



UPSKILLING – UPLEVELING WITH DIGITAL TWIN

Technology & Data Enablers

AGENDA

- 01 Recap - Fundamentals
- 02 Demonstration
- 03 Activity
- 04 Implementation



01

Fundamentals

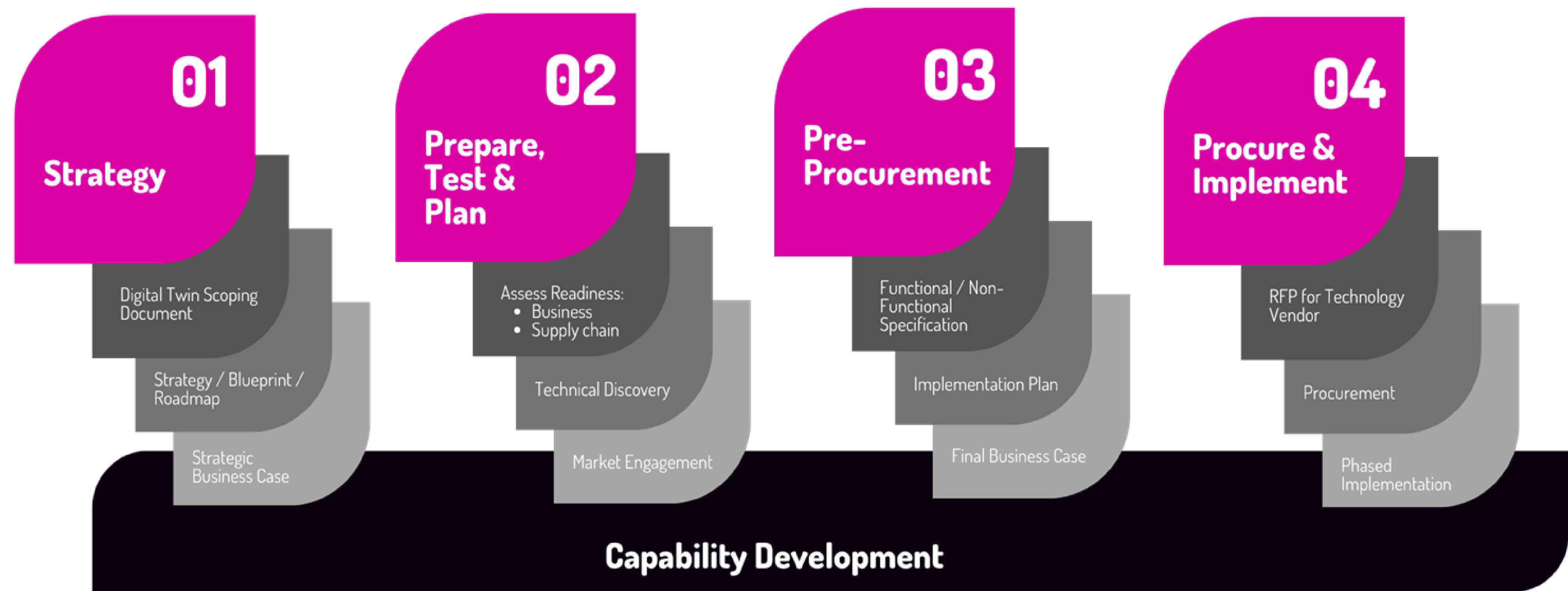
Digital Twin Definition

Digital Twin Use Cases

Digital Twin Strategy



THE PATHWAY FOR IMPLEMENTATION



INFLUENCING FACTORS: WHAT CAN KICK START A DIGITAL TWIN JOURNEY?



KEY CHALLENGES

- Housing
- Climate & Resilience
- Mobility & Transportation

What types of planning

- Permitting
- Zoning
- Cultural Heritage
- Watershed planning – catchments, forest



STANDARDS: DIGITAL TWIN

ISO/IEC AWI 30172 DT_w — Use cases

ISO/IEC AWI 30173 DT_w — Concepts and terminology

JTC 1-SC41 WD 30186 DT_w – Maturity model

JTC 1-SC41/333/NP DT_w – Reference architecture

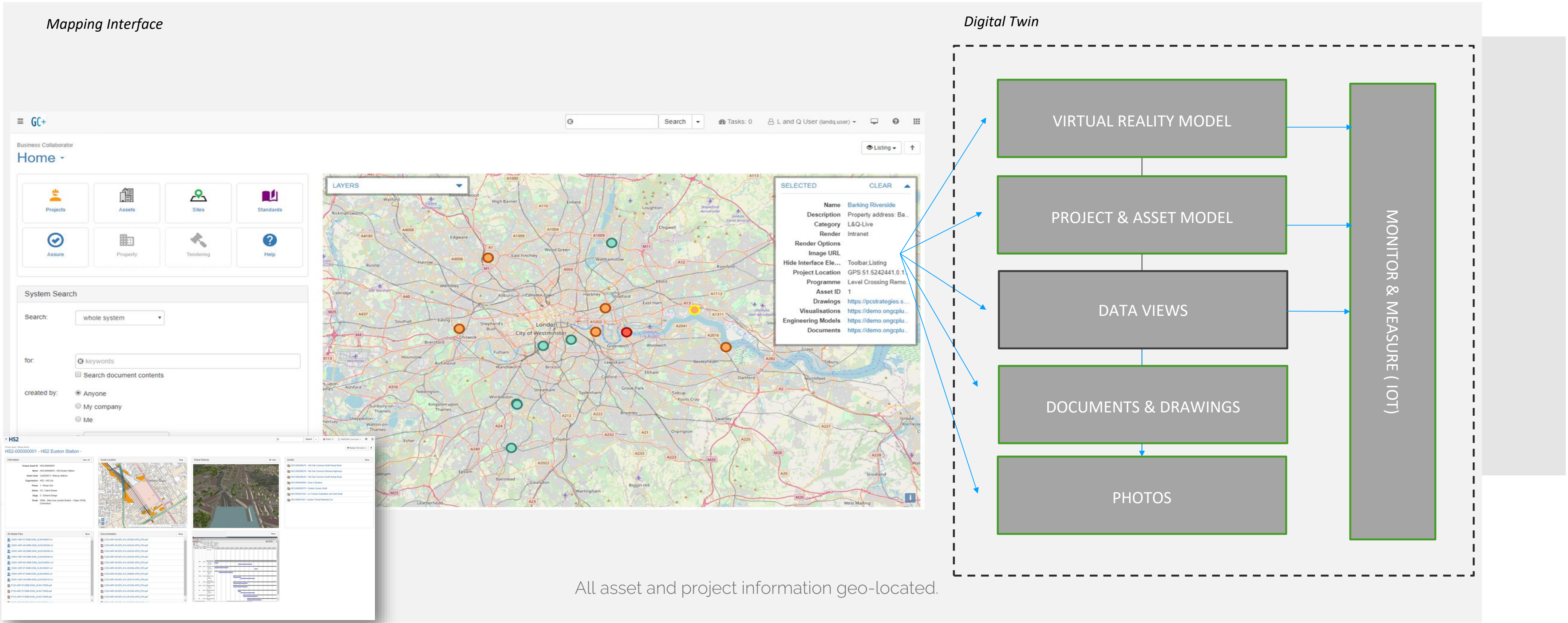
Digital representation of a target entity with data connections that enable convergence between the physical and digital states at an appropriate rate of synchronization.

Digital Twin Capabilities

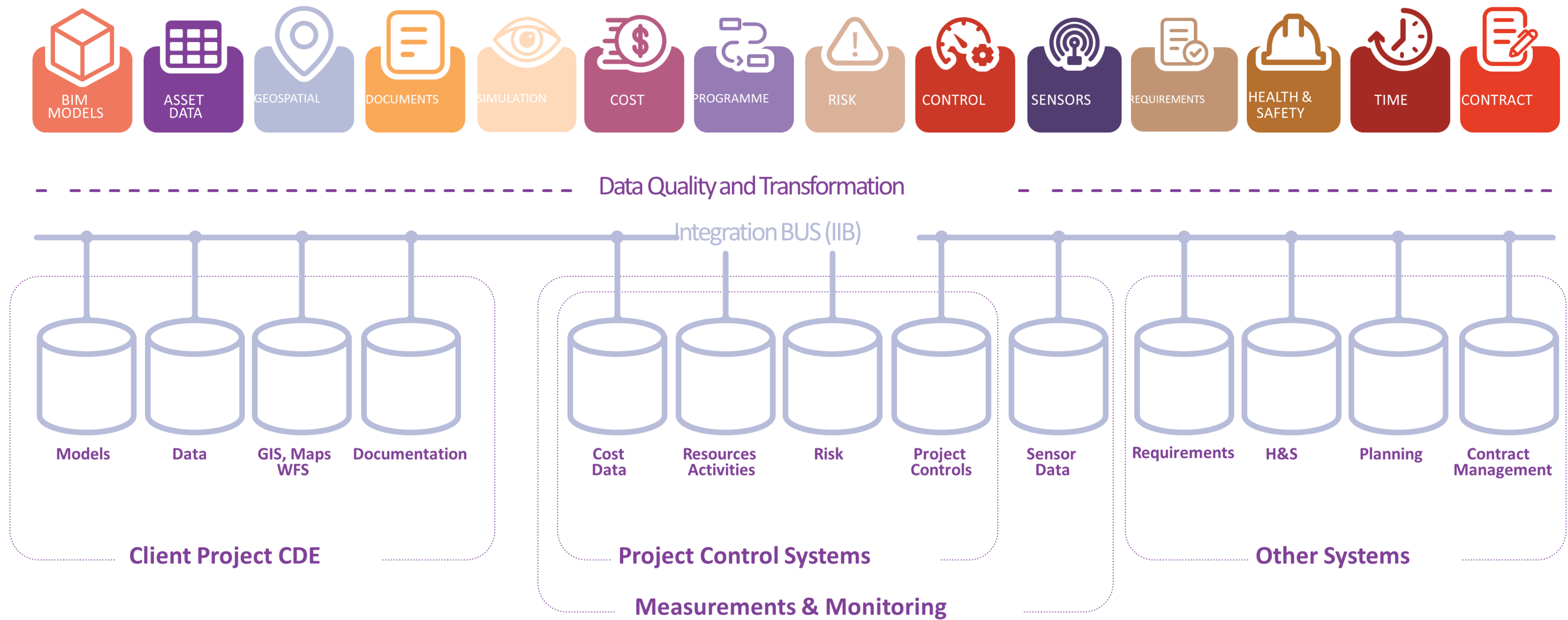
- Connect
- Integrate
- Visualize
- Analyze
- Simulate



