Project Controls Expo UK - 13th November 2019

Emirates Arsenal Stadium, London

Improving the reliability of Design Information for Procurement and Construction

David Prangley

Managing Consultant, Adept Management

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About Me

David Prangley – Managing Consultant, Adept Management

- ~20yrs in design and project management
- Experience across different sectors, industries and scales
- Particular focus on the management of complex inter-dependent processes such as design/engineering
- Passionate about improving the understanding of these processes
- Involved in developing the next generation of design, construction and project management professionals, incl. teaching on a number of MSc programmes.
- Father of a 2yr old

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Where are we going

- A bit about us
- Why focus on Design / Engineering
- The Design / Engineering Process
- A Methodology for Reliability – Case Study 1
- Further Case Studies
- What Next

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A bit about us

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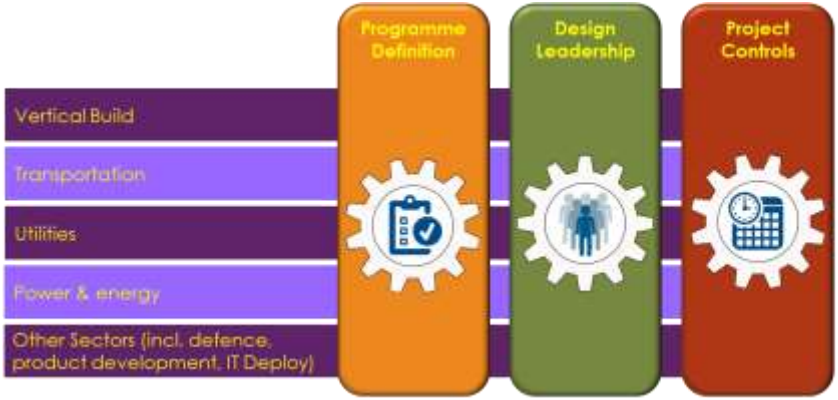
Our Story

- Industry / Academic Research (1990's)
- 1999 Quality in Construction Supreme Award for Innovation
- AML Established (2001)
- 1st Gen Tool Launched (2002) – Plan Weaver
- 2nd Gen Tool Launched (2008) – Adept Design Suite
- AML US Incorporated (2009)
- 3rd Gen Tool Launched (2018) – Flow
- Continue to innovate and develop tools and services
- Continue to support academic teaching and research

Our Services



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Our Experience

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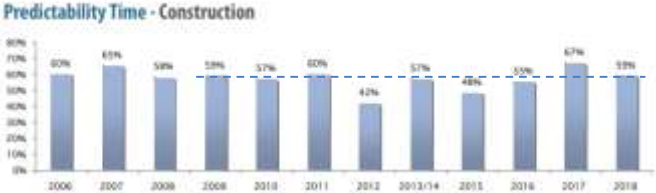
Why Design / Engineering?

Industry Data

Over the last ten years in the UK across all capital projects, big and small, **design & engineering work is as likely to be late as on time.***

The performance trendline over those 10yrs aligns with the performance of construction

This is not unique to the UK



* Data from UK Industry Performance Report 2019 (UK Construction KPI's)

Glenigan · Constructing Excellence · citb

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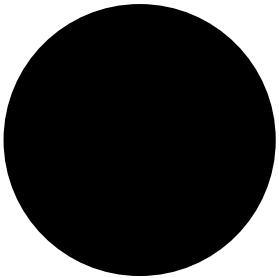
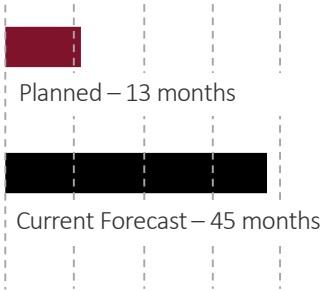
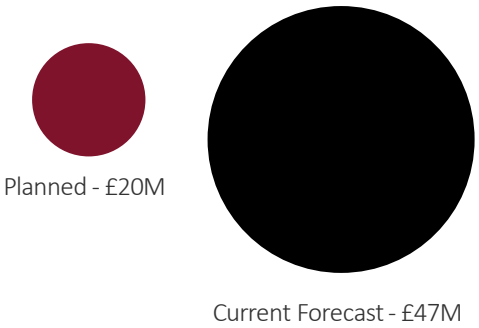
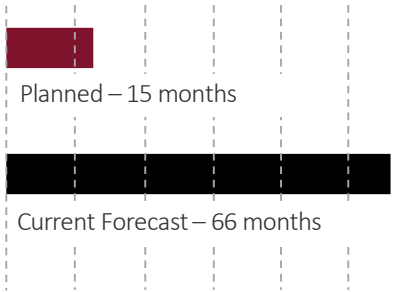
Project Data

