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The PMO and the Complexities in Supporting the Management of a Large Number of Small Projects

The PMO and the Complexities in Supporting the Management of a Large Number of Small Projects

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Currently working for:

- UK Power Networks as Head of Programme Management Office, and

- Guest lecturer on Project Management at various UK Universities

25 years experience in Programme and Project Management worked for a number of organisations and in various roles:

BAA, Thames Water, Balfour Beatty, Brown & Root, T&T, Carillion

- PhD in Complexity, MSc in Project Management and BEng Mech Eng.

- Fellow of APM – Thames Valley Branch Committee member

- Fellow of the Chartered Management Institute

What is this presentation about?

Today's presentation is about the complexities of managing programmes of work that are comprised of a large number of small projects.

It is about the challenges the Utilities industry and the PMO are facing in an environment, where 'mega' projects are not as frequent as they used to be and where we have to deal with the complexities of interfaces between outputs, expenditure, people and departments / directorates.

We will explore answers to the challenges raised.

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Content

- ☐ Background

- ☐ Challenges

- ☐ Setting up the PMO Organisation to deal with the interfaces

- ☐ The approach taken
  - ■ Process implemented / followed
  - ■ The System / Tools / Reporting

- ☐ Considering and presenting complexity

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Three Distribution Networks

Our work covers regulated and non-regulated business in the three Distribution Networks

The environment

☐ **External**

- ■ Annual Outputs – Health & Load Indices
- ■ Sub-programmes – Flooding, Batteries, etc.
- ■ Four Alliance Partner organisations
- ■ The Regulator

☐ **Internal**

- ■ Capital Programme & Procurement
- ■ Other Directorates
- ■ How do we interface & the interconnections

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Some numbers for 2015

- ☐ **Regulated:**
  - ■
  - ■
  - ■
  - ■

  - ☐ **Non-regulated:**
    - ■
    - ■
    - ■
    - ■

The challenges

- ☐ Delivering the Outputs at the expected time,

- ☐ Establishing annual business plans,

- ☐ Requirement for immediate reporting on forecast expenditure for both regulatory and financial years

