

Data Driven Decision making in Project Organizations

Case study



Agenda

- 1** Introduction and context
 - Presentation objective and bio of presenter
 - Introduction to some of the projects
- 2** Attributes of Data
 - Review attributes of Data
- 3** Case Study and Key questions – Strategic insights
 - Case study
 - Discuss the key strategic considerations and lessons learned to increase likelihood of project success
 - Touch on AI and data driven insights
- 4** Conclusion and Q and A
 - Recap of Key messages / takeaways
 - Call to action – what we do differently now?
 - Q and A

Introduction

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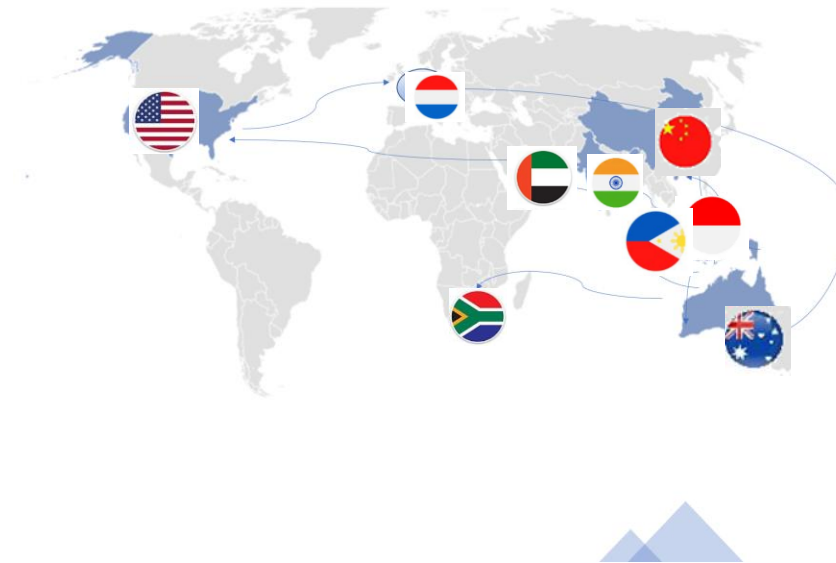
Strategic consideration

Conclusion

Introduction

Abhi Datta

- Civil Engineer, Program Strategy, Program Project Controls (Asia, Europe, North America, Middle East Australia): Rail, Airports, Mining, Oil and Gas
- Performance Improvement
- Leading teams



Reflections on Data

Jim Barksdale, the former CEO of Netscape once said “If we have data, lets look at data. If we all have opinions, lets go with mine”



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How data drives outcomes

DATA-DRIVEN DECISION-MAKING—PATHWAY TO GAINING THE COMPETITIVE ADVANTAGE

In his article in *Harvard Business Review (HBR)*, Walter Frick ([2014](#)) refers to the 2012 report by Andrew McAfee and Erik Brynjolfsson in *HBR* that highlights the benefits of data-driven decision-making, “Companies in the top third of their industry in the use of data-driven decision making were, on average, 5% more productive and 6% more profitable than their competitors.” To reinforce his stance, Frick further quotes comments from McAfee’s other post on HBR, “Data and algorithms have a tendency to outperform human intuition in a wide variety of circumstances.” Also, the data-driven approach minimizes the risks generally associated with the process of making decisions.

Introduction

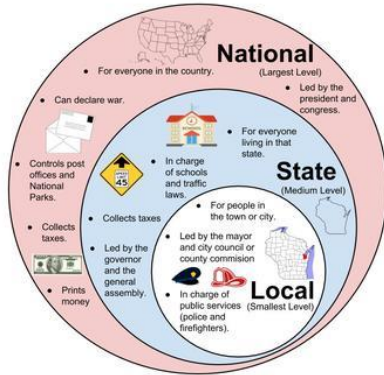
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Key Differences Moving from Manufacturing to Mega Projects

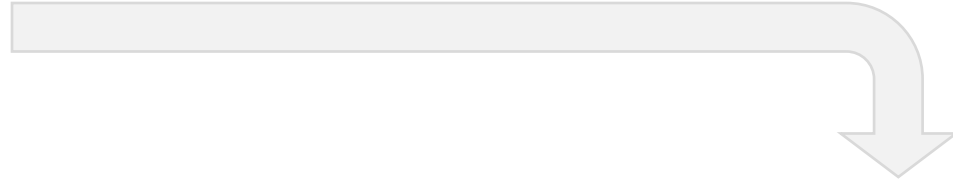


- Typically lack experience due to political cycles
- Different incentives across the various lifecycle phases

