



# Project Data Analytics. Hype or Reality?

**Presentation to PMO Flashmob  
21 March 2019**

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## Professional Accreditation



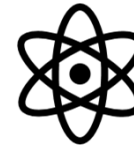
Fellow

Registered Project Professional



Chartered Engineer

## Sectors



Icon credit: Icons8

## Roles

Project Manager **\$1bn**

Programme Director **\$0.6bn**

Portfolio lead **\$10bn**



## Programme Information

For building, operating and maintaining the railway

### Programme Technical Information

- Requirements
- Asset inventory
- Contract documentation
- Drawings
- Designs
- 3D models
- GIS
- Urban realm
- Assurances & Undertakings
- Quality Management
- Etc.

For building the railway

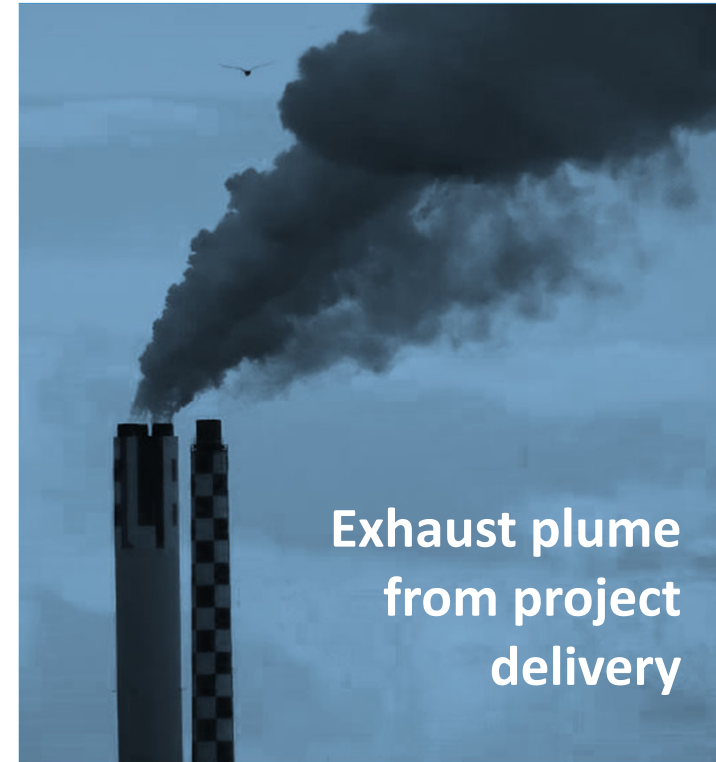
### Programme Control Information

- 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.

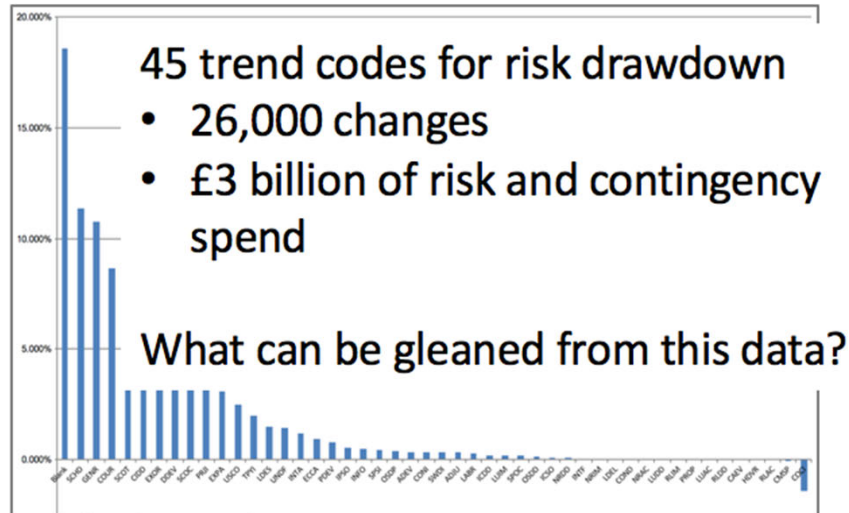


## Programme Control Information

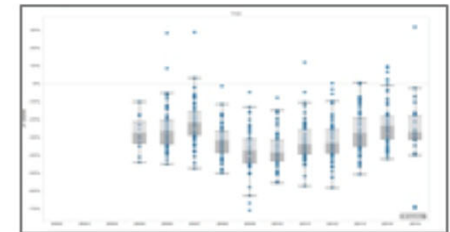
- Schedules & Costs
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- Risk Management
- Financial control
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- Procurement
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- Estates & Land Management
- Titles Management
- Media & External Affairs
- Innovation
- Audits etc.



# What Happens to the Data?



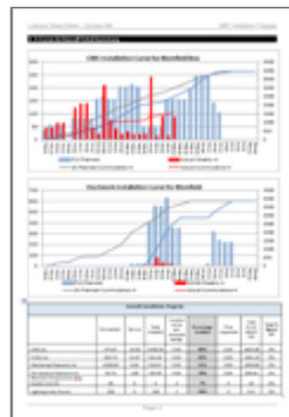
**Risk drawdown**



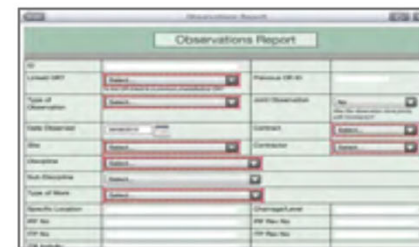
**Cost data**



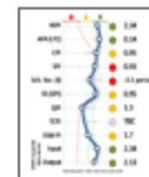
**Earned value data**



**Installation reports**



**Observations reports**



**KPI reports**

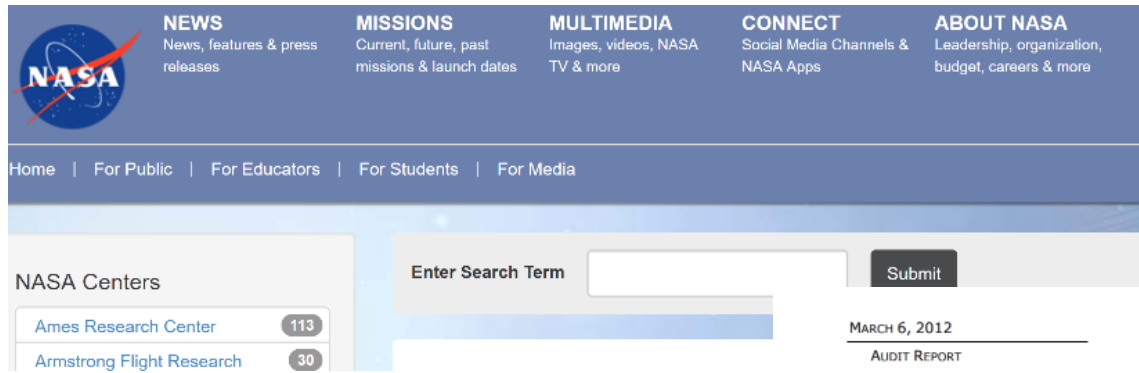


**Dashboards and progress reports**



Images courtesy of Crossrail

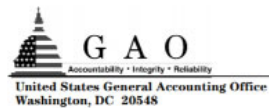
# NASA Lessons Learned System



The screenshot shows the top navigation bar of the NASA website with categories: NEWS (News, features & press releases), MISSIONS (Current, future, past missions & launch dates), MULTIMEDIA (Images, videos, NASA TV & more), CONNECT (Social Media Channels & NASA Apps), and ABOUT NASA (Leadership, organization, budget, careers & more). Below the navigation bar is a search bar with the text "Enter Search Term" and a "Submit" button. To the left of the search bar is a "NASA Centers" list with "Ames Research Center" (113) and "Armstrong Flight Research" (30). The date "MARCH 6, 2012" and "AUDIT REPORT" are visible on the right side of the screenshot.

## 2001

- Limited sharing of lessons
- Dissatisfaction with processes
- Barriers
  - Culture
  - Lack of time



September 5, 2001

The Honorable Dana Rohrabacher  
Chairman, Subcommittee on Space  
and Aeronautics  
Committee on Science  
House of Representatives

The Honorable Bart Gordon  
Ranking Minority Member, Subcommittee  
on Space and Aeronautics  
Committee on Science  
House of Representatives

Subject: Survey of NASA's Lessons Learned Process

You asked us to assess whether the National Aeronautics and Space Administration (NASA) has adequate mechanisms in place to ensure that past lessons learned from mission failures are being applied. As part of your request, you asked that we provide the results of our survey regarding the collection and sharing of lessons learned by NASA program and project managers. This letter provides the results. We plan to issue a more detailed report on the effectiveness of NASA's lessons learned process early next calendar year.

As part of our assessment of NASA's effectiveness in applying lessons learned, we surveyed all of NASA's program and project managers to obtain their perspectives on (1) the collection, access, and use of lessons learned, (2) the strengths and limitations of current NASA's lessons learned processes, procedures, and systems, including the Lessons Learned Information System (LLIS), (3) the challenges or barriers to the sharing of lessons learned, and (4) suggested areas of improvement. This represented 192 managers overseeing about 240 programs and projects. On August 6 and 8, 2001, we briefed your staff on the results of our survey and this report summarizes those results. The briefing slides are included as enclosure I.

We conducted our work from September 2000 through July 2001 in accordance with generally accepted government auditing standards. Enclosure II describes our objectives, scope and methodology.

## REVIEW OF NASA'S LESSONS LEARNED INFORMATION SYSTEM

OFFICE OF AUDITS

OFFICE OF INSPECTOR GENERAL



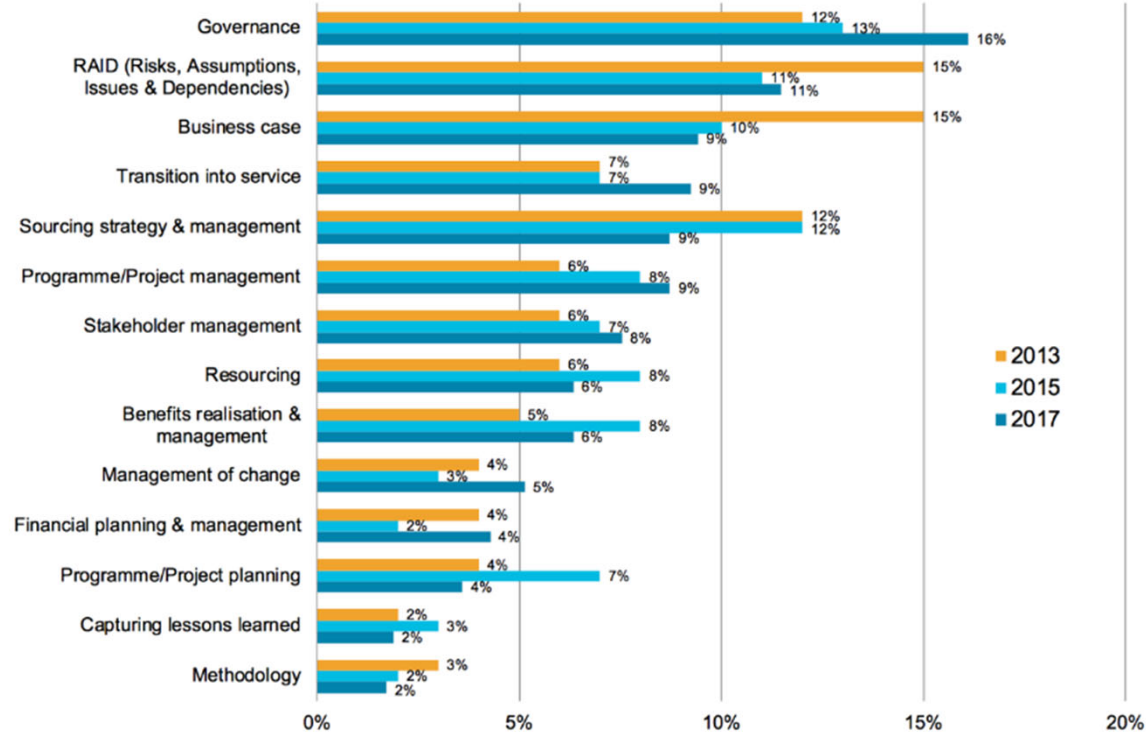
REPORT NO. IG-12-012 (ASSIGNMENT NO. A-11-010-00)

## 2012

- Not routinely used.
- Ill defined strategies
- Inconsistent funding
- Lack of monitoring

# Existing Lessons Learned Analysis

## Gateway Review Recommendations by Theme



<http://www.treasury.govt.nz>

Australian Government  
 Department of Finance

### Information Sharing Lessons Learned from Gateway Reviews: Gate 3 – Investment Decision Review

October 2013

The purpose of this document is to share lessons learned to support agencies to better identify opportunities to improve productivity and efficiency and to help make project teams more aware of alternative approaches to project delivery that may increase the realisation of benefits.

