Project Controls EXPO London, UK

Projecting Success

Project Data Analytics

Project Controls Expo – 14th November 2018
Emirates Arsenal Stadium, London

Advanced Data Analytics for MegaProjects

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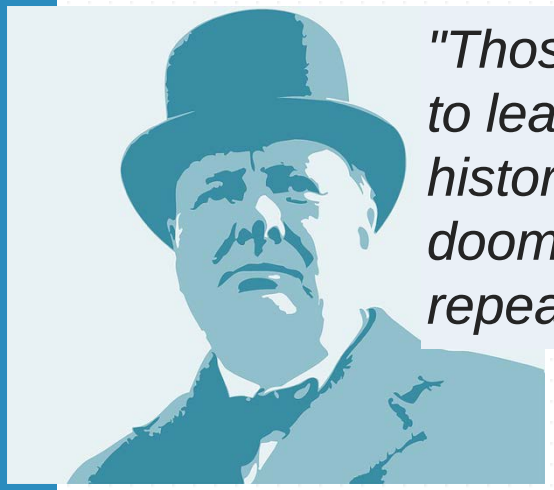
Background

Project Lead for
$Bn Nuclear
New Build

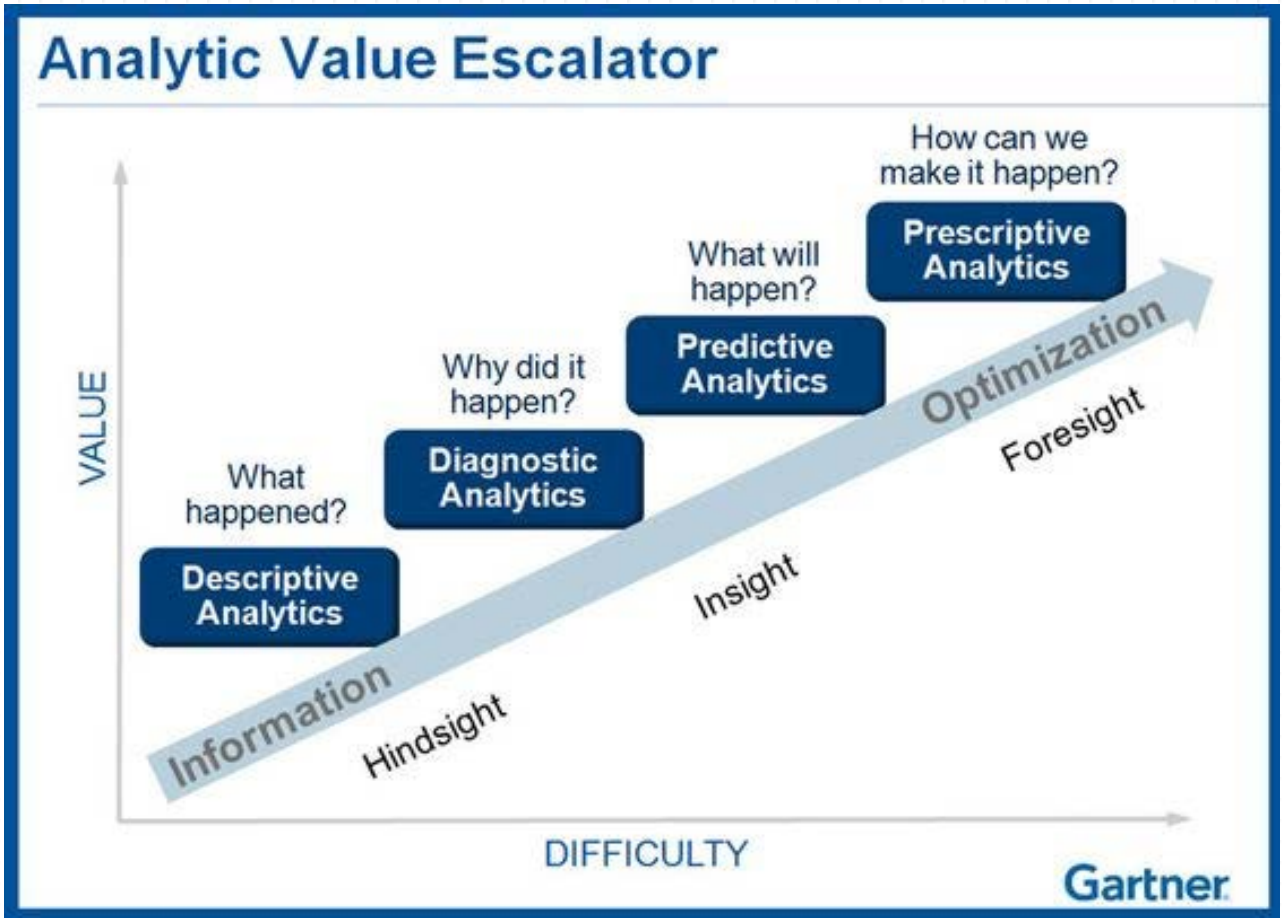
PMO roles
in multi $Bn
portfolios

Programme
Manager for
£400m portfolio
of 60 projects



"Those that fail to learn from history are doomed to repeat it."

So…what is advanced data analytics?