Architect



- Bespoke design
- Min constructability

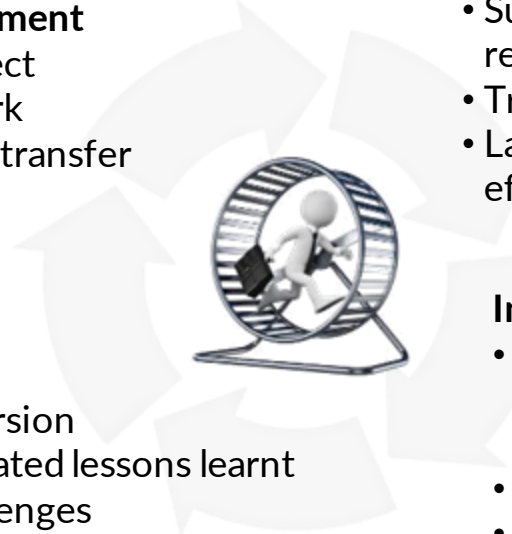


Single project engagement

- Allegiance is to Project
- No continuity of work
- Maximisation of risk transfer

Volatility

- Shareholder risk aversion
- Project focus = repeated lessons learnt
- Sector capacity challenges



General Contractor as broker for services

- Supply chain trust issues from short term relationships
- Trade by trade competitive bidding
- Lack of overhead to manage any innovation efforts in subcontracted works

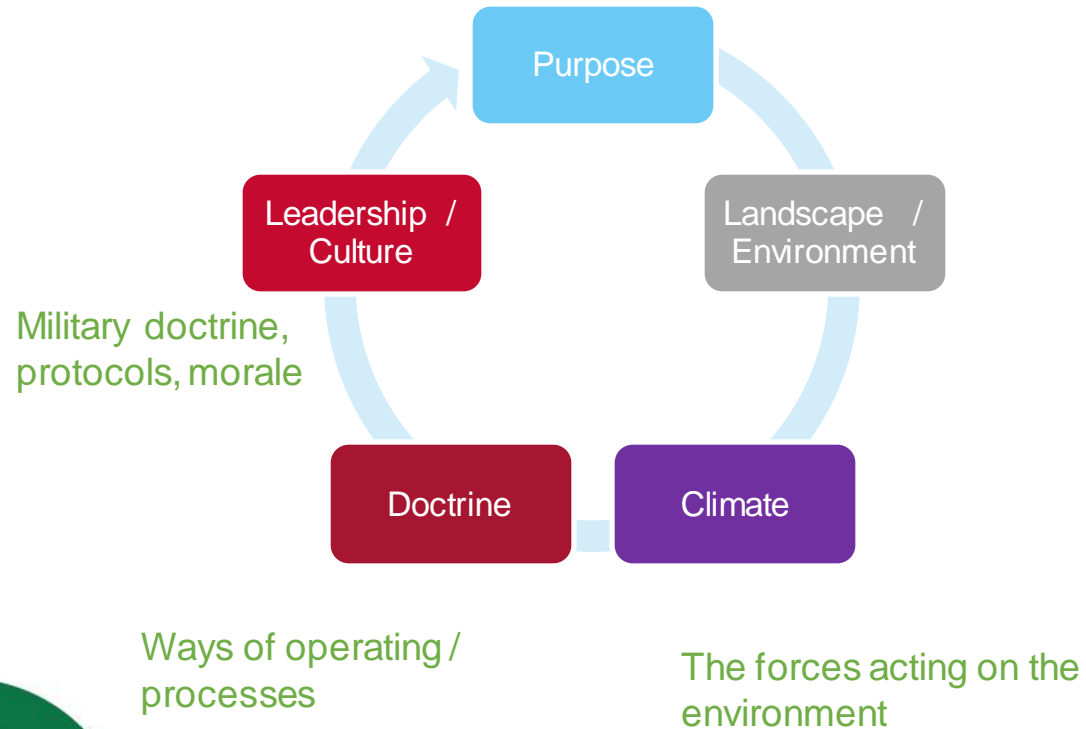
Increasing Complexity & Specialization

- Entrenched fragmentation across trade contractors, specialists, component suppliers
- Complex relationships of responsibility
- Low situational awareness



Data Strategy

Military Strategy



Sun Tzu's five factors



Data Strategy

- Visible attitudes, 'walking-the-talk'
- Collaboration
- Accountability
- Overall data literacy




1. Data pipeline (3Vs)
 - Volume (how much)
 - Velocity (size of firehose)
 - Variability (formats)
2. Data quality
3. Velocity of risks

- Project, asset, & organizational information requirements
- Interface exchange protocols

- Technological advancements
- Data regulations
- Changing business objectives
- Effectiveness of governance





Case study – *Organisation going through an overall digital transformation wants their project controls to be digitally enabled to facilitate effective decision making on projects.*

Context – *Operation focussed organisation with several legacy systems and tools with a strong culture of investment in project controls within individual projects*



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We evaluated the current reporting landscape maturity to assess effort required to develop a working Viz platform and emerge into data driven analytics



Category	People	Process	System	Overall
Commentary				
Cost				
Planning				
Risk				
Commercial/Contracts				
Progress & Performance (Earned value)				
Environment				
Safety				
Construction - on site				
Digital Engineering				

Reporting element requirement planning was done to move ahead with the visualization platform requirements

