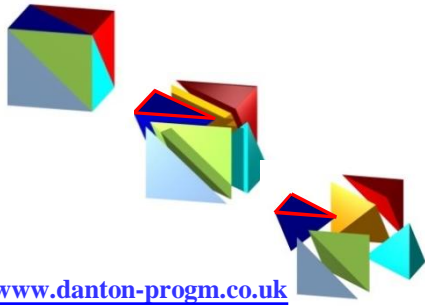ARISTOTLE
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90
YEARS +
auth

# Information Management in Client Programmes of Work

Διαχείριση της Πληροφορίας και Πολυπλοκότητα στα Τεχνικά Έργα: Το παράδειγμα των Δικτύων Διανομής Ενέργειας στην Αγγλία

Dr Dimitris N Antoniadis

26th May 2017

## Dimitris Antoniadis

Head of Programme Management Office - UK Power Networks

- 30 years in Programme and Project Management

Worked for various organisations:

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

- PhD, MSc in Project Management and BEng Mechanical Engineering

- Fellow of the Association for Project Management

- Fellow of the Chartered Management Institute

- PMGreece founding member
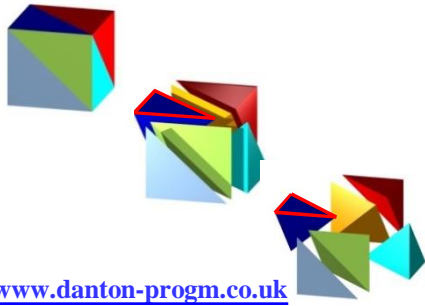
**The presentation will cover**:

- Some facts about the Company

- The '*environment*'

- Integrated systems – Challenges & Opportunities

- The information environment of projects

- How Information Management serves client programmes?
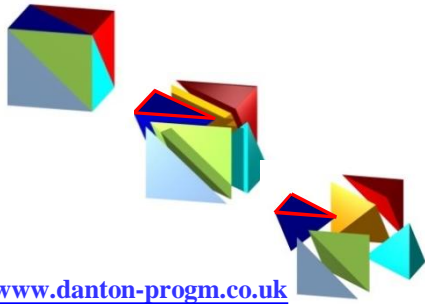
- The future challenges – a view on Complexity
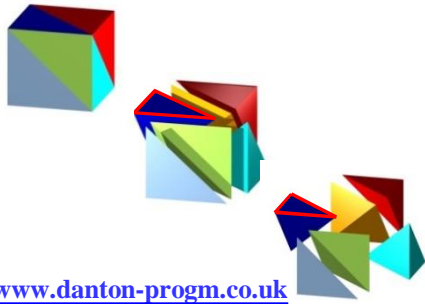
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# Three Distribution Networks



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

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# Some numbers

- **Regulated:**
  - Annual expenditure of c£150M - £180M
  - Delivered by approx. 400 projects
  - 180 projects had budget < £500K
  - Handful of project budget > £10M

- **Non-regulated:**
  - Annual expenditure of c£60M - £70M
  - Delivered by approx. 210 projects
  - 150 projects had budget < £200K
  - Ten projects with budget > £2M

# The environment

- The external environment
  - The requirements – regulation, outputs, customers, etc.
- The Internal environment
  - Governance (inter and intra-directorate)
  - Inter-Directorate environment
  - Nine Programme Managers
  - The project requirements
    - The downward causations
- The Alliance Partners :– Four organisations
- Contractors :– Various layers
- The interconnections between five organisations