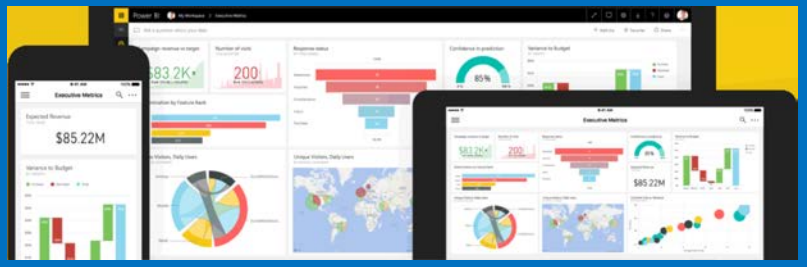


Descriptive Analytics

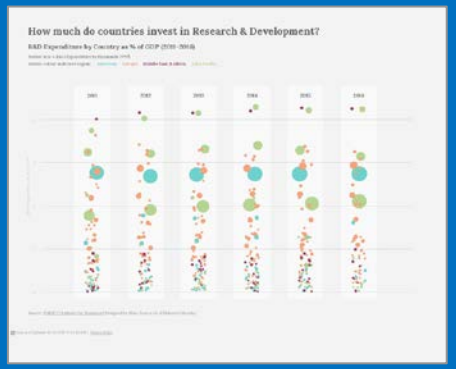
Insight and analysis into ‘What has happened?’

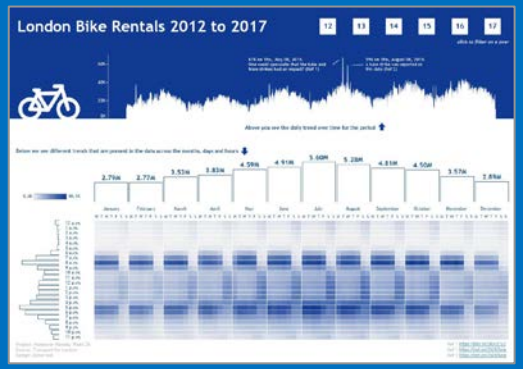
- Data extraction
- Data mining
- Data cleansing
- Data aggregation
- Align to use case

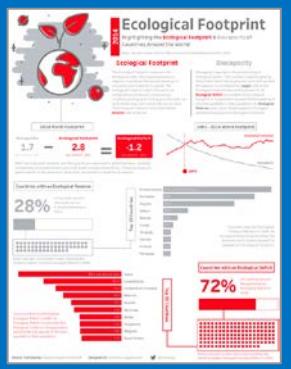
PowerBI
Tableau
Qlik



Storytelling







Images courtesy of makeovermonday.com

Diagnostic Analytics

Insight and analysis into 'Why did it happen?'

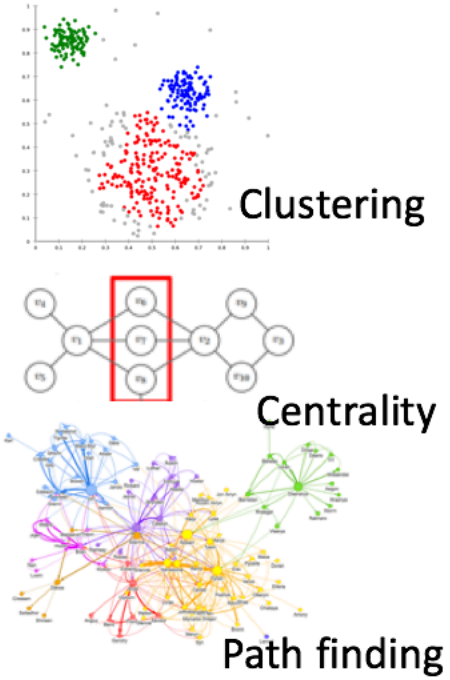
High level analysis

- Public inquiries
- NAO/GAO reports
- Lessons learned

Forensic Analysis

- Critical Success Factors
- Root cause analysis
- 5 whys analysis
- Fault tree analysis
- Ishikawa analysis
- Timeline plots