- ☐ Managing the change

  - ■ Top – Down

  - ■ Bottom – Up

- ☐ Over-programming Vs Under-programming

- ☐ Perception of a rigid project control environment

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The PMO Structure
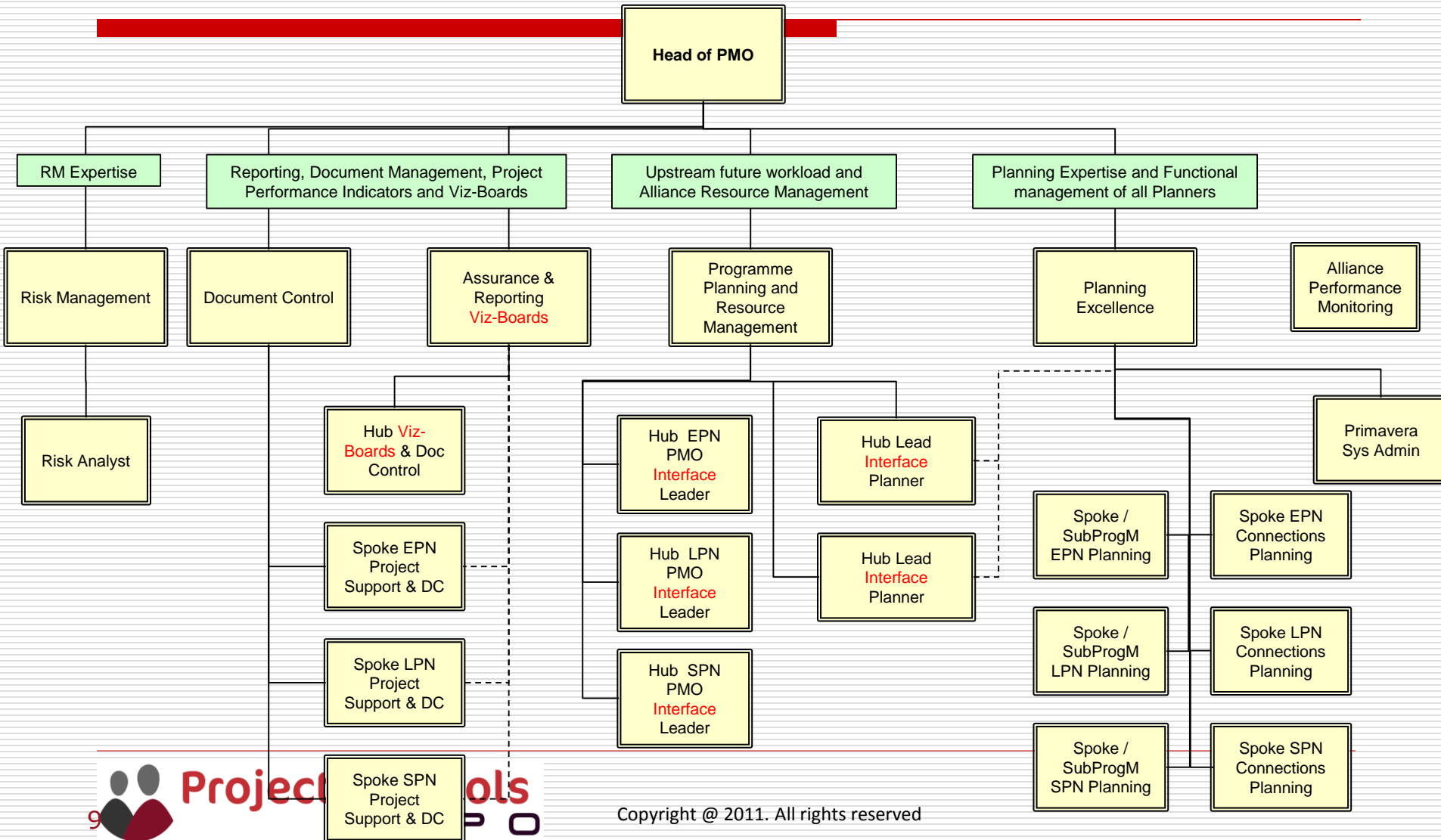
The PMO Planning department
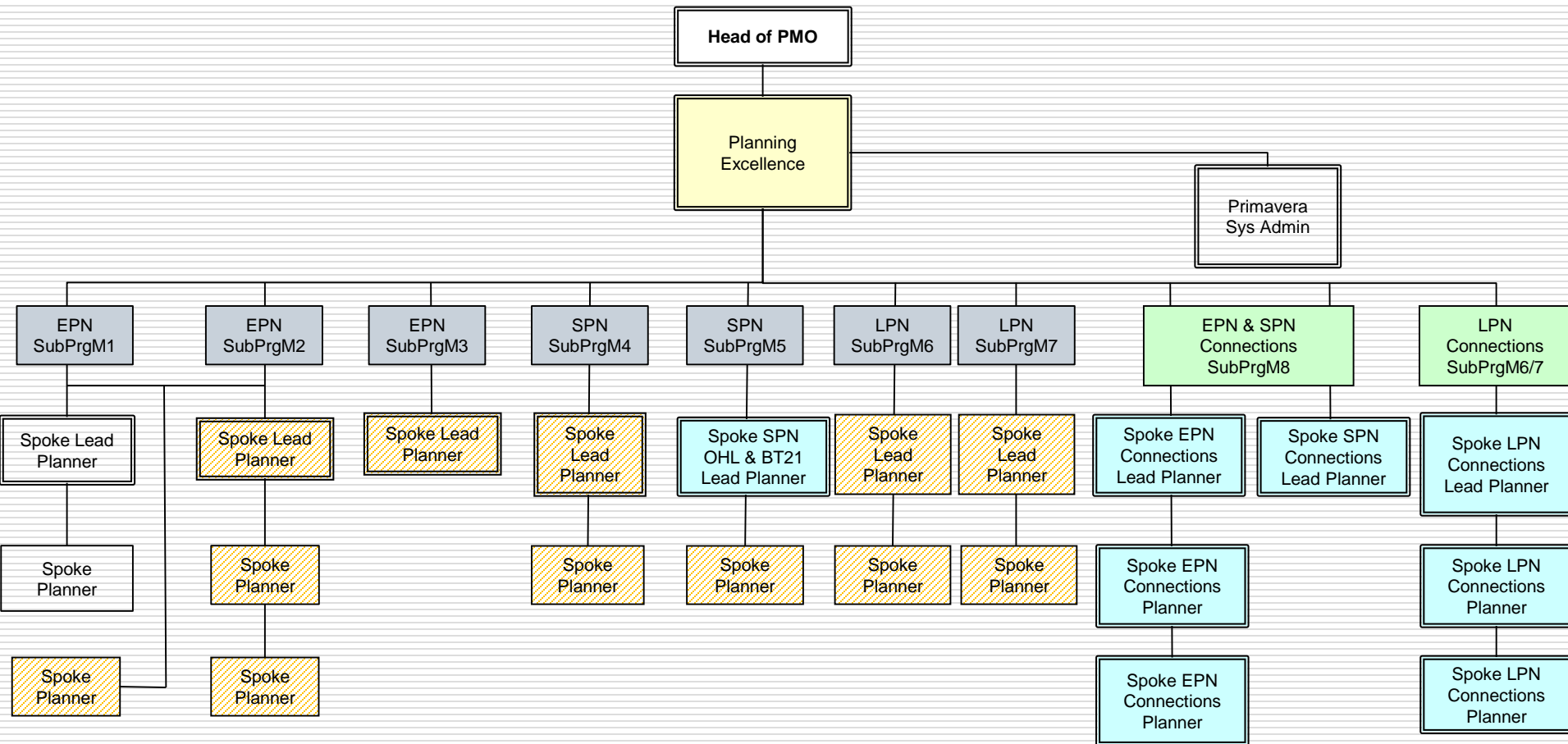
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The Approach

- ☐ Tools' integration – The 'SYSTEM'

- ☐ High level reporting structure

- ☐ Systems and Reporting timeline

- ☐ Risks & Issues Management

- ☐ Long term plan

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The tools' - integration

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Area A

Integrated Programme & Project Management System

EVA reports are the basis for project reporting.