#	Content	Content Type	Currently Reporting/ Proposed?
1	Executive Summary	Text	Proposed
2	Project Overview	Text	✓
3	Programme	Gantt Chart	✓
4	Milestone Status	Table	✓
5	Project Risk Map	Table	✓
6	Traffic Light Status	Table	Proposed
7	Construction Safety	Text/ Table	✓
8	Quality Assurance	Text	✓
9	Cost	Table	Proposed
10	Design Management	Text	✓

#	Content	Content Type	Currently Reporting/ Proposed?
11	Civil Engineering Status	Text / S-Curve	✓
12	E&M Engineering Status	Text/ S-Curve	✓
13	Stakeholder Engagement	Text	✓
14	Programming	Text	✓
15	Land Administration	Text	✓
16	Commercial (Major Contracts)	Text / S-Curve	✓
17	Architecture	Text	✓
18	Environment	Text	✓
19	Operation & Maintenance Planning	Text	✓

Reporting current state assessment and Metrics

Discipline	Query	Tool	Status	Risk	Contact
Cost (incl. Progress & Performance)	<p>Following information may be grouped or filtered by Portfolio, Program, Project, Area, Control Centre/account, Elements, Cost type etc.</p> <ul style="list-style-type: none"> • Month-end cost summary (Budget, forecast, commitment, actuals) • Forecast variance since last month • Progress and Performance (Earned value -CPI/SPI/CV/SV) • Cost Flow by month (Budget, Actuals, ETC) • CPI/SPI by period • Contingency and Risk drawdown • Changes by status (Approved, Pending); Pending changes or 'Trends' • Changes month over month • Top contract changes by value • Changes funded from Contingency vs Risk (Approved/Pending) • Financial Plan vs Actuals/ETC tracking • Provisional sum summary 	Ecosys/Prism			
Contracts (Post Award)	<p>Following information may be grouped or filtered by Portfolio, Program, Project, Area, Elements, Cost type etc.</p> <ul style="list-style-type: none"> • Total Contracts by value, count and status • Contract register – Original value, changes, current value, remaining contingency, Contract start date and finish date (Original/Current) • Contracts Original amount vs variations % • Contract variations and claims summary • Weekly report (Live contracts, Letter of engagement, Closed LOE, Standing orders)- total/new 	Ecosys/Prism			
Contracts Pipeline (Pre-Award)	<p>Following information may be grouped or filtered by Portfolio, Program, Project, Area, Elements, Cost type etc.</p> <ul style="list-style-type: none"> - Contract award status – with milestone dates (RFT, Bid, Evaluate, Award etc) - Contracts awarded vs Pending 				