Statistical analysis



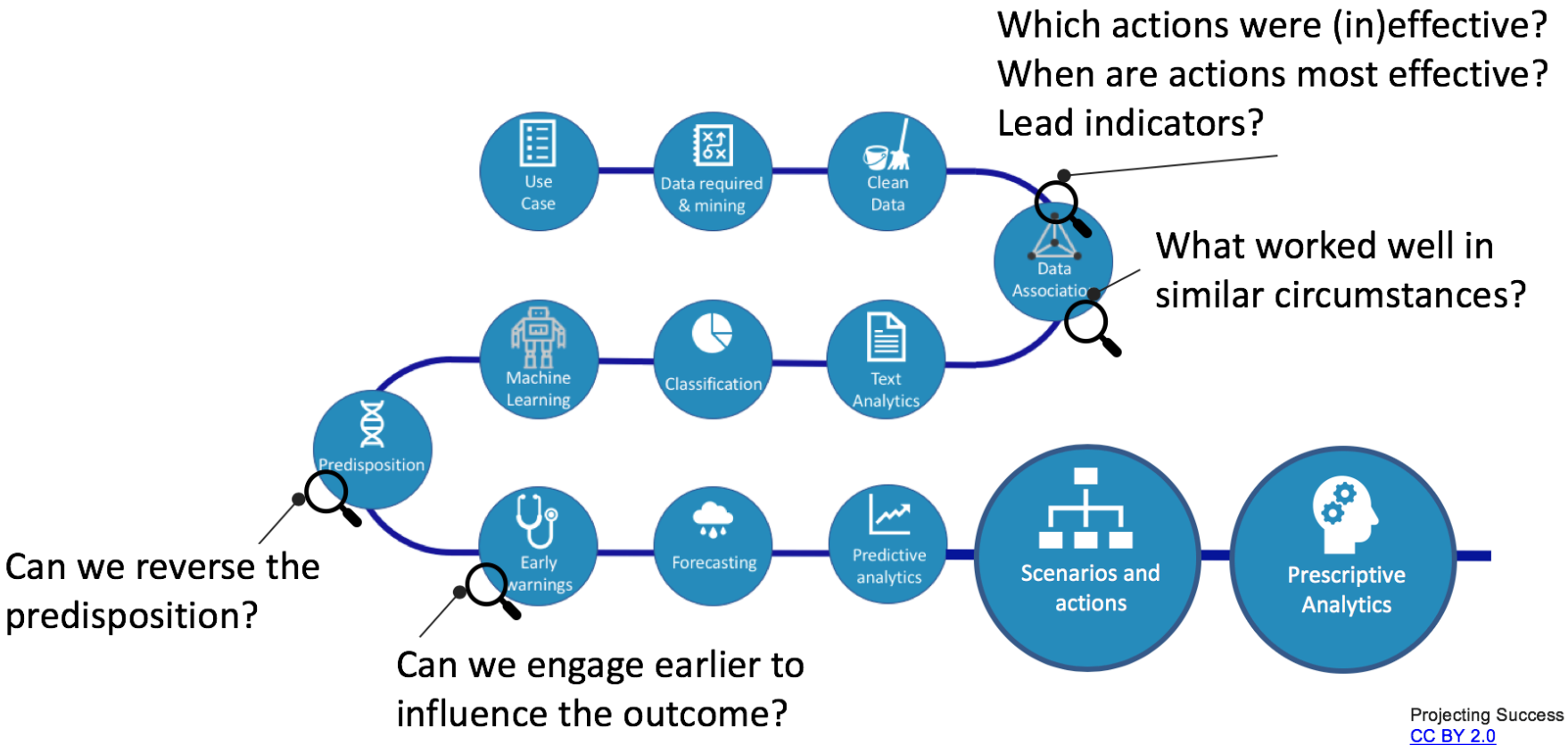
Images courtesy of Neo4J

Predictive Analytics

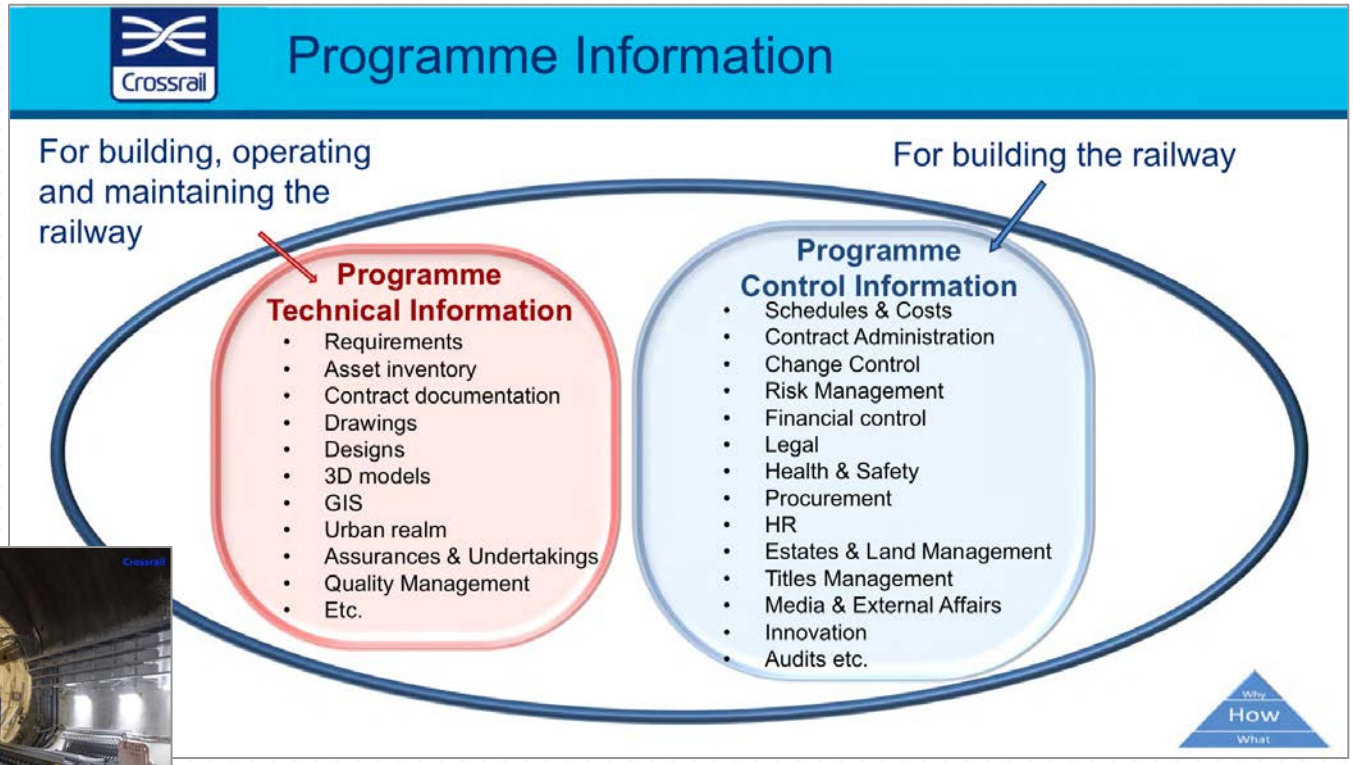
Insight and analysis into ‘What may happen’