FRONT END: A SINGLE PANE OF GLASS



BACK END: MASTER DATA MANAGEMENT SYSTEM



APPLICATIONS

Environmental Policy & Activity Impact



Environment and Climate Analysis



Mapping and provision of underground utilities and networks



Flood Simulation & Risk Management



Accelerated affordable housing



Energy Resilience Planning



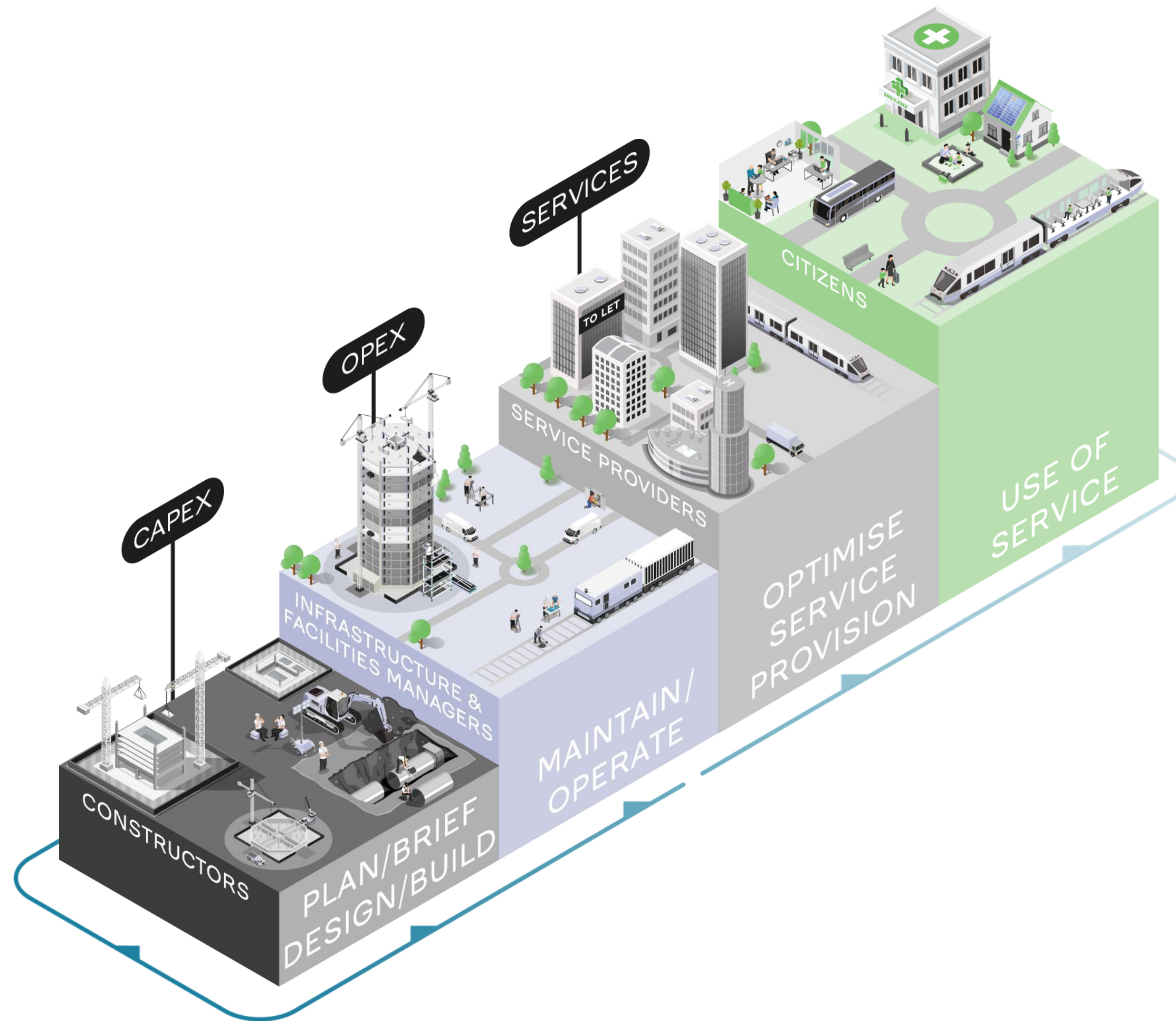
Understanding the impact of zoning and planning decisions



Policy Impact Analysis



BENEFITS FOR PLANNERS



Permitting

- Streamlines permitting processes by integrating real-time data into a centralized platform.
- Expedites decision-making with predictive analytics to identify compliance and resource challenges.
- Enhances efficiency in assessing applications and visualizing development impacts.

Zoning

- Enables virtual testing of zoning proposals with real-time and historical data.
- Predicts outcomes like traffic flow or population density changes for informed urban planning.
- Improves collaboration among stakeholders with unified, data-backed visualizations

Cultural Heritage

- Creates precise digital models to simulate impacts on heritage sites during development.
- Supports conservation strategies by predicting risks like erosion or climate damage.
- Facilitates data-driven decision-making for safeguarding sensitive cultural assets.

Watershed Planning (Catchments and Forests)

- Integrates hydrological and ecological data for sustainable water and forest management strategies.
- Provides real-time monitoring of catchments to predict risks like flooding or deforestation.
- Simulates environmental impacts of urbanization to balance development with ecosystem preservation.

Holistic Benefits

- Unifies diverse data sources for a complete system view across planning areas.
- Enhances stakeholder engagement with clear visualizations and robust predictive analytics.
- Drives sustainable, informed, and proactive planning decisions



HOW IS A USE CASE USEFUL TO DTW CAPABILITY DEVELOPMENT?



Use Case

- Increase certainty and buy-in by making the complex simple
- Maximise outcomes by avoiding expensive pitfalls or shortfalls in resourcing
- Provide clear focus and provide understanding from a user perspective
- Plan and prioritise new capabilities or improvements alongside other use cases