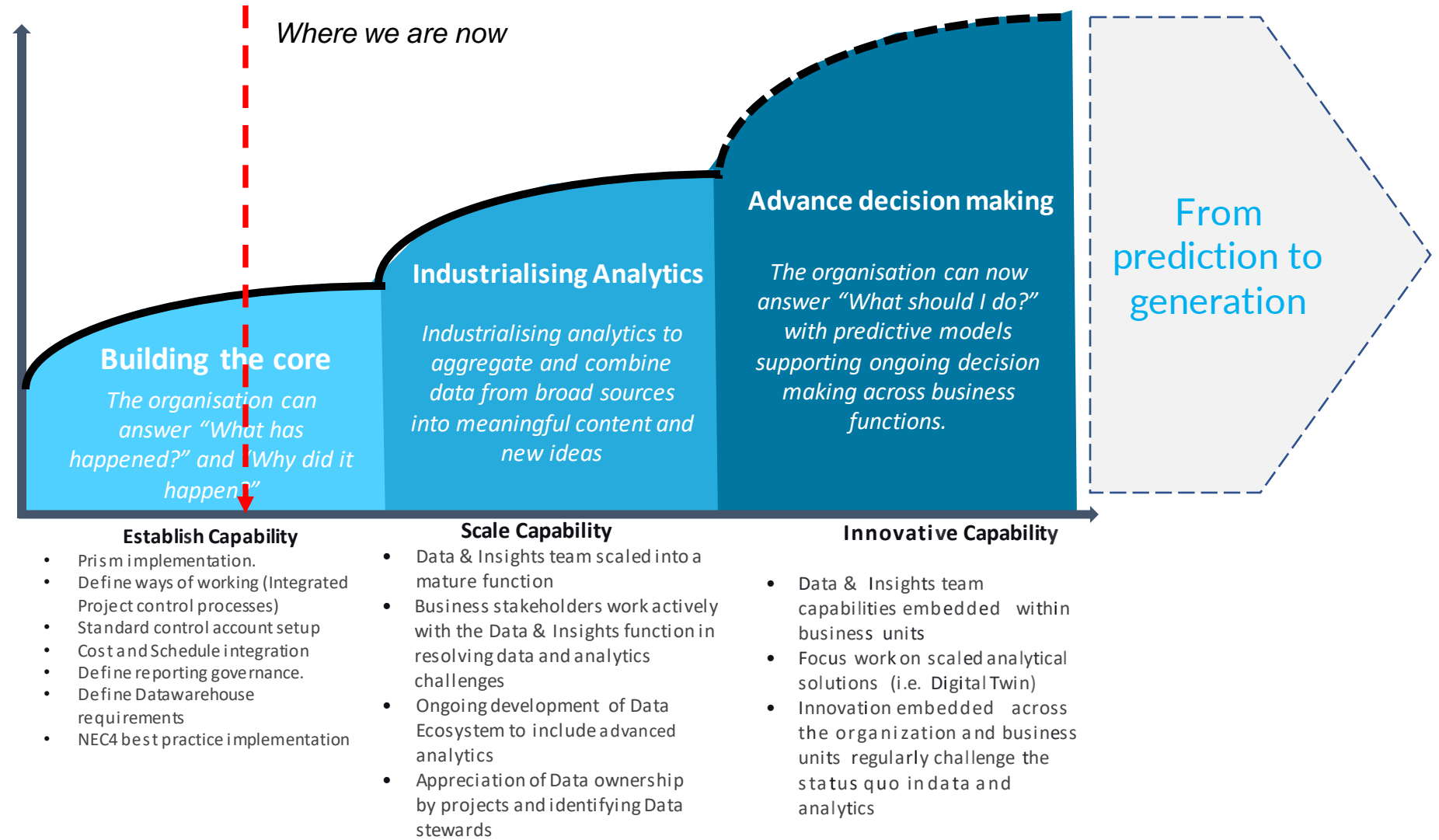
Metrics

Discipline	Query	Tool	Status	Risk	Contact
Planning	<p>Following information may be grouped or filtered by Portfolio, Program, Project, Area etc.</p> <ul style="list-style-type: none"> • Metrics – Milestones count- Planned vs Actuals – Start and Finish • Key milestones – Baseline vs Current vs Actual/Forecast dates • Current month goals – target vs current dates - status • FY goals – target vs current dates – status • Critical and Near critical activities • 3 months look ahead with dates • Package milestones lookahead • Procurement milestones summary - Progress to contract award • Contracts milestones summary • Schedule month-end commentary • Design/Delivery/Env approval/ Land acquisition - milestones summary • Stage gate milestones 	P6			
Risk	<p>Following information may be grouped or filtered by Portfolio, Program, Project, Area, Discipline, Month etc.</p> <ul style="list-style-type: none"> • Open risks summary (Current vs target with trajectory) • Risk ratings heatmap • Controls effectiveness – Pie chart • Risk count by discipline and risk rating • Top control owners 	ARM			
Environment	<p>Following information may be grouped or filtered by Portfolio, Program, Project, Area, etc.</p> <ul style="list-style-type: none"> • Reported incidents • Investigations open/overdue • Corrective actions by workgroup • Event by severity • Total reported events by month by category • Assurance findings 	Safety Sys			

Metrics

Discipline	Query	Tool	Status	Risk	Contact
Land Acquisition	<p>Following information may be grouped or filtered by Portfolio, Program, Project, Area etc.</p> <ul style="list-style-type: none"> • Land acquisition - required vs acquired by month • Land acquisition - Cost summary - Budget vs actuals vs forecast • Land acquisition - Schedule summary - Baseline dates vs Current dates • Valuations • Properties by map • Summary by status (Planned, Offered, Offer accepted vs acquired) • Risks 				
Quality	<ul style="list-style-type: none"> • Audits details • Audits by month, categories - chart • Assurance activities - 3 months look ahead • Training highlights - PIMS, other training, remarks • Site acceptance testing • Factory test • Certification • Commissioning • tests 				
Health & Safety	<ul style="list-style-type: none"> • Injury frequency rates (LTIFR) and others as applicable • Safety inspections vs target (no of observations maynot be helpful - avoid the number of inspections; theres no target - focus on quality of inspection not qty) • Action count by responsible person • Emerging health risk trend (Injury, illness, drug etc.) • Event by severity • Open audit actions • Top non compliance areas • Significant incidents 				

We planned the journey to Target State (of advance decision making), and developed a 3 phased plan



Change management gets ignored too often within Project Controls system implementation

Change enablement activities along with technical outputs suggested

- *Creating buy-in and excitement around the benefits that this change will bring*
- *Embedding change that is underpinned by tools, methodologies and accelerators based on practitioner best practice and global experience*