Other project reports include req'd details and are based / extracted from P6 (see JA/IA sample)

Web based environment

Most of the information in P6

Additional req'ts also web based (as per earlier brief)

Forms of data to & from P6 saved in UKPN Db environment enable combined web based reporting

Area B

RAID logs in P6

- Qualitative
- RM Workshops
- Supporting Portfolio Board papers

Risk drawdown in P6 with planned release intervals.

Risk allocation managed by: PM/SPM/ProgM/HoID

RISK MANAGEMENT

Risk Analysis

- Quantitative
- Project Risk analysis
- Risks analysis for Gate papers - Projects >£10M

Risk managed by: Proj./ProgM/DNO/CP&P

REPORTS

P6 link to UCI / CU / Rigs Db

WBS
CBS
OBS
RBS

Cost & Contract Mngt

Project Structures

Actuals, Accruals

Link to Unifier & SAP

P.O.
Activity
Outputs

Coding

Coded link to / from CostOS

Rigs
HI
LI
Other

Estimating

Contractors use P6 structured at the req'd level and including the necessary information.

Instructions are given to them through the WPEP or PCH.

Cost loaded programmes for projects >£2M, with details down to Level 4/5 of the WBS.

Smaller value/duration projects are covered under Umbrella P6 projects and these are updated at a different frequency to the other projects.

Primavera P6

1. PM/Com/Plng work with the P6 programme
2. Forecast through P6
3. Requirement for robust Progress & Change Management Processes
4. Minimising use of non-auditable reports (LBEs, etc)
5. Possibility for automatic transfer of 'Forecast' info to SAP

Work Package Execution Plan (WPEP)

Project Control Handbook (PCH)

These two documents describe in detail:
- WHY
- WHAT
- HOW
- WHEN
- WHO

LINKS TO OTHER DIRECTORATES

Front End
- Templates for pre-Gate B managed by AM
- Linking to PIMS info
- Working with NAMP planning
- Setting up Gate Dates

ASSET MNGT

Gate B-D
- Monitoring Outputs
- Reporting on Outputs
- Working with NAMP planners to plan ahead
- Working with AM PMO to a common data system re. dates, etc

CONNECTIONS

Back End
- Project Closure
- Supporting estimating of Durations
- Supporting estimating of Budgets

REGULATION

NETWORK OPs

CP&P projects

Future Workload

Reports from P6 to Mngt

Reports from P6 to Regulation

Coordination Reporting Monitoring Early Warning

Umbrella project that will enable DNO resource loading

Reports from P6 to Regulation
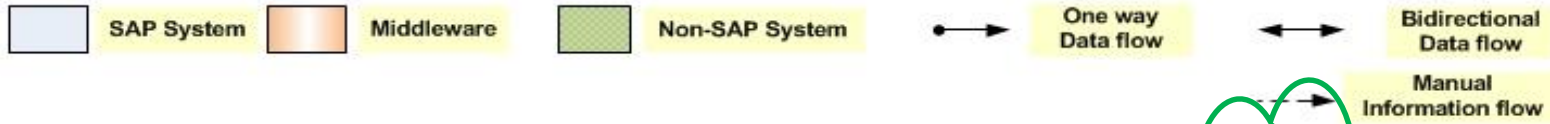
Understanding and accommodating RIIO-ED1 req'ts

Area C

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//PMO/DNA_A100064_Systems Diagram Jan13

High Level - Solution Interface Diagram

BTP Release-4 Interfaces Wire Diagram

High level reporting structure

Rolling up - Reporting levels

We generated the reporting pyramid

For Regulatory, Finance and other Directorate requirements

DNO   DNO   DNO

Projects (incl. Functional)

Sub-programmes / (incl. Viz-boards)

Alliance reports

Directorate(s) / SMT

EMT / OPR – CPP pages

A – Project level information
• Project expenditure by month & S-curve
• EVA (CPI & SPI)
• Variance justification (Forecast Vs achieved)
• Outputs – milestone variance
• Comments by project team members
• Milestones and variance against baseline
• Risks and Opportunities

B – Subprogramme level information
• Use of DNO roll up to report by project,
• Forecast expenditure by SubproM & by Project (Direct & Indirects, Alliance & non-Alliance). Back up material for projects,
• Describing the variances by Month, YTD & Year End,
• Outputs – RAG status and comments,
• Risk & Opportunities– top 10 risks
• H&S report

C – OPR level information
• Spider graph indicating overall performance
• Forecast expenditure and variances
• Status of Outputs with back up comments on red and amber Outputs
• Status of HVPs
• CPP Achievements and Risks
• Status of Connections portfolio
• Inter-Directorate KPIs