HOW YOU CAN DEVELOP YOUR USE CASES

Objectives

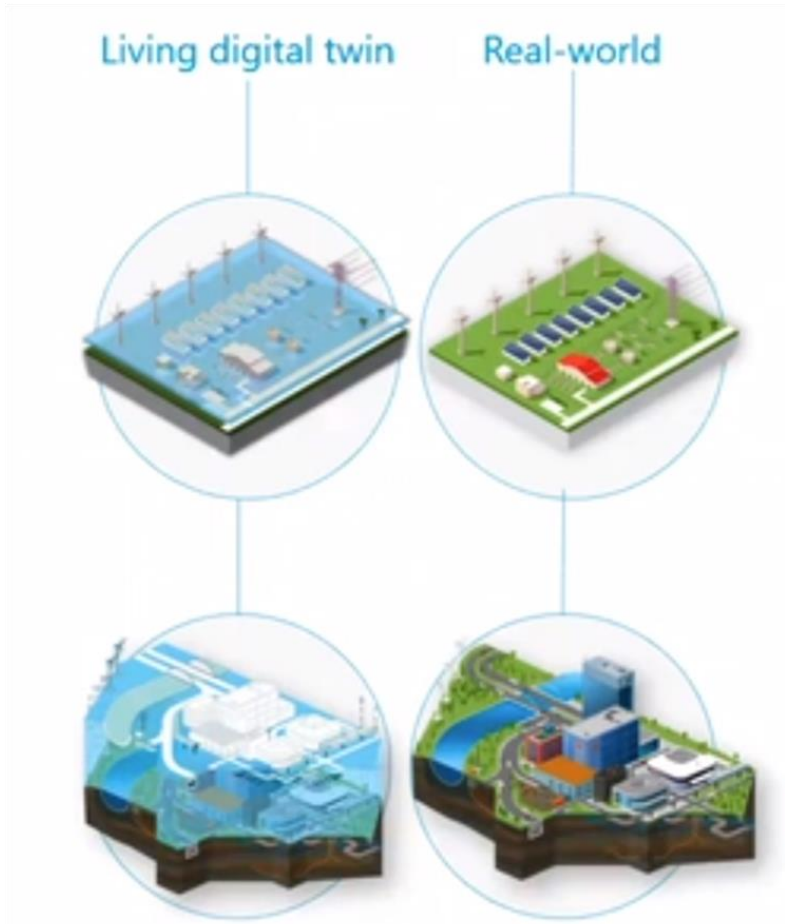


Services

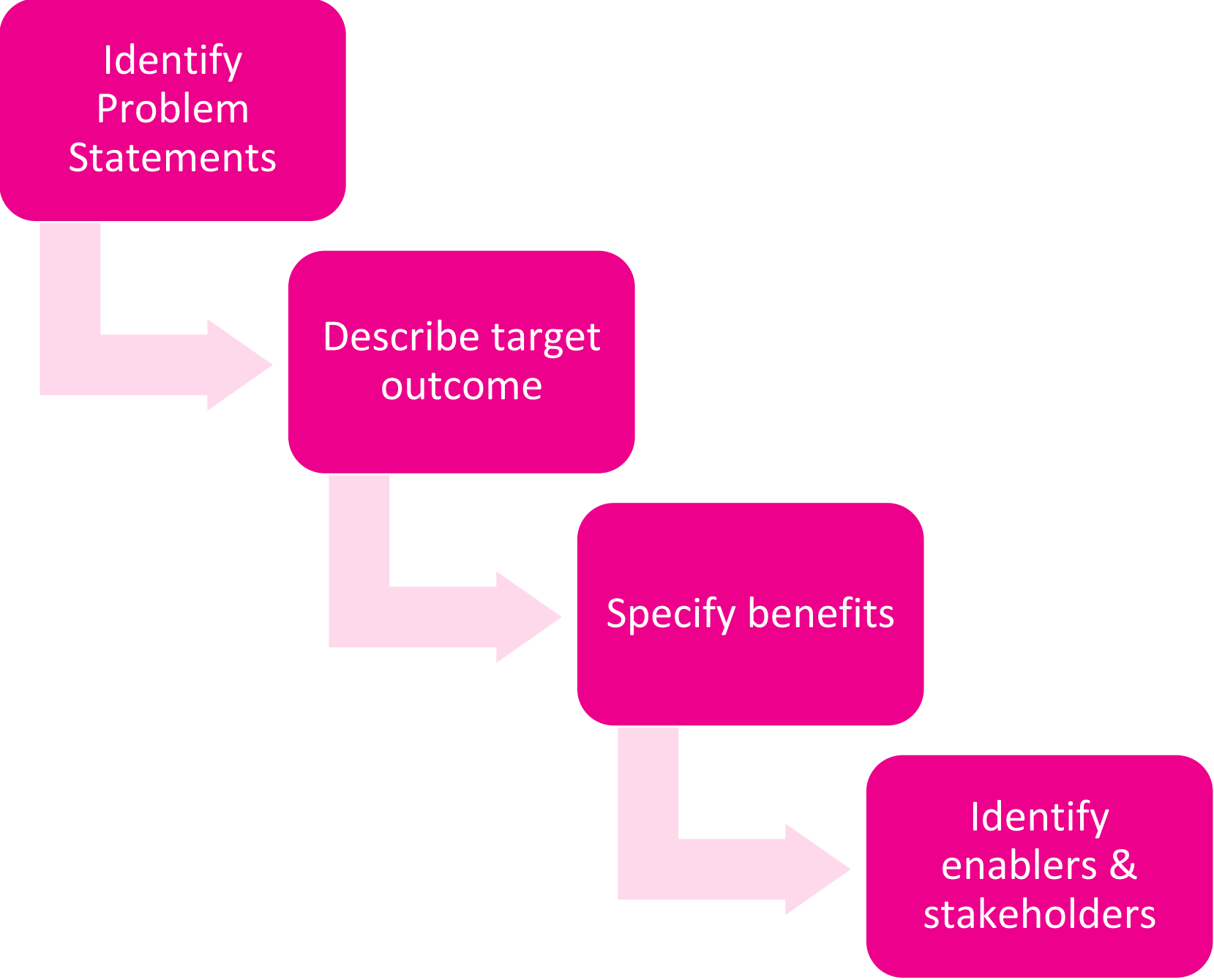


Digital Twin Capabilities

- Connect
- Integrate
- Visualise
- Analyse
- Simulate



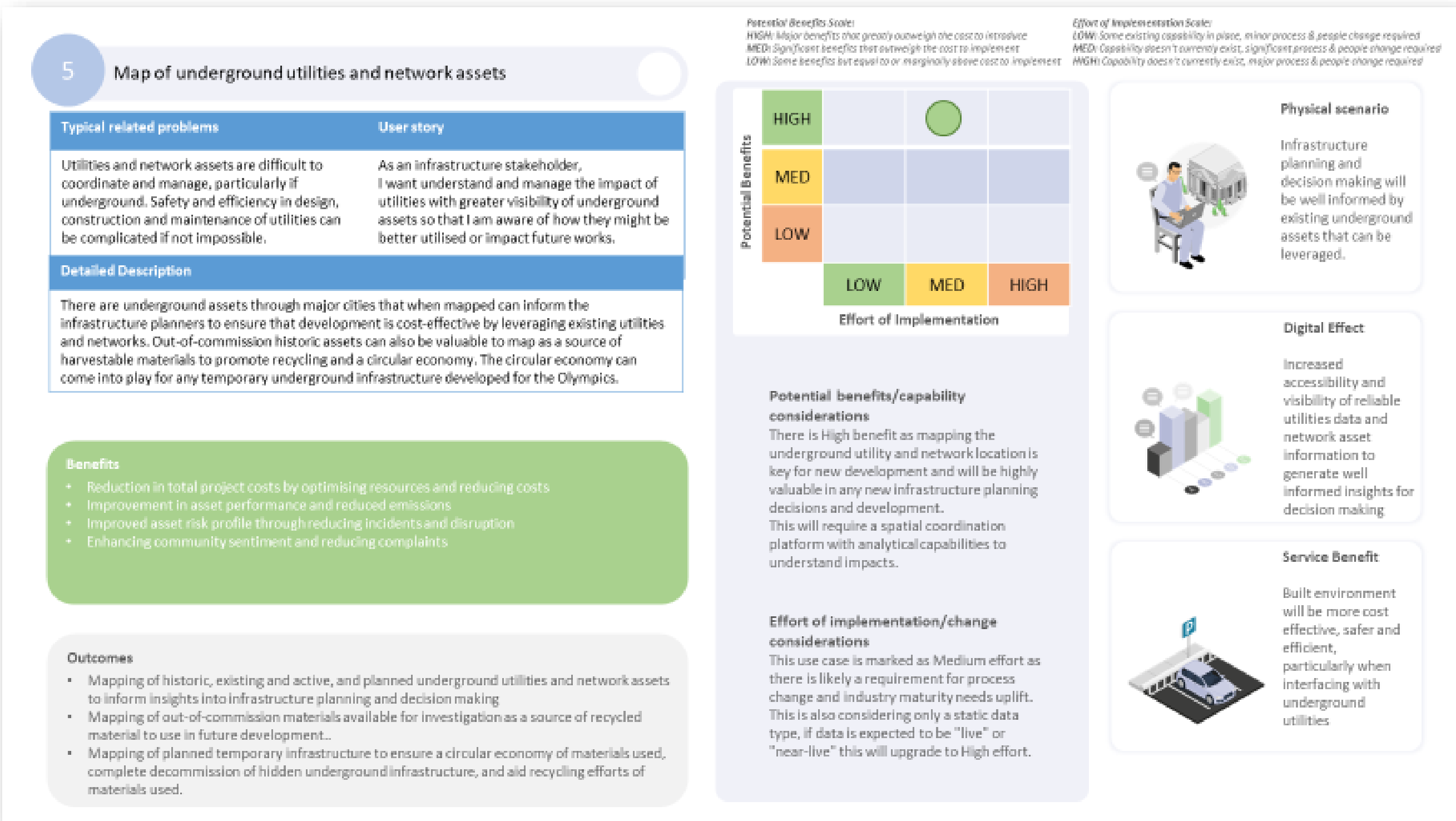
Use Case Identification



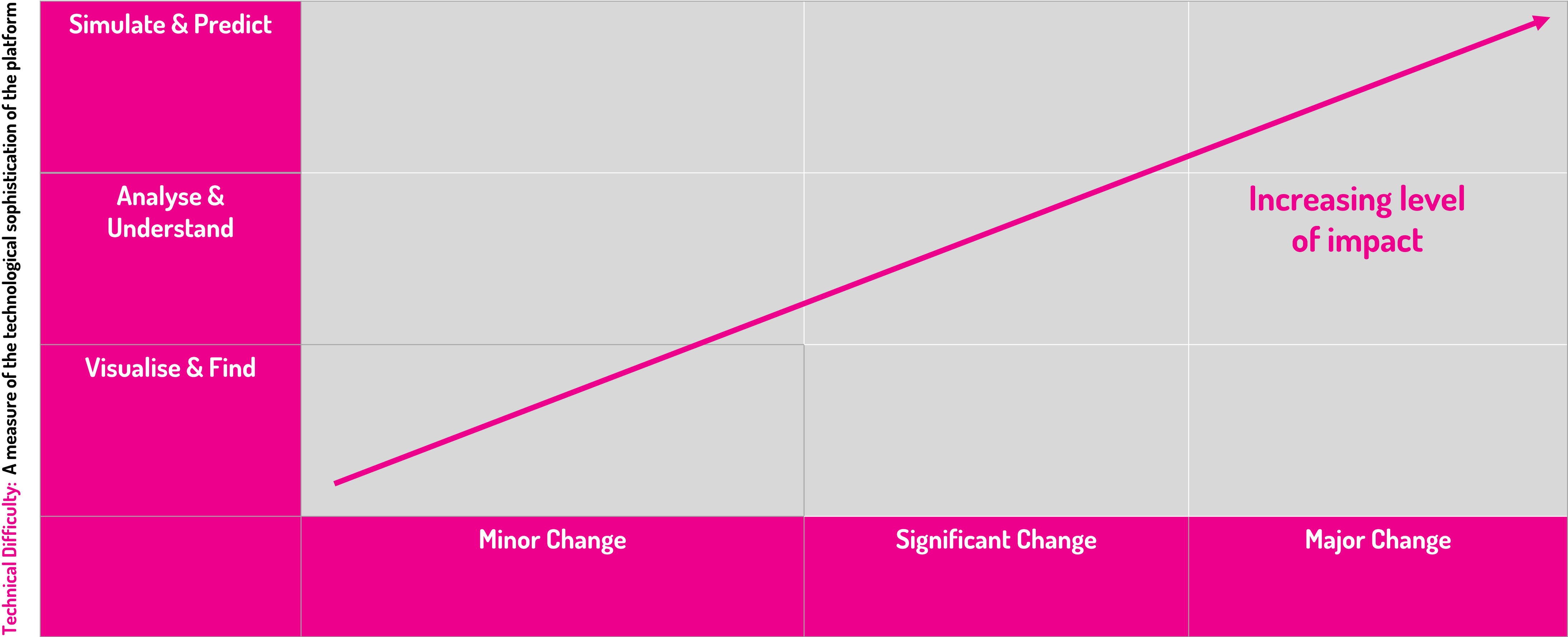
USE CASE FRAMEWORK

Key Elements of a Use Case Summary:

1. Title
2. Description and typical problems
3. User Story
(Actor, Trigger and pre-conditions)
4. Benefits Summary
5. Outcomes Summary
6. Key Considerations:
 - a) Benefits and capability considerations
 - b) Effort and change considerations
7. Process and functions
 - a) Real-world scenario
 - b) Digital enabler
 - c) Service outcome



MAPPING USE CASE TECHNICAL AND OPERATIONAL DIFFICULTY



Operational Difficulty: A measure of process change and capability uplift required, both internally and externally.