Some specific examples;

	Design Cost	Design Time
Example 1 : Construction Project as part of a multi £bN Infrastructure Programme	Planned - £2.5M  Current Forecast - £45M	 Planned – 13 months Current Forecast – 45 months

Project Data

Some specific examples;

	Design Cost	Design Time
Example 2 : Infrastructure Project		

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The Design / Engineering Process

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Characteristics of Design / Engineering

- Design is an iterative process
- Driven by intangible information
- Can be highly complex
- Silo-based teams
- Usually broken into sub-problems
- Can involve many people
- Normally undertaken in stages
- Value of the information increases

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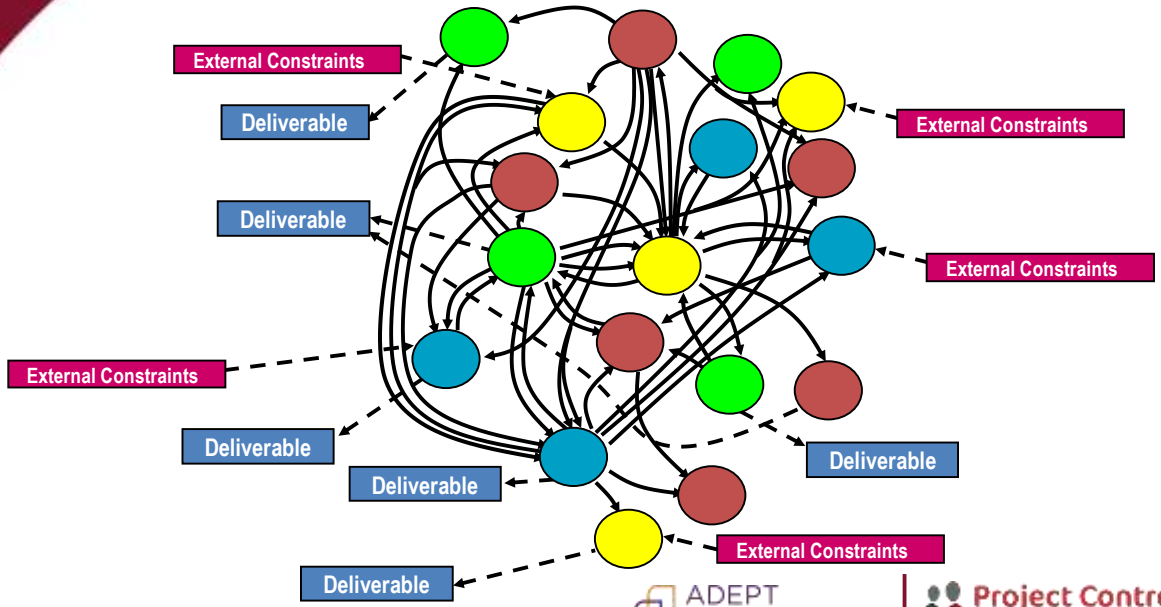
Typical Design / Engineering Process