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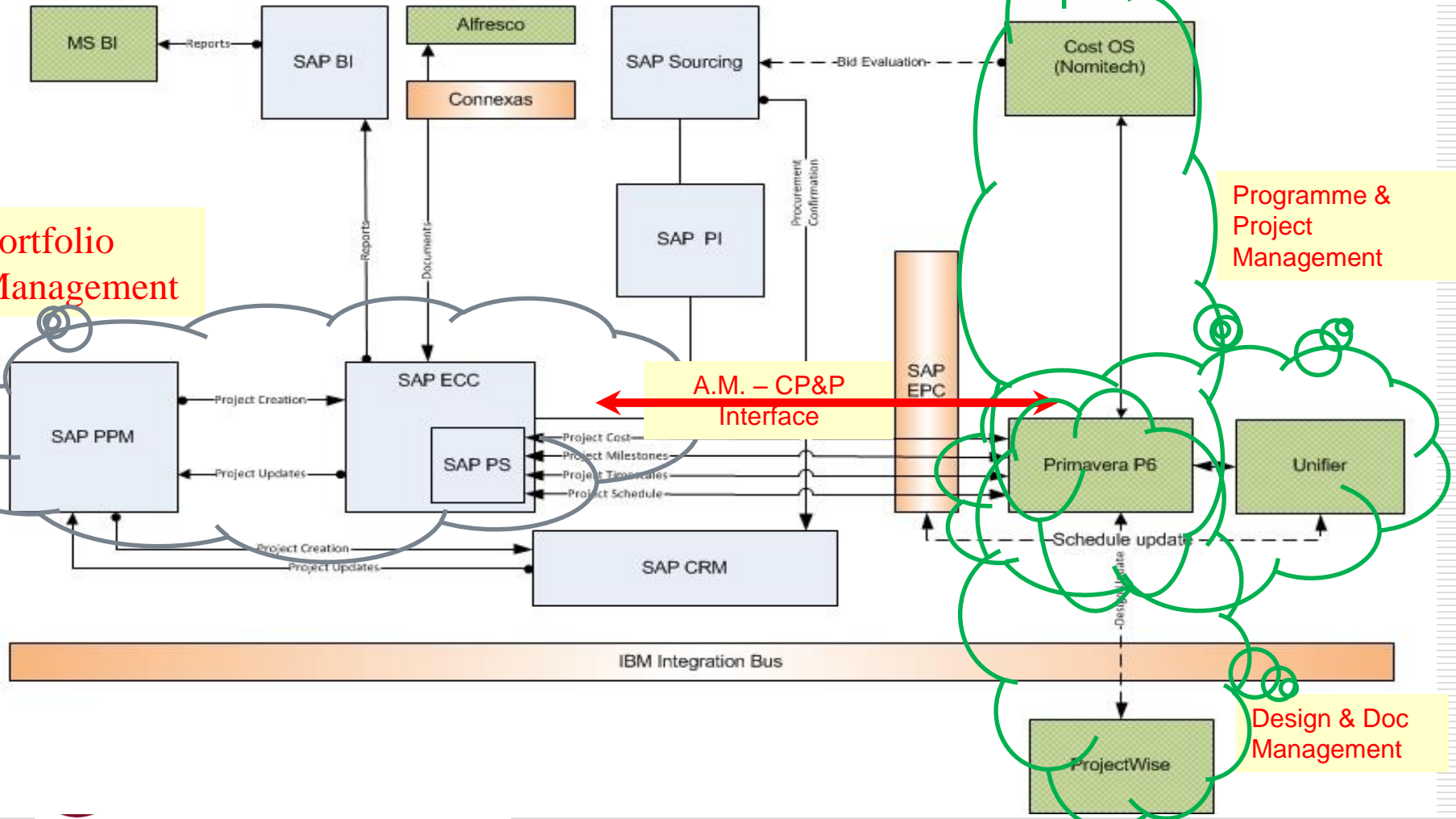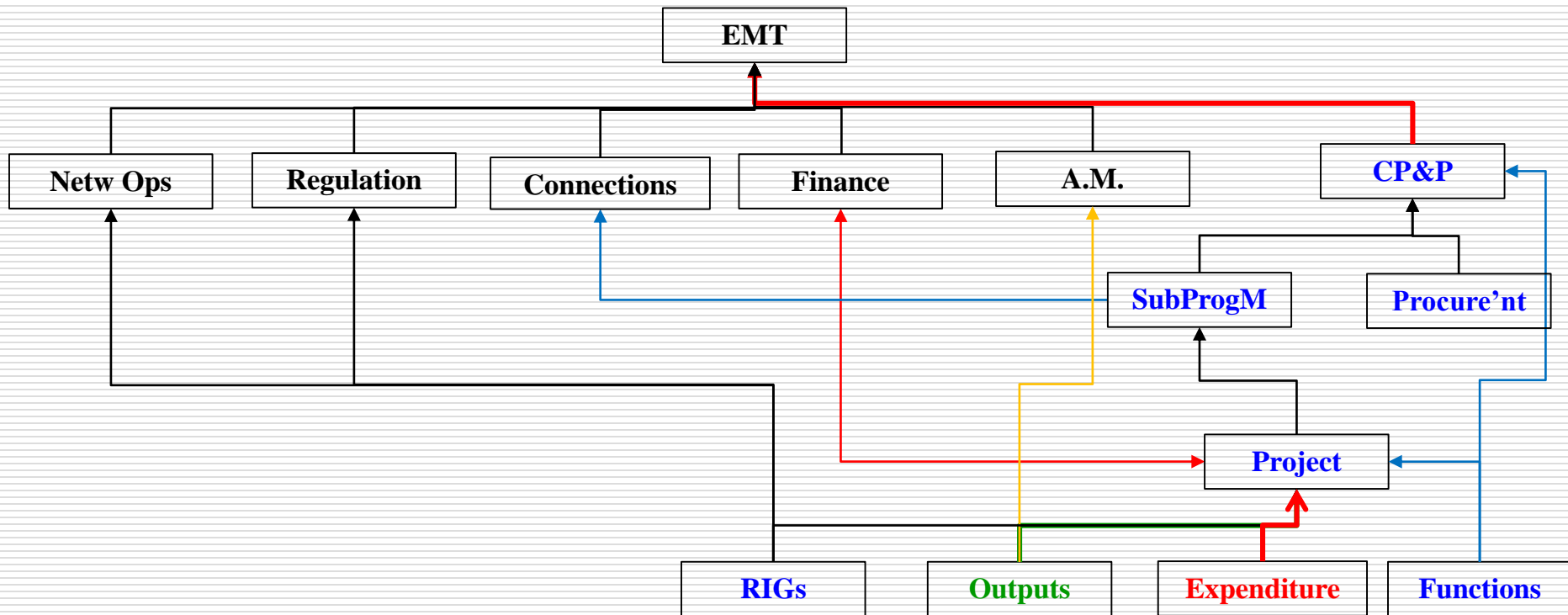
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Systems and reporting timeline