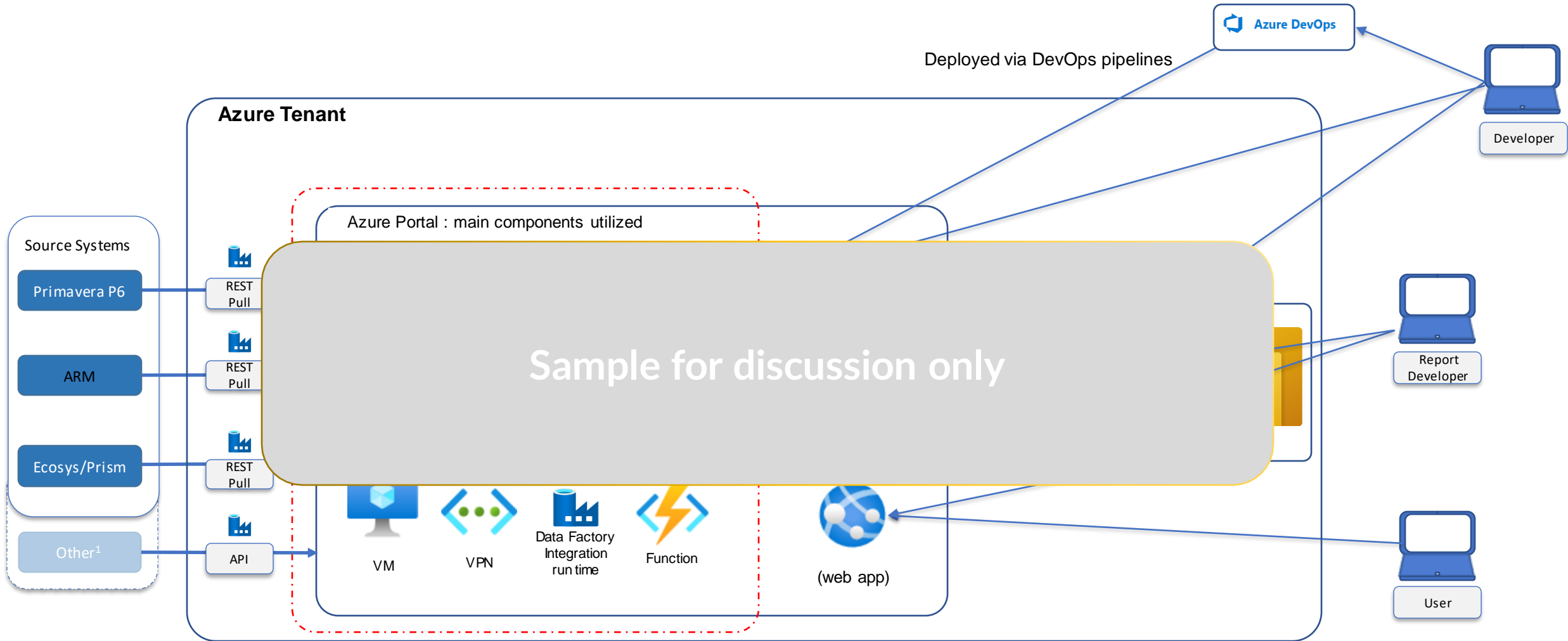
Considered across three lenses (as demonstrated in Figure 1):

- **developing solutions**; that are right for and created with the client. This ensures that the solutions are successful in addressing the weaknesses of, and threats to, the organisation – addressing them head on.
- **create an environment for sustainable change**; getting this right will mobilise the business and create a business pull on the change, making it much more likely that the change will be communicated positively through word of mouth, be willingly adopted, and will 'stick' in the long-term.
- **deliver the transformation programme**; delivering an integrated change programme in the right way with outcomes and benefits in mind. This can be done with the people and change management team. In addition, this focuses on the delivery and realization of benefits – how they are measured, tracked and realized.



Figure 1 – Model adoption suggested for the Change

Component Architecture



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Are KPIs not the answer?

