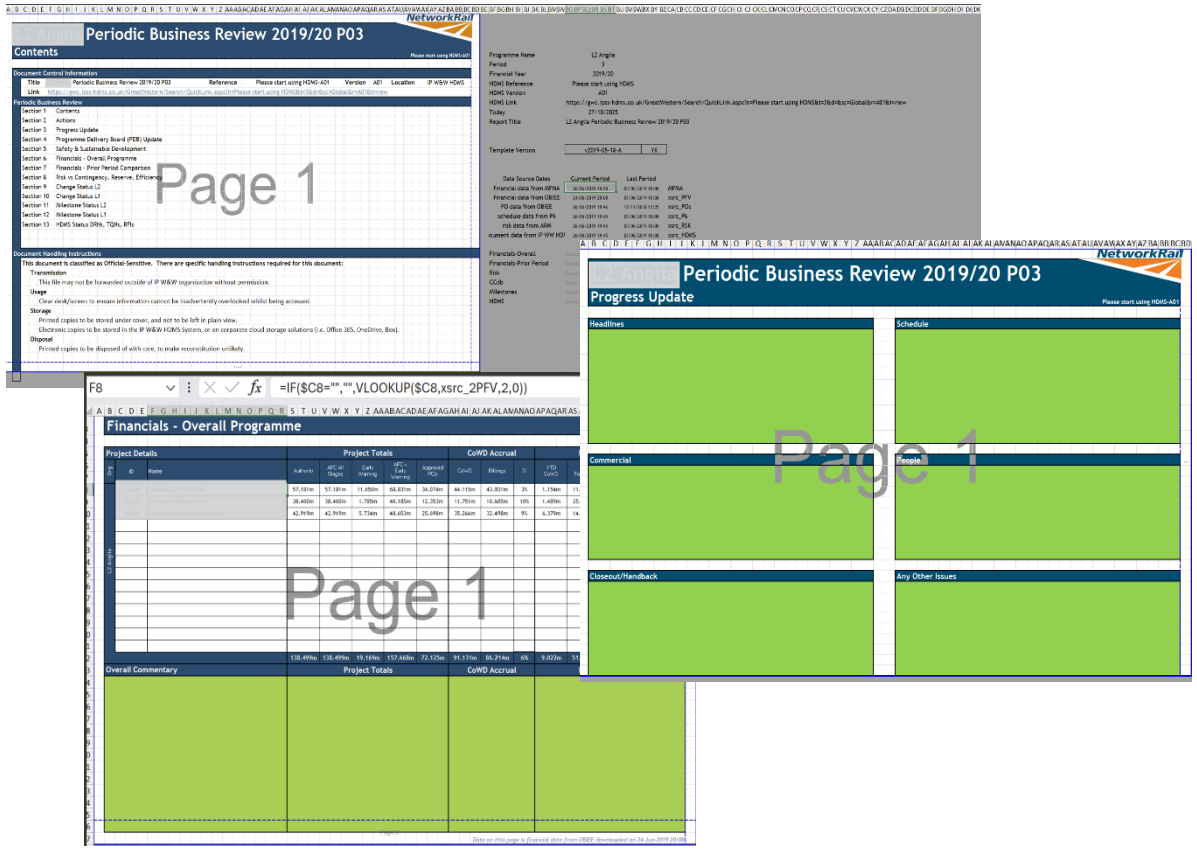