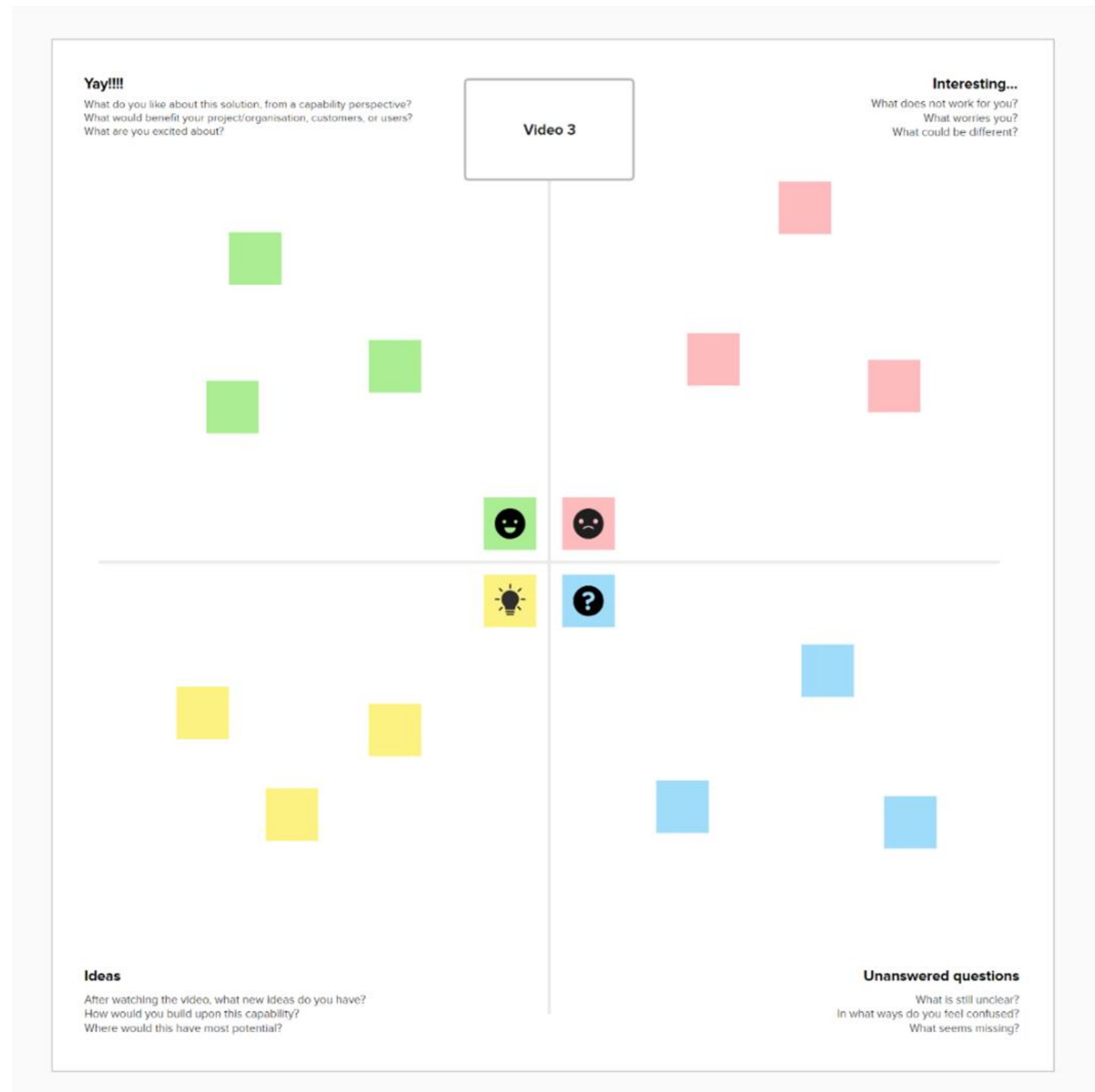
02

Demo

Platform video demonstration



ACTIVITY PREPARATION



- Listen to the demonstration and take notes – capability alignment, broader functionality, data needs
- What do you see as benefits?
- Note your concerns
- Are there questions that come to mind?
- What new ideas come to mind?





Use CasesPricingLearnResources

Get startedLoginBook a call

The digital platform for real estate, infrastructure and urban policy

Whether you manage existing assets, design and develop new assets or create policy, Giraffe puts serious digital capability in the hands of every member of your team.

Book a call

Get started free

1.2x

10 min ⚡ 8 min 37 sec



Areas

	GFA	BY: Usage
GSA	137,469m²	115,792m²
Retail copy (from website2)		GFA: 27,381m²
Residential copy (from website2)		GFA: 63,447m²
Community copy (from website2)		GFA: 5,163m²
Retail		GFA: 19,800m²

Site (FSR 0.58:1)

Building

Hardscape

Open Space

Total

5%	10,440m²
0%	0m²
95%	187,925m²
	198,365m²

Urban

Max Height

Facade area

Floor facade

Basement area

	134.3m
	42,234m²
	3.25:1
	0m²

Paved Area

0m²

Landscaping

4,926m²

0 out of a required 1,286 (0%) parking spaces are provided.

Residential

Studio

1 bed

2 bed

3 bed

Total

0%	
20%	10
72%	50
8%	5
	75

Ready to connect your early stage planning pipeline?

0:01

Register now

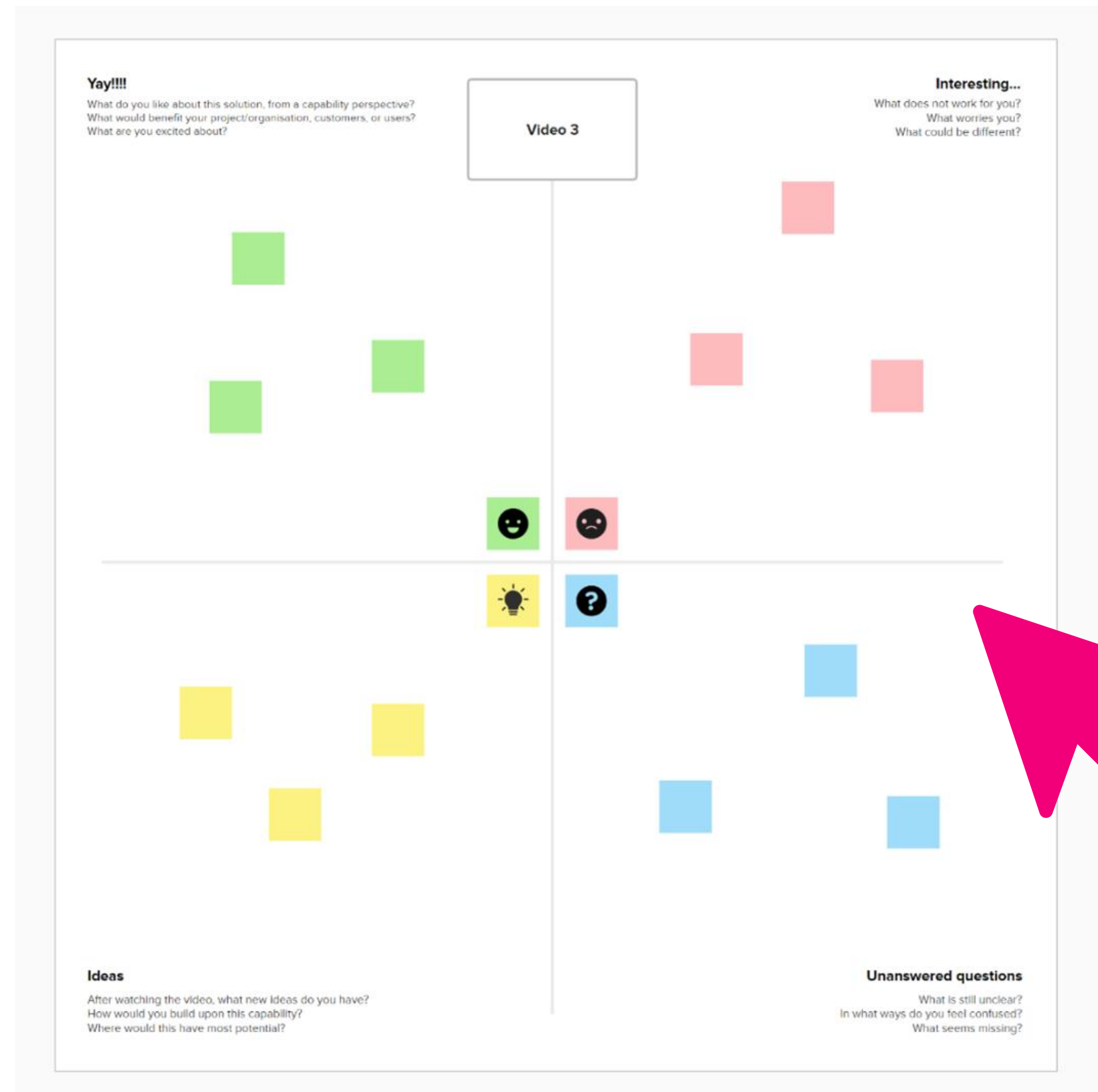


03

Activity



THE ACTIVITY



- Listen to the video's and take notes – capability alignment, broader functionality, data needs
- What do you see as benefits?
- Note your concerns
- Are there questions that come to mind?
- What new ideas come to mind?