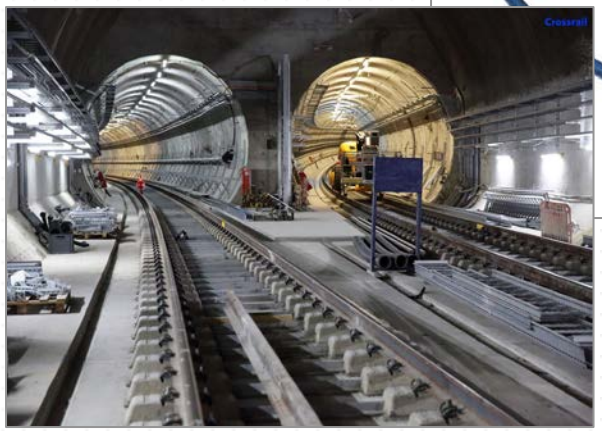
Predictive Analytics

Insight and analysis into 'How do I influence the result'



An Example: Crossrail



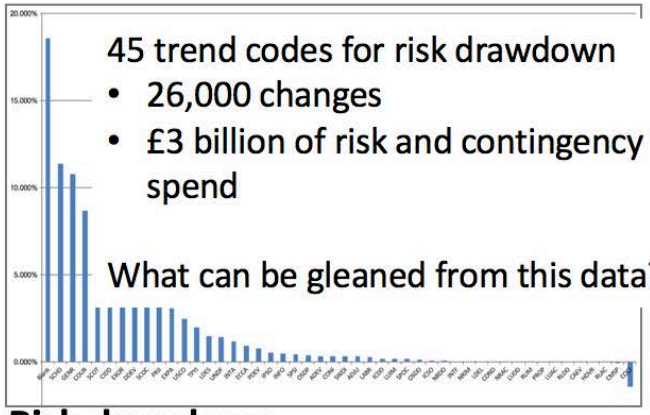


What happens to the data?

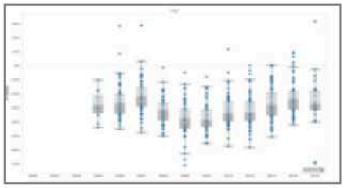
Programme Control Information

- Schedules & Costs
- Contract Administration
- Change Control
- Risk Management
- Financial control
- Legal
- Health & Safety
- Procurement
- HR
- Estates & Land Management
- Titles Management
- Media & External Affairs
- Innovation
- Audits etc.

What happens to the data?

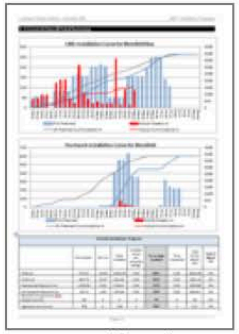


Risk drawdown

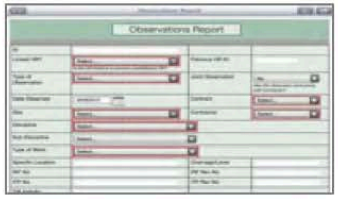


Cost data

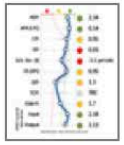
Earned value data



Installation reports



Observations reports

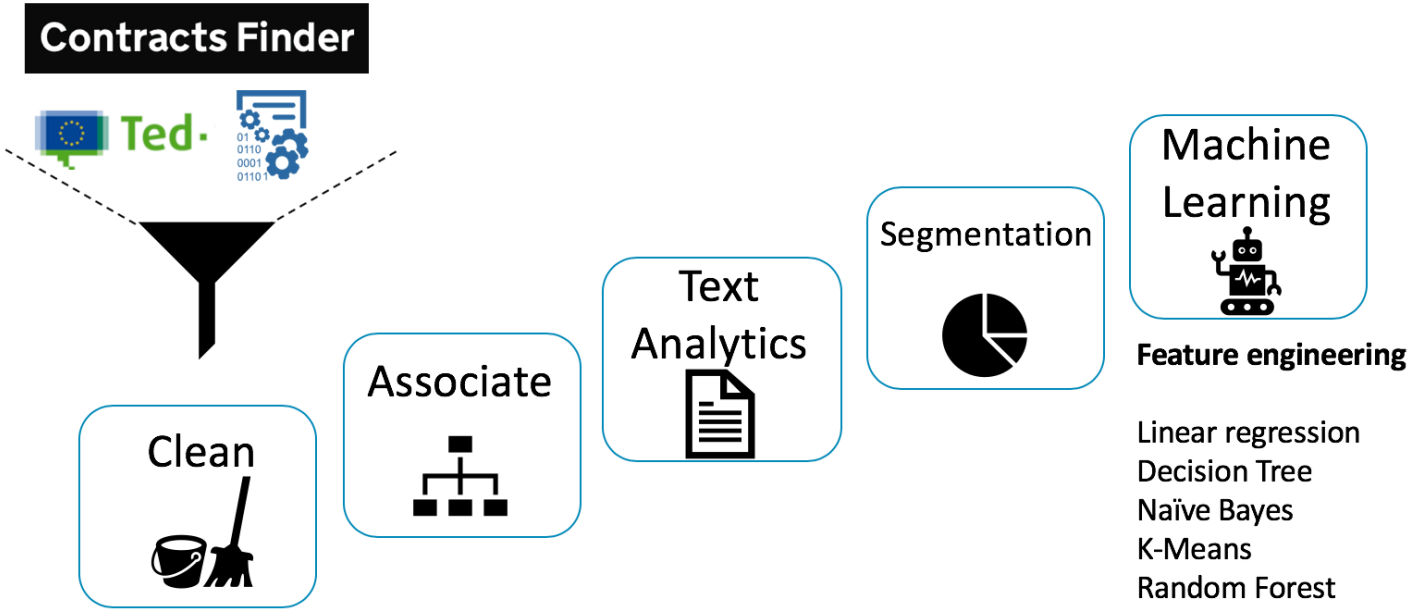


KPI reports

Dashboards and progress reports

Images courtesy of Crossrail

An example: Bid data



1000s of features to derive:

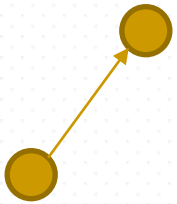
- Potential bidders
- Top 3
- Winner
- PWin
- Success rates
- Client Loyalty
- Anomalies

- Bid strategy
- Appeals

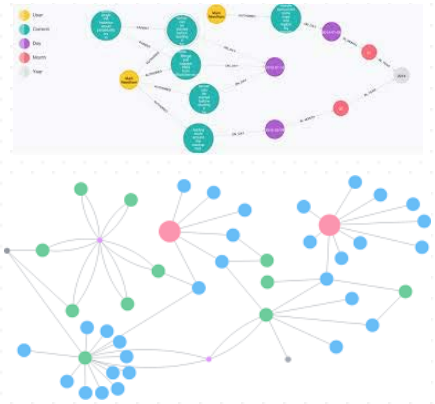
Icons made by Freepik from www.flaticon.com

Schedules

Scheduling Corpus and Context



Extract Triples



WBS Elements

PowerApps

Real time update of assigned tasks

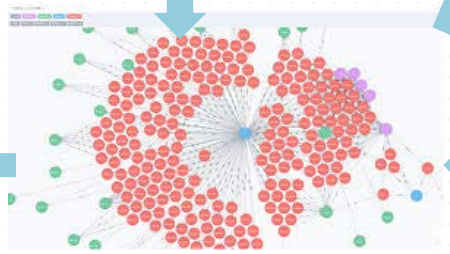
Benchmarking

nPlan

ALICE

Do nothing
Warn
Assist
Control

Recommendations



Adaptive Scheduling

EVM data
Resourcing
Weather
Supplier performance
Dependencies
Risks etc

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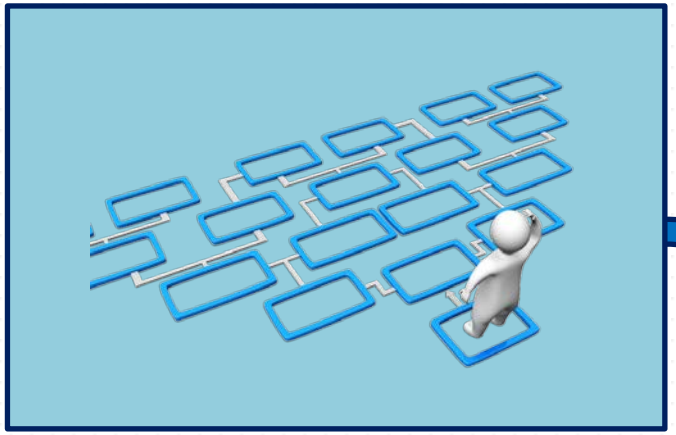
Risks

A once through process



Systemic Risk

Informed risk registers

Risk trends

Risk budget

Connected risks

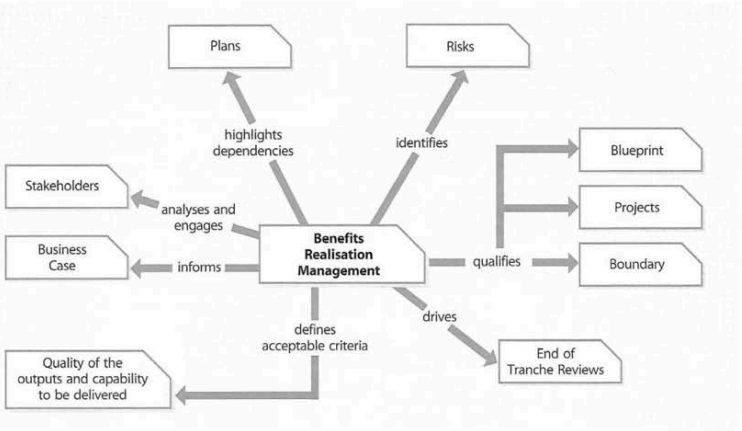
Risk lifecycle

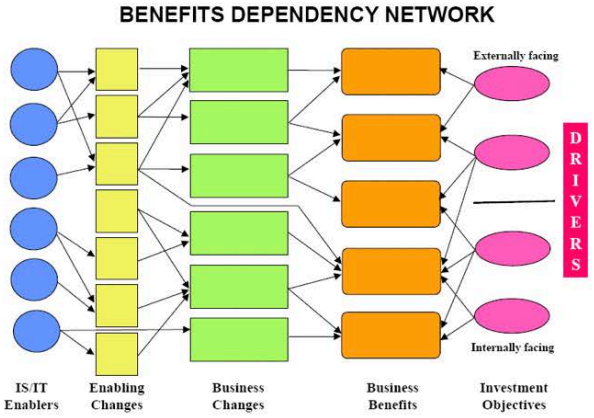
Risks-Issues-Lessons

Risk mitigations

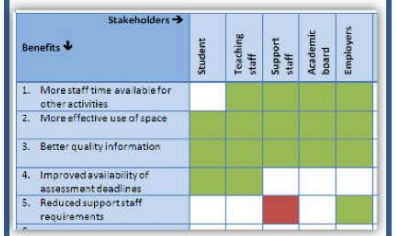
Leveraging Risk Experience

Benefits





Benefits networks



Benefits ↓ / Stakeholders →	Student	Teaching staff	Support staff	Academic board	Employers
1. More staff time available for other activities					
2. More effective use of space					
3. Better quality information					
4. Improved availability of assessment deadlines					
5. Reduced support staff requirements					

Library of Benefits

- Ease of benefits realisation
- Impact
- Management Actions

Reality!