Key Question 1



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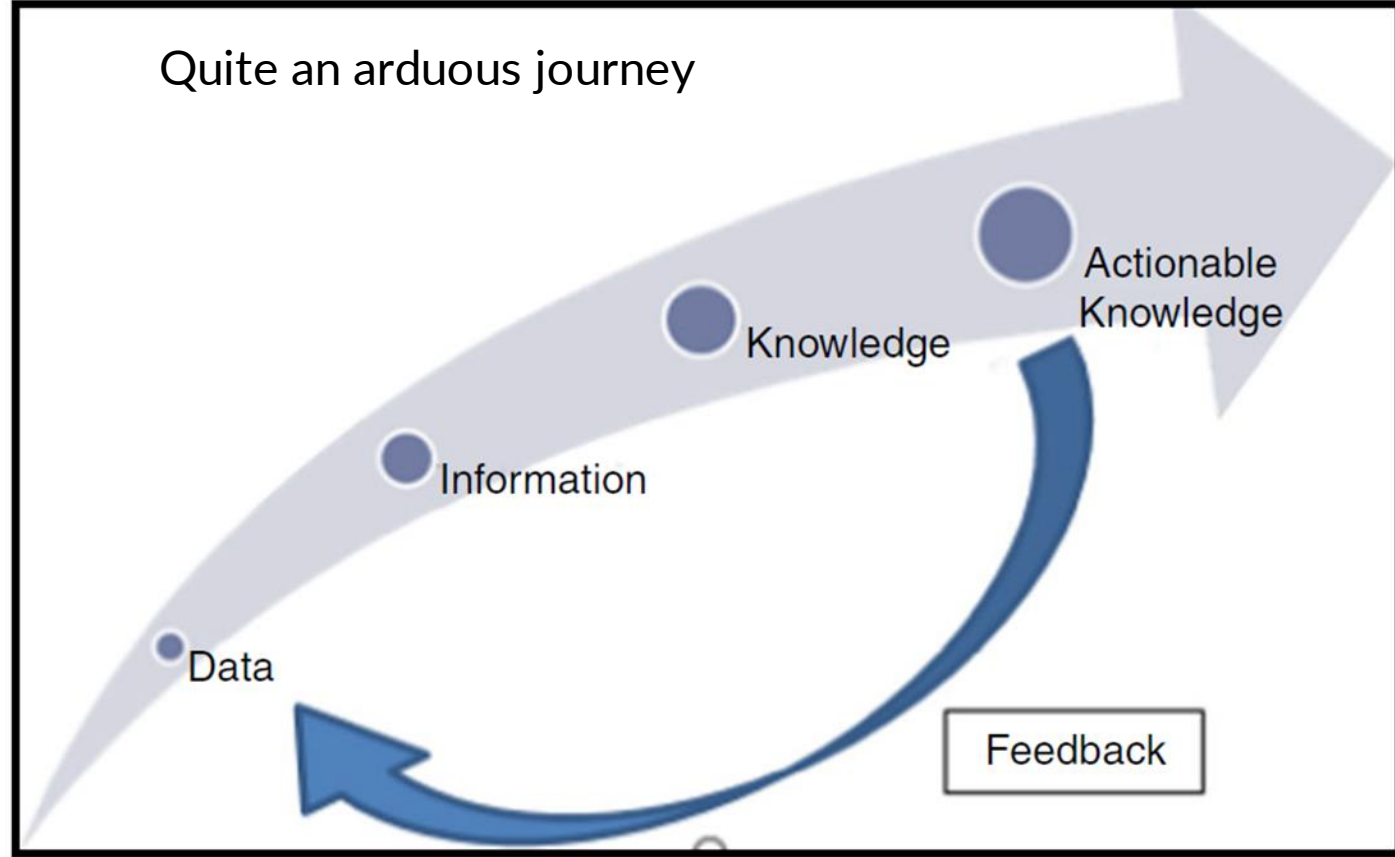
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Can I have this done quickly ?

- Inter departmental inconsistency
- Inter application inconsistency

Key Question 2

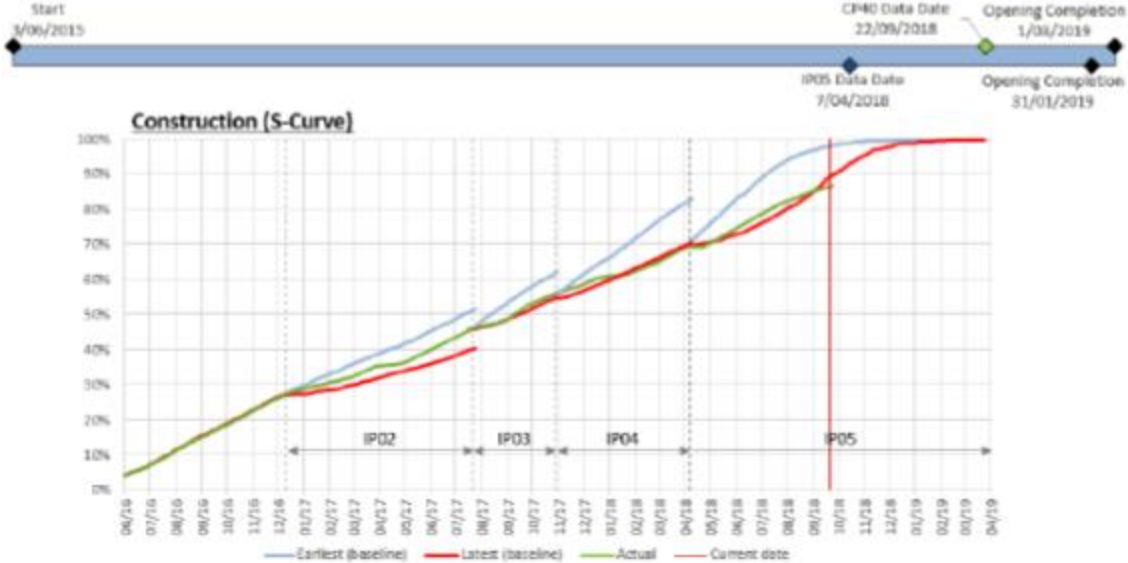


I can embed requirements in my contract and that should be ok right?