**Information Management
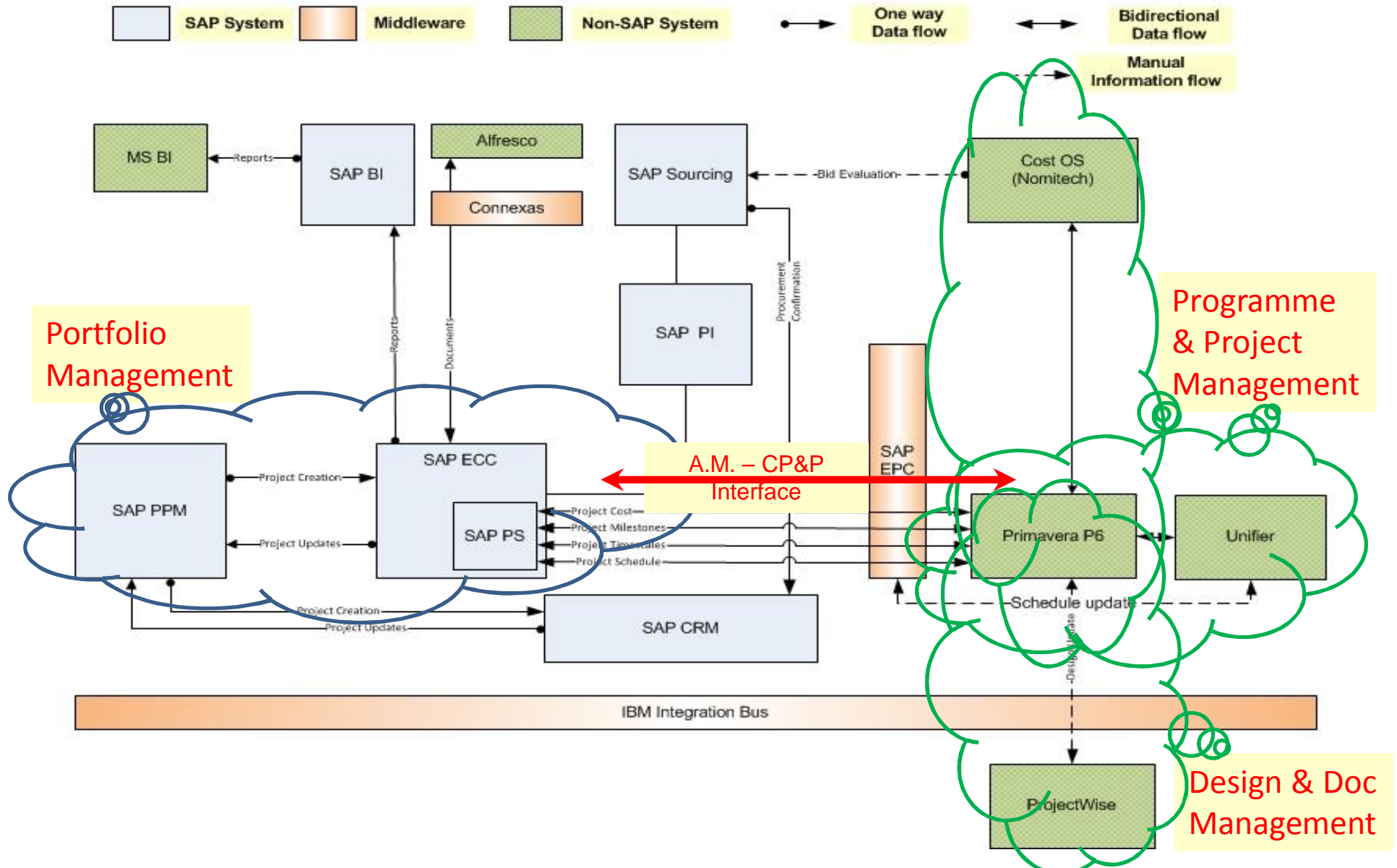In Client Programmes of
work**

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# Integrated Systems
# Challenges & Opportunities

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# R4 – Solution Interface Diagram



Figure showing BTP Release-4 Interfaces Wire Diagram

# Integrated Programme & Project Management System

**Area B**

**Area C**

Web based environment

Most of the information in P6

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

EVA reports are the basis for project reporting.

Other project reports include req'd details and are based / extracted from P6

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

P6 link to UCI / CU / Rigs Db

**Analytics**

**REPORTS**

**RISK MANAGEMENT**

**ISSUES MANAGEMENT**

RAID logs in P6

Risk Analysis

Qualitative

RM Workshops

Supporting Portfolio Board papers

Quantitative

Project Risk analysis

Risks analysis for Gate papers - Projects >£10M

Risk drawdown in P6 with planned release intervals.

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

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

Cost & Contract Mngt

Actuals, Accruals

**Link to Unifier & SAP**

WBS
CBS
OBS
RBS

Project Structures

P.O.
Activity
Outputs

Coding

Rigs
HI
LI
Other

**Coded links through WBS to / from CostOS**

**Estimating**

## Primavera P6

1. PM/Com/Plng work with the P6 programme
2. Forecast expenditure through P6
3. Resource Management
4. Requirement for robust Progress & Change Management Processes
5. Minimising use of non-auditable reports (grey IT)
6. Automatic transfer of 'Forecast' info to SAP

Package Execution Plan (WPEP)

Project Control Handbook (PCH)

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

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 all projects, with details down to Level 4/5 of the WBS.

**LINKS TO OTHER DIRECTORATES**

**ASSET MNGT**

Front End

Gate B-D

Back End

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

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

Project Closure
Supporting estimating of Durations
Supporting estimating of Budgets

**NETWORK OPs**

Reports from P6 to Mngt
Reports from P6 to Regulation

**CONNECTIONS**

CP&P projects

Coordination
Reporting
Monitoring
Early Warning

Future Workload

Umbrella project that will enable DNO resource loading

**REGULATION**

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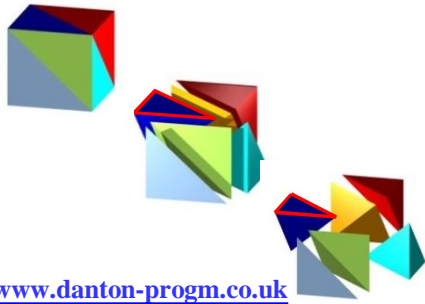Understanding and accommodating RIIO-ED1 req'ts

//PMO/DNA_A100064_Systems Diagram_Jan13

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# The information environment of projects