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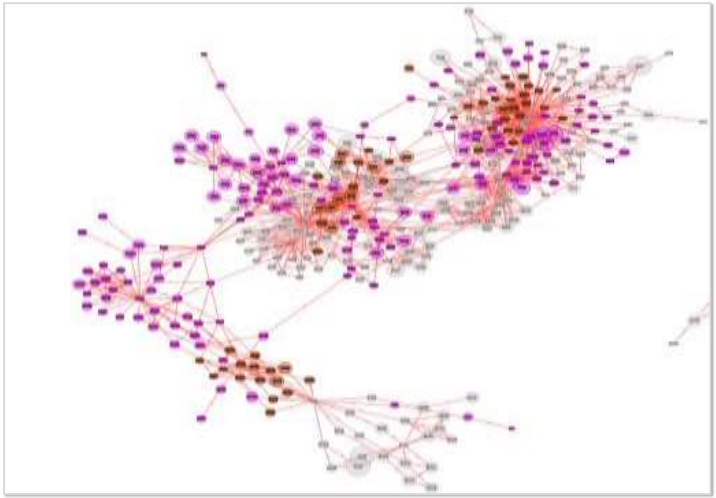
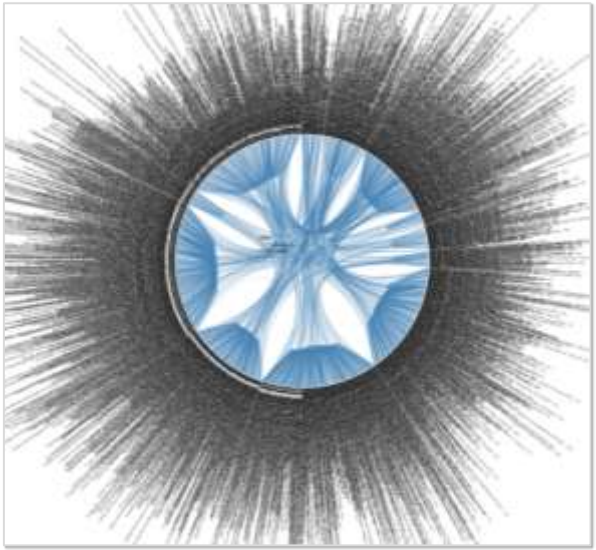
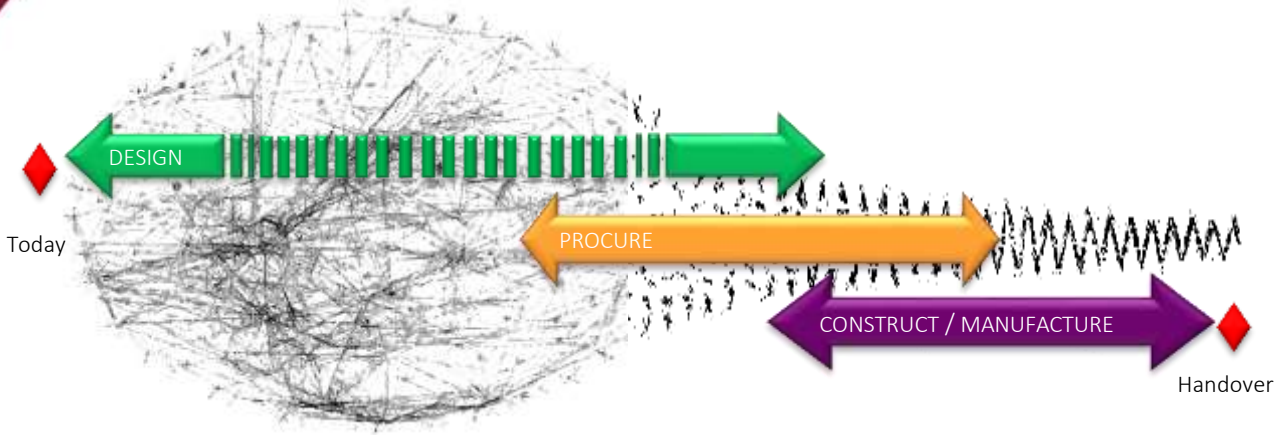
A real example



A real example



Planning Principles in Reverse



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A Methodology for Reliability

Case Study 1 - Mixed Use Development, London

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Project Characteristics

- Mixed Use Commercial Development
- Combination of Refurbishment and New Build
- 4 Main Plots
- 4 Different Architects
- Complex interfaces with shared plant spaces in existing basements
- Complex interfaces with existing Heritage assets
- Complication of existing tenants in place