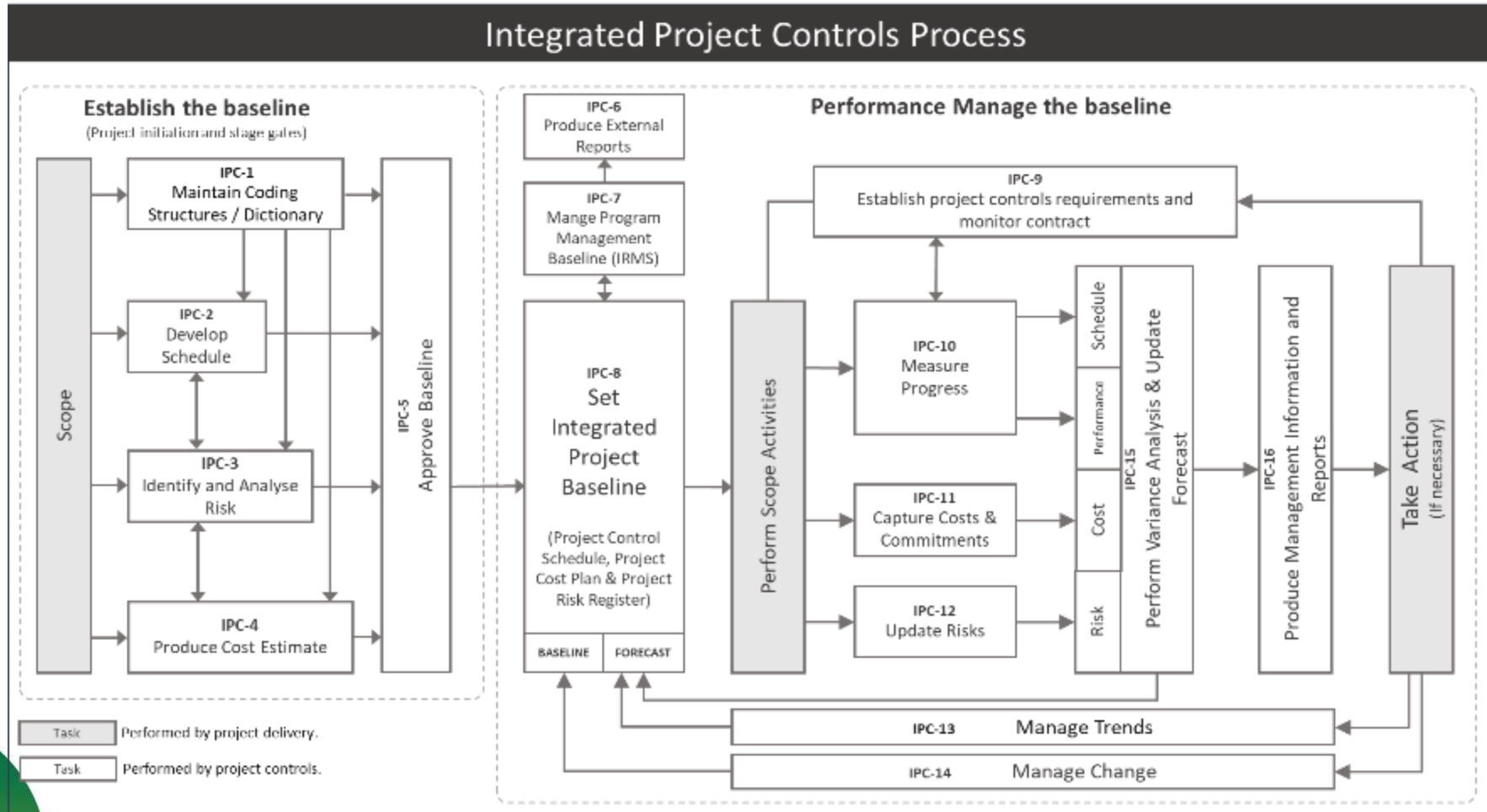
Megaprojects suffer from optimism bias as its project team consistently underestimate costs and overestimates benefits.

They fail to learn from their mistakes despite the increased number of projects and researchers claiming the presence of optimism bias leading to a 'performance paradox.'

Key Question 3



Golden Thread of data - Integrating Project Controls?



Scope definition guides project control effectiveness

Some principles for Project Data strategy

- Data is enabling project decision making
- Data source can be tracked and trusted
- Data has good quality
- Data is managed across different functions
- Data is secure
- Data is available to relevant decision makers

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'You can have brilliant ideas, but if you can't get them across, your ideas won't get you anywhere'
Culture Eats Strategy for Breakfast

4 categories of cultural barriers

- *Values and beliefs*
- *Cultural ethnocentrism*
- *Impact of change on individual*
- *Cultural norms*

How to communicate the Data Strategy?

- **Context** – why a data strategy, what is its alignment to the corporate strategy, why now and what it is seeking to achieve
- **Scope** – be clear on what is to be delivered, by when and how
- What is required to deliver it – **resources, dependencies, sponsorship, accountabilities**
- **When** it will be achieved
- **The value** it is expected to deliver
- **How** is information exchanged within projects?