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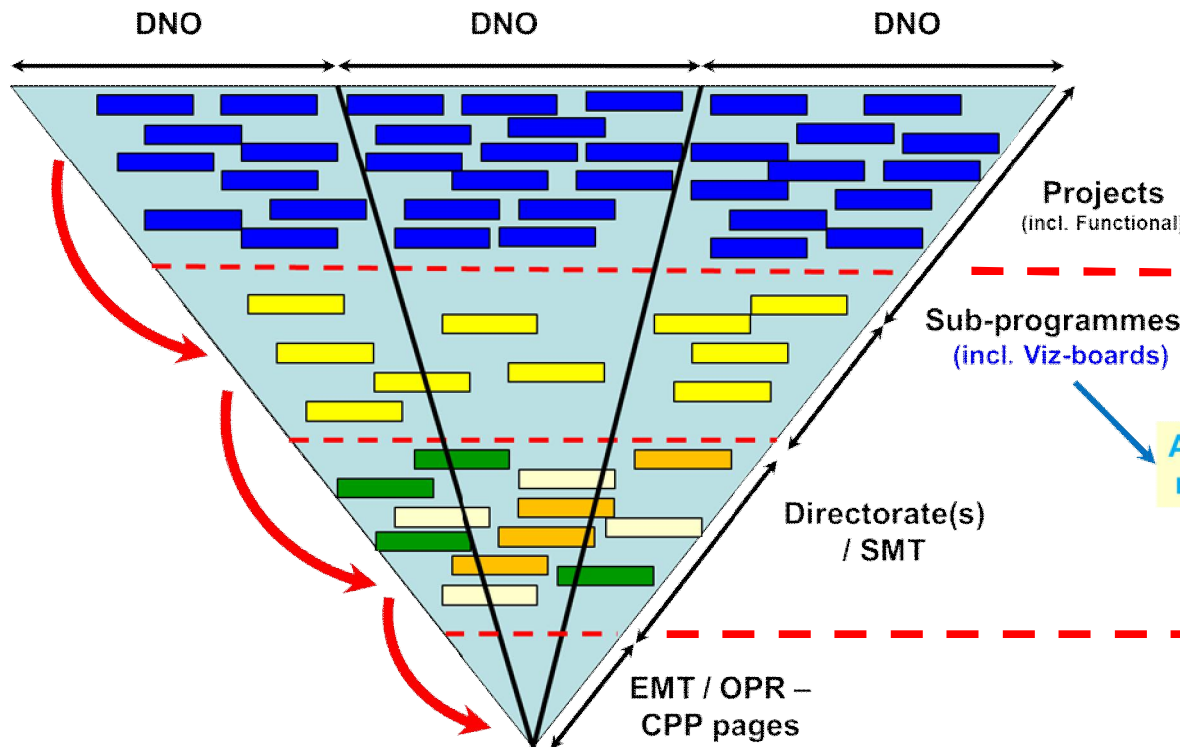
| A – Project level information |
| --- |
| • Project expenditure by month & S-curve |
| • EVA (CPI & SPI) |
| • Variance justification (Forecast Vs achieved) |
| • Outputs – milestone variance |
| • Comments by project team members |
| • Milestones and variance against baseline |
| • Risks and Opportunities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

| 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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# Reporting outputs