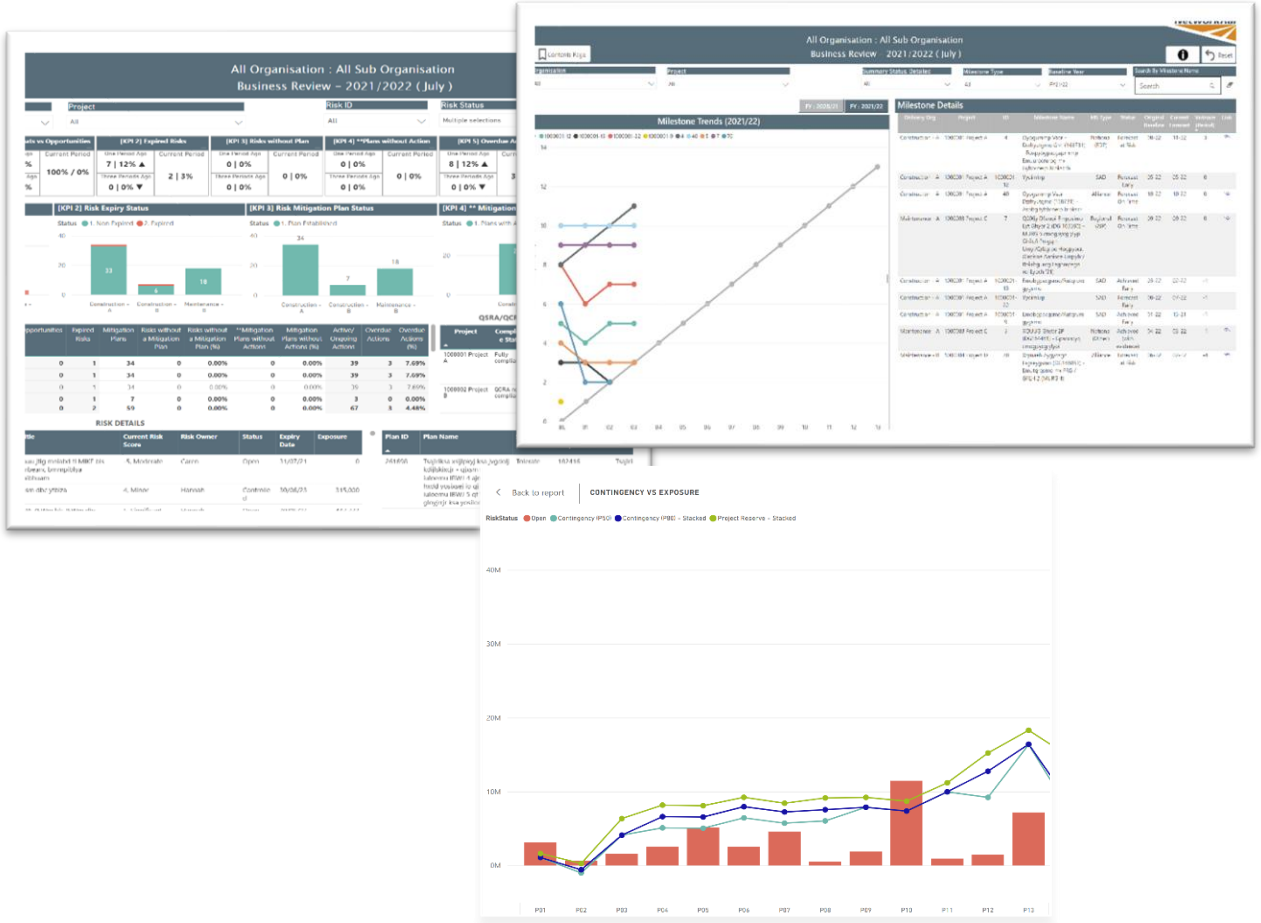
Reporting Process: Before vs After