This document presents the lessons learned from Gate 3 – Investment Decision Reviews held since the Australian Government’s implementation of the Gateway Review Process in 2006 and are drawn from the three project types: ICT, Procurement and Infrastructure. Regardless of their origin, the lessons learned are beneficial and provide good practice that can be applied across all project types.

The Gate 3 – Investment Decision Review provides assurance on the supplier selection and that the business needs are likely to be met through the project and contract management controls. It also assures that processes are in place for contract delivery and that benefits management strategies and plans have been incorporated.

The lessons learned provided in this document are a subset of all recommendations and are grouped into the Gate 3 Key Focus Areas. The percentage distribution for all recommendations is as follows: Business Case and Stakeholders (21 per cent); Assessment of the Proposed Solution (15 per cent); Review of Current Phase (29 per cent); Risk Management (14 per cent); and Readiness for Next Phase (21 per cent).

#### Business Case and Stakeholders

**Update the Business Case and manage benefits** – ensure that the proposed solution continues to meet business needs and will realise the previously outlined benefits.

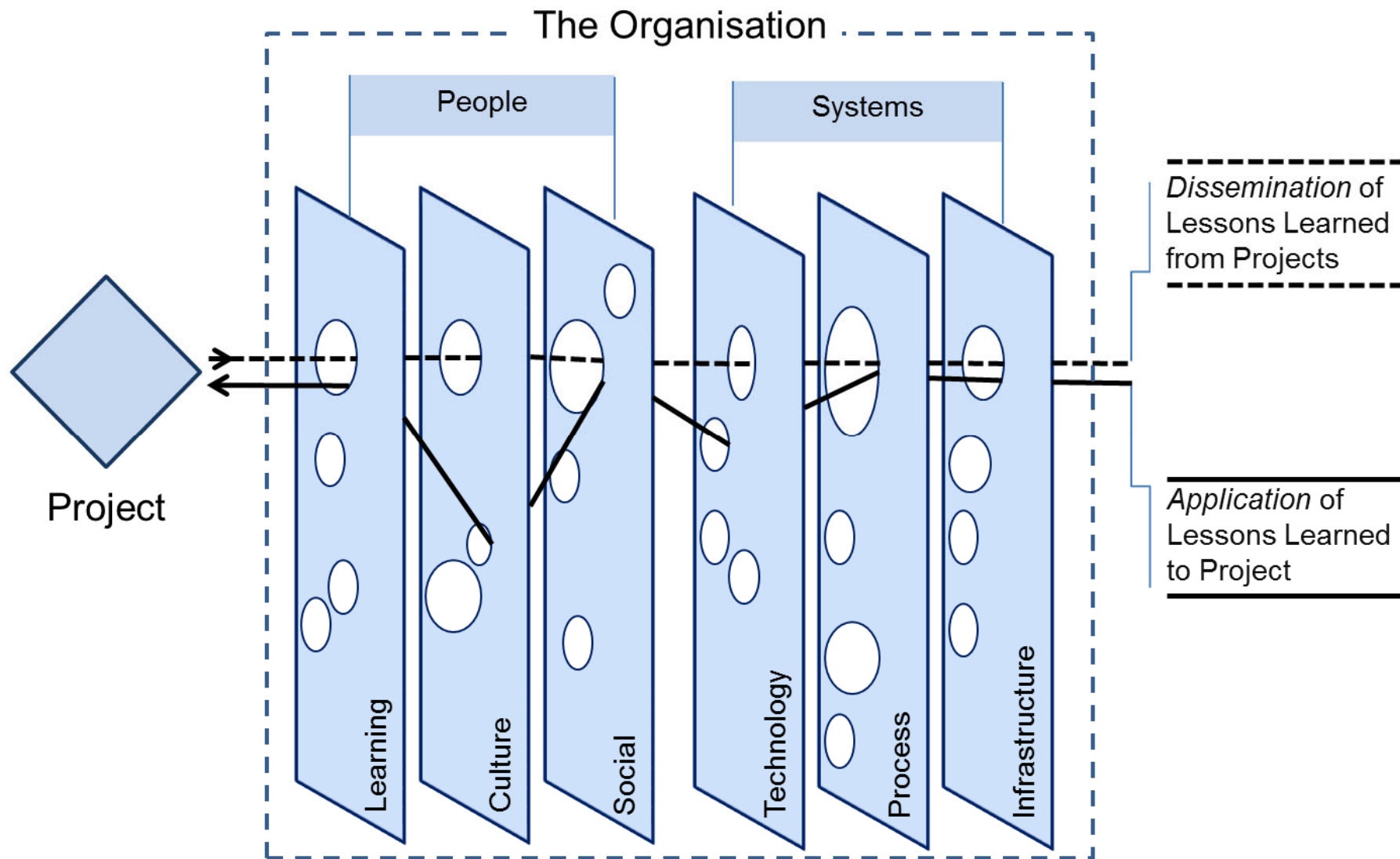
**Proactively manage stakeholders** – update Stakeholder Management Plans and provide feedback to stakeholders on consultations.

Effectively updating the Business Case and managing benefits involves:

- updating the Business Case to reflect the Project’s progression, key milestones, revised benefits (if applicable), risks and task level objectives;
- reflecting any changes to the Business Case in all relevant project documentation;
- seeking, where appropriate, that the Project Steering Committee formally affirm the Business Case including validation of revised costs, budget, benefits, risks and contingencies prior to recommending entering into a contract with a supplier;
- maturing the Benefits Management Plan, particularly relating to baseline establishment, benefits profiling (including key non-financial outcomes), measurement processes and assigning ownership for benefits realisation activities;

Page 1 of 5

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## PROJECT MANAGEMENT LESSONS LEARNED

*“THE ELEPHANT IN THE ROOM”*

**ABSTRACT:** A significant challenge for government and business project delivery organisations is to ensure that lessons are learned and that mistakes of the past are not repeated. This study has established that project, programme and portfolio management lessons learned methods vary significantly, implementation is inconsistent and fails to deliver results. The study used a prominent inductive, qualitative multiple case study approach representing the phenomenological paradigm of realism. Research data was collected from participating organisation's, open sources and via the freedom of information process. There is a significant amount of literature published on lessons learned, and refinement of the methods to date has failed to deliver the step change that is required. A decision now exists for the P3M community on whether to accept this direction of travel or assess whether a change in approach can deliver a measurable benefit that enables investment in a new framework. The study proposes a Leveraging Experience conceptual framework as a viable alternative approach.

**Keywords:** Lessons Learned, Project Management, Knowledge Management, Organisational Learning, P3M, Leveraging Experience

### AUTHORS

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**Dr Stephen Duffield**, MPM,  
FAIPM, AFALARA, CPPD.

### 1 Introduction

The study is concerned with the effectiveness of lessons learned systems within a project, programme and portfolio management (P3M) delivery environment. The need to learn and apply lessons from project delivery is well researched. The project management literature pays little attention to the effectiveness of the lessons learned process (Duffield & Whitty, 2015; Patton, 2001). Instinctively, it is evident that future projects will benefit from leveraging the experience of the past (Burr, 2009; Shergold, 2015). Yet it remains a major impediment for the P3M profession, where organisational learning from projects rarely happens, and when it does it fails to deliver the intended results (Atkinson et al., 2006; Keegan & Turner, 2001; Kerzner, 2009; Klakegg et al., 2010; Milton, 2010; Schindler & Eppler, 2003; Shergold, 2015; Williams, 2008). In project management, lessons learned is the 'elephant in the room', that needs to be acknowledged and discussed. The lessons learned 'elephant', is reinforced by project management literature. Milton (2010) highlights a significant dissatisfaction with project lessons learned processes. Lessons from projects might be identified, but not many are learned when it comes to picking up on early warning signs in problem projects (Klakegg et al., 2010). Out of 74 organisations that attempted lessons learned processes, 60 per cent were dissatisfied (Milton, 2010). In another study, 62 per cent of 522 project practitioners responded that they had a process for learning lessons, and of that only 11.7 per cent followed the process (Williams, 2007). Furthermore, while the lessons learned process is accessible, it fails to deliver the intended results as lessons are identified and are often not followed through and integrated into the organisation (O'Dell & Hubert, 2011a).




Following this introduction, the remainder of the paper is organised as follows. We commence with identifying the research problem, review the literature, discuss and reflect the current practice of the research problem. We then identify the research gaps, revisit the research problem, develop the research proposition and associated research issues. The next few sections describe the research methodology, develop an initial conceptual framework and describes the research cycle. The results and findings based on the initial conceptual framework are provided followed by a discussion section that answers the research issues. The conceptual framework is revised in line with the results and findings. Finally, the last sections outline the limitations and challenges, future research and conclusion.



<https://bit.ly/2T7yKnL>

# The Technology

# Overview: What is AI?

Narrow (ANI)	General (AGI)	Super (ASI)
 A standard 8x8 chessboard with pieces in their starting positions.	 A humanoid robot with a white head and torso, looking thoughtful with its hand to its chin.	 A glowing red eye with a yellow center, set within a blue circular frame.
Performs one task	Performs many tasks. Equivalent to a human	Surpass most abilities of a human
Chess	Machines that perform reasoning	Hal (2001)
Widely adopted	Predicted 20-100 years away	Imminently after AGI

# AI, ML and Deep Learning

Artificial  
Intelligence  
(AI)

The parent term encompassing any technique that allows a machine to act like a human

Machine  
Learning  
(ML)

An AI technique that focusses on **learning from experience**

Deep  
Learning

A **subset of ML** that uses neural networks based on the brain

# Why the Hype?



Data

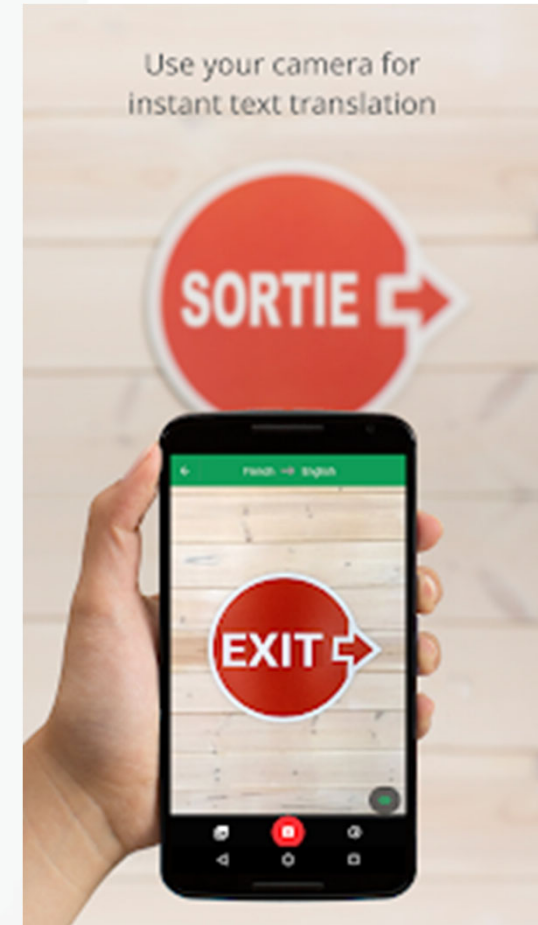
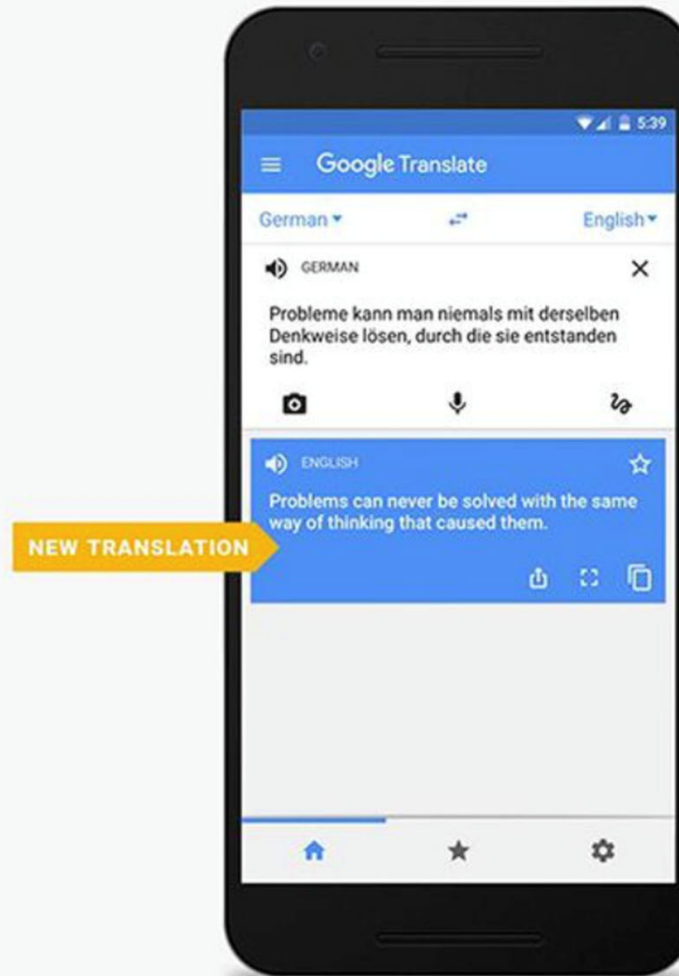
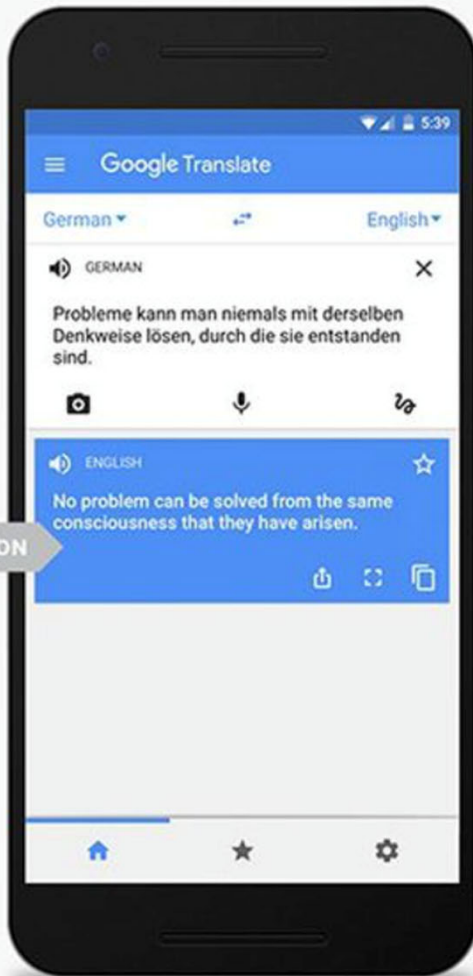