Don't make your strategy document a shelfware



- An excellent strategy document sitting on the shelf

Introduction

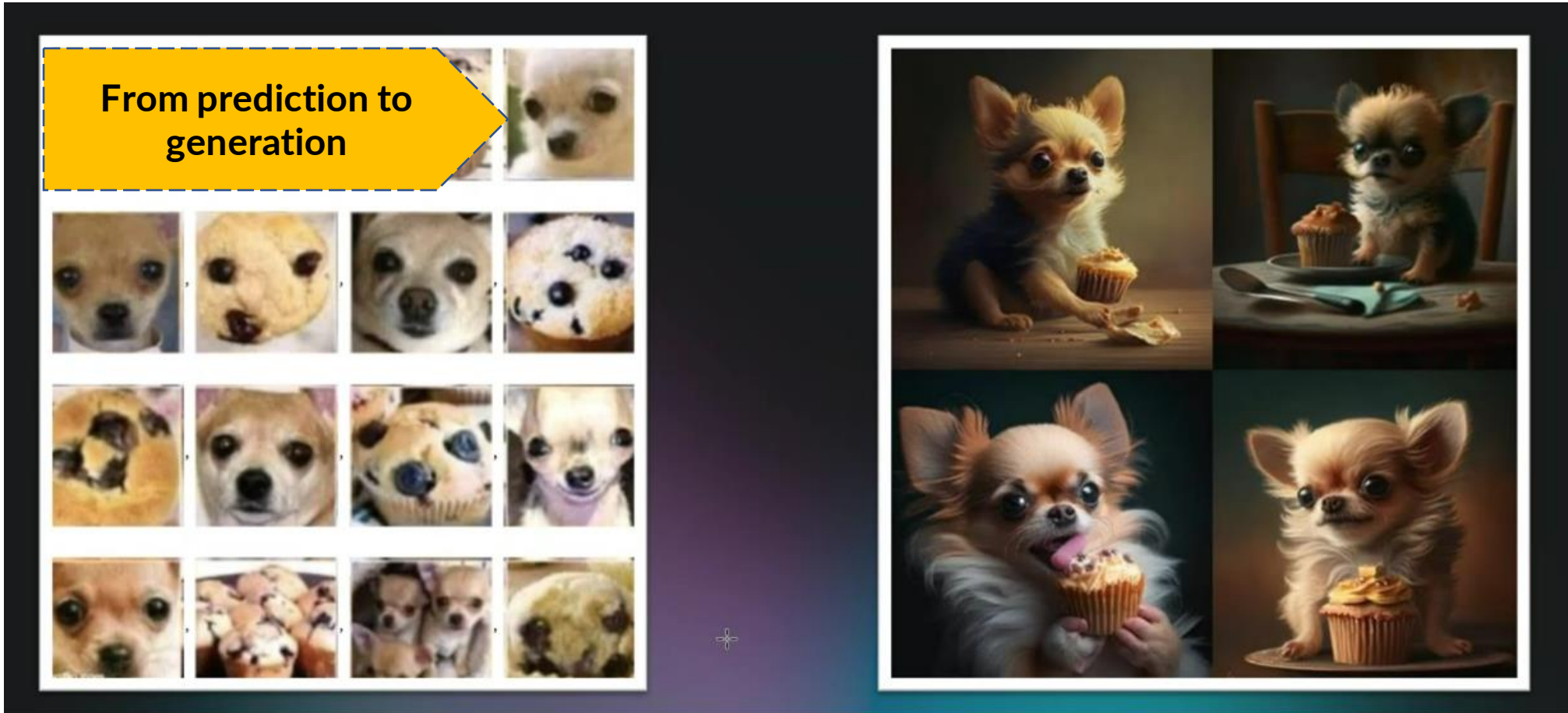
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From prediction to generation



From prediction to generation

- *Gen AI - Data visualisation using natural language based on user queries*
- *This feature is already coming within Power BI or Tableau*
- *Questions posed like which site has my top safety concerns while the program safety leader driving in her car*
- *Visualisation through AI application would support data driven decision making and ultimately risk mitigation*

4. Conclusion and Q&A

- | | | |
|---|--|--|
| 1 | Introduction and context | <ul style="list-style-type: none">• Presentation objective and bio of presenters• Introduction to some of the projects we have worked on |
| 2 | Attributes of Megaprojects, | <ul style="list-style-type: none">• Review attributes of Megaprojects• Why are they different from normal projects |
| 3 | Strategic considerations and lessons learned | <ul style="list-style-type: none">• Discuss some of the key strategic considerations and lessons learned to increase likelihood of project success |
| 4 | Conclusion and Q&A | <ul style="list-style-type: none">• Recap of Key messages / takeaways• Call to action – what we do differently now?• Q and A |

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Actions

Invest in Current state assessment

Define what is being measured and why

Convey the message that Data Strategy and Project Strategy are inherently linked

Focus on data driven decision making

Integrated controls with data strategy

Culture of data and controls; focus on data capability

Knowing Doing Gap awareness

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THANK YOU