SAP 1

SAP 2

Data Copy from P6 and batch run – weekend after PM SPM reviews

Wk 1   **Wk 2**   **Wk 3**   **Wk 4**

Project Reviews weeks 2 and 3 of the current month

Period of 2 wks for soft transfer of actuals from Unifier/SAP to summary activities in P6

Planners distribute the actuals to proper activities and <u>zero</u> actual costs in summary activities.
During these 2 weeks no reporting of costs from P6

Sub-ProgrMs review progress with PMs last week of the month

By 15th of Month

PMs, Planners, Commercial and Design review progress

Progress update (Direct & Indirect costs)

PM and team - progress reviews

Finance incorporate Forecast Expenditure and submit Finance report and Programme Summary Data

Planner updates Primavera
QS update Unifier, reviews AFP and establishes Variances against Baseline

PM updates commentary Web version
(1st draft PM report)
PM & team review Risk Register

PM reviews: PM report, SubProgM rollup & EV Tracker
Expenditure report to SubProgM Managers & Finance
(2nd draft PM report, SubProgM report)

Full suite of reporting – issued to SubProgMs. 1st day of week and available to AMT for reviews

Wk 1

Sub-programme Monthly Performance meeting with SMT & AMT.

2 days for CP&P Performance packs to be ready

UKPN Operational Performance Review Meeting

1st week of month

CP&P Director Review meeting

CP&P report issued

Final version of report and full suite of reporting

Data Copy from P6 and batch run – weekend after reviews

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Risks & Issues Management

- A common tool used to deliver the two main process – Primavera P6,

- The tool is used by both the Client and the Contractor Project teams,

- Governance support process with weekly Risk Advisory Body reviewing Portfolio Board papers prior to their submission for approval,

- Issues – Project & Programme level entered and emailed directly to person that needs to resolve,

- Guidance documentation supported by frequent 'flyers' informing all on updates and other issues

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Levels of Risks & Governance
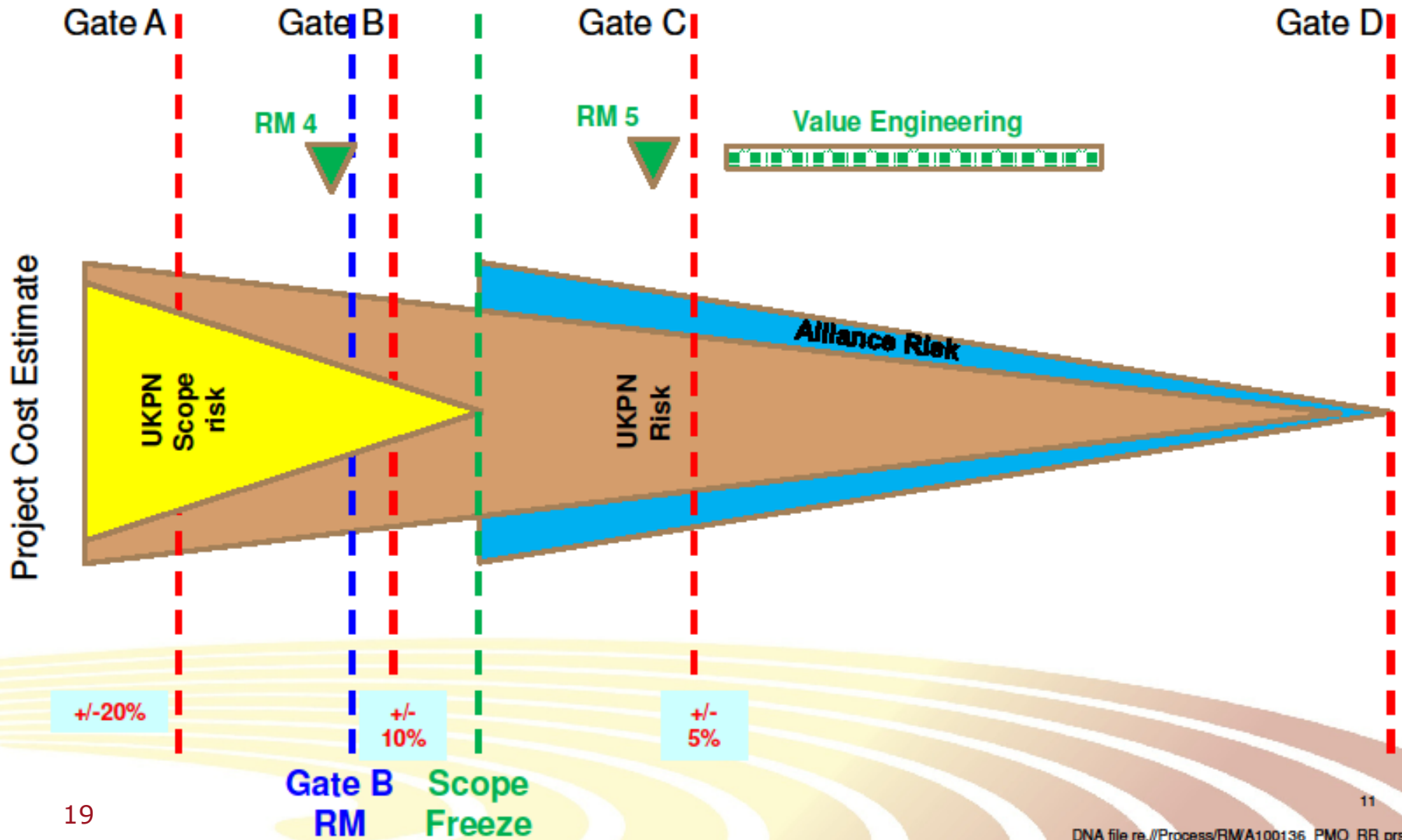
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DNA file re.//Process/RM/A100136_PMO_RR prsnt v7