Cloud

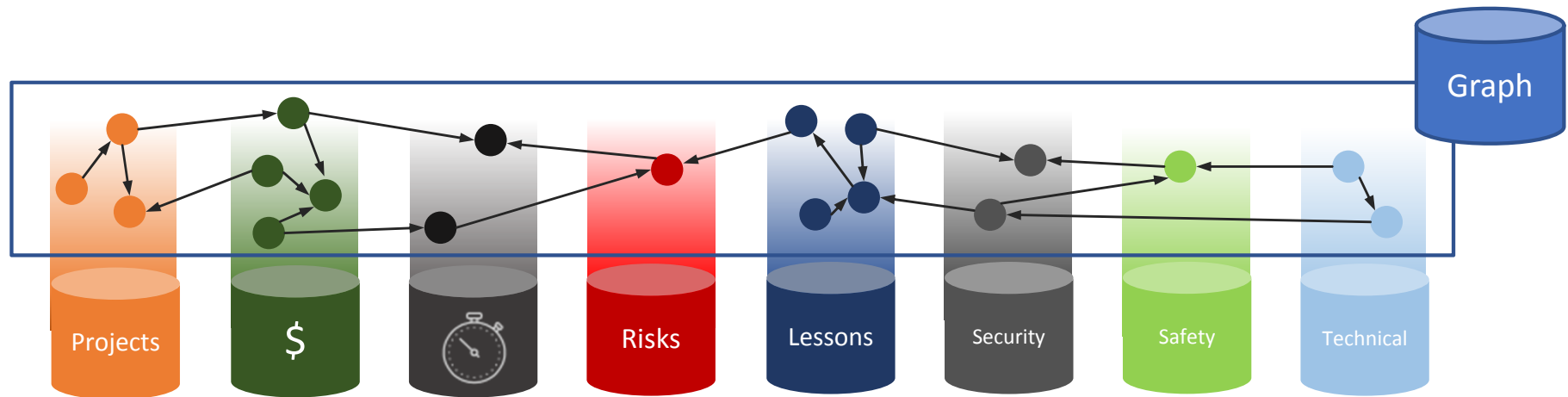


Algorithms

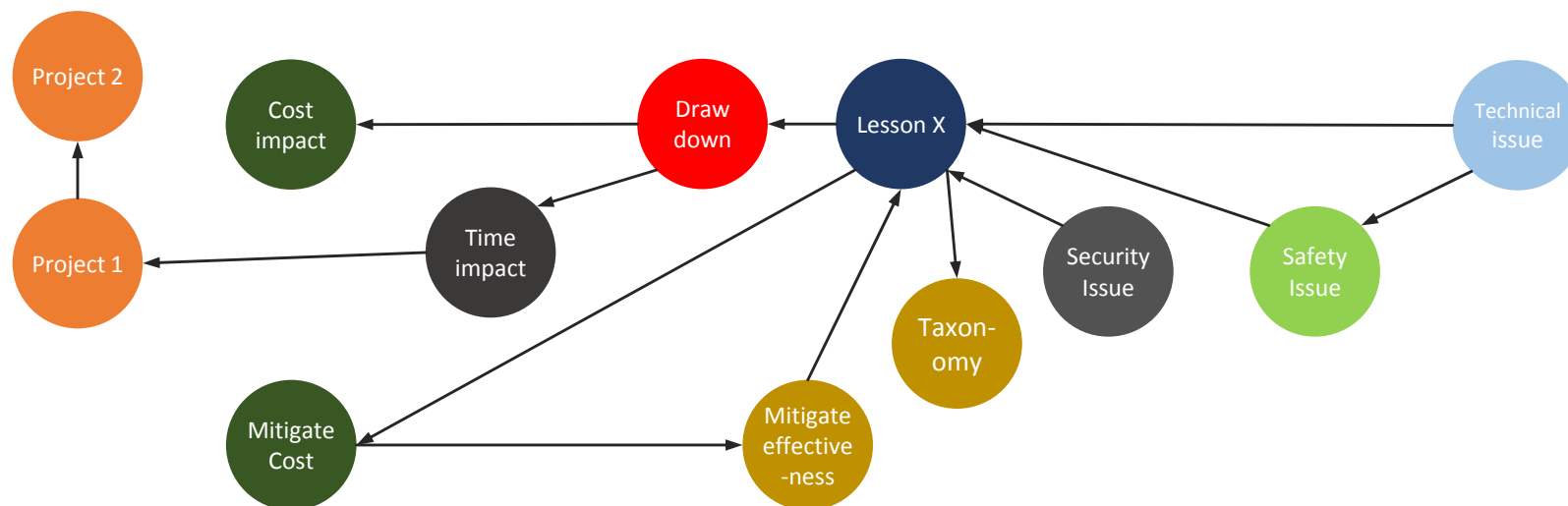
In 2016, 90% of the world's **data** (that's 90% of all the **data** ever created) had been created in the previous two years (IBM).

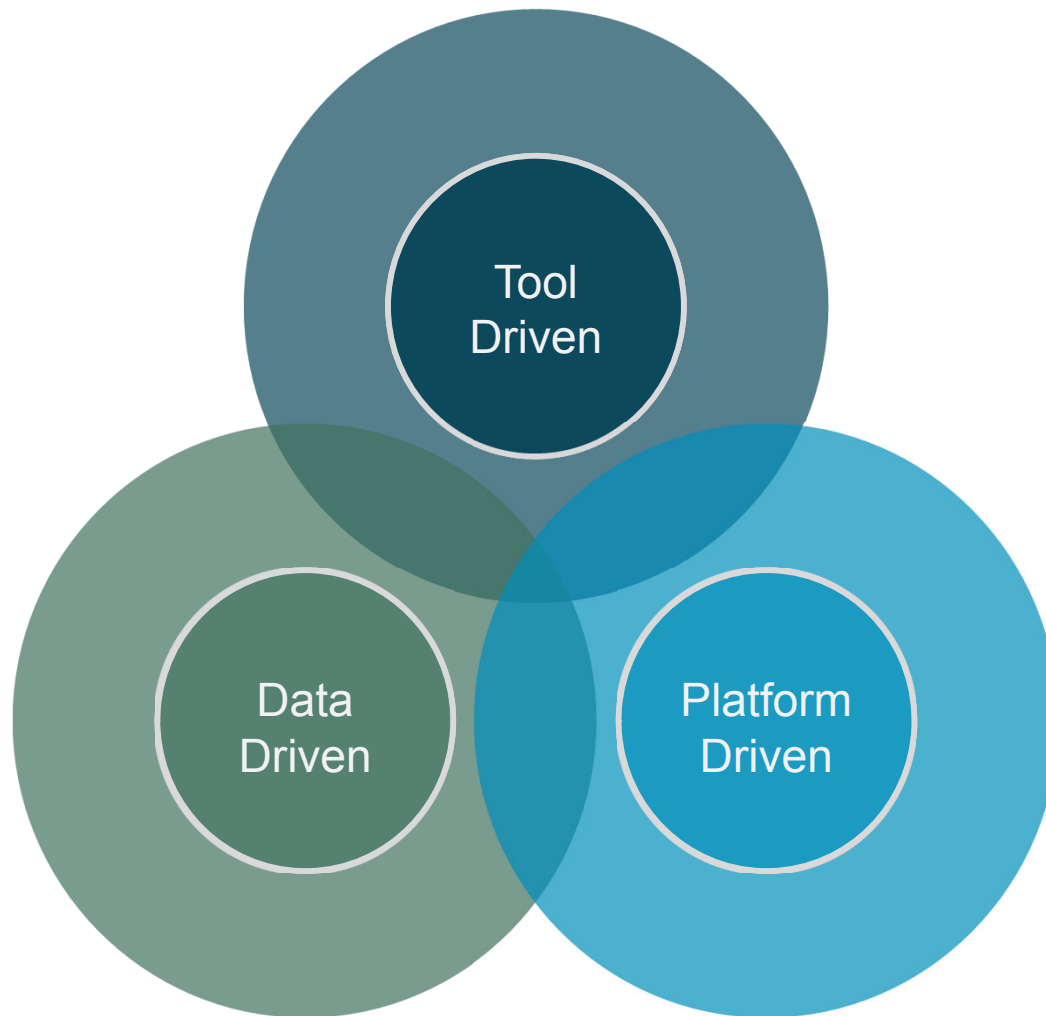


# Some Foundations: Graph Databases



Data Stored in Silos





## Tool Driven

Implementation strategy driven by tool selection.

Primavera/ASTA, Risk Tool, BIM etc.

Considerable tool integration challenge.

## Platform Driven

A platform that integrates multiple tools. A one stop shop that integrates database and tools for a project management or BIM centred use case. Vendor lock in.

## Data Driven

Connected data is at the core of the solution.

Tools and platforms are used to capture, ingest, process, visualise and provide insights.