Do nothing
Warn
Assist
Control

Recommendations

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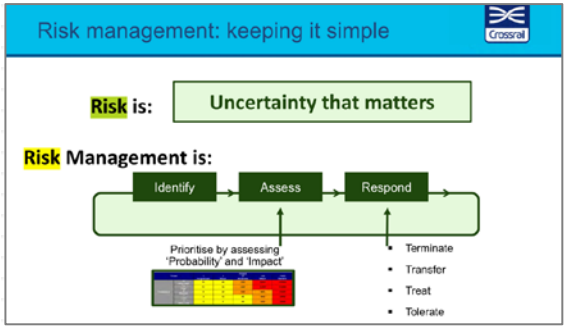
How will your team evolve?

The rate of change is about to escalate…

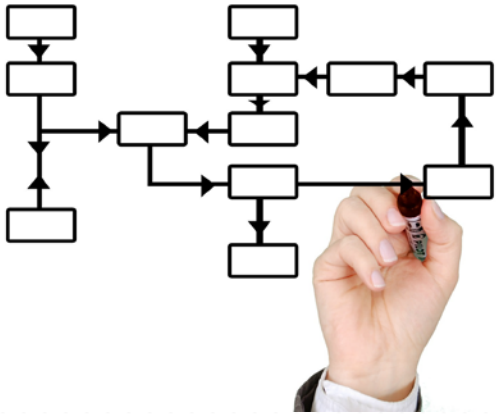


Risk Admin — Keeping the risk register up to date, understands how to craft a risk. Risk progress chasing

Risk Manager — Expert on process. Links risks with schedule. Expert at crafting a risk and identifying actions. Domain expertise.

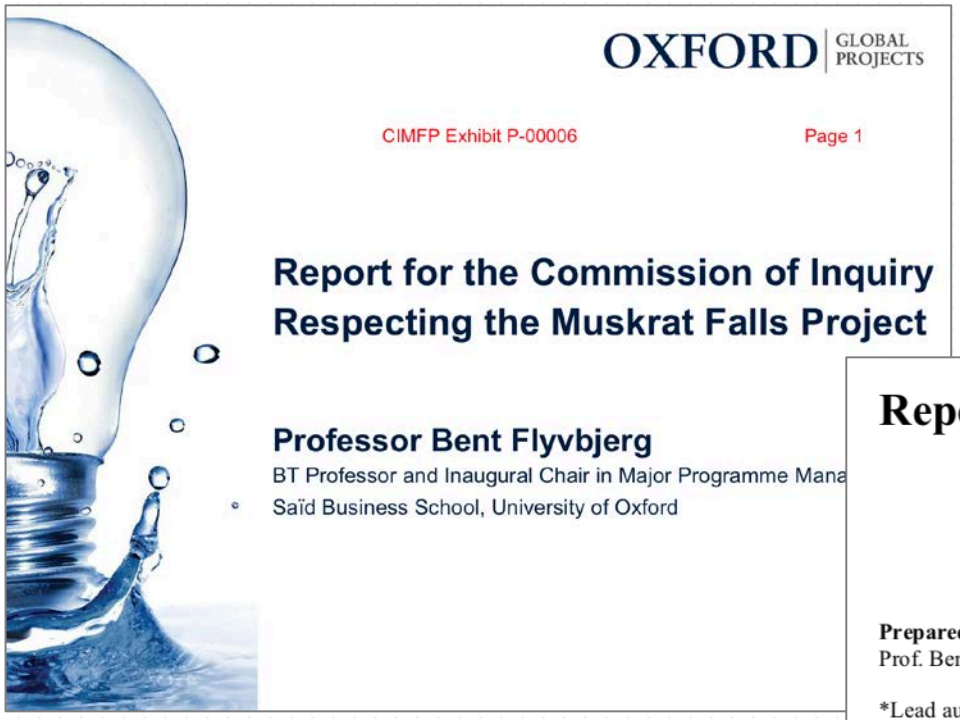
Data scientist — Analyse previous data to extract relevant risks, perform statistical analysis on probability and impact, assess relevance, perform scenario analysis, set up automated risk maturity analysis.

How will your team evolve?



Process Expert **Domain Expert** **Data Scientist**

Bent Flyvbjerg's work on Major Projects



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CIMFP Exhibit P-00006 Page 1

Report for the Commission of Inquiry Respecting the Muskrat Falls Project

Professor Bent Flyvbjerg
BT Professor and Inaugural Chair in Major Programme Mana
Saïd Business School, University of Oxford

Report for the Edinburgh Tram Inquiry

Prepared by
Prof. Bent Flyvbjerg* and Dr. Alexander Budzier

*Lead author; all opinions expressed in this report are the opinions of the lead author and he accepts responsibility for all errors and omissions.