Long term plan

Dealing with the challenge

'*The future is not what it used to be*'.

- We have to deal with Complexity on a daily basis
- We have to work with projects through a different perspective:

The management of transient, dynamic and complex adaptive systems/agents, so as to deliver the expected change within certain parameters that are established by seemingly ordered and stable environments.(Antoniadis, 2009)

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Considering Complexity

But why complexity?

Complexity is defined as '*the dealing with interconnections between dynamic systems*' and has characteristics.

Classification of complexity characteristics by type (Antoniadis, et al., 2006)

Conditional:

Autonomous Agents, Instability, Non-equilibrium, Non-linear, Attractors

Developmental:

Co-evolution, Self-modification, Self-reproduction, Downward causation, Mutability, Non-uniform, Emergence, Phase changes

Behavioural:

Unpredictability, Non-standard, Undefined values

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Autonomous Agents
Complex systems are generally composed of independent or autonomous agents. All of these agents are regarded as equally valuable in the operation of the system

Instability
Evolution and catastrophes will exist. Sudden swaps between attractors become possible.

Non-Equilibrium
Energy flows will drive the system away from an equilibrium position and establish semi-stable modes as dynamic attractors

Unpredictability
In interacting systems a chaotic sensitivity to initial conditions can occur

Non-linear
Complex system outputs are not proportional to their inputs

Emergence
The properties of the overall system will be expected to contain functions that do not exist in the parts.

Co-evolution
The parts are regarded as evolving in conjunction with each other in order to fit into a wider system environment

Downward Causation
The existence and properties of the parts themselves are affected by the emergent properties (or higher level systemic features) of the whole

Radar chart labeled "Complexity Characteristics" with axes: Autonomous agents, Instability, Non-equilibrium, Non-linear, Attractors, Co-evolution, Self-modification, Self-reproduction, Downward Causation, Mutability, Non-uniform, Emergence, Phase changes, Unpredictability, Non-standard, Undefined values. Scale from 0 to 100.