Flow

A SYSTEM FOR MANAGING COMPLEX DESIGN & ENGINEERING PROJECTS

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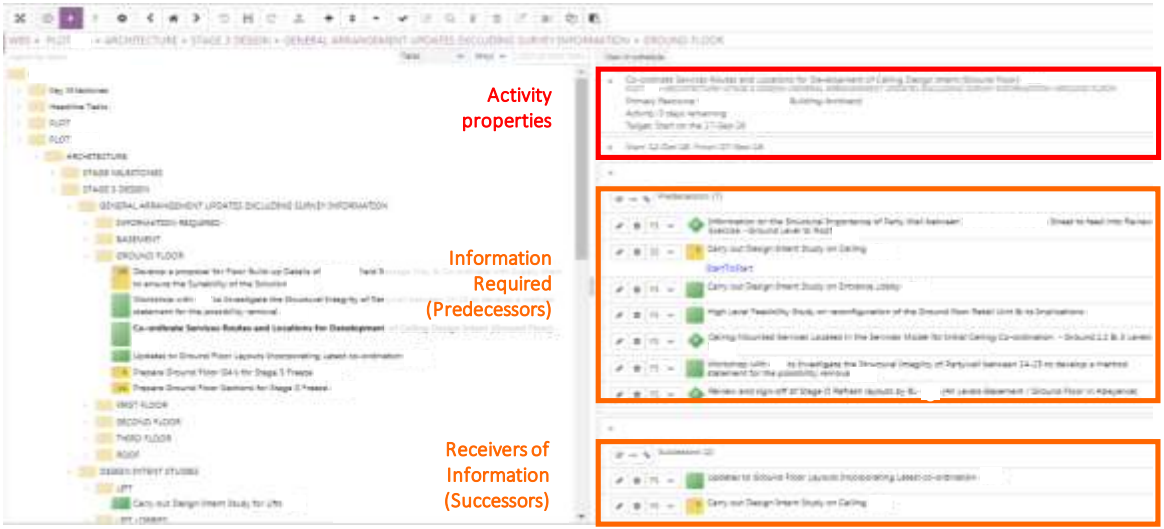
Stage 1 - Define



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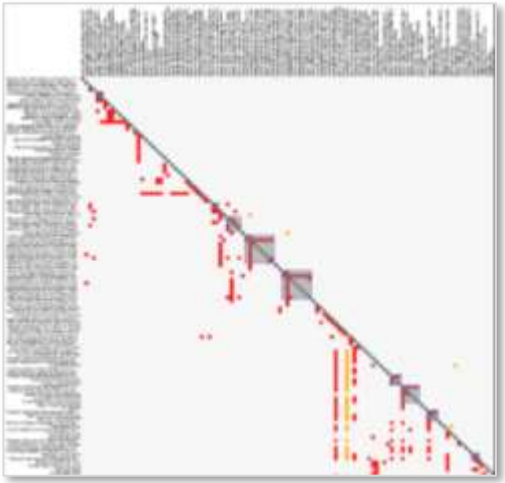
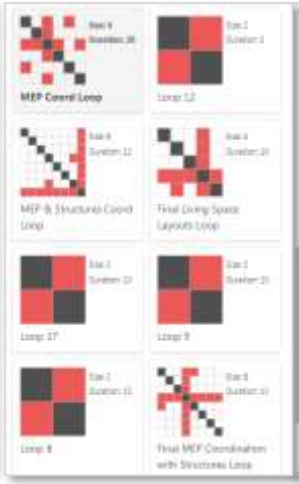
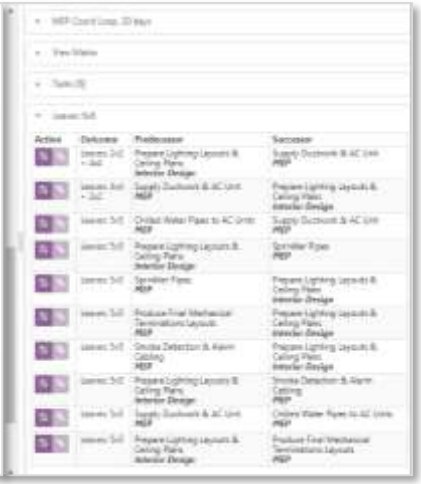
Stage 2 - Streamline







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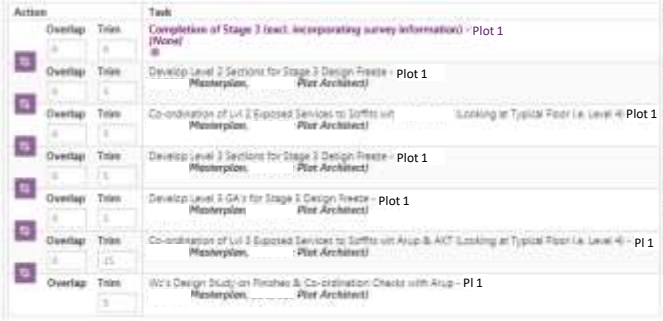
Stage 3 - Plan