Before	After
Fragmented data and legacy systems, hard to consolidate	Centralised, automated platform and one source of truth
Manual Excel reporting, slow updates and error-prone	Automated, fast, and accurate reporting
Processes relied on separate tools (e.g., commentary collected by email and copy-paste)	Integrated apps and systems enable end-to-end automation (e.g., integrated commentary collection)
Weak governance, inconsistent standards and poor scalability	Standardised, governed, and scalable reporting
Manual processes caused delays and reduced productivity	Over 12,000 hours saved annually, enabling focus on strategic initiatives
Siloed and inconsistent insights	Integrated and actionable insights

Reporting Platform: Before vs After





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Implementation: Responsible Parties

Users

Project Specialists

Data Analyst

Data Engineers & Data Scientists

Implementation: Infrastructure

1	• Ingested
2	• Cleansed
3	• Enrich
4	• Unified data model

Implementation: Key Enablers

Iterative Development

Open-Source Technologies

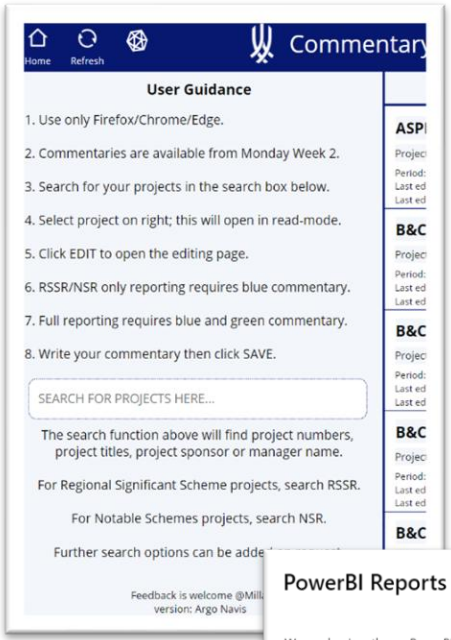
Training Sessions

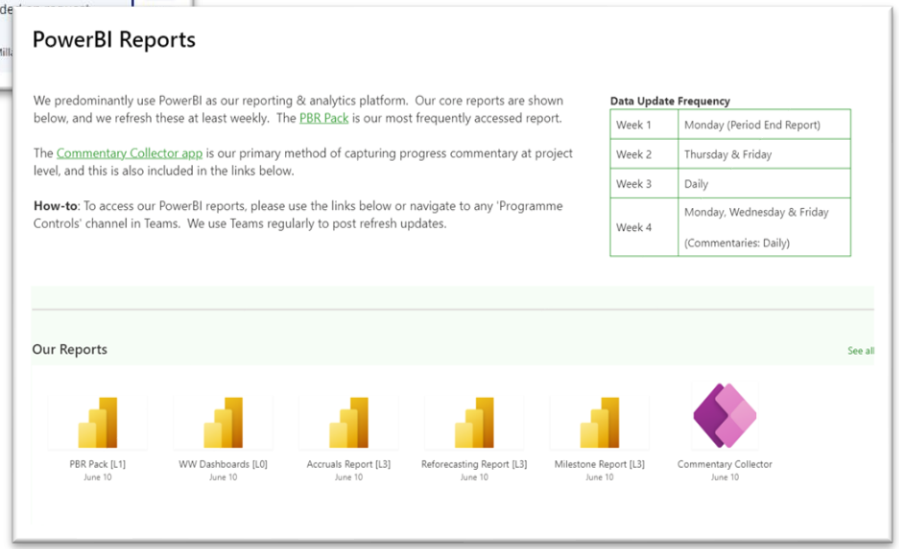
Collaboration

Flexibility

Empowerment

Results: Reporting Ecosystem





Commentary Collector

Milla Mazilu
Head of Advanced Analytics

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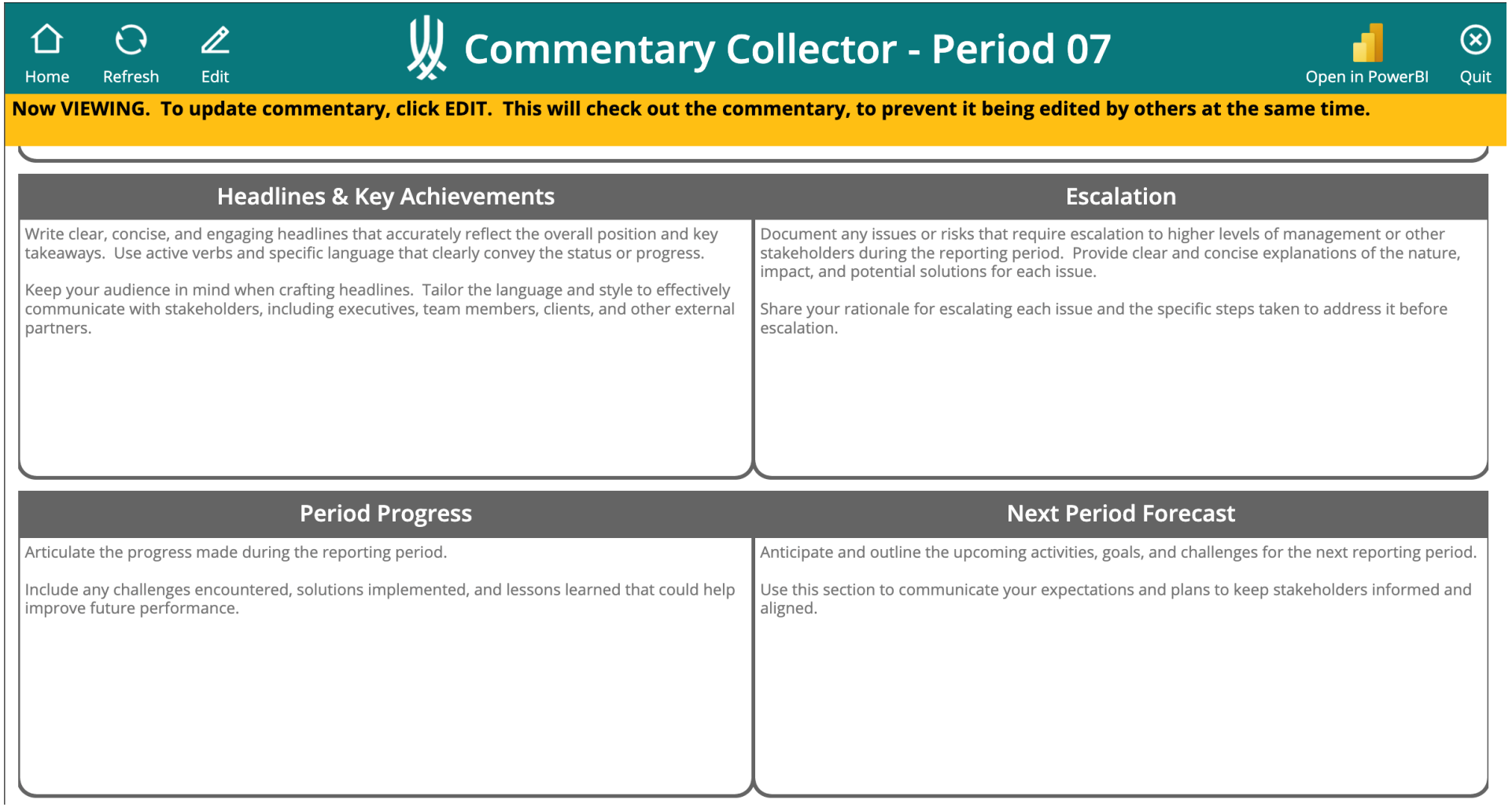
London, UK

Challenges

- Cumbersome process
- Extensive manual liaison
- Version control issues

Implementation



Results

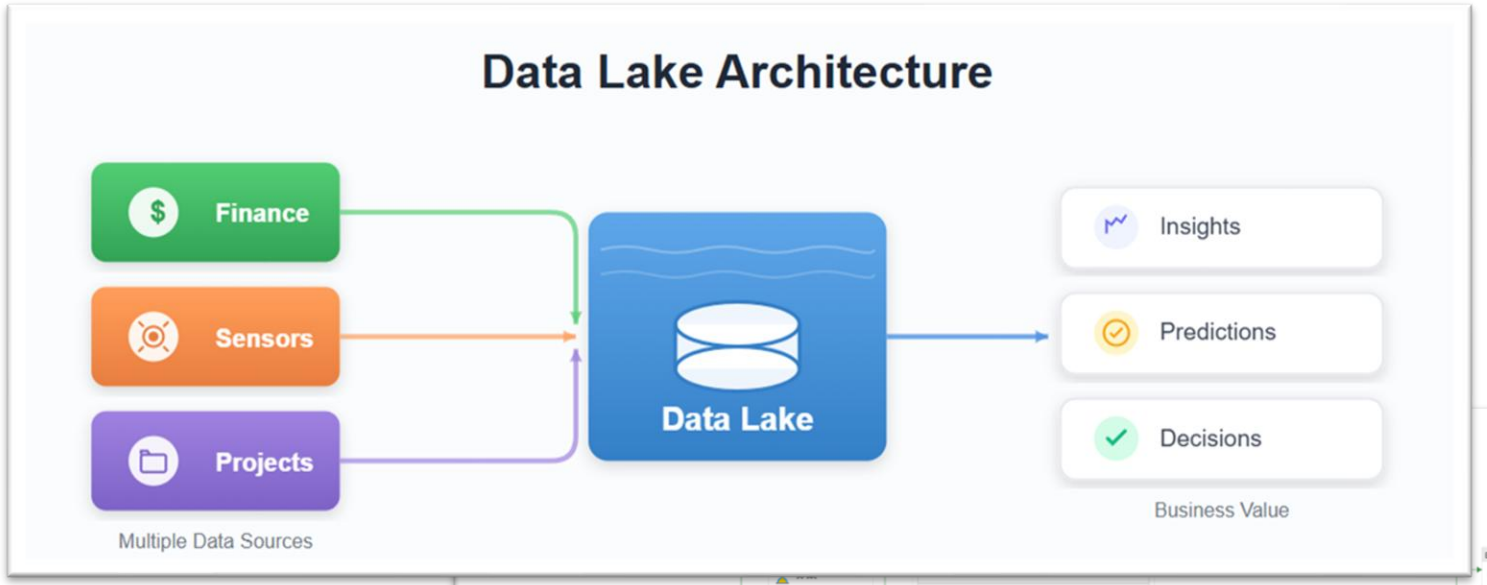
- Input Once, Reuse Often
- Accessible to All
- Version Controlled and Auditable