Version 14

February 2018

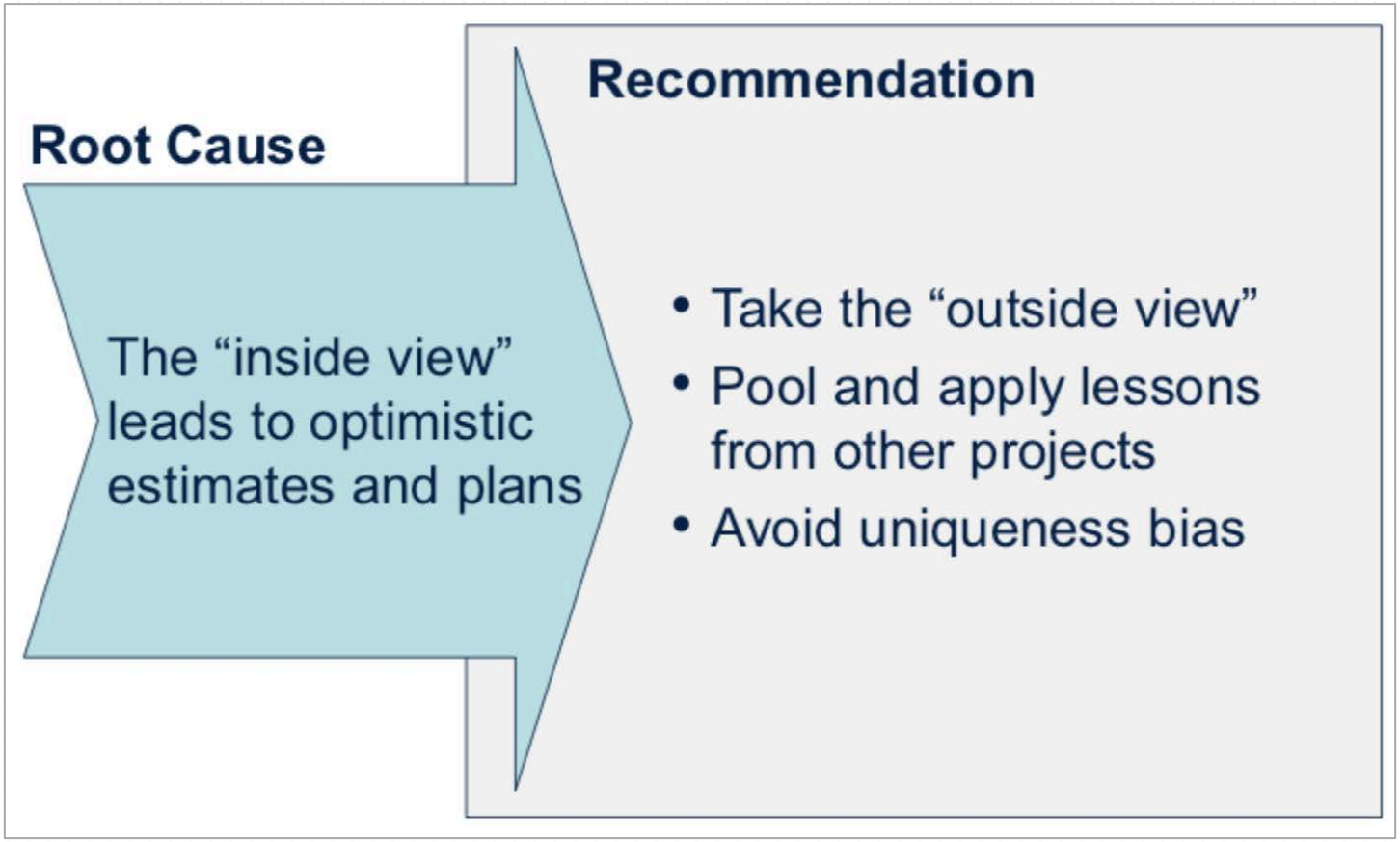
Bent Flyvbjerg's work on Major Projects

- Conventional wisdom sees causes of risk as mainly **external** to programs

- The root cause of risk is **internal**. It consists in the way leaders systematically misconceive of risk

1. **Technical**: Errors in data and models (Vanston & Vanston)
2. **Psychological**: Optimism bias (Kahneman, Tversky)
3. **Political-economic:** Strategic misrepresentation (Wachs, Flyvbjerg)

Bent Flyvbjerg's work on Major Projects



Fundamentally….

- What is the **predisposition** of the work to variance?
- Can we **predict** it?
- How do we **test** for it?
- How do we **treat** it and change the future?