Consider Pinch-Points and Resolve before setting a baseline

Completion of Stage 3 (excl. incorporating survey information) - Plot 1	**Missing (by 6 days)**
Completion of Stage 3 (excl. incorporating survey information) - Plot 2	**Missing (by 11 days)**



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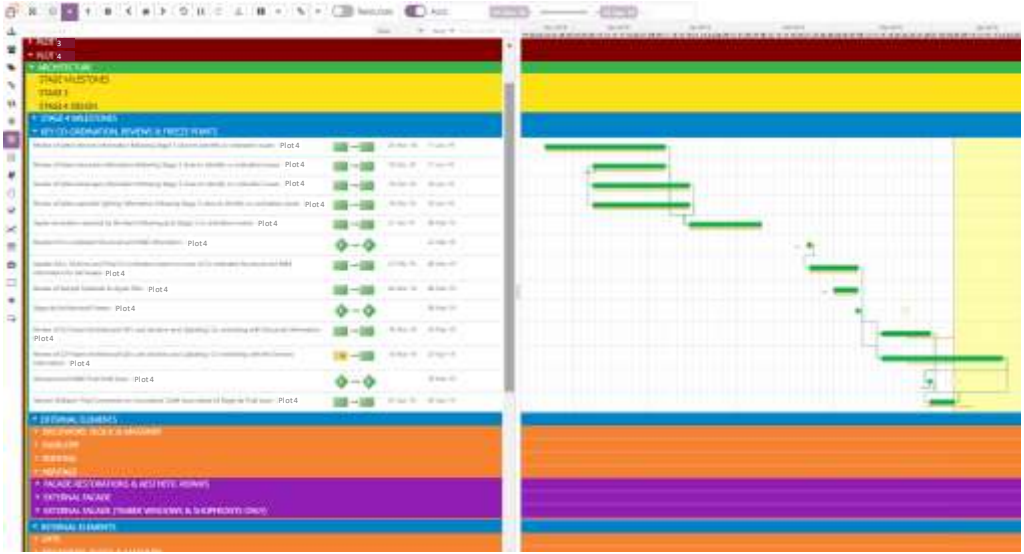
Stage 3 - Plan



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Stage 4 - Deliver

Stage 4 - Deliver

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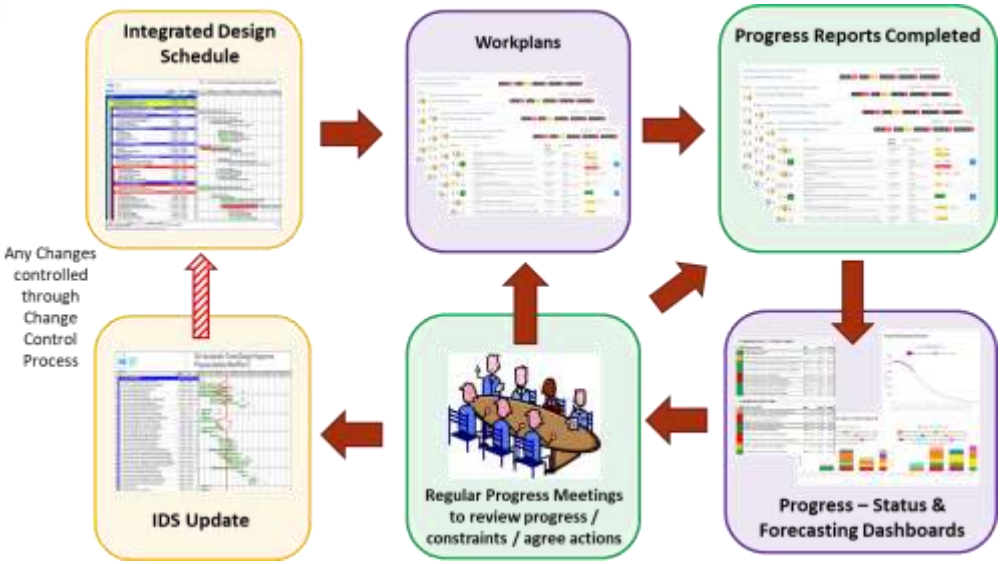
Stage 4 - Deliver