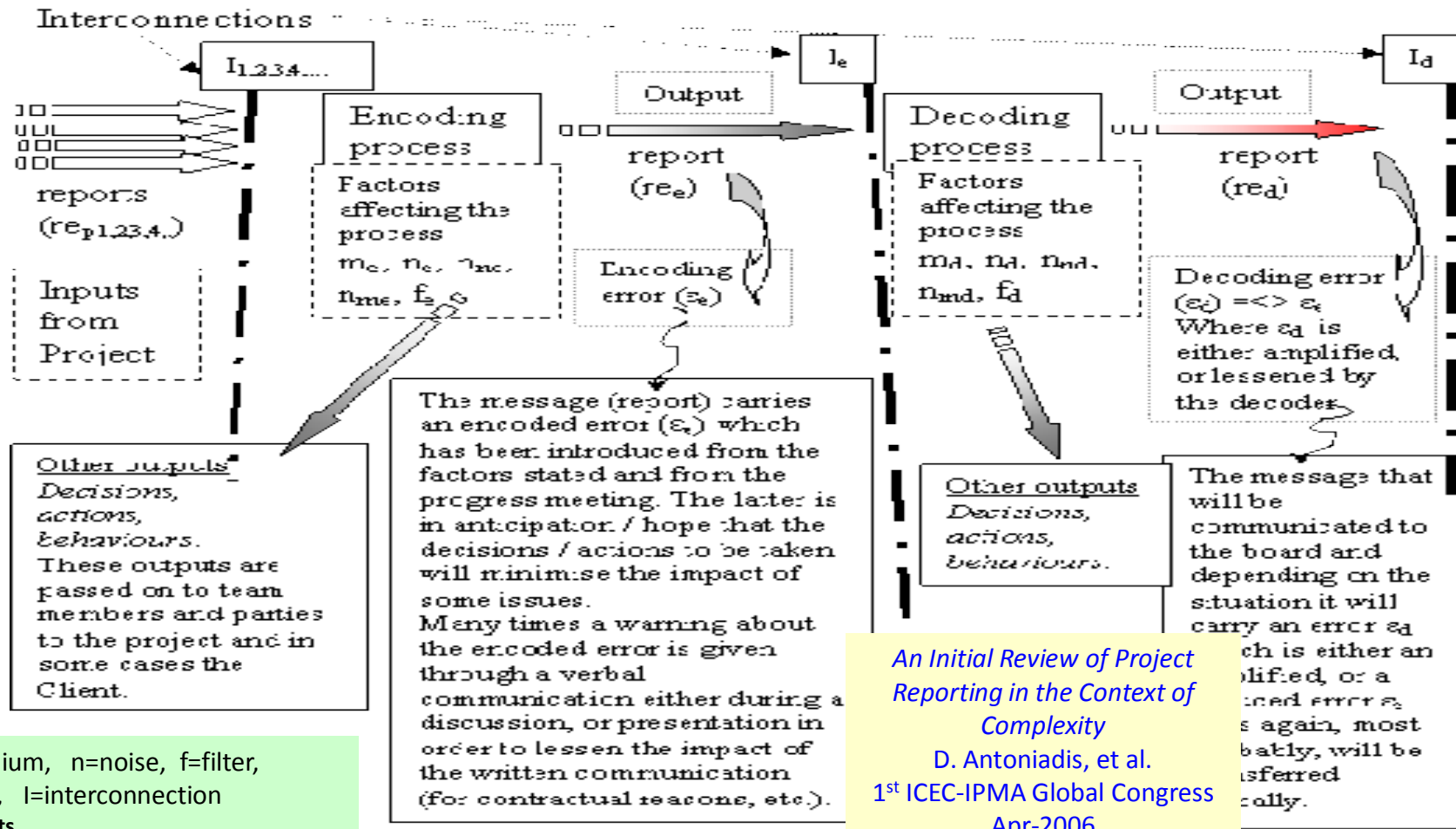| Current performance | Future workload | Risks & Issues |
|---|---|---|
| 1. Sub-programme level performance (drilling down to projects and the project dashboard)<br>  1. EVA RAG by project<br>  2. Financial RAG<br>  3. Milestone/Output RAG<br>2. Sub-programme and project expenditure report RAG<br>3. Variance EAC Vs Baseline Mandate<br>4. Project Performance Indicators by Sub-programme and project<br>5. Sub-programme and project cost performance Expected Vs Achieved<br>6. HI / LI Outputs Baseline Vs Achieved (by sub-programme drilling down to project)<br>7. Gate achievement report/graph<br>8. Annual expenditure profile by sub-programme and by Directs & Indirects<br>9. Annual expenditure by project – Directs & Indirects (rolling up to sub-programme) | 1. Forward looking workload (drilling down by project)<br>2. 12 week look-ahead activities at project level<br>  1. Major milestones<br>  2. Project expenditure S-Curve<br>3. Slippage report<br>4. Variance EAC Vs Baseline Mandate<br>5. Project Performance Indicators by Sub-programme and project<br>6. Full year Outputs (HIs / LIs)<br>7. Forecast RIGs report (to the end of the regulatory year)<br>8. Forecast Outputs report/graph (by sub-programme drilling down to project)<br>9. Future generic resource demands<br>10. Forecast Gate report/graph<br>11. OPR summary (EV Tracker) | 1. Risk exposure by Sub-programme<br>2. Level of project risk exposure<br>3. Top 10 risks and opportunities RAG<br>4. Issues log by sub-programme<br>5. Top 10 issues RAG |
| 1. Asset Management Dashboard - TBA<br>2. Connections Dashboard - TBA<br>3. CP&P Dashboard – TBA | | |
| Named reports:<br>• DNO Rollup<br>• EV Tracker<br>• HI & LI report<br>• Gate milestone report<br>• Project expenditure | Named reports:<br>• DNO Rollup<br>• HI & LI report<br>• Major milestones report<br>• Forecast expenditure graph<br>Plus:<br>• P6 & Unifier layouts | Named reports:<br>• Risk report<br>• Issues log |

# The Continuous process of Reporting

Interconnections

$I_{1,2,3,4....}$

$I_e$

$I_d$

reports $(rep_{1,2,3,4...})$

Inputs from Project

Encoding process

Factors affecting the process $m_e$, $n_e$, $n_{me}$, $n_{me}$, $f_{e}$

Output report $(re_e)$

Encoding error $(\varepsilon_e)$

Decoding process

Factors affecting the process $m_d$, $n_d$, $n_{nd}$, $n_{md}$, $f_d$

Output report $(re_d)$

Decoding error $(\varepsilon_d) = <> \varepsilon_e$ Where $\varepsilon_d$ is either amplified, or lessened by the decoder.