Plus integration with other corporate tools and data



# Some Foundations: Python, Flow, PowerApps and Power BI



Power BI



Microsoft Flow

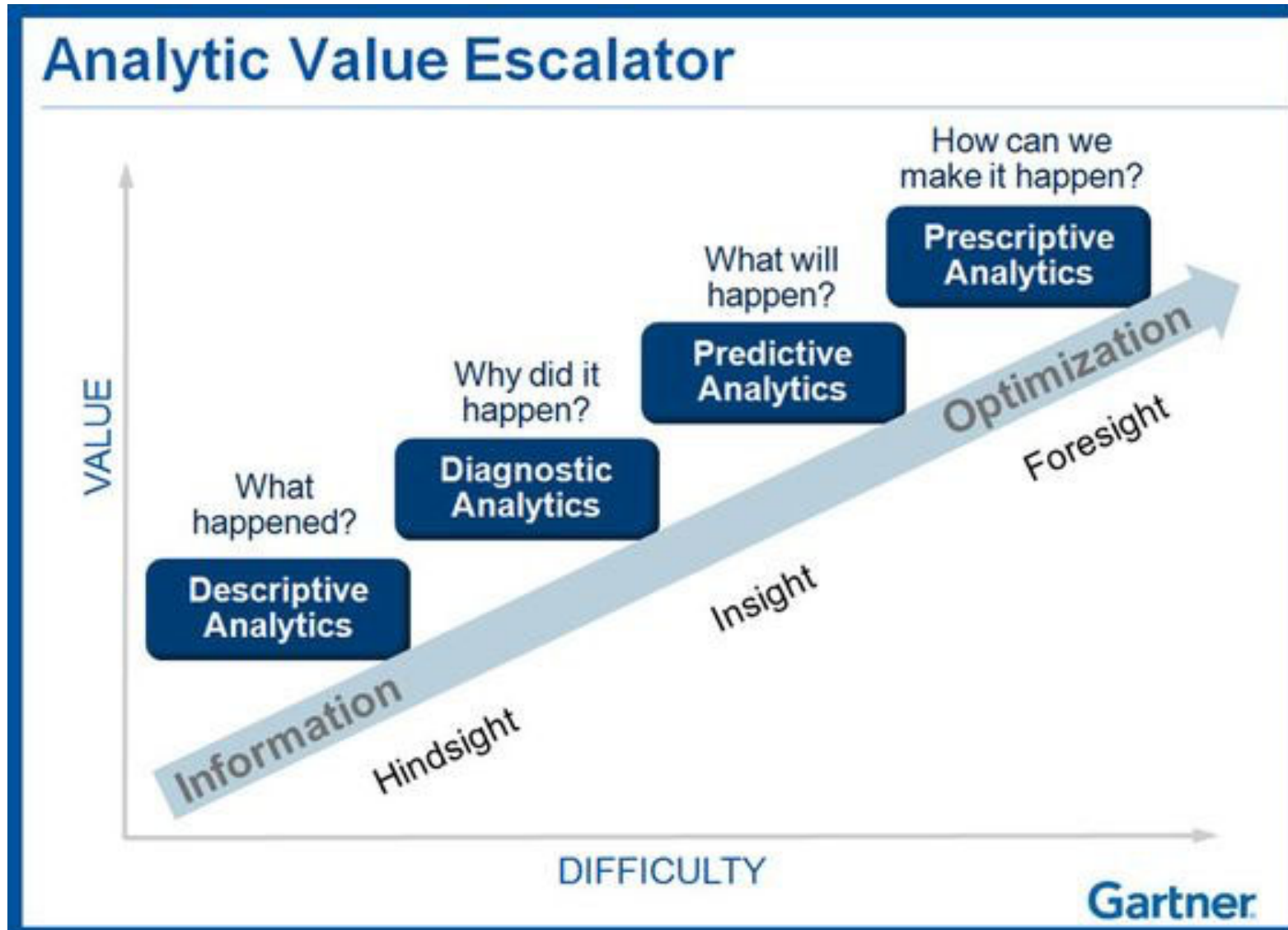


PowerApps

Available as part of your current services. Leverage your current investments.

Opportunity to tailor to your business, use cases and integration of different systems

# Some Foundations: Extracting Value from Data



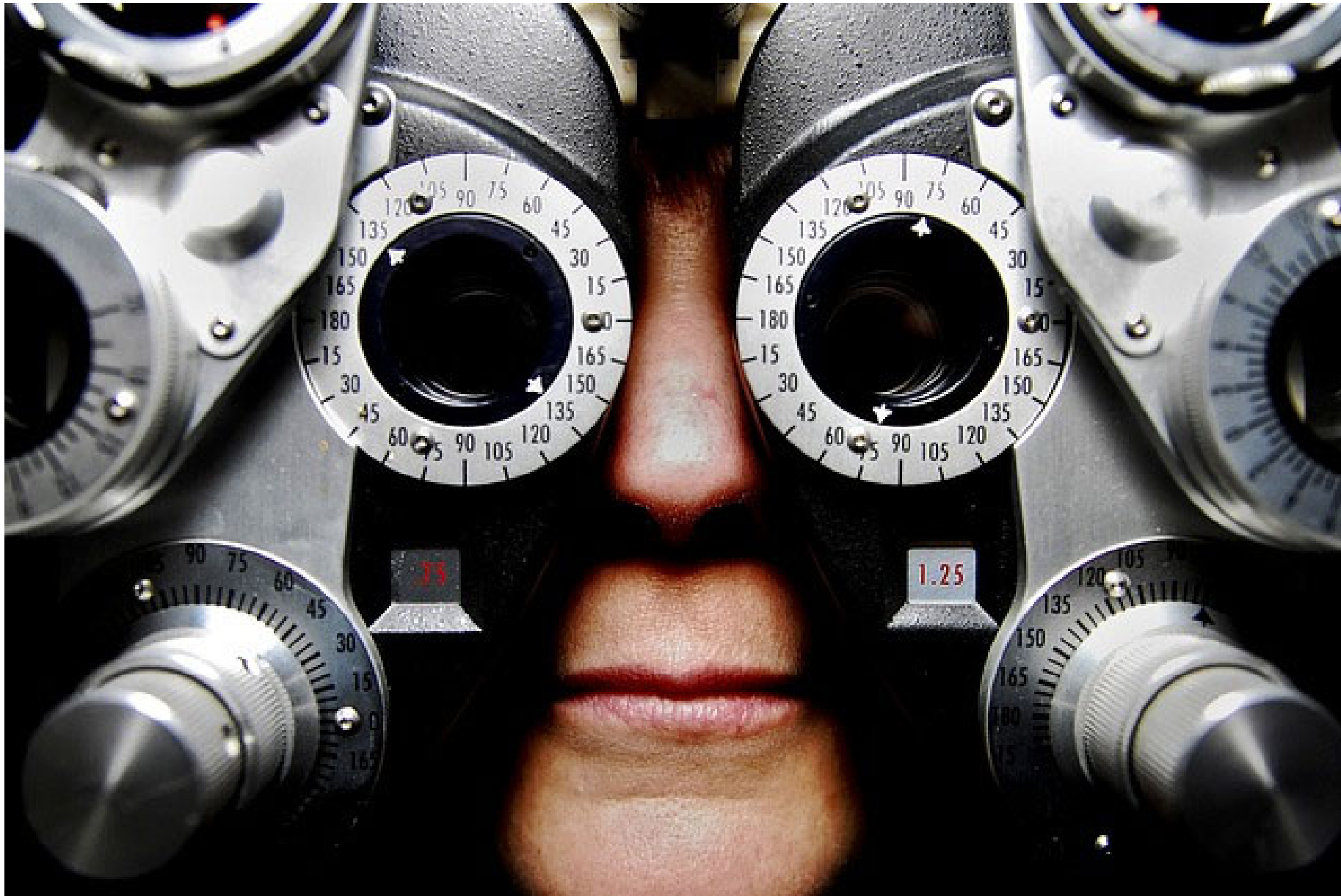
- What is the **predisposition** of the work to variance?
- Can we **predict** it?
- How do we **test** for it?
- How do we **treat** it and change the future?

Evidence based, tempering against bias.



**Project DNA**

# A Possible Future...



## Briefs, Reports and Dashboards



Auto-reporting  
Auto-dashboards  
Predictive analysis

## Tracking Contract Deliverables



Tracking receipt  
Compliance and quality assessment  
Deliverable graphs

## Meeting Admin, Minutes, Actions



Gotomeeting – Transcript  
Extract actions into Flow  
Use Flow to progress actions

## Resource Utilisation



Automatic review of timesheets  
Workflows chasing timesheets  
KPIs on resource performance

## Quality Audits, Maturity Reviews



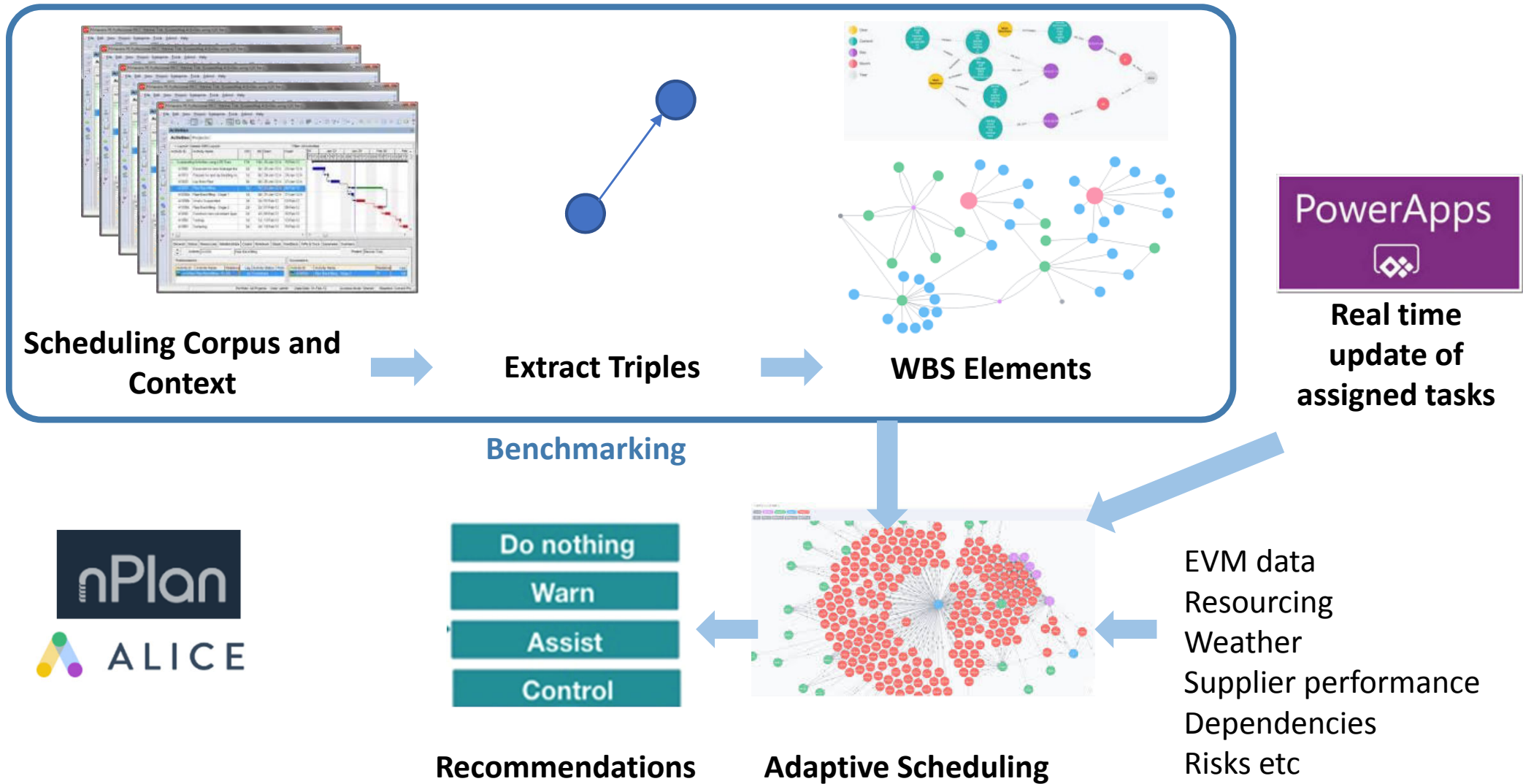
Data quality/completeness analysis  
Frequency of updates  
Comparison against good practice

## Forecasting, Budgeting



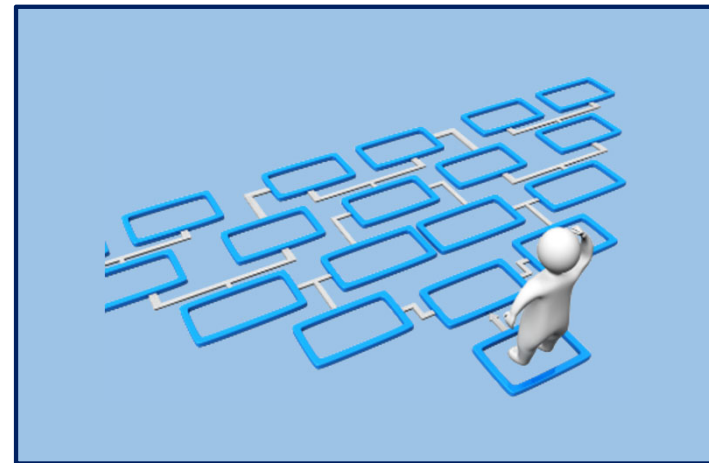
Improved benchmarking  
Variance analysis  
Early warnings