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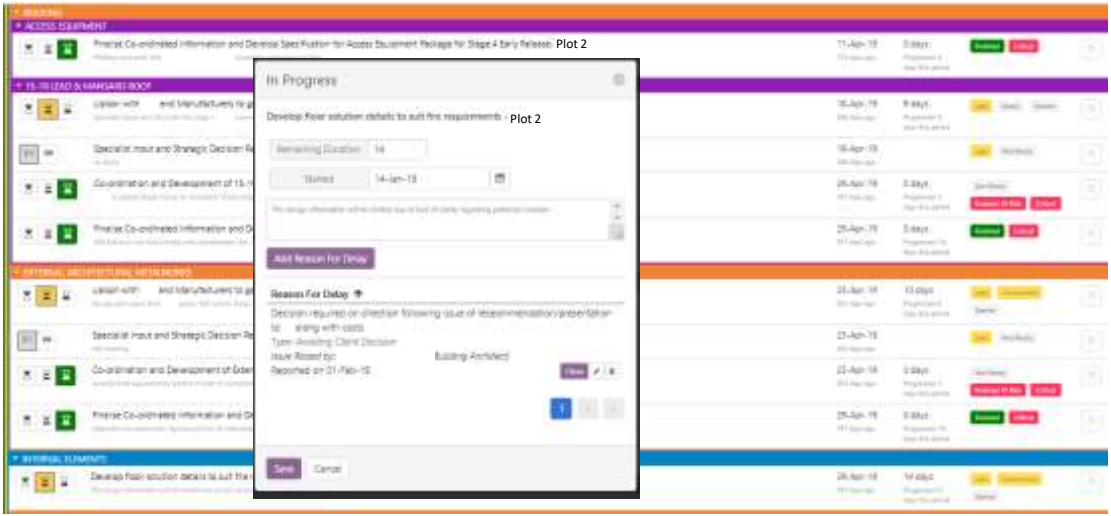
Stage 4 - Deliver



Stage 4 - Deliver

Stage 4 - Deliver

Key Design Delivery Milestone Health Check (One Month Lookahead)

Ref#	Key Design Delivery Milestone	Status (working days)	Target Date	Reported	Owner	Comment
8	Approval of Form 3 Received - Ground Assessment & Monitoring Action Plan	Hitting by 10days	30-Nov-18	16-Nov-18		Approval now covers Ground Assessment and MAP,
9	Completion of Stage 3 (excl. incorporating survey information) - Plot 1	Missing (by 7 days)	16-Nov-18	27-Nov-18		are on target to achieve their revised target
10	Completion of Stage 3 (excl. incorporating survey information) - Plot 3	Missing (by 5 days)	23-Nov-18	30-Nov-18		Critical string is driven by update of structural mode ordination. Architectural details are reported as on
11	Completion of Stage 3 (excl. incorporating survey information) - Plot 4	Missing (by 9 days)	30-Nov-18	13-Dec-18		Critical string is driven by completion of co-ordinatio originally planned. Resolutions in the subsequent ta and structural models to be agreed
12	Completion of Stage 3 (excl. incorporating survey information) - Plot 2	Missing (by 5 days)	30-Nov-18	07-Dec-18		Critical string of activities involves resolution of the

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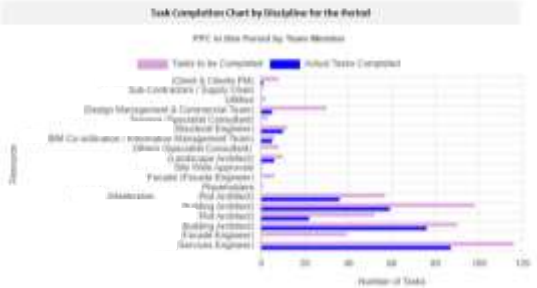
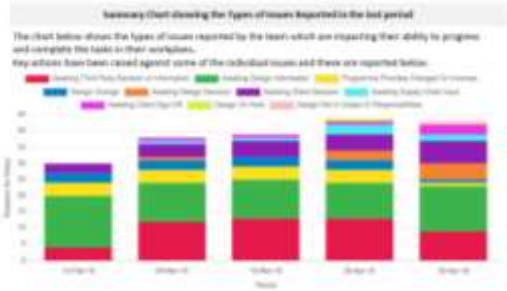
Stage 4 - Deliver