Antoniadis, D. 2009, Managing Complexity in Project Teams. PhD Thesis.
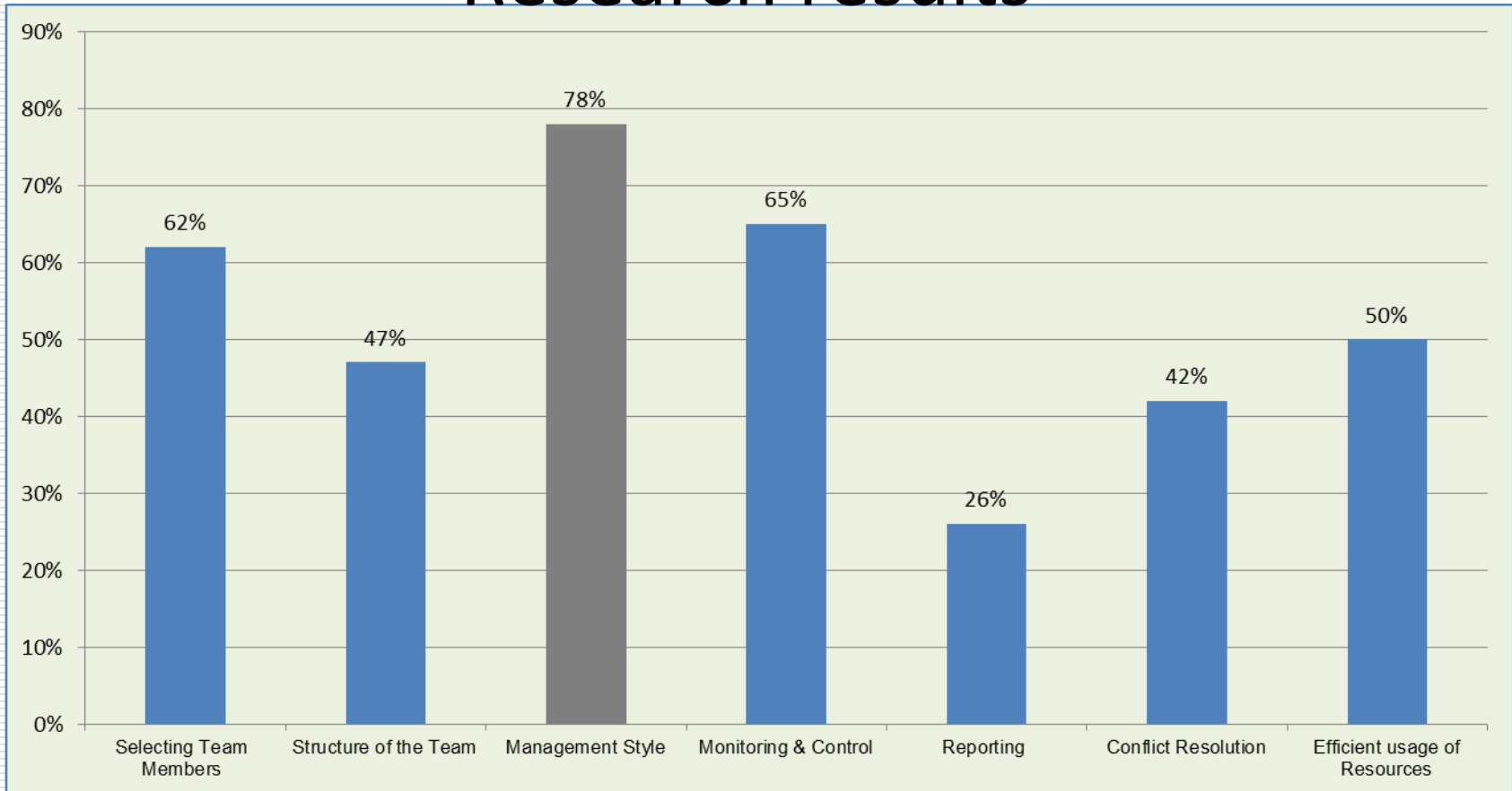
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Group	Characteristics	Relevance to Project Management	Further Explanation
Conditional	Autonomous agents	Each and every individual contributing to a project is considered to be an autonomous agent and regarded as equally valuable in the operation of the system.	
	Instability	Stepped evolution(s) or catastrophes do occur in projects. Attractors (see definition) appear (currently unintentionally) and become system parameters and which will attract and avoid chaotic behaviour of the project system	
	Non-equilibrium	The various 'pulls' (contractual, behavioural, stakeholder influences, company politics, and management pressures, to mention but a few) that occur in projects from the multiple contributors which, depending on the situation, will establish semi-stable modes with 'players' (attractors) who will attempt to influence the project at the opportune moment	It should be a combination of stakeholders as well as project team members that cause these 'energy flows' therefore we should be looking further than a simple stakeholder management
	Non-linear	Individuals seen as complex systems that work in a project and outperform themselves when faced with challenging conditions and under a good environment encouraging team work, understanding and noticing individuals' contribution, establishing team work rather than group work or individualistic behaviour.	
	Attractors	Simple systems (individuals) come together and many times self-organise to form more complex systems which are pulled by the presence of the dynamic attractors of the moment. So we have individuals, that could easily not be the line managers, who because of their capabilities, abilities, behavioural attributes are assigned to be 'attractors' is a certain situation arises.	The top-2-bottom hierarchical structure allows only for the identification of lines of responsibility. However, complexity (defined as the study of interconnections of systems) identifies as one of the characteristics the need/existence of attractors, which are / could be construed as individuals who when required become the poles of attraction.
Developmental	Co-evolution	This is self-evident in the Project Management world	Individuals within teams and teams within projects co-evolve and initially attempt to understand each other in order to understand the requirements and fit into the wider project environmen
	Downward Causation	The existence and skills (including characteristics) of individuals and teams within the project are affected by higher level systemic features of the whole.	A number of structures that are set up at project level that indicate the systemic features of the project affect the existence, the properties / requirements of the project parts themselves. Therefore the standard project management structures, WBS, OBS, CBS, etc. as well as the informal project structures (everyday communication, etc.) affect the existence and input by individuals and teams
	Emergence	This again is the power of the whole delivering a lot more than the individual parties to the project. The usual 2+2=5. The project takes from each part and combines all properties to produce a holistic system that will deliver the project	
Behavioural	Unpredictability	This represents the importance of the initial project conditions which if not managed appropriately could lead to chaotic conditions occurring later on the projects (*see also pathogens and incubation period, IJPM ref. needed here*).	

Antoniadis, D. 2009, Managing Complexity in Project Teams. PhD Thesis.