# Scheduling

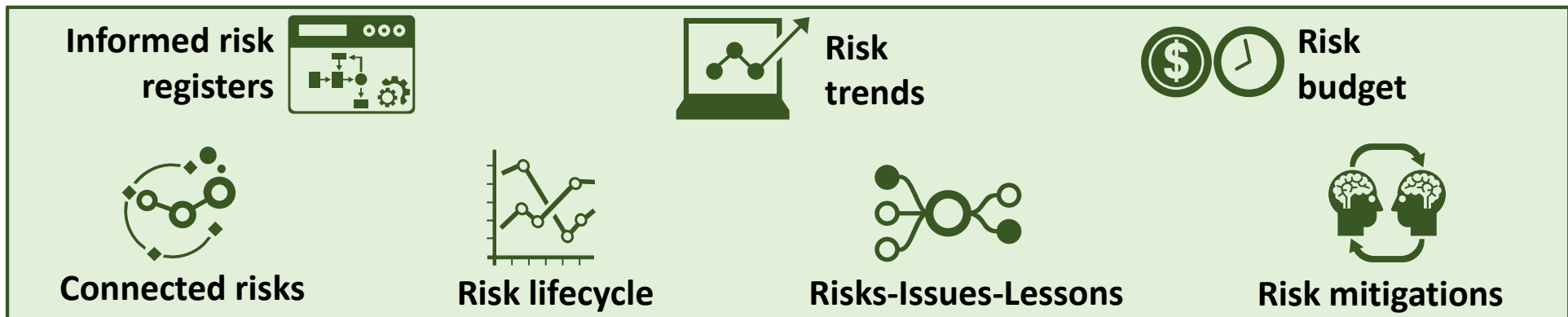




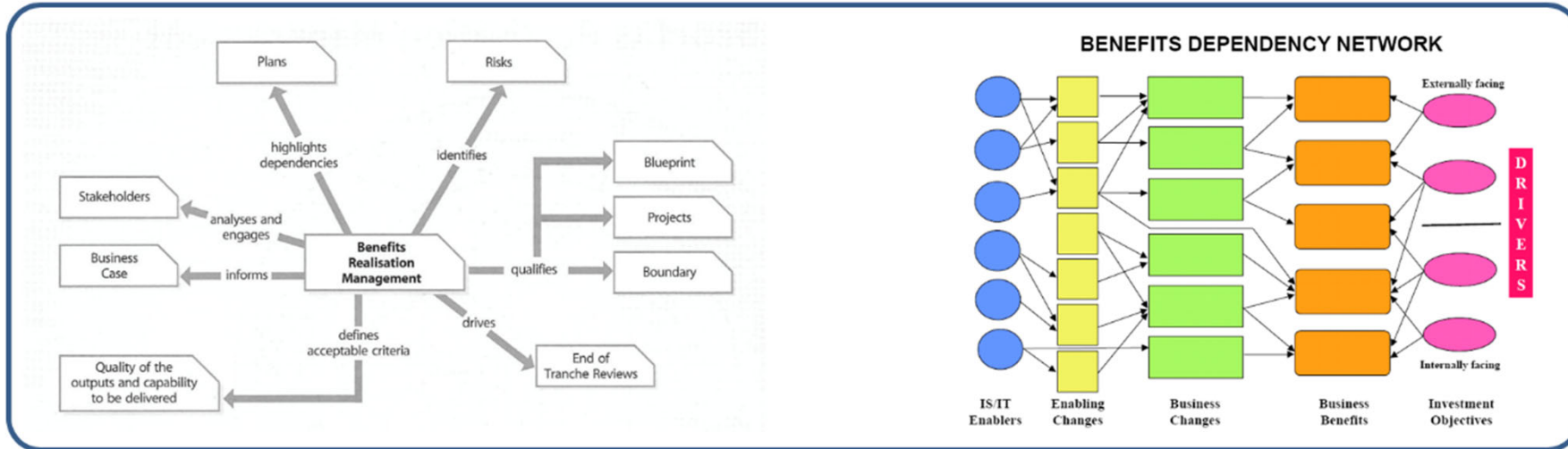
A once through process



Systemic Risk



Leveraging Risk Experience



## 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



# Stakeholder Management

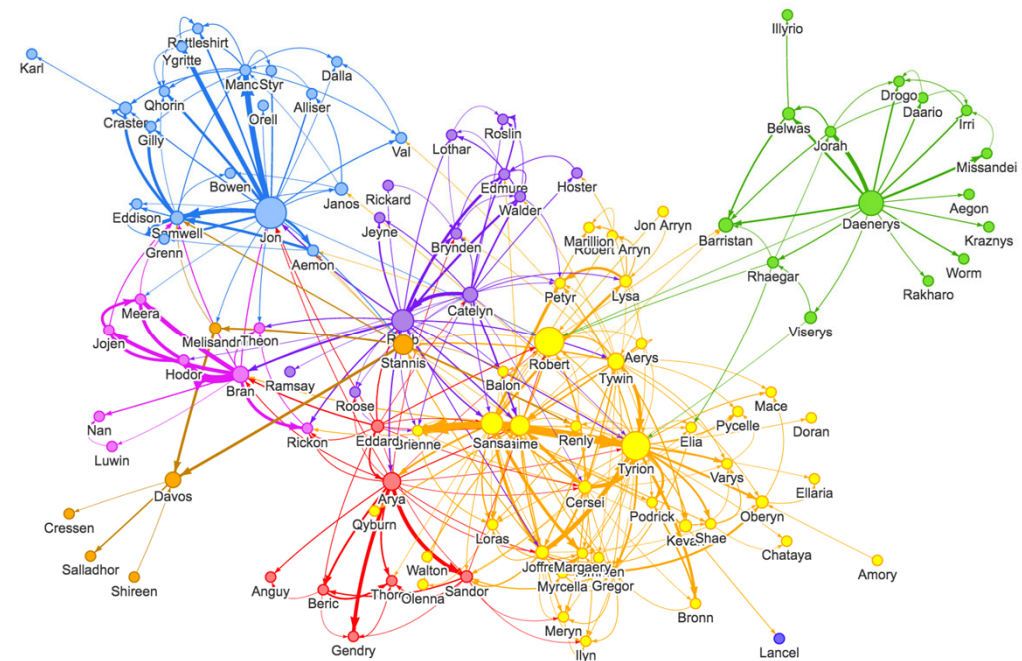
		For			Ambivalent	Against		
		High	Medium	Low	Low	Medium	High	
Influence	High	Orange	Orange	Yellow	Yellow	Yellow	Orange	Orange
	Medium	Orange	Yellow	Yellow	Yellow	Yellow	Yellow	Orange
	Low	Yellow	Yellow	Green	Green	Green	Yellow	Yellow
		High	Medium	Low	Interest			

Credit: Praxis Framework

## Static Analysis

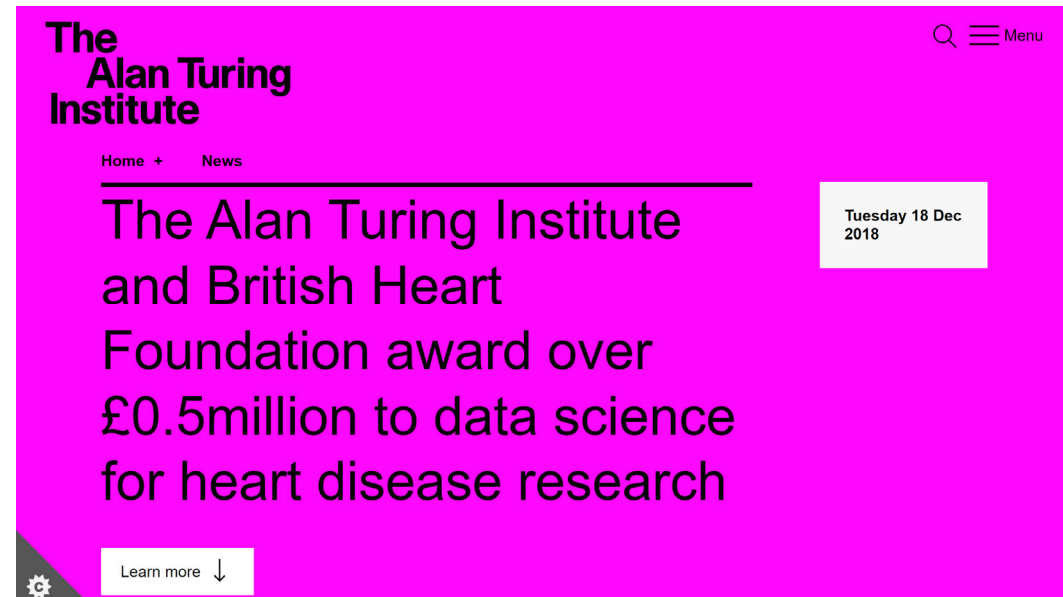
Or

Adaptive, **dynamic** networks, reflecting real time feedback and historical performance of specific groups/individuals



Credit: Neo4J

- [Mapping genetic traits of cardiovascular disease](#)
- [Physical activity and cardiovascular health](#)
- [Heart attack risk prediction and treatment management](#)
- [Personalised risk management of cardiovascular disease](#)
- [Blood related risk factors for cardiovascular disease](#)
- [Modelling the heart's chemical signals](#)

A screenshot of a website page with a blue background. The header includes "The Alan Turing Institute" logo, a search icon, and a "Menu" button. Below the header is a navigation bar with "Home + News". The main content area features a large headline: "The Alan Turing Institute and British Heart Foundation award over £0.5million to data science for heart disease research". A date box on the right says "Tuesday 18 Dec 2018". At the bottom left is a gear icon, and at the bottom center is a "Learn more ↓" button.

The Alan Turing Institute

Home + News

The Alan Turing Institute and British Heart Foundation award over £0.5million to data science for heart disease research