INTRODUCTION: SOME NOTES

- You are not expected to be a technology or data expert
- You have options: Outsource / Co-Design / Delivery Partner / In-house
- Independent advice: Client-side advisory/review, advisory panels
- Standards: Supporting your functionality definition
- Strategic questions: Asking questions is a critical part of the process, and seeking responses
- Silver bullets: They really don't exist, and use cases are diverse
- You have peers doing exactly the same thing, right now – find them, engage, steal with permission

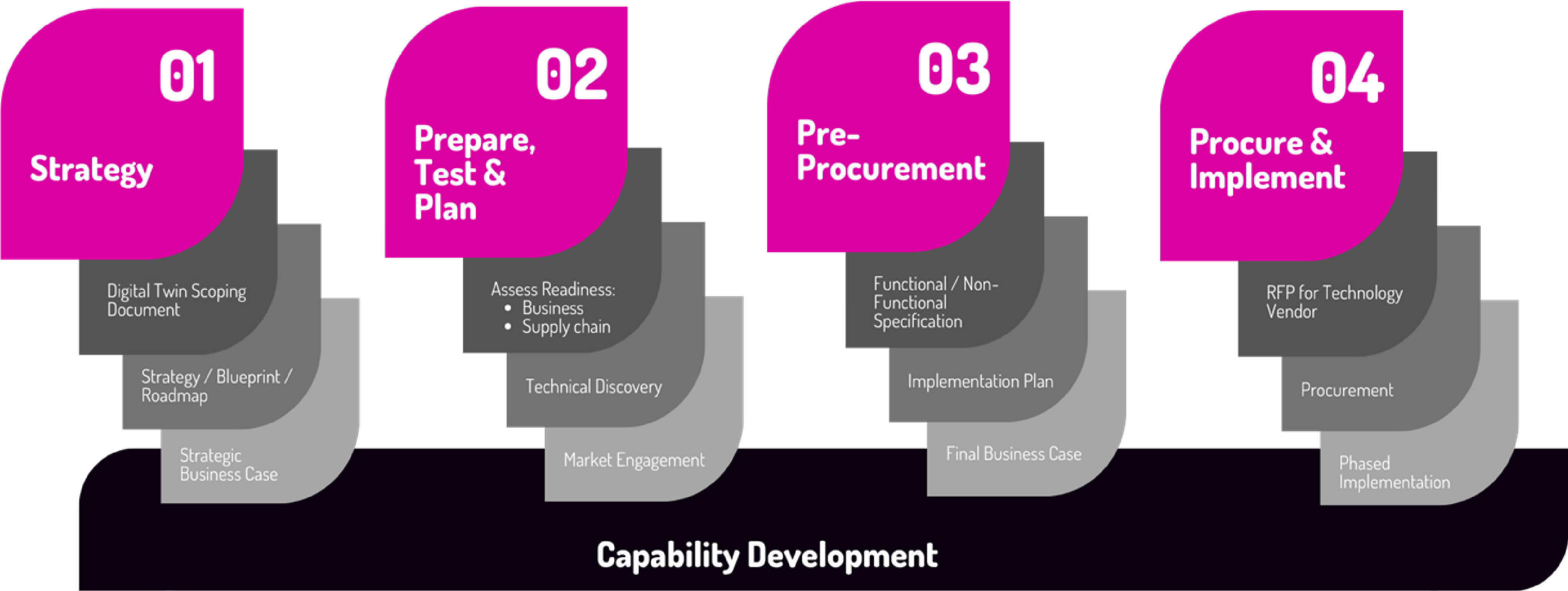


04

Implementation



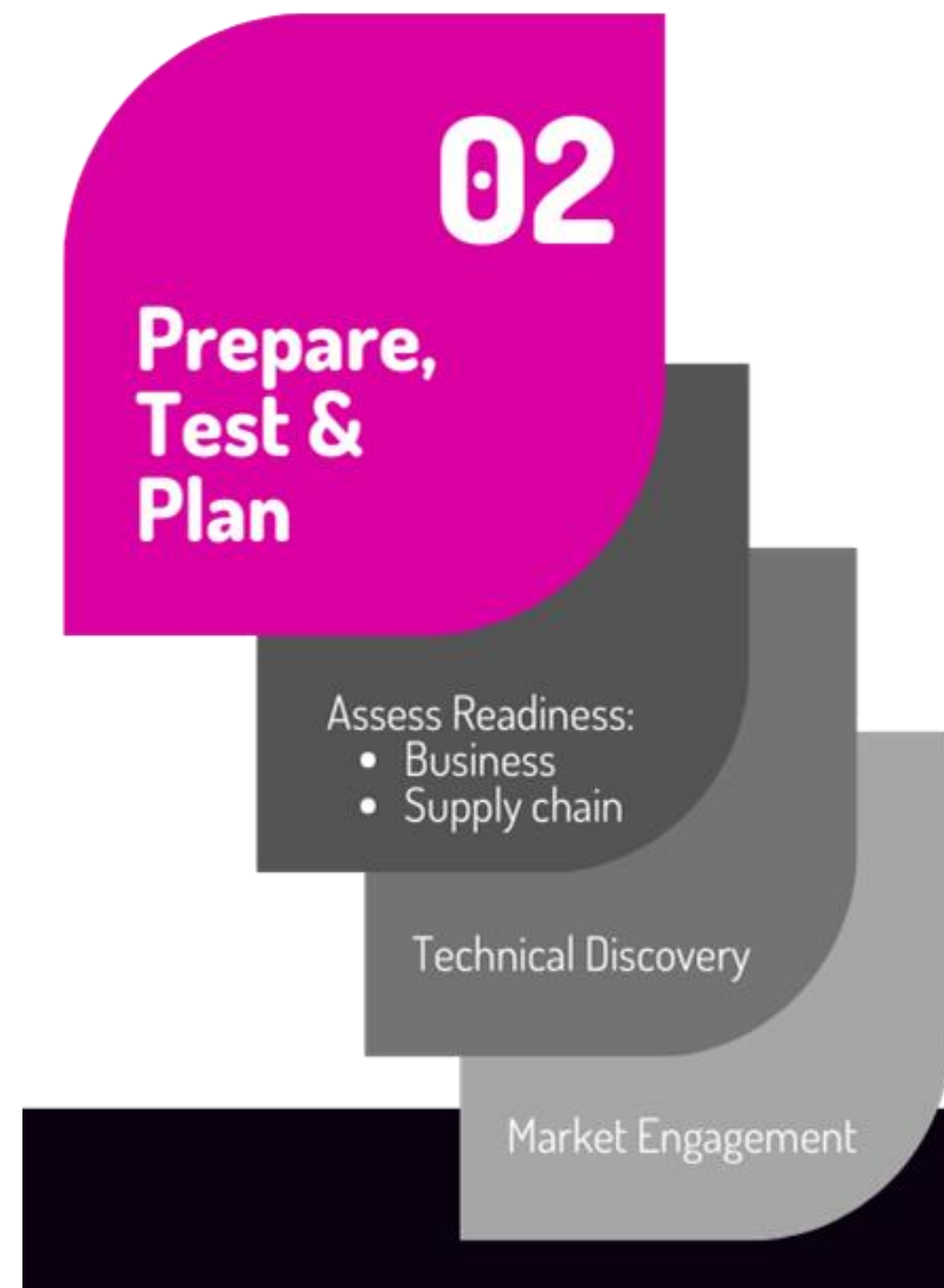
SUMMARY







PREPARE, TEST & PLAN



Assess Readiness: Evaluate organizational maturity, define objectives, and assess data to understand project feasibility.

Technical Discovery: Identify technologies, define architecture, and conduct a proof of concept to validate technical viability.

Market Engagement: Identify vendors, engage experts, and develop a communication plan to ensure market alignment and procurement strategies



ASSESS READINESS

An organisational readiness assessment is an official measurement of your company's preparedness.