Other outputs
*Decisions, actions, behaviours.*
These outputs are passed on to team members and parties to the project and in some cases the Client.

The message (report) carries an encoded error ($\varepsilon_e$) which has been introduced from the factors stated and from the progress meeting. The latter is in anticipation / hope that the decisions / actions to be taken will minimise the impact of some issues.
Many times a warning about the encoded error is given through a verbal communication either during a discussion, or presentation in order to lessen the impact of the written communication (for contractual reasons, etc.).

Other outputs
*Decisions, actions, behaviours.*

The message that will be communicated to the board and depending on the situation it will carry an error $\varepsilon_d$ which is either an amplified, or a lessened error $\varepsilon_e$ again, most probably, will be transferred orally.

**Legend**
m=medium,  n=noise,  f=filter,
e=error,   l=interconnection
**Subscripts**
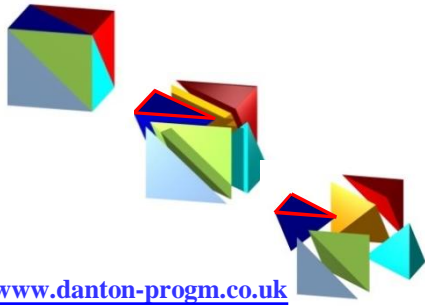e=encoder, d=decoder, m=medium,
n=environment, p=project team

*An Initial Review of Project Reporting in the Context of Complexity*
D. Antoniadis, et al.
1st ICEC-IPMA Global Congress
Apr-2006

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# How Information Management serves client programmes?

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# Serving the customer

- For decision making
- Reporting
  - Sample Directorate report
  - Sample project report
  - Other samples: Energisation, Risk
  - Performance Indicators: PPIs
- Can we achieve a common reporting timetable?
  - Sample PMO Reporting Timeline
- Increased Complexity when in Alliance / Partnering environment

- Where does this lead to?

# The future challenges

## The future out there:

- Dealing with Complexity

- Looking at Project Management with 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)
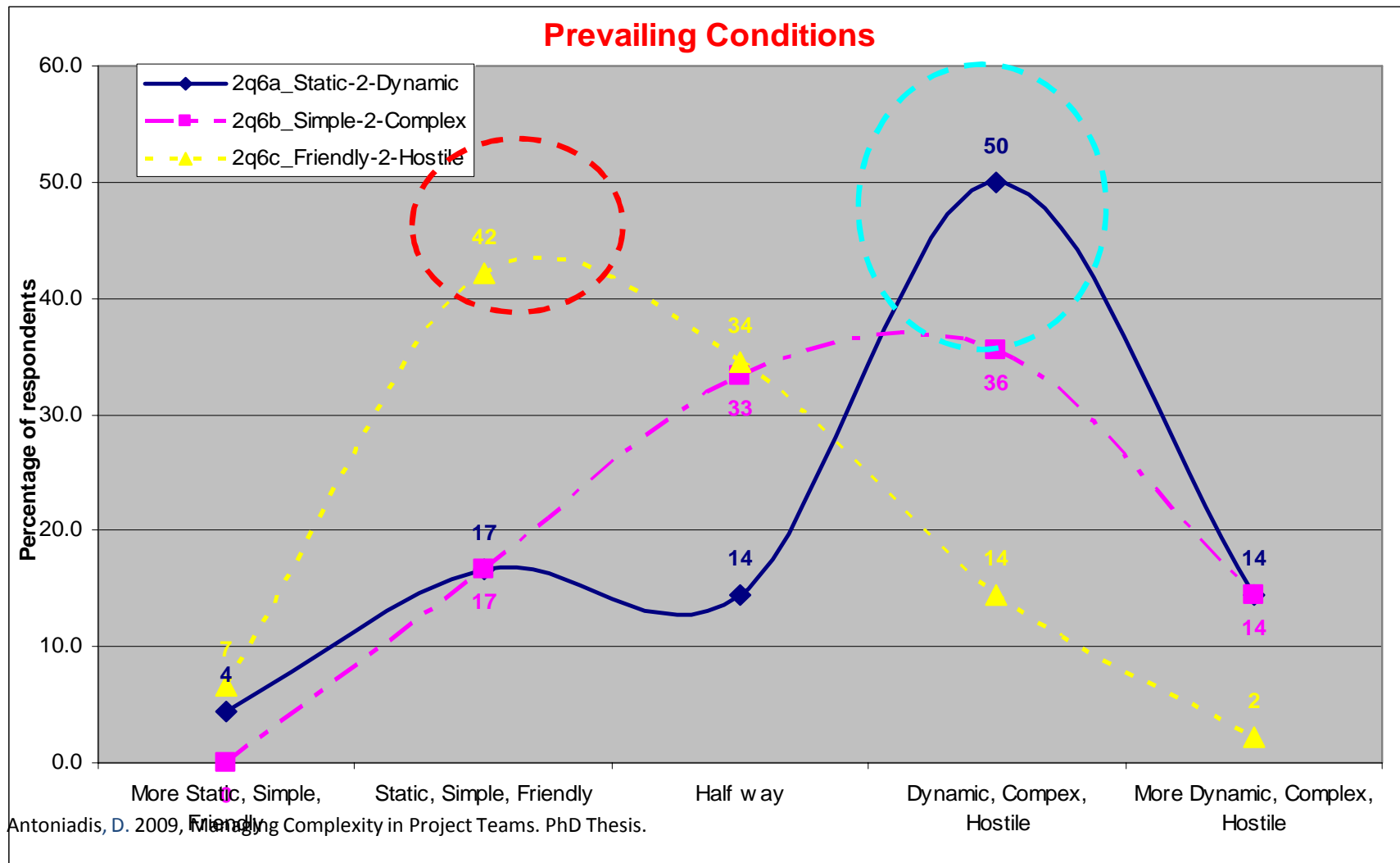
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Antoniadis, D. 2009, Managing Complexity in Project Teams. PhD Thesis.