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A Methodology for Reliability

Case Study 2 – IT Deployment Project, Europe

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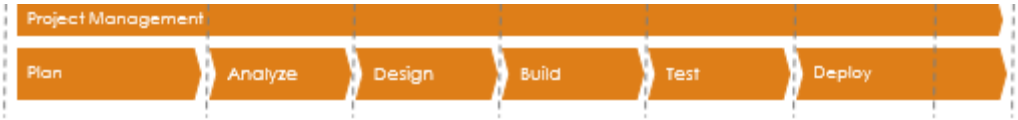
Project Characteristics

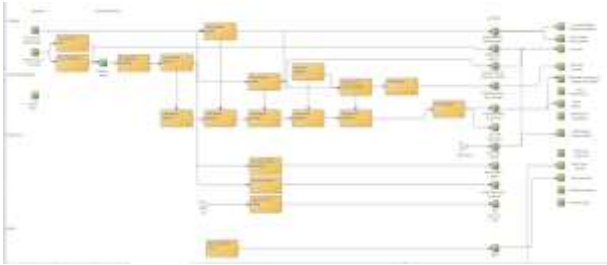
- Deployment of Oracle Fusion across of multi-national organisation
- Stakeholder managers, software integration developers and deployment professionals based in multiple continents
- Previous releases delivered under scope, late and over budget
- Complex integrations across departmental functions and embedded reporting tools
- Challenge of both Agile and Waterfall approaches to planning and management
- Time pressure imposed by switch off of existing payroll system!

Stage 1,2,3 – Define, Streamline, Plan

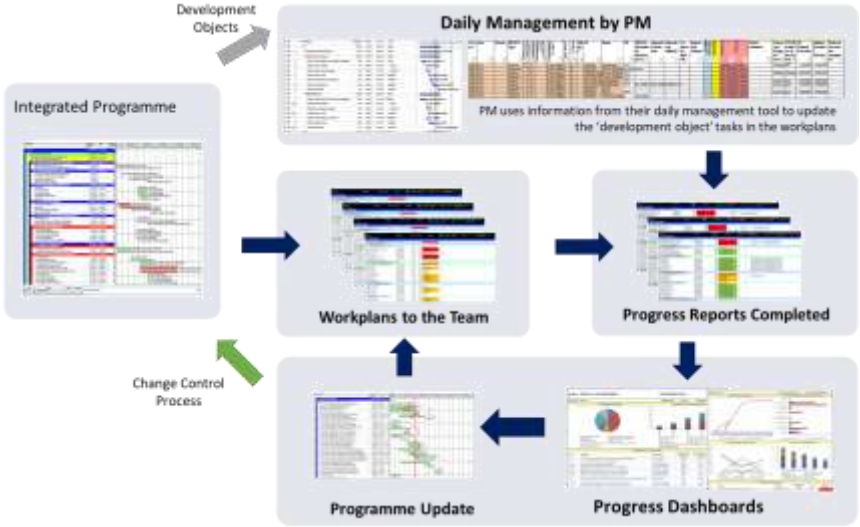
Overall Development / Deployment Process