Goals & Objectives



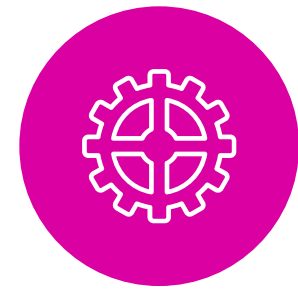
Ability to adapt to change



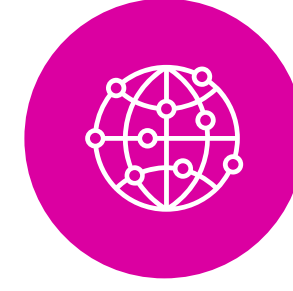
Expectations & concerns



Ways to minimise potential project failure



Leadership support



Project governance and decision-making



TECHNICAL DISCOVERY

PROCESS

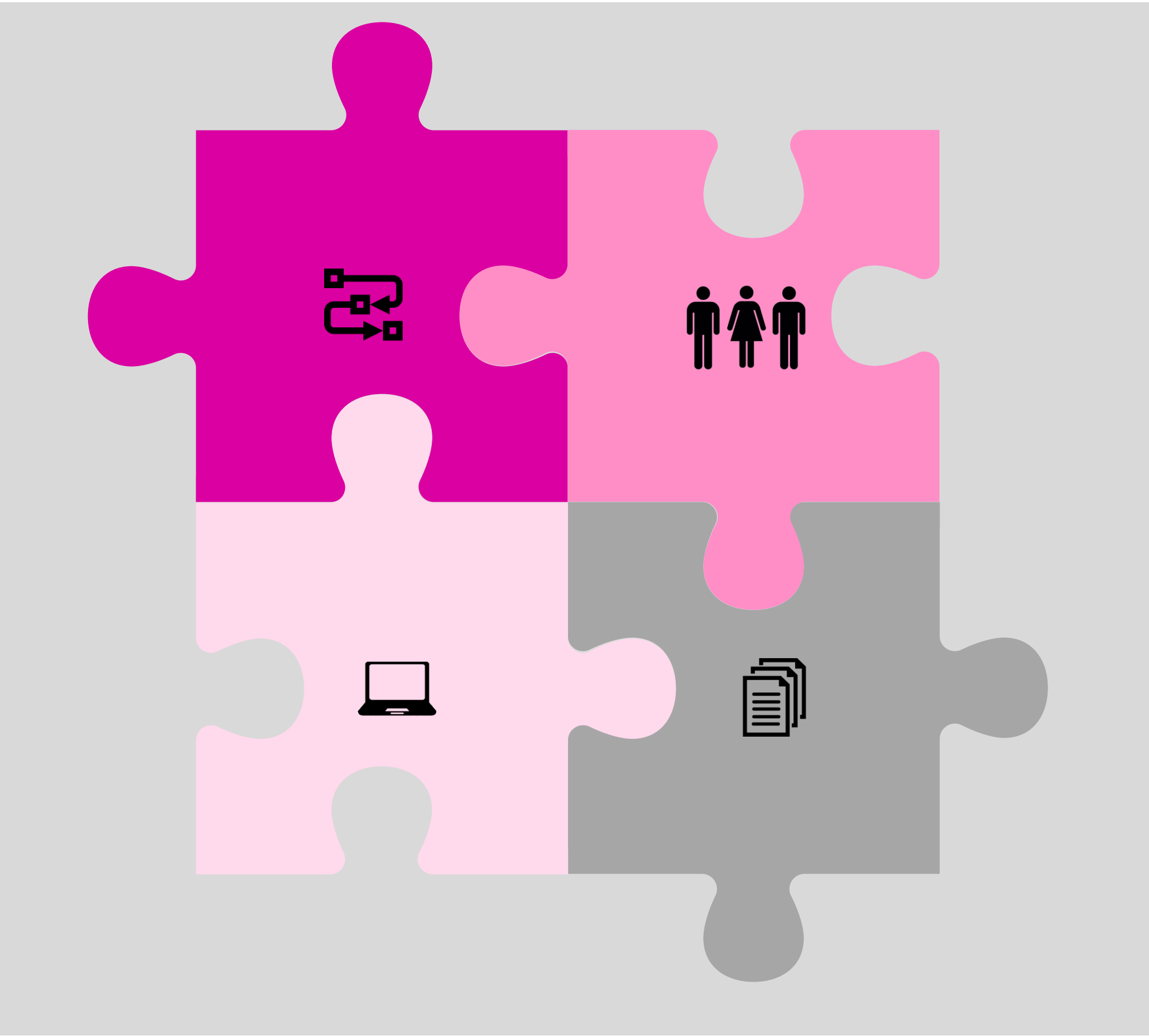
The changes to processes and ways of working required to implement the strategy

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TECHNOLOGY

Technology requirements including systems, tools, and infrastructure

.



ORGANISATION & CULTURE

People changes related to culture and behaviours and specific roles and capabilities that may be required

.

INFORMATION

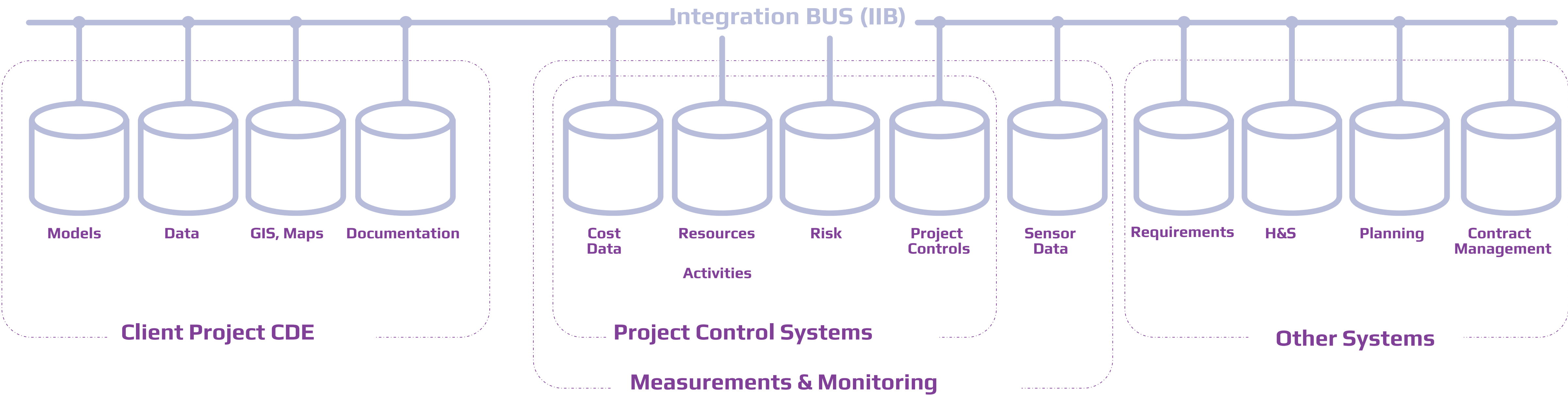
The information and data required to enable the strategy to deliver benefit



TECHNICAL DISCOVERY



----- Data Quality and Transformation -----



TECHNICAL DISCOVERY

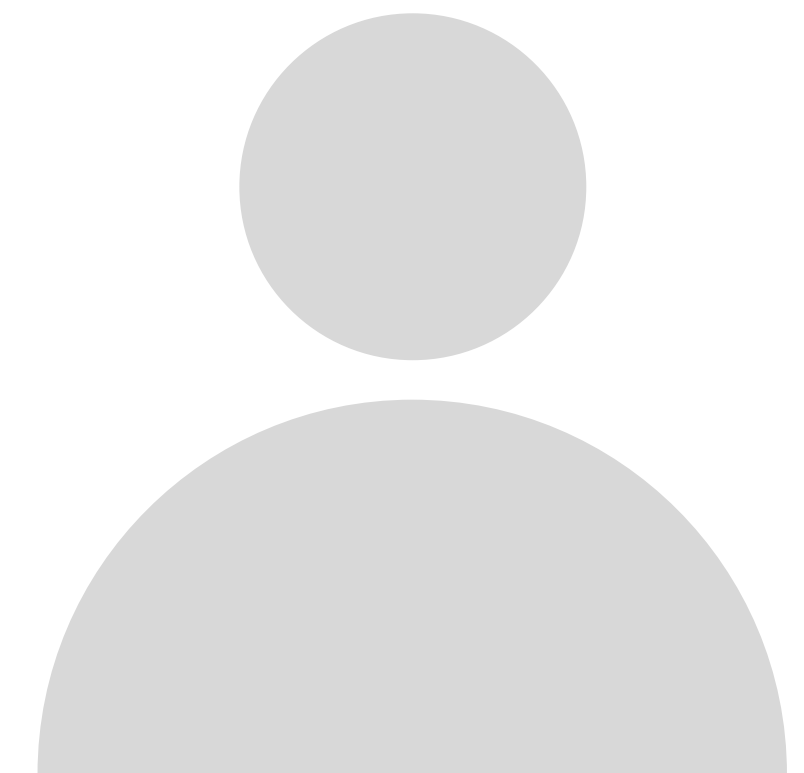
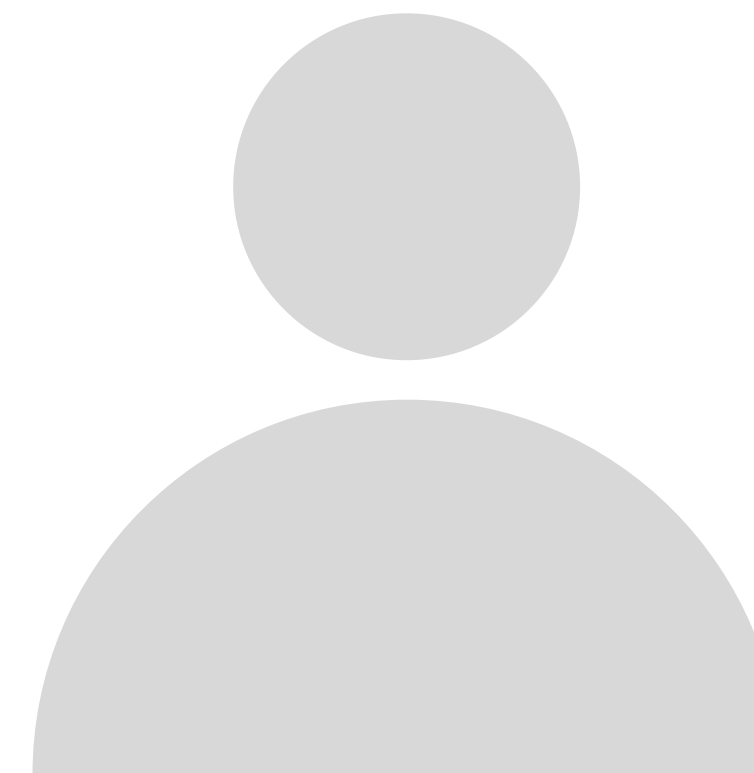
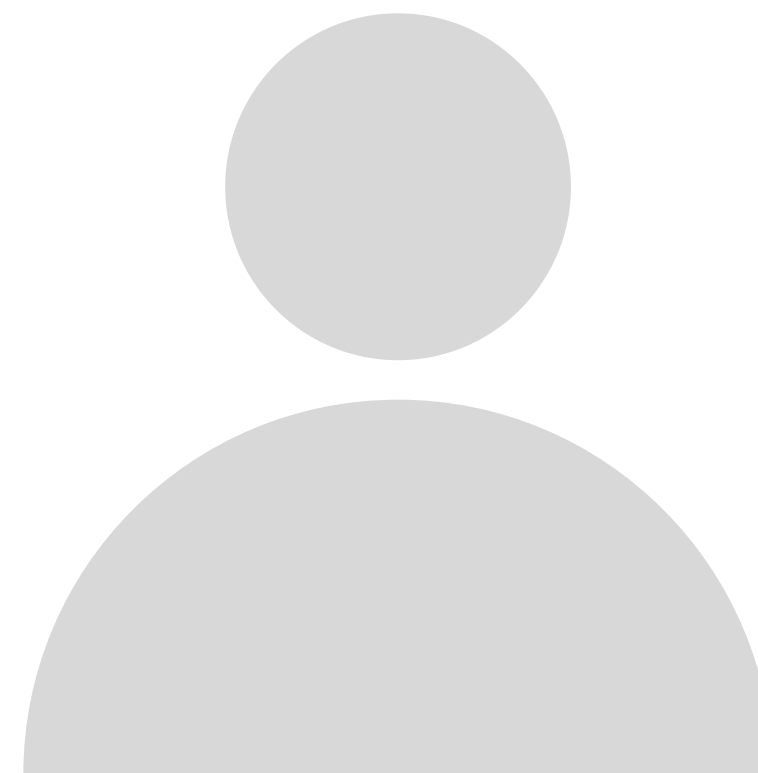
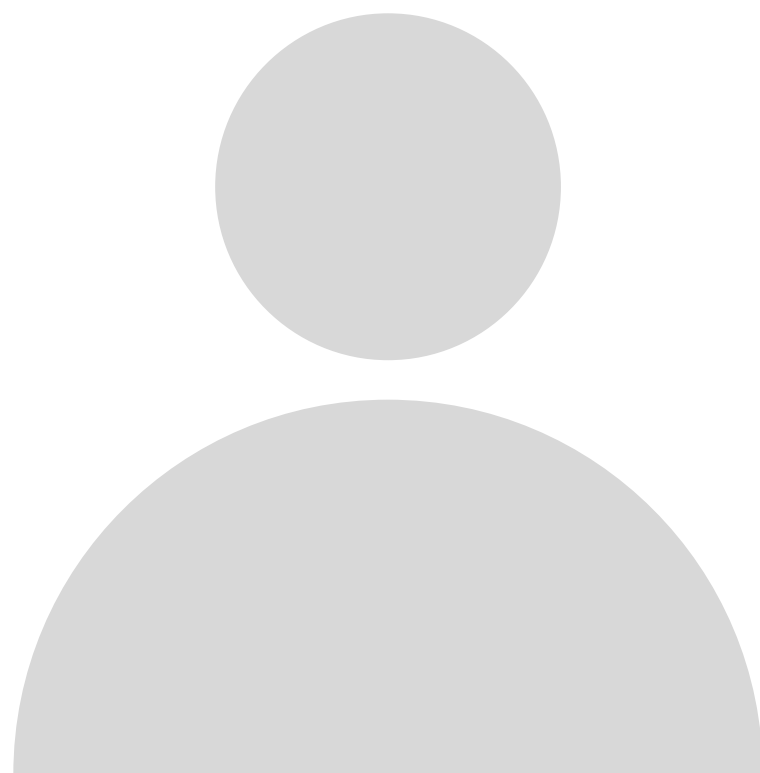
Technical discovery ensures that your team understands your current data and technology maturity.