- Selecting Team Members: 62%
- Structure of the Team: 47%
- Management Style: 78%
- Monitoring & Control: 65%
- Reporting: 26%
- Conflict Resolution: 42%
- Efficient usage of Resources: 50%
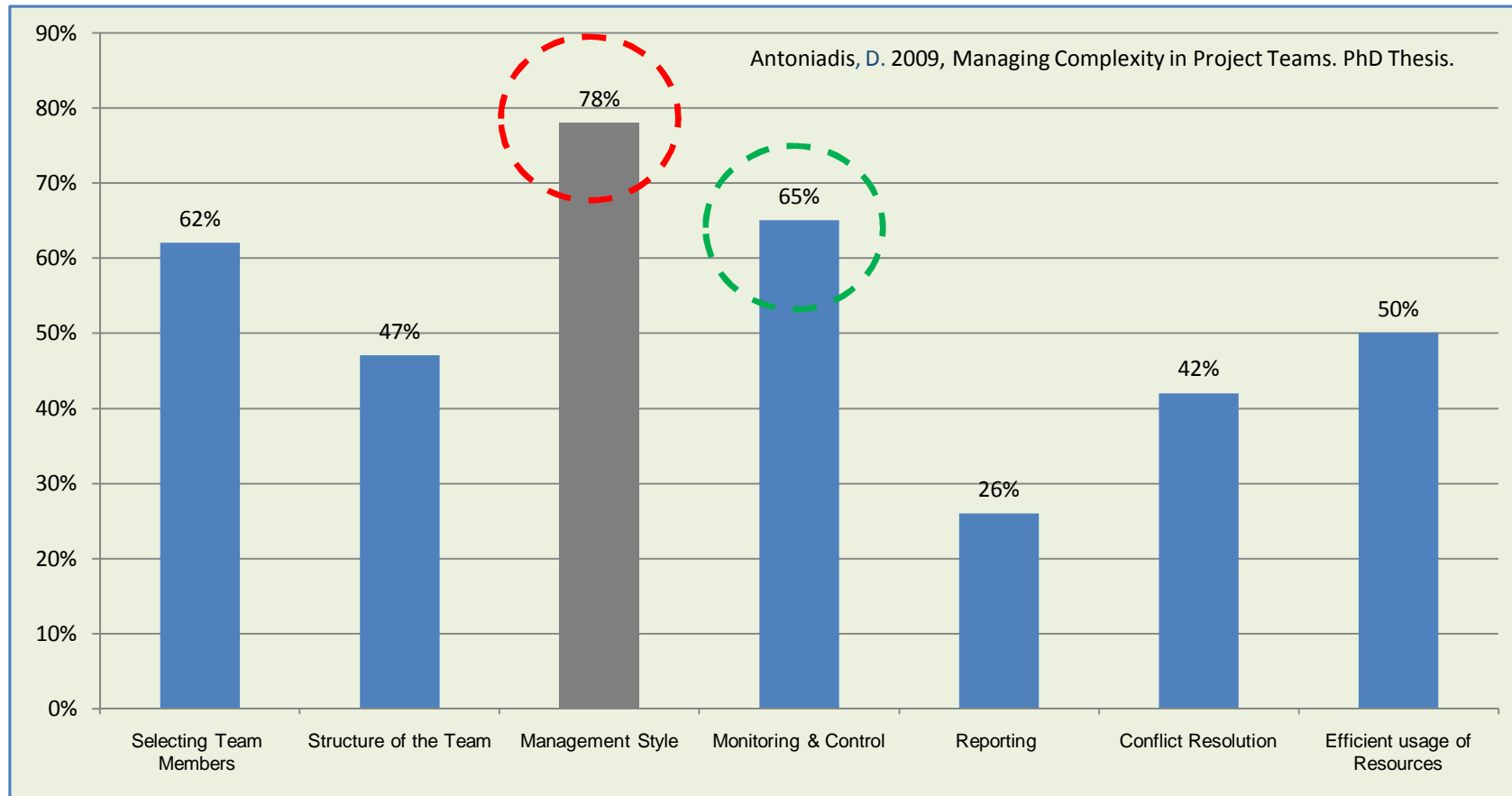
Contribution of project management sub-processes to the success of the quality of the project management for levels – Substantial to Excellent