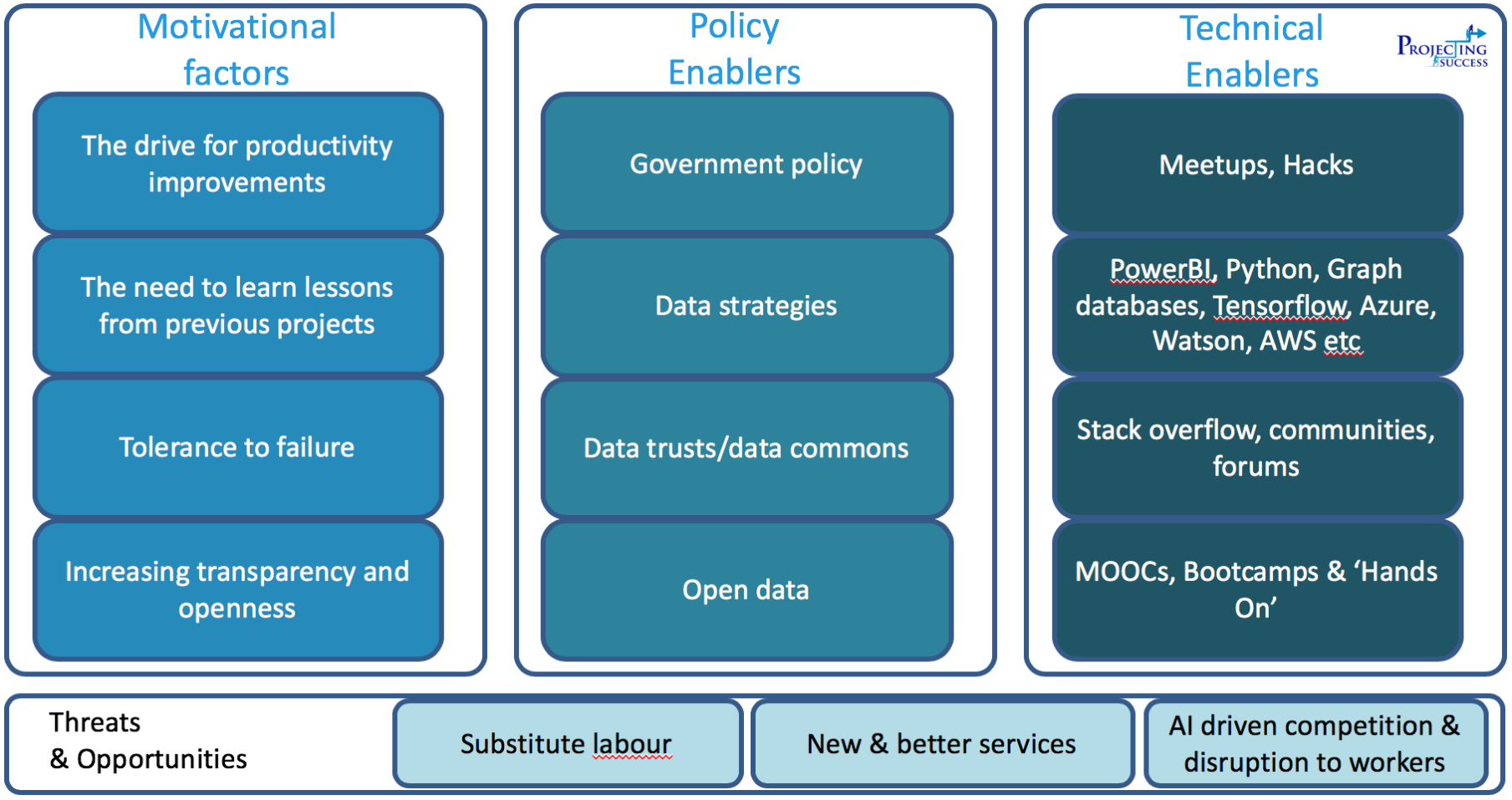
Evidence based, tempering against bias.

The Barriers to Adoption

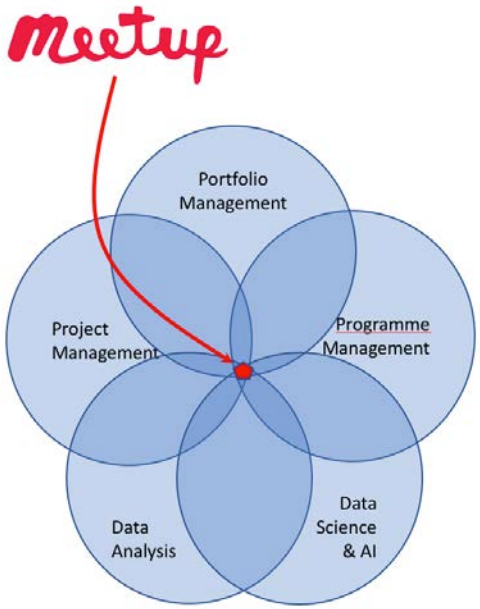
Its not on the corporate ‘to do’ list

- Lack of a shared vision
- Lack of evidence to support the vision
- Lack of skilled horsepower
- Lack of data
  - Siloed
  - Poor quality
- Understanding the investment case

Creating the Environment for Change



Developing a Community



- Free to join
- Free to attend
- Crosses professional boundaries
- Developing a community
- Developing into a force for good

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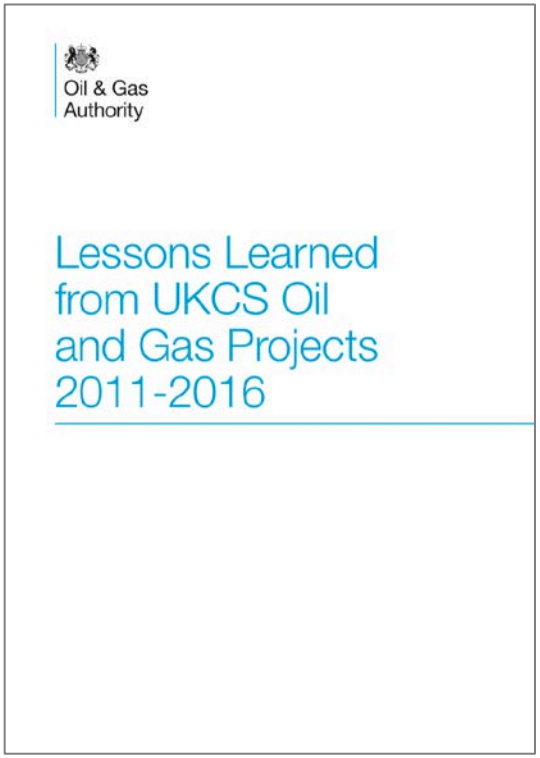
Oil and Gas Pilot



Task 1

- Review of the impact of the 2017 report
- Understand how organisations are leveraging their own project delivery experience,
- Characterise the organisational commitment to leveraging experience,
- How they measure any return on investment, and
- Identify areas of good practice.

Task 2

- A pilot to explore the principle of a data sharing model as a precursor for machine learning.

Contact details

London Project Data Analytics Meetup

https://www.meetup.com/London-Project-Data-and-Analytics-meetup/

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