Data Quality

Current Tech stack

Integration

Constraints





Openly and transparently discuss “the problem” and possible solutions

Write clearer requirements to include in your specification and business case

Explore any opportunities for delivering aspects such as innovation, social value or carbon net zero

Encourage competition and ensure a good number of applications

Gain a better understanding at an early stage of how much a contract could cost and time



EARLY MARKET ENGAGEMENT – TYPICAL QUESTIONS TO ASK VENDORS

Description	Question
Solution capability	Please indicate your capability to provide each of the use cases along with a brief description of how your product or approach will deliver the use case
Cost – Delivery	Please estimate the cost for delivering each use case, including development and build activities (i.e., integration) and services
Cost – Operate	Please estimate the cost to operate your solution for each use case, including hosting costs, licensing costs and expected services
Delivery	Please provide an indicative timeline for delivering the use cases
Delivery	Please describe how you would deliver the use cases; will they be delivered solely through you, or will you incorporate partners?



MENTI POLL

- Where do you think your readiness is at?

Go to: **www.menti.com**

Enter code: **3760 1004**





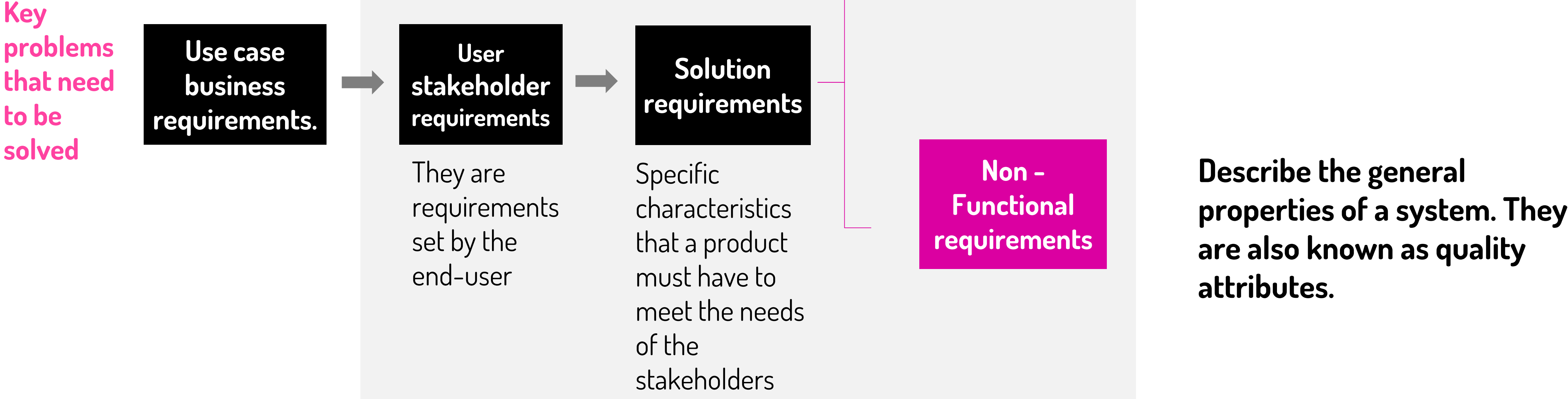
Development & Requirements: Define functional/non-functional requirements and prioritize them for a successful build.

Implementation Planning: Define the implementation scope, develop a phased approach, and create training plans for smooth adoption.

Business Case & ROI: Quantify benefits, calculate ROI, and assess strategic alignment to secure funding and demonstrate project value.

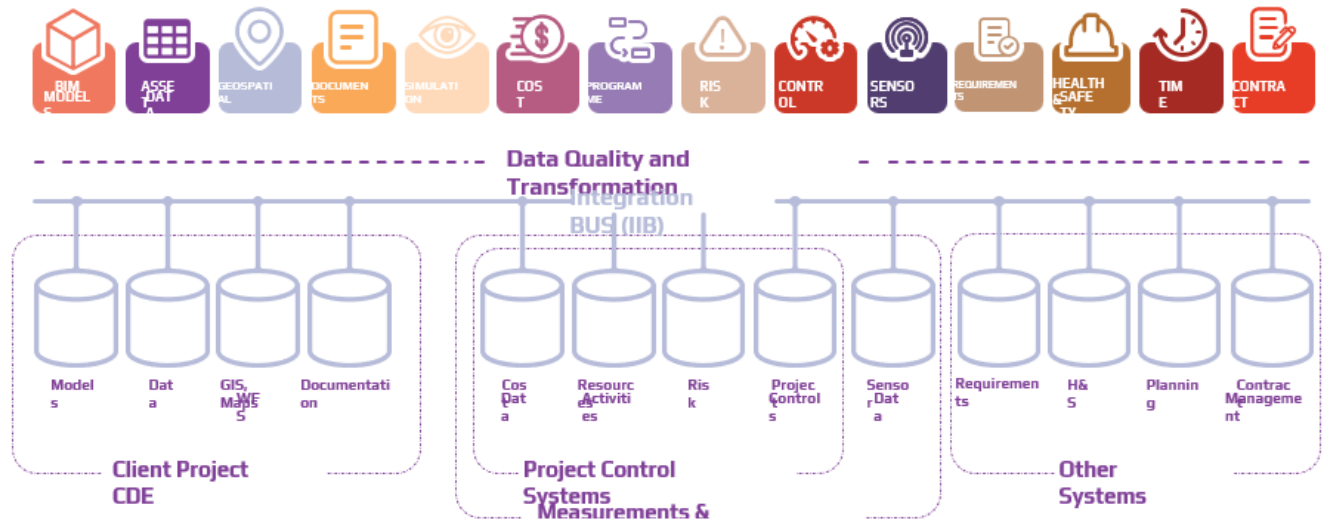
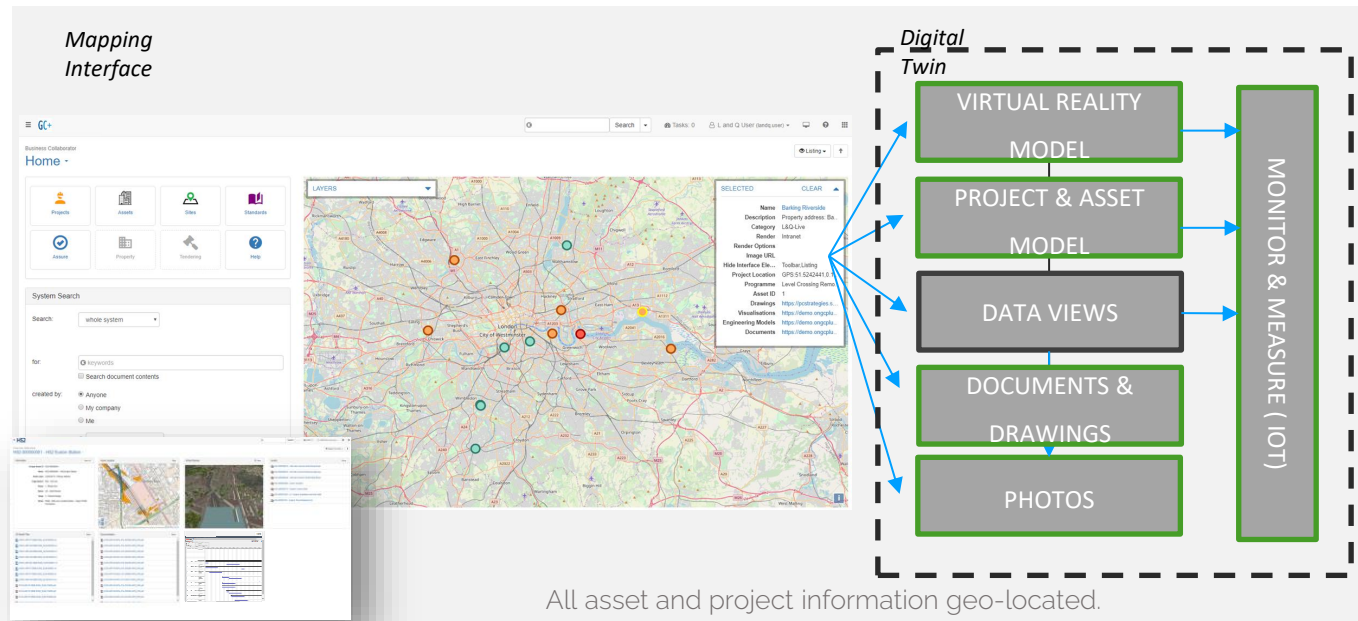