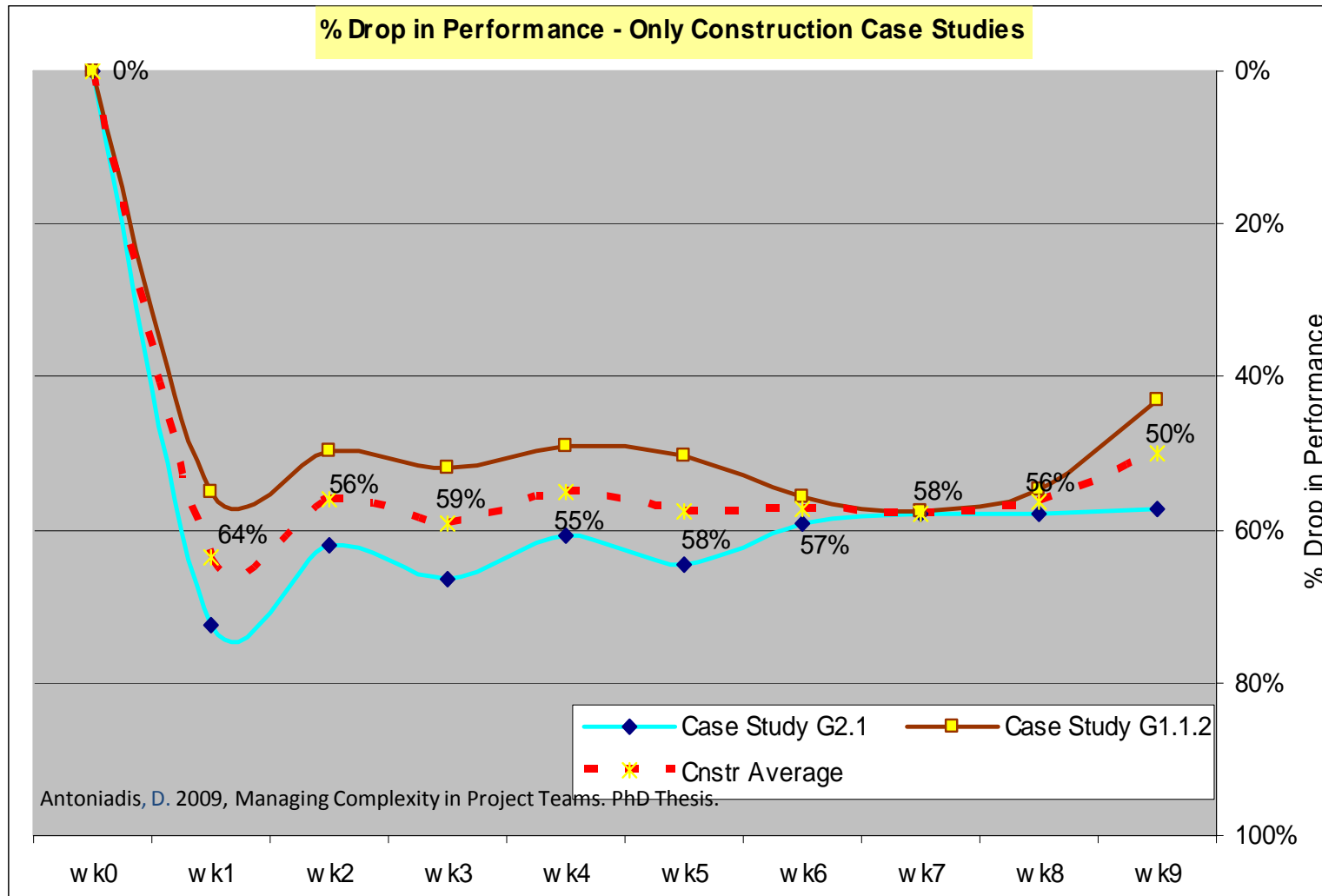# Information Management In Client Programmes of work

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% Drop in Performance - Only Construction Case Studies