Tuesday 18 Dec 2018

Learn more ↓

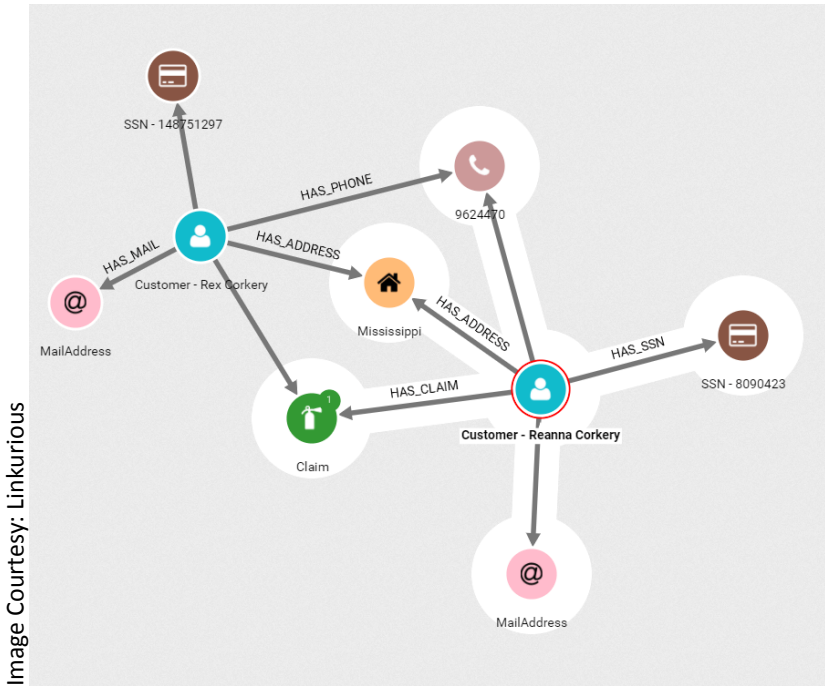


Image Courtesy: Linkurious

## Fraud detection

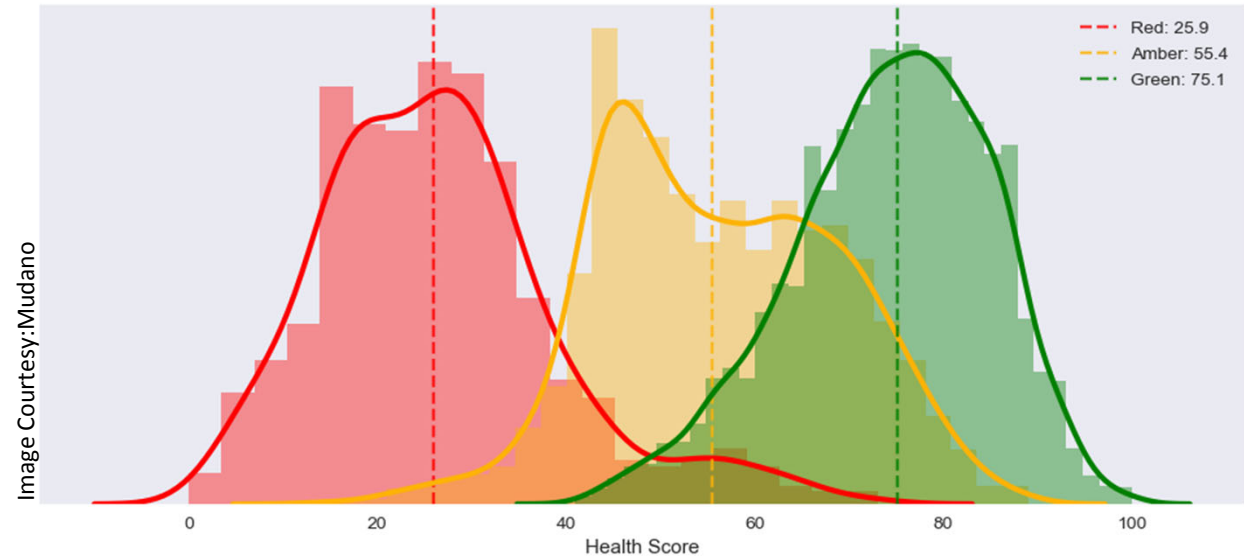
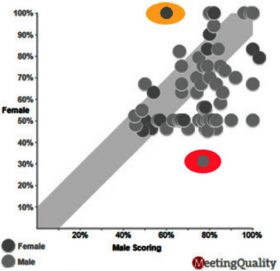
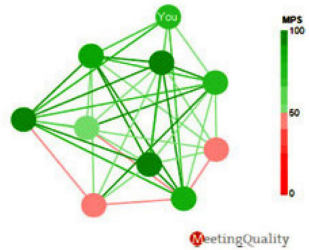


Image Courtesy: Mudano

## RAG Reports

## Use Case-3: Diagnostics for Interpersonal Relationships



- This use case describes how MeetingQuality's by-product diagnostics reveal interactions between individuals that may hinder team performance
- Early Warning – Interpersonal Relationship Issues**
  - The "Meeting Promoter Score (MPS) Network Map" (top-left) illustrates the impact of two team members contributing negatively [pink circles & pink connecting lines]
  - The color of the circles represents the strength of a participant's meeting contributions (average scores over time).
  - The color of the lines connecting circles represents the strength of the relationship (average scores) between any two individuals in the network
- Early Warning – Gender-Based Relationship Issues**
  - The "Gender-Based Ratings Graph" (bottom-left) illustrates differences in the way that male and female team members may rate each other using the Meeting Promoter Score (MPS)
  - Note the two outliers here:
    - Female team member [orange ellipse] is scored at 100% by females but is scored at only 65% by males
    - Male team member [red ellipse] is scored 80% by males but is scored at only 30% by females
- NOTE:** Consulting Partners provided client with tools and techniques to help improve these relationship issues

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## Use Case-4: Portfolio Management

- This use case demonstrates Meeting Quality governing projects from a portfolio perspective
- Waterfall Project A – Early Warning Signs of Possible Project Problems**
  - Last Steering Committee meeting was good: MQS (68%) and PSP (75%)
  - Last Project Team Meeting was not so good: MQS (73%) but PSP (56%) (Project team usually discovers problems before Steering Committee and Stakeholders)
  - Governance Report provides clues to potential problems as scores on Resource (55%) and warnings on Scope (65%) and Change (67%) may lead to project team concern
- Waterfall Project B – Clear Warning Signs of a "Watermelon Project"**
  - Classic "watermelon project" profile – green on the outside but red on the inside
  - Project Team meeting MQS (35%) suggests serious dysfunction – may cause very low PSP (40%)
  - Stakeholder meetings also not going well with MQS (59%) and very low PSP (25%)
  - Surprisingly high Steering Committee PSP (80%) – May be classic profile of information withheld from Project Director or Sponsor which may explain Steering Committee MQS (54%)
  - Early signs of problems with this project can also be seen in the Portfolio Governance table with critical scores for Scope, Resources and the operation of the meeting itself.
- Waterfall Project C – New Project Honeymoon Period**
  - Profile of a new project – high optimism and high enthusiasm

Comparing Agile and Waterfall Projects using the same measurements – Meeting Quality Score (MQS) and Project Success Probability (PSP)

Project	Steering Committee		Project Team		Stakeholders	
	MQS	PSP	MQS	PSP	MQS	PSP
Agile Project A	50%	84%	66%	92%	69%	82%
Agile Project B	-	-	56%	39%	59%	61%
Agile Project C	-	-	66%	74%	63%	64%

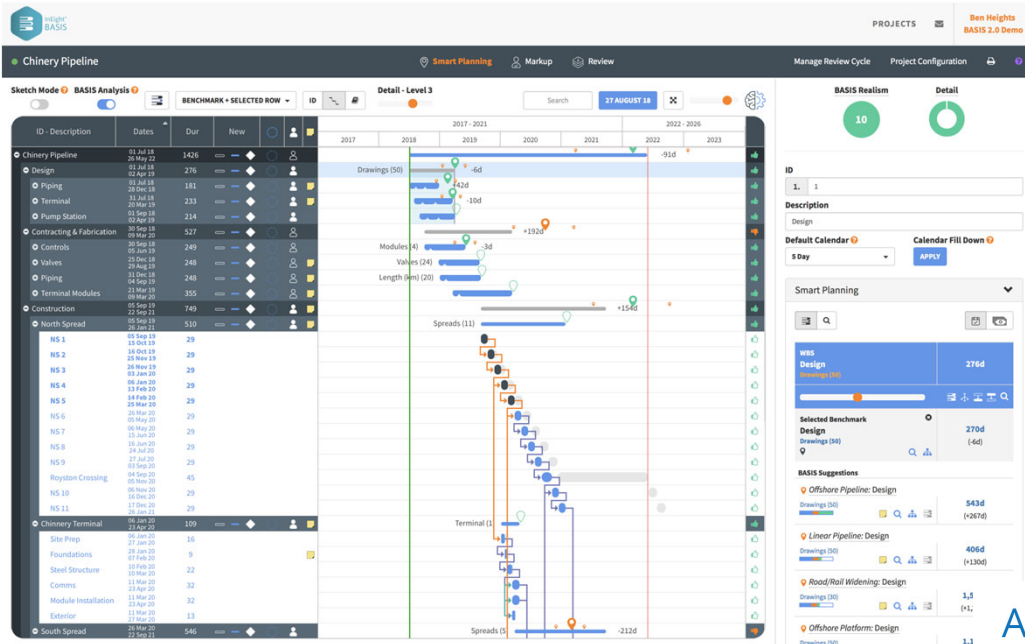
Project	Steering Committee		Project Team		Stakeholders	
	MQS	PSP	MQS	PSP	MQS	PSP
Waterfall Project A	68%	75%	73%	56%	65%	71%
Waterfall Project B	54%	80%	35%	40%	59%	25%
Waterfall Project C	80%	74%	68%	76%	73%	78%

Quarterly Governance Assessment completed by Steering Committee

Project	Last	Steering Committee Portfolio Governance Assessment					
		Scope	Cost	Resource	Benefits	Change	Schedule
Waterfall Project A	Jul	65%	75%	53%	95%	67%	81%
Waterfall Project B	Jul	73%	62%	79%	40%	40%	40%
Waterfall Project C	Sep	90%	85%	70%	92%	78%	90%

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# Other Products



Assistive AI based on small data sets

**XAI SUGGESTIONS**

- Create new risk action**  
Review supplier contract
- Similar risk**  
Profitability of Contracts  
pre-contract due diligence | poor risk management | profitability of contracts
- Risk Title: Profitability of Contracts  
Description: Risk of contracts not being profitable due to poor risk management and pre-contract due diligence  
Business Unit: TF Group  
[Open this risk](#)
- Similar risk**  
Contract Cover
- Create new risk action**  
Review actions
- Similar risk**  
Supplier Delays

**Contract Terms not favourable to TFGroup**

**Details**

- Description: The contract terms are not favourable to TFGroup, or contain too much uncertainty
- Risk Cause: Poorly negotiated contract
- Risk Event: Non favourable payment terms
- Risk Impact: Cash flow impact

# Does Your Data Give You An Edge?

Protect my data

Compete on basis of:  
**Data availability / Quality**

Short term tactical advantage but cannot compete long term with pooled data

Pool my data

Compete on basis of:  
**Innovation and Quality of Insights**

Strategic advantage by leveraging the broad pool of data, including client data

Not wholly applicable in our case. Stewardship will be by data providers

It is a legal structure that provides **independent** stewardship of some data for the benefit of a group of organisations or people.

In a data trust, the trustors may include individuals and organisations that hold data. The trustors grant some of the rights they have to control the data to a set of trustees, who then make decisions about the data – such as who has access to it and for what purposes.

The beneficiaries of the data trust include those who are provided with access to the data (such as researchers and developers) and the people who benefit from what they create from the data.

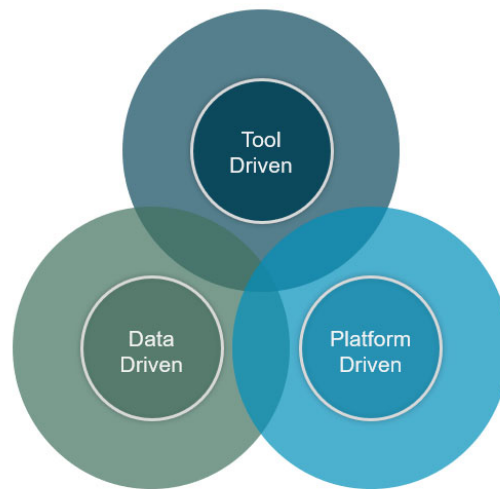


Source: <https://theodi.org/article/defining-a-data-trust/>

# Positioning for a New Future



**Data Strategy**



**Overall approach**



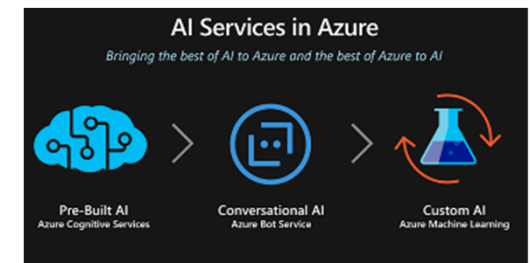
**Data harvesting**



**Connected Data**



**Insights and Lean**



**Predictive Insights**





**Some examples**

# Machine Learning: Bid Data – a worked example

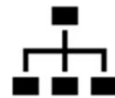
## Contracts Finder



Clean



Associate



Text  
Analytics



Segmentation



Machine  
Learning



Feature engineering

Linear regression  
Decision Tree  
Naïve Bayes  
K-Means  
Random Forest  
Gradient Boosting  
etc

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

Data Analytics in procurement: new opportunity or pandora's box of risk? webinar

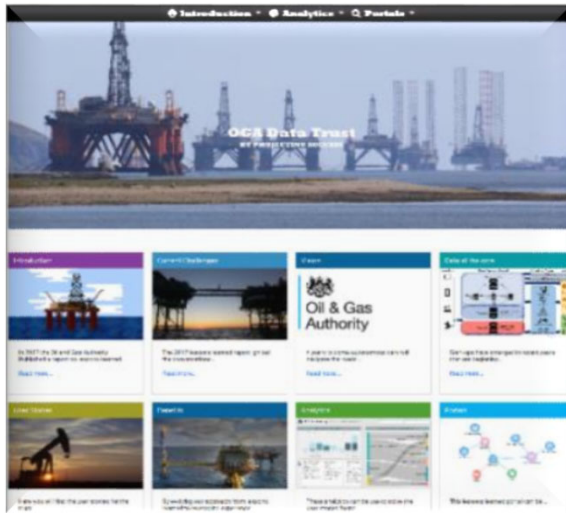
Data analytics, machine learning, and statistical analysis are increasing our ability to make reliable predictions. Automation and AI (artificial intelligence) can reduce the drudgery of analysing and evaluating masses of data. But they can also introduce hidden biases and reduce transparency. How does this apply to procurement?