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Research results
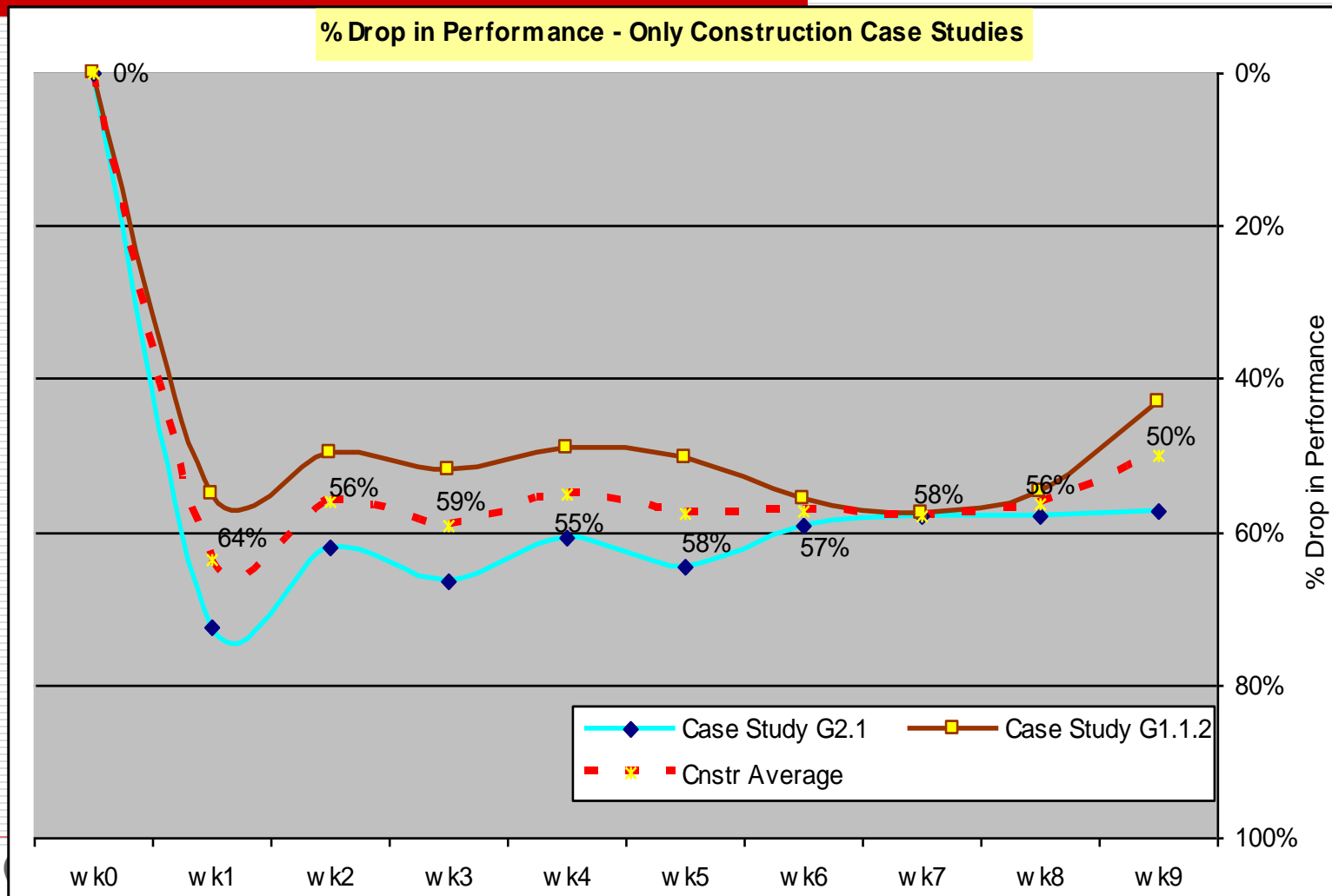

Contribution of project management sub-processes to the success of the quality of the project management for levels – Substantial to Excellent

Research results – Effect of Complexity

% Drop in Performance - Only Construction Case Studies

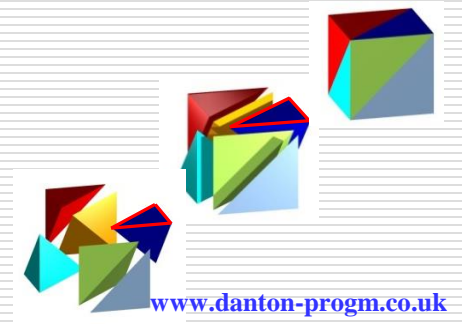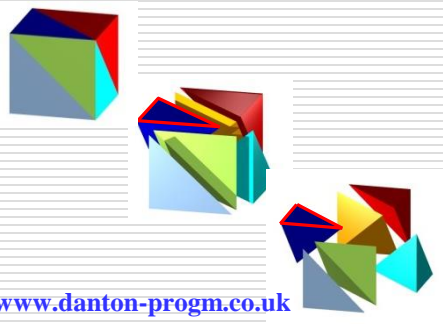Legend: Case Study G2.1 — Case Study G1.1.2 — Cnstr Average

Conclusion

In reviewing the actions taken and the complexity characteristics it can be seen how the new dimensions of a PMO have to deal with the interconnections between dynamic systems – people, processes and software tools.

PMOs have to move away from the control paradigm and focus on things that others cannot see – not forgetting what has to be delivered.

PMOs have to look at the various 'agents', how they perceive information and the possible '*behavioural selective acquisition*' that affects their processing of the information.

PMOs need to enable the management of the large number of interactions from the large number of projects.

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Thank you