Complex integrations within and across the different stages



Stage 4 – Deliver



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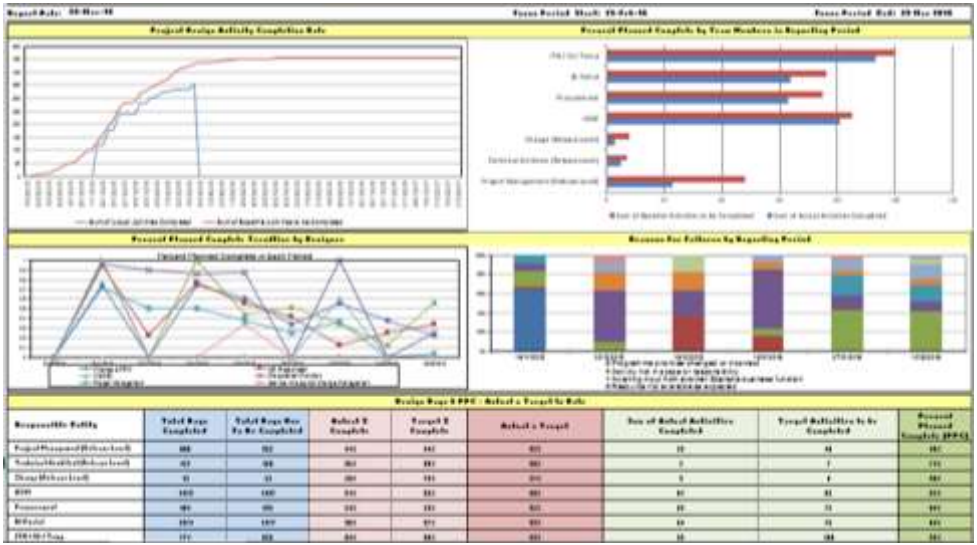
Stage 4 – Deliver



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A Methodology for Reliability

Case Study 3 – Infrastructure Programme, Los Angeles

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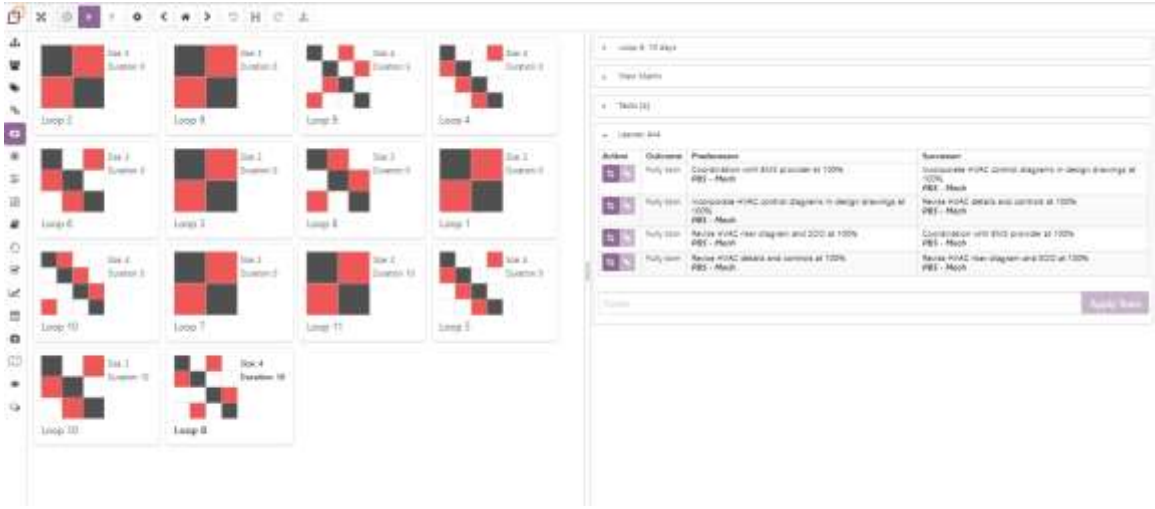
Project Characteristics

- Complex programme for delivering an automated people mover system at a major US airport
- 11 different projects with complex integrations within and across projects
- Over 100 different resource roles being managed across the programme
- Pace of project in certain phases required daily checks on progress and impact of progress

Stage 1,2 – Define, Streamline



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Stage 3,4 – Plan, Deliver

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What Next

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Lessons Learned over the last 20 yrs

- A detailed design / engineering programme is not optional
- The design / engineering process is repeatable : define it and then re-use the process
- Building a culture of honesty, transparency and integrity in reporting is critical
- The solution develops with increasing certainty and diminishing flexibility
- Manage intangible information, not just tangible deliverables
- Recognise when assumptions are being made, and the risk they represent
- BIM still requires a process to be defined and managed
- 80% complete isn't good enough; that represents risk
- Procurement of specialist sub-contractors is a critical part of the design process
- The skills/tools we've developed are transferable across industries / sectors

What Next

A new community for all those involved in the leadership of the design process

Launching Q1 2020

Please contact me if you'd like to join us

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Any Questions

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