As a project manager accountable for selecting suppliers, imagine a world where clients share data on supplier performance, on their adherence to schedule and cost, compensation events and volume of costed change requests. This data enables insights into how the supplier

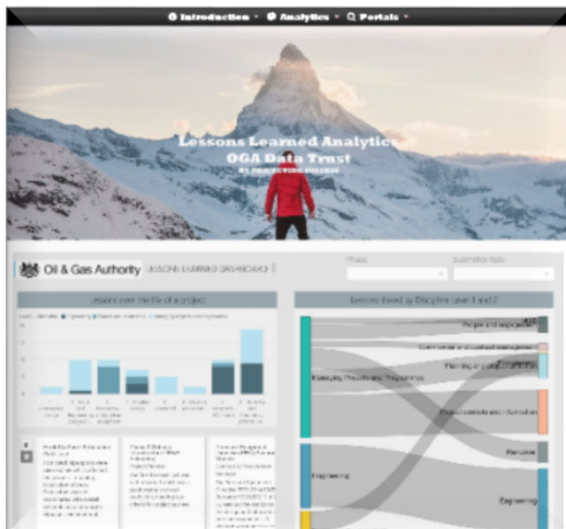
apm  
Contracts and  
Procurement  
SIG

Join

# Visualising the Connections



Title	Assessed Title	Impact Schedule	Impact Cost	Organisation	Project	Project Phase	Lesson Date	Subject Role	Link
Hook-Up Register	Populating the register during the final stages of design rather than completing this at the beginning. Drawings not always clear as to what was hook-up scope.	HIGH-10%	LOW-5%	Organisation	Project	8- Hook up and Commissioning prior to Handover to End User	06/05/2017	Chief Electrician	<a href="#">View Lesson</a>
Hook-Up Work packs	Work Packs are inherent in hook-ups and brieffields work. Contractors see them as a useful tool to ensure they have covered all aspect of a work. This needs to be thought Onshore and Offshore Teams are not aware of what is being produced and why. Onshore supervisors are not close enough to the project to have the right effect.	HIGH-10%	LOW-5%	Organisation	Project	8- Hook up and Commissioning prior to Handover to End User	26/10/2009	Project Engineer	<a href="#">View Lesson</a>
Hook-Up Spool Fabrication	The spool interfaces at both ends of the bridge were incomplete when the bridge was set away from the construction yard. This stopped us from carrying out hook-up dimensional surveys.	LOW-5%	HIGH-5-10%	Organisation	Project	8- Hook up and Commissioning prior to Handover to End User	21/06/2007	Engineer - Design & Application	<a href="#">View Lesson</a>



## Web App

- Enables users to explore connectivity between lessons.
- Connection between lessons, risks, issues, change, QA observations, change control etc.
- Ultimately, provides the foundation for AI to begin to identify early warnings and the predisposition of certain projects to variance.

# Visualising the Connections

## Explore

- **Explore.** This uses graph technology to explore associations with a keyword search, identifying associations through manual interaction.

## Assist

- **Assist.** Known parameters of the project are imported using natural language processing and text analytics. The assisted feature returns associated lessons/risks/issues to assist you with your project plan.

## Propose

- **Propose.** As above, project parameters are imported. The propose feature identifies the lessons/risks/issues which are of greatest relevance to your project, phase and its context. Project plan, schedules, risk registers, etc are automatically created as a basis for further development.



Oil & Gas  
Authority





CVs



Projects

# Data Connections

Please select a name:

- Available
- Employed

John Smith

Tom Hardy

Noel Edmonds

Tom Hanks

James Smith

Total number of CVs  
**201**

Total number of people  
**121**

Number of CVs selected  
**2**

Number of projects selected  
**5**

Name:	<b>James Smith</b>	
Role:	Environmental Advisor	

- John Smith CV May 2016.txt
- John Smith CV May 2014.txt

**About**

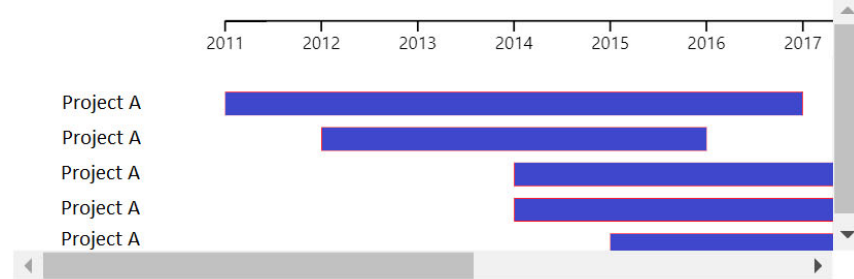
John joined [redacted] in 2011 after graduating from Wroclaw University of Environmental and Life Sciences in Poland. In the short time she has been with us, she has supplemented our regional environmental team with her engineering and technical knowledge.

Her capabilities have identified her as the most suitable person to address the challenging environmental and neighbour liaison issues on the [redacted] Project.

She has been instrumental in finding a workable solution to the challenges related to noise, air quality and vibration and to do this she has formed good working relationships with specialist consultants and the technical officers from local authorities.

[redacted] is an active member of the Considerate Construction Scheme reporting mechanism and

Duration by New Project Name and Project Start



**Project A**  
Environmental Manager  
Client:  
Grosvenor Duration: 2012 - 2014 Location: London  
Region: London & South East  
Sector: Residential

**Project A**  
Environmental Advisor  
Client:  
Duration: 2010 - 2015  
Location: London Region:  
London & South East Sector:  
Residential

**Project A**  
Environmental Manager  
The [redacted] scheme is a proposal for the rejuvenation of an existing private and underutilised space in the middle of what is currently an impermeable urban block. It is intended to be both the site of a new public space and a new residential community on the floors above. The proposals for [redacted] include the

**Project A**  
Environmental Manager  
Client: Duration: 2014  
- Present Location: London  
Region: London & South East  
Sector: Residential

**Qualifications**

MSc Environmental Engineering, Engineering Degree - Environmental Engineering from Wrocław University of Environmental and Life Sciences, Associate member IEMA, Institute of Acoustics Certificate of Competence in Environmental Noise Measurement

MSc Environmental Engineering, Engineering Degree - Environmental Engineering from Wrocław University of Environmental and Life Sciences, Graduate member of ICE and Applicant in CIOB, Institute of Acoustics Certificate of Competence in Environmental Noise Measurement, NEBOSH National Certificate in Construction Health and Safety, BREEAM 2014 UK New Construction Assessor, BREEAM Accredited Professional

**20** years of documents in legacy systems  
Some machine readable, some images  
**12,000** documents  
**1** person working part time to provide access



- Extracted documents
- Ensured all were readable
- Applied topic modelling
- Associated documents and saved on sharepoint

<b>23.78</b> File size (mb)	<b>1.00</b> Completeness Score	<b>48</b> Number of columns
<b>689K</b> Number of rows	<b>5544</b> Number of NULL	<b>33M</b> Number of entry points
<b>9</b> Number of sheets	<b>9</b> Number of sheets	<b>9</b> Number of tables

Python and Robotic Process Automation

Extract and analyse large volumes of files

Analyse quality, completeness, timeliness

Clean and transform



# How to Prepare

# Positioning For a Data Driven Future

**Collate  
Data**



Reporting

**Auto-Collate  
Data**



Dashboards

**Connect,  
Qualify and  
Integrate Data**



Data cleansing  
Data Graphs  
Text analytics  
Insights

**Extract  
Predictive  
Insights**



Benchmarking  
Predictive analytics  
Machine Learning

# The Learning Curve.....

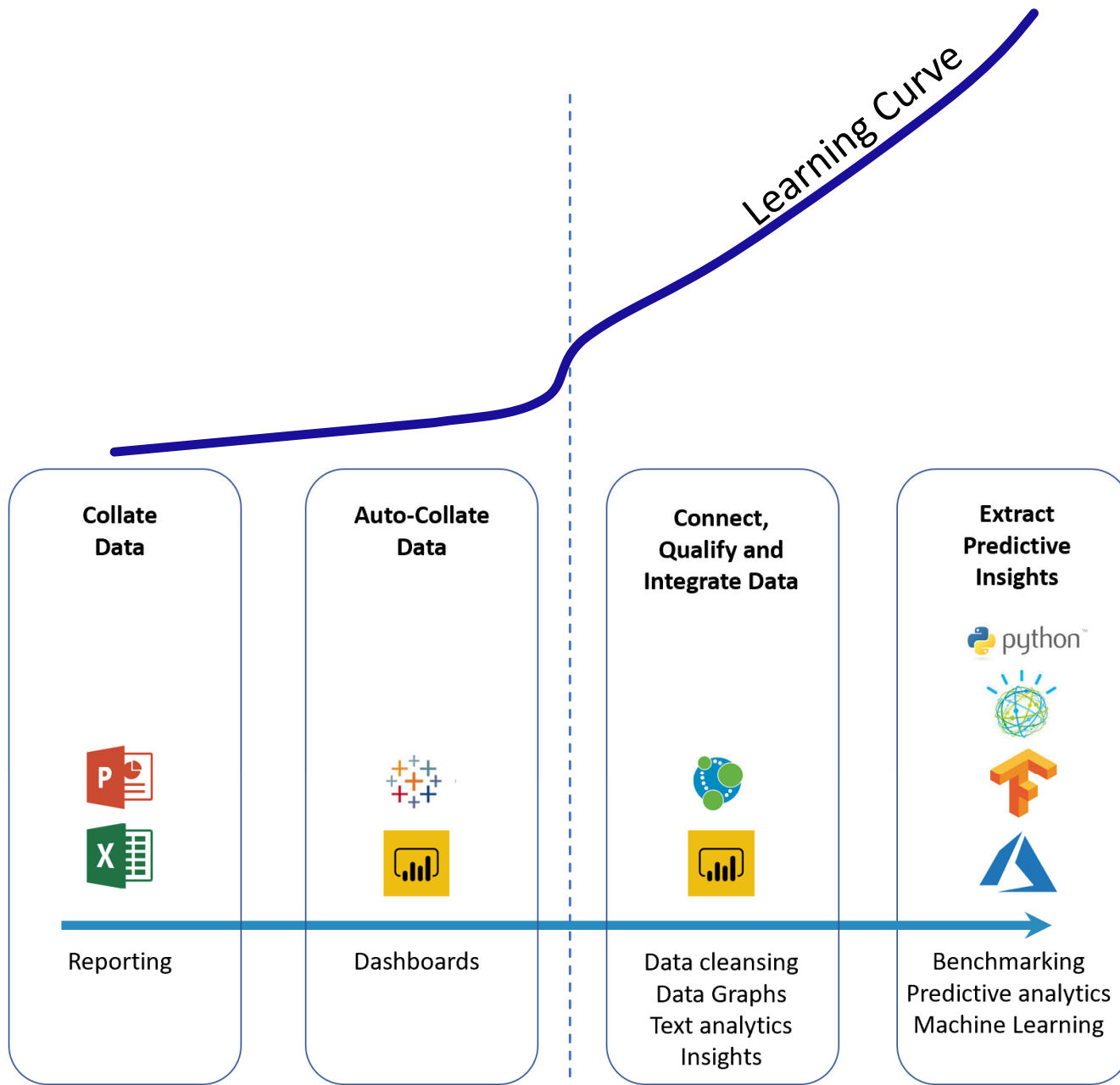
Learning Curve

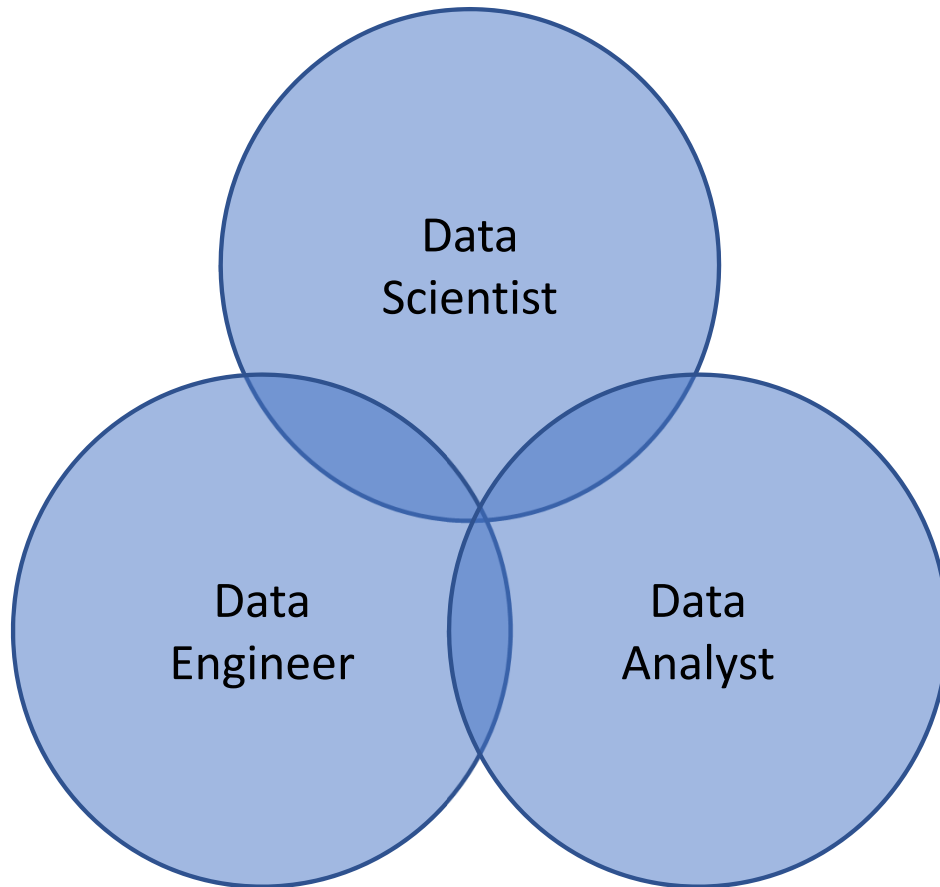
What are your aspirations?