FUNCTIONAL / NON-FUNCTIONAL REQUIREMENTS



FUNCTIONAL / NON-FUNCTIONAL REQUIREMENTS

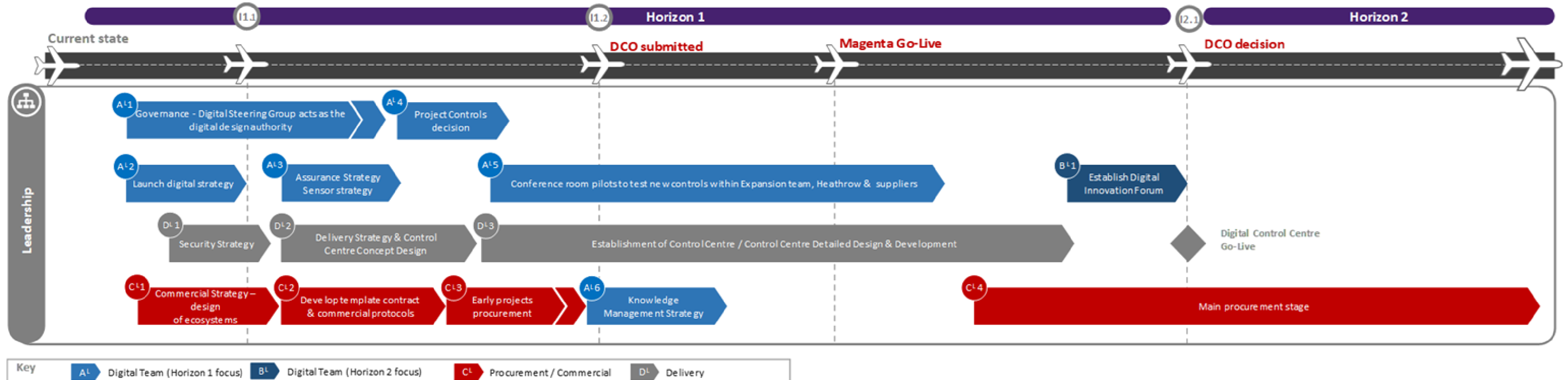
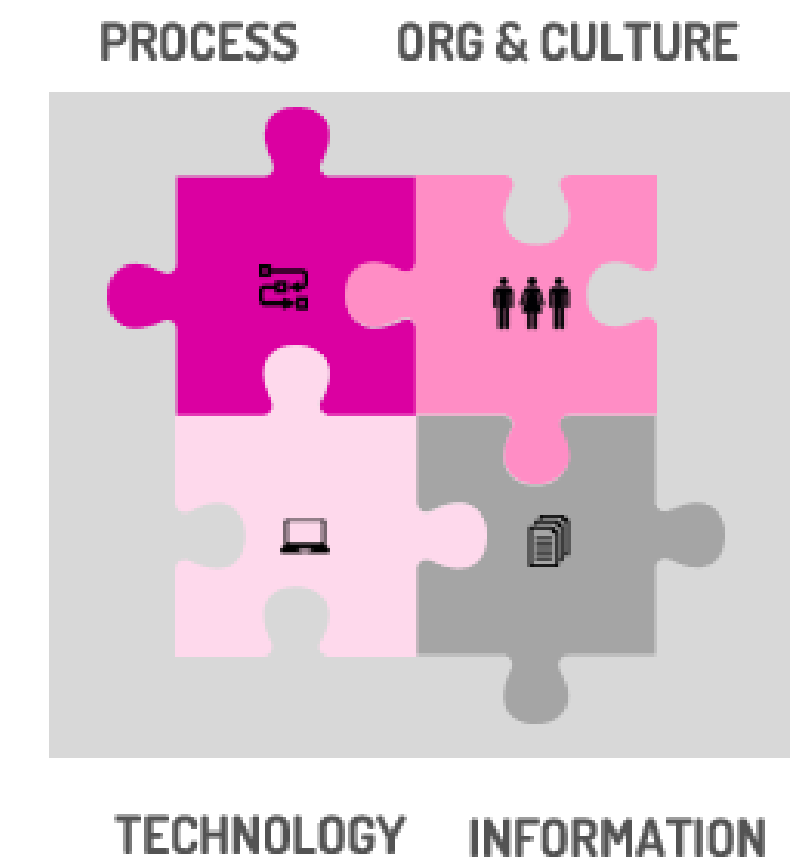
Description	Functional requirements	Non-Functional requirements
Objective	Describe what the product does	Describe how the product works
End result	Define product features	Define product properties
Focus	User requirements	User expectations
Documentation	Captured in use case	Captured as a quality attribute
Essentially	They are mandatory	They are not mandatory but desirable
Origin type	Usually defined by user	Usually defined by developers
Testing	Component, API, UI testing – tested before non-functional testing	Performance, usability, security testing – tested after functional testing
Types	External interface, authentication, authorisation levels, business rules etc	Usability, reliability, scalability, performance etc



IMPLEMENTATION PLAN

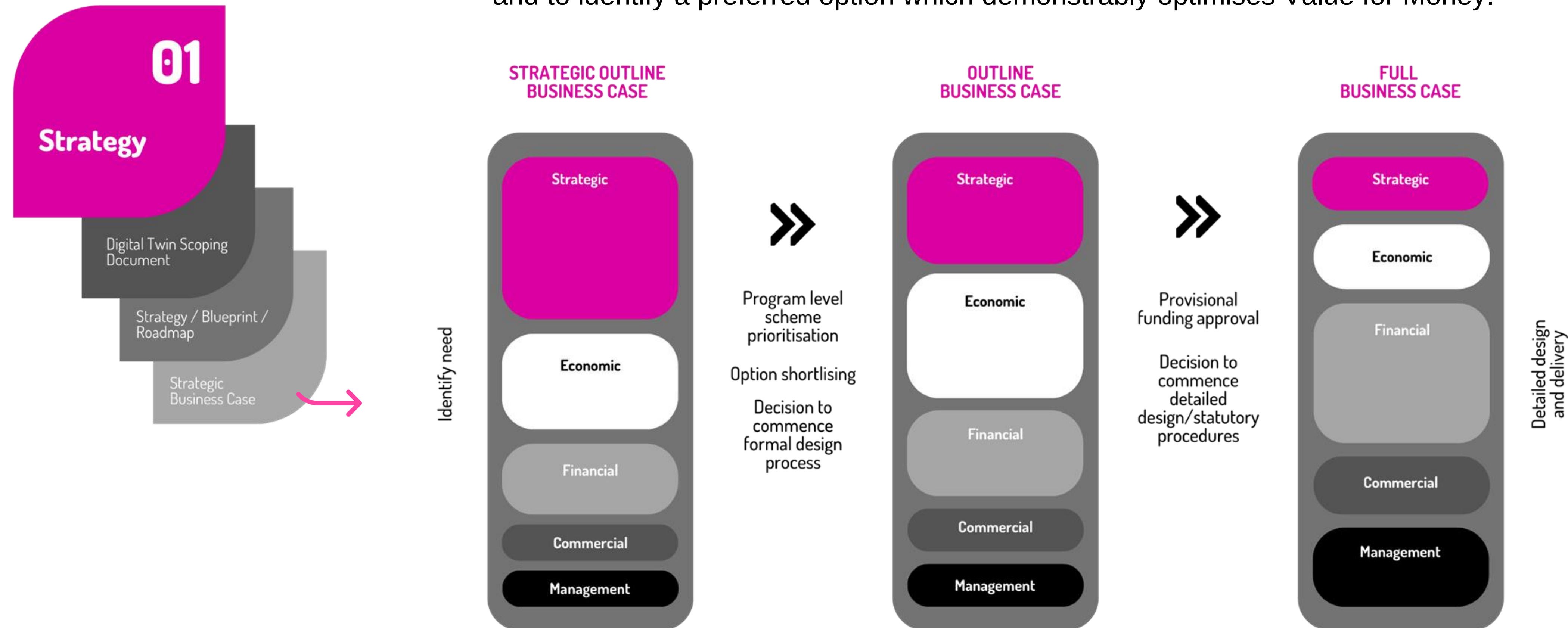
For each activity identified in the roadmap, this implementation plan provides a description covering:

- **Purpose of the task** – description of the task providing context and the outcome(s)
- **Ownership** – which team / sub-team / who is responsible for delivering the task
- **Deliverables** – definition of the deliverables that are to be provided in completing the task
- **Task execution requirements** – baseline of how it is envisaged a task is to be executed, including prerequisite & predecessor tasks
- **Task completion acceptance criteria** – the criteria that define whether a task has been completed or not



FINAL BUSINESS CASE

The purpose of the final business case is to revisit the previous business case in more detail and to identify a preferred option which demonstrably optimises Value for Money.



SUMMARY: PROCURE & IMPLEMENT