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

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

# Complexity Characteristics



**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

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

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

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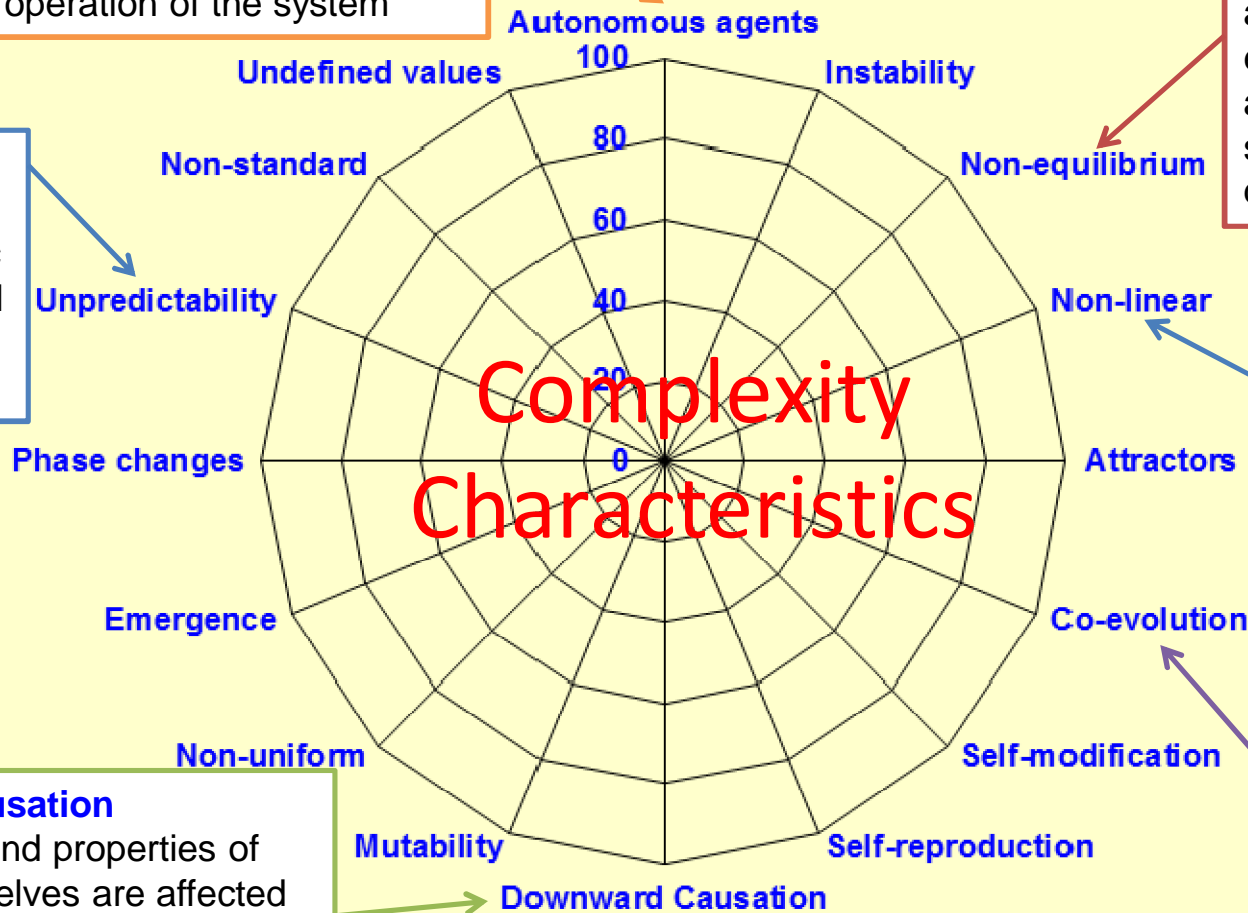Complex system outputs are not proportional to their inputs

**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

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

100
80
60
40
20
0

Complexity Characteristics

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

## Systems Thinking and Complex Systems

- Systems thinking requires a shift of mind
  - Seeing interrelations rather than linear cause – effect chains, and
  - Seeing processes of change rather than snapshots

- Complex Systems
  - In Complex Systems, interactions reinforce one another and result in behaviour that is very different from the norm

Miller & Page (Complex Adaptive Systems, p.50)
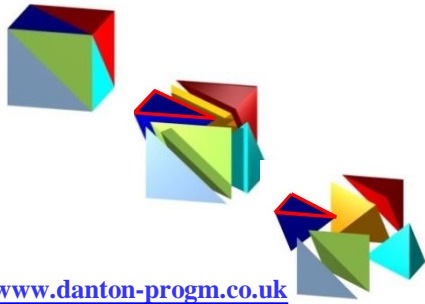
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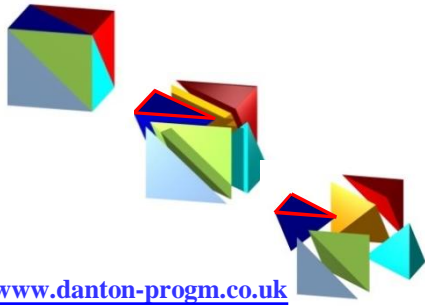UNIVERSITY OF
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## Complexity and Information

- Kolmogorov said:

  – … the complexity of a number, or message, or a set

    of data is the inverse of simplicity and order and, once

    again, it corresponds to **information**.

    The simpler the object is, the less information it

    conveys.

    The more complexity the more information.

    J. Gleick (The Information, p.336)

**A major issue faced by I.M. in Construction**

Every social agent receives information
about the world, processes it and acts.

The principle:
Acquire information – process it – act
is questioned as:-
behavioural, selective acquisition and
processing affects the traditional view

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# Thank you

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