**Analyst**

Or

**'Operative'**





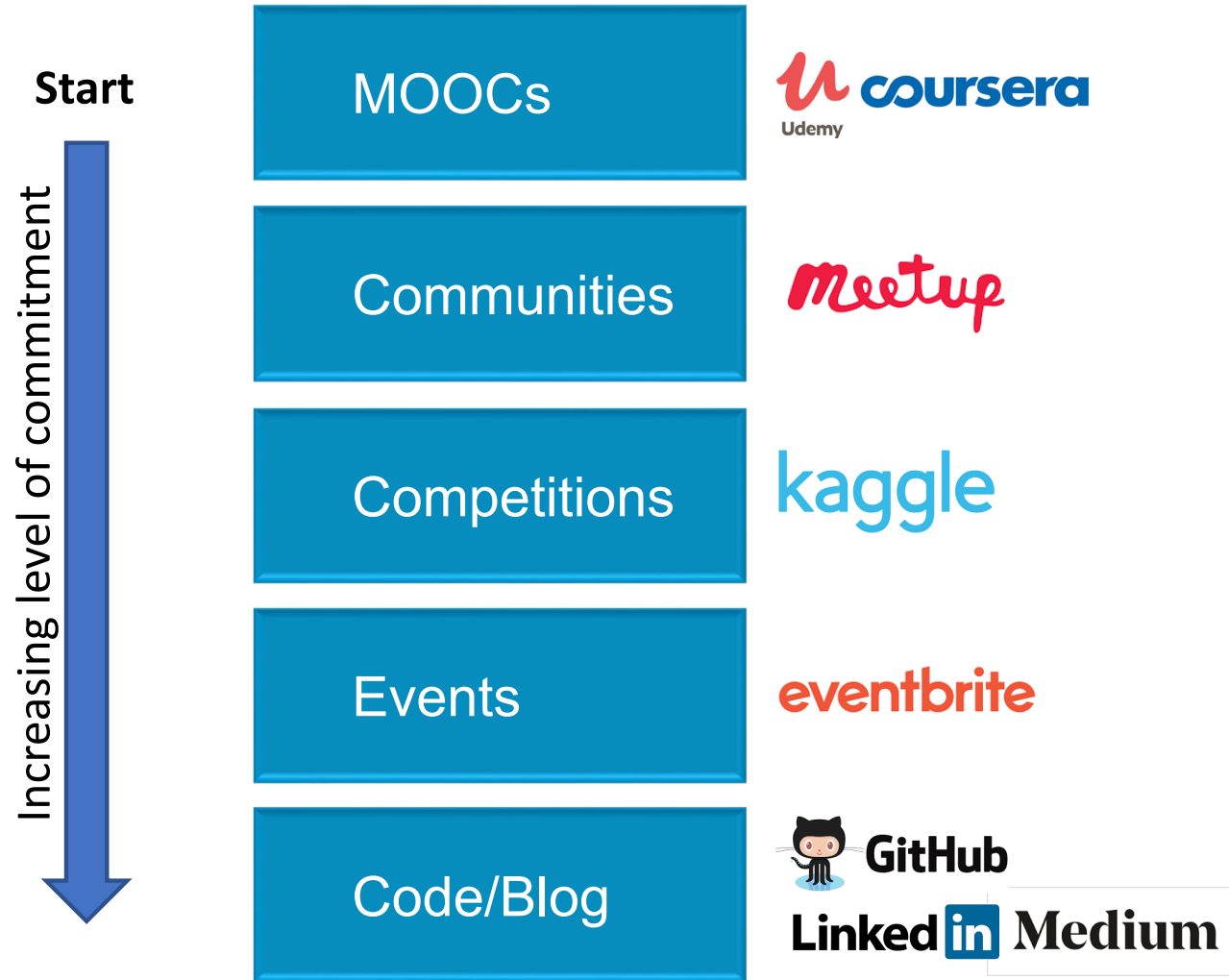
- Familiarisation with roles
- Gain an overview of each
- Gap analysis
  - What skills does your organisation have?
  - What does your organisation aspire to?
  - What does the roadmap look like?
  - What would you like to do?

Make good use of:



# Demonstrate a Passion

## You are in a competitive environment





## 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

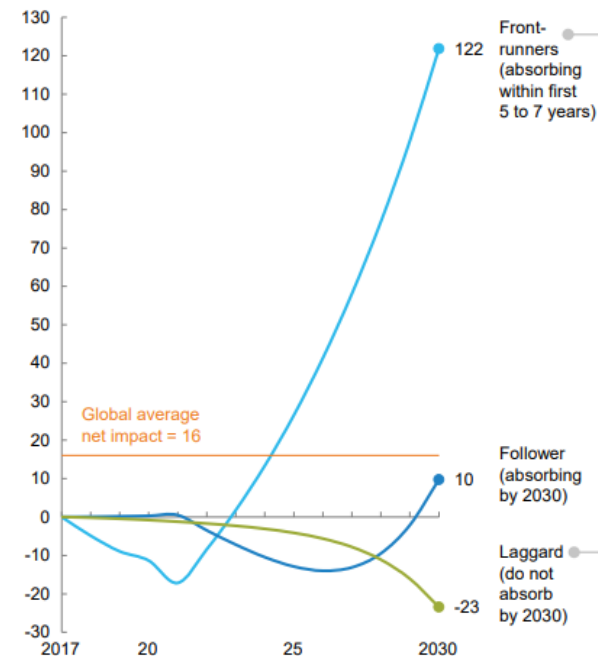
# How Quickly Will This Happen?

## It depends on....

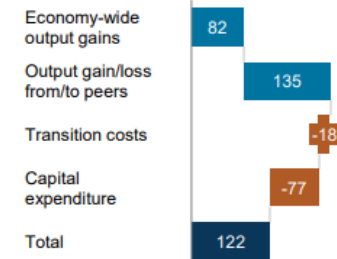
- Corporate pressure: Transparency, delivery performance
- Demonstrating the return on investment.
- Willingness to share data.
- Leaders: Next 12-24 months
- Others: 2-5 years

Consider: **Large** vs small organisations.

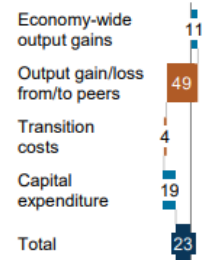
Relative changes in cash flow by AI adoption cohort  
% change per cohort, cumulative



Front-runner breakdown  
% change per cohort



Laggard breakdown  
% change per cohort



NOTE: Numbers are simulated figures to provide directional perspectives rather than forecasts.

SOURCE: McKinsey Global Institute analysis

## Threat

- Some PMO roles will be displaced
  - How many....depends
  - When....depends
- You may be in competition

*Hope is not a strategy*

Rudy Giuliani 2008

## Opportunity

- Reduce the burdensome roles
- Move beyond dashboards
- Integrate your assets
- Correlate across the portfolio
- Leverage external analysis
- Derive predictive insights
  
- It could be a very cool role
- It moves the PMO on to be a predictive asset

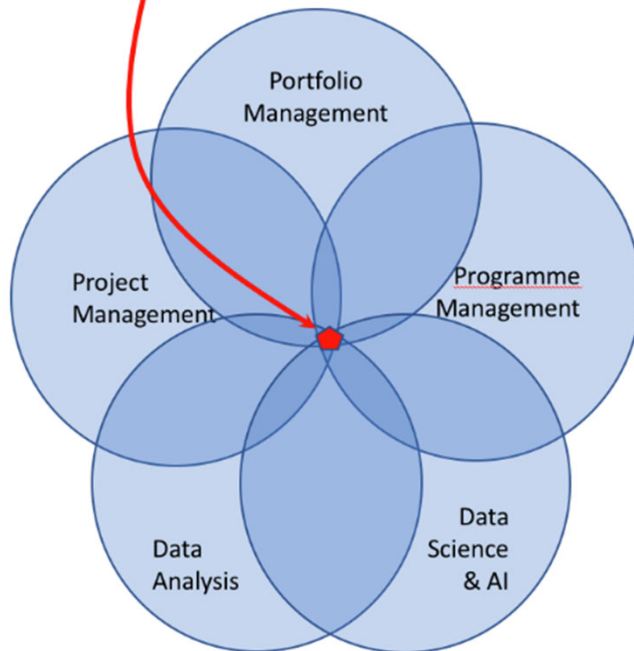
**Keep an eye on the change ‘vector’ in your organisation and profession.**



**Community**

# Developing a Community

*Meetup*



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

## London Project Data and Analytics meetup

📍 London, United Kingdom  
👥 2,250 members · Public group  
👤 Organized by Martin Paver and 2 others



## Bristol Project Data Analytics Meetup

📍 Bristol, United Kingdom  
👥 75 members · Public group  
👤 Organized by Martin Paver and 1 other



Coming soon... Manchester/Liverpool/Warrington

**Project:Hack** £1,000 in Prizes

Help to shape how projects are delivered in the future  
Be part of something transformational

**Azure Passes for the entire weekend**

23-24 February

Microsoft Reactor

Project Data Analytics  
PMU  
UNITED KINGDOM CHAPTER

Sir Robert Moulton  
A14  
Integrated Delivery Team  
highways england  
Microsoft



Microsoft Reactor

1 weekend x 3 times a year

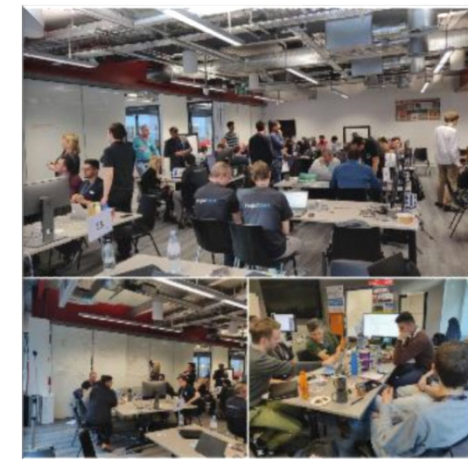
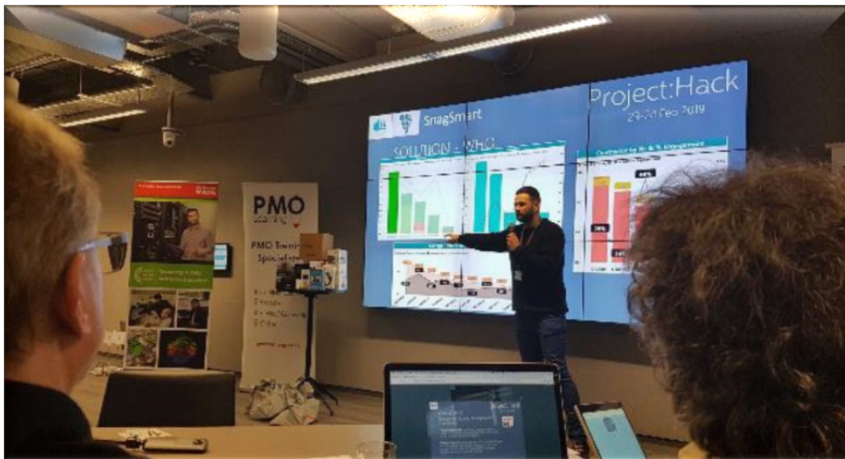
**14** Challenges

**5** masterclasses

**>100** people

Free food and drink. Free evening bar

**£1000** of prizes



Please find me on LinkedIn:



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