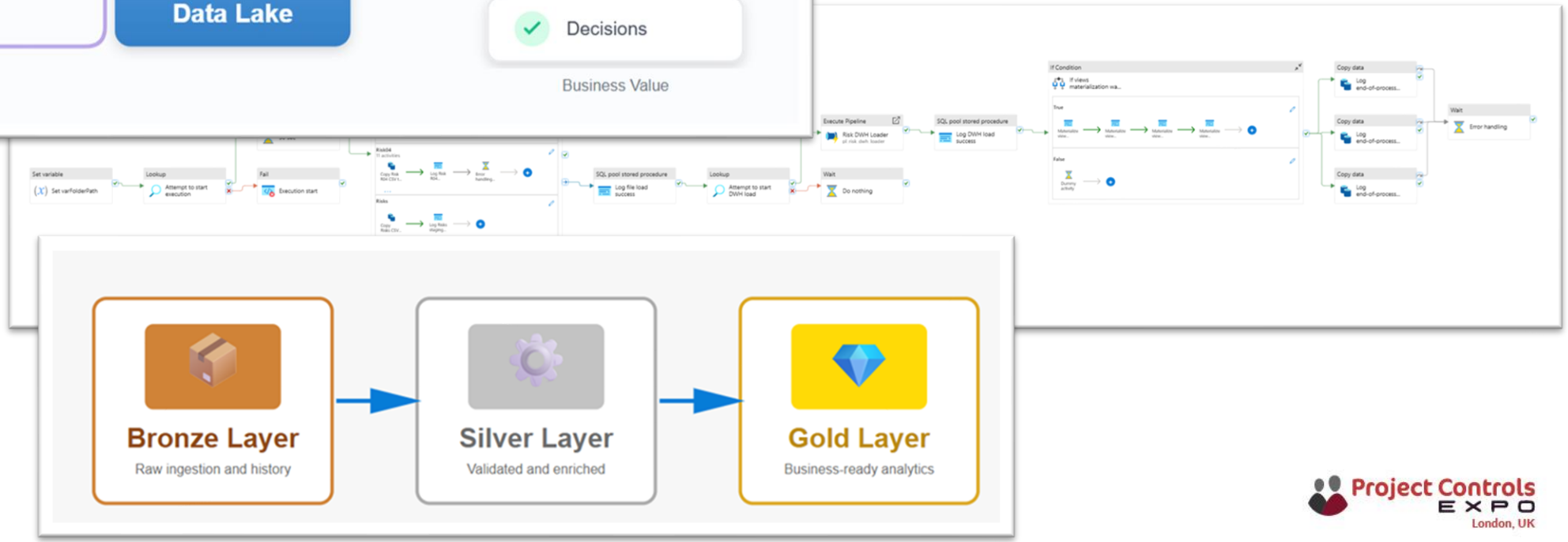
Data Lake

Ionuț Coroian
Senior Systems & Data Manager

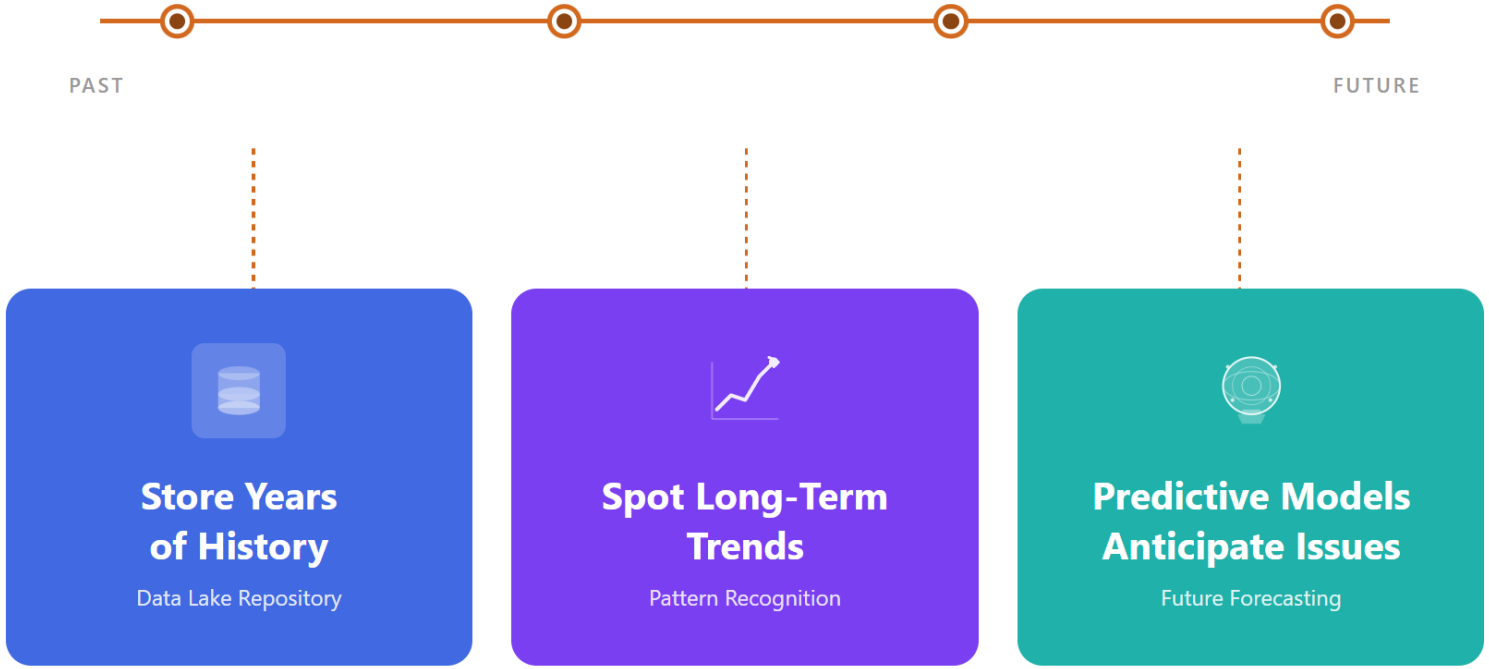
Project Controls EXPO
London, UK

Transforming Data into Operational Excellence





Historical Trends & Advanced Analytics

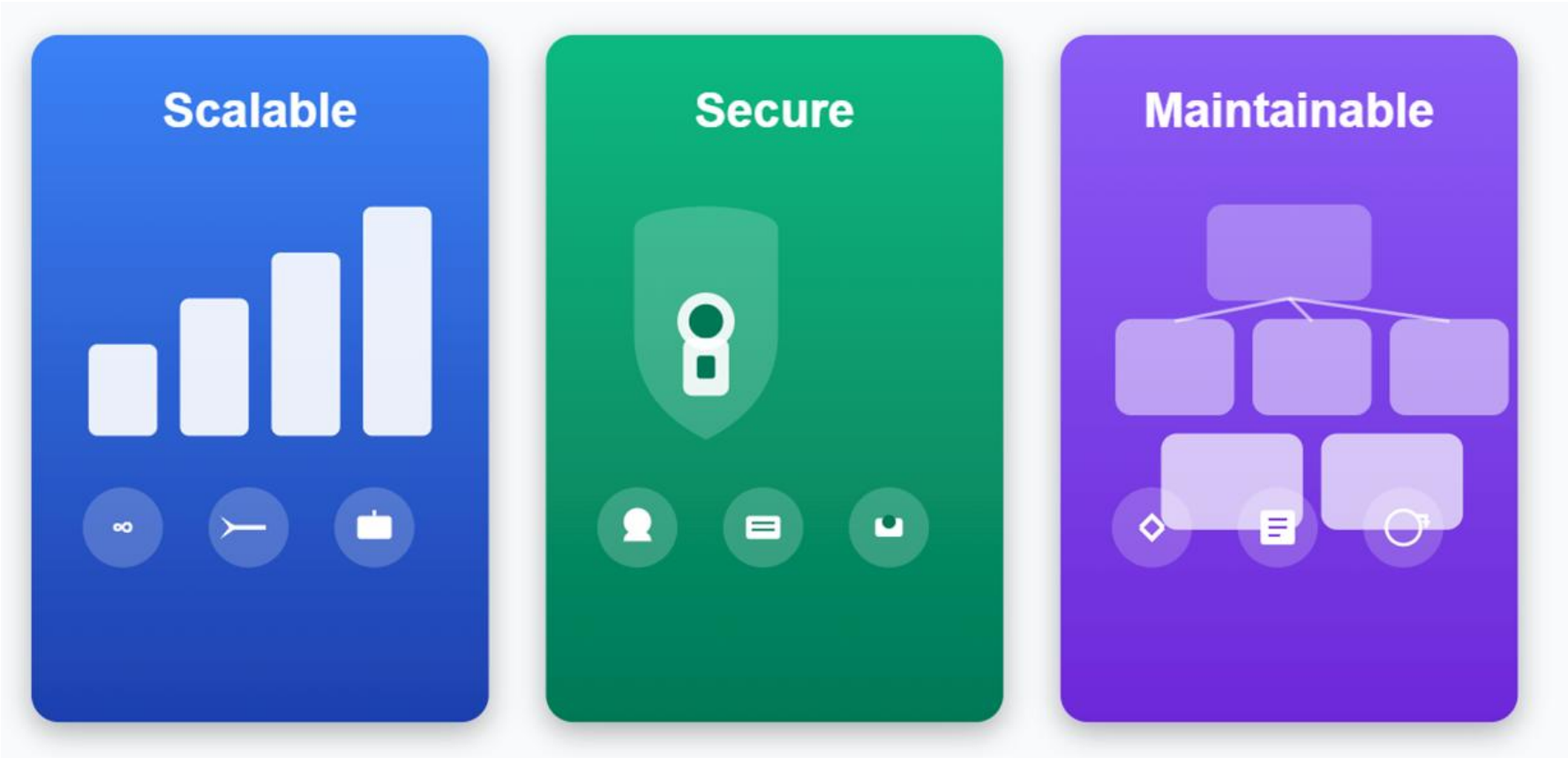


See the Past → Understand Patterns → Forecast the Future

Enable Self-Service Reporting

- Direct Access to Enriched Data
- Answers in Minutes, Not Days
- Focuses on Strategy
- Insights Available on Demand
- Consistent Metrics Across Departments

Build for Growth & Security



Summary

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Summary

Why

- Maximising value and linking the data silos

What & How

- Change Control Database
- Phase Readiness App
- Periodic Business Review Pack
- Commentary Collector
- Data Lake

So What...

- Impact & Benefits and Lessons Learned

Impact & Benefits

Lessons Learned

Key Takeaways

- Defining the right questions to ask
- Deploying a series of trusted reports
- Establishing a core technical team
- Implementing training for independent analysis

Q&A

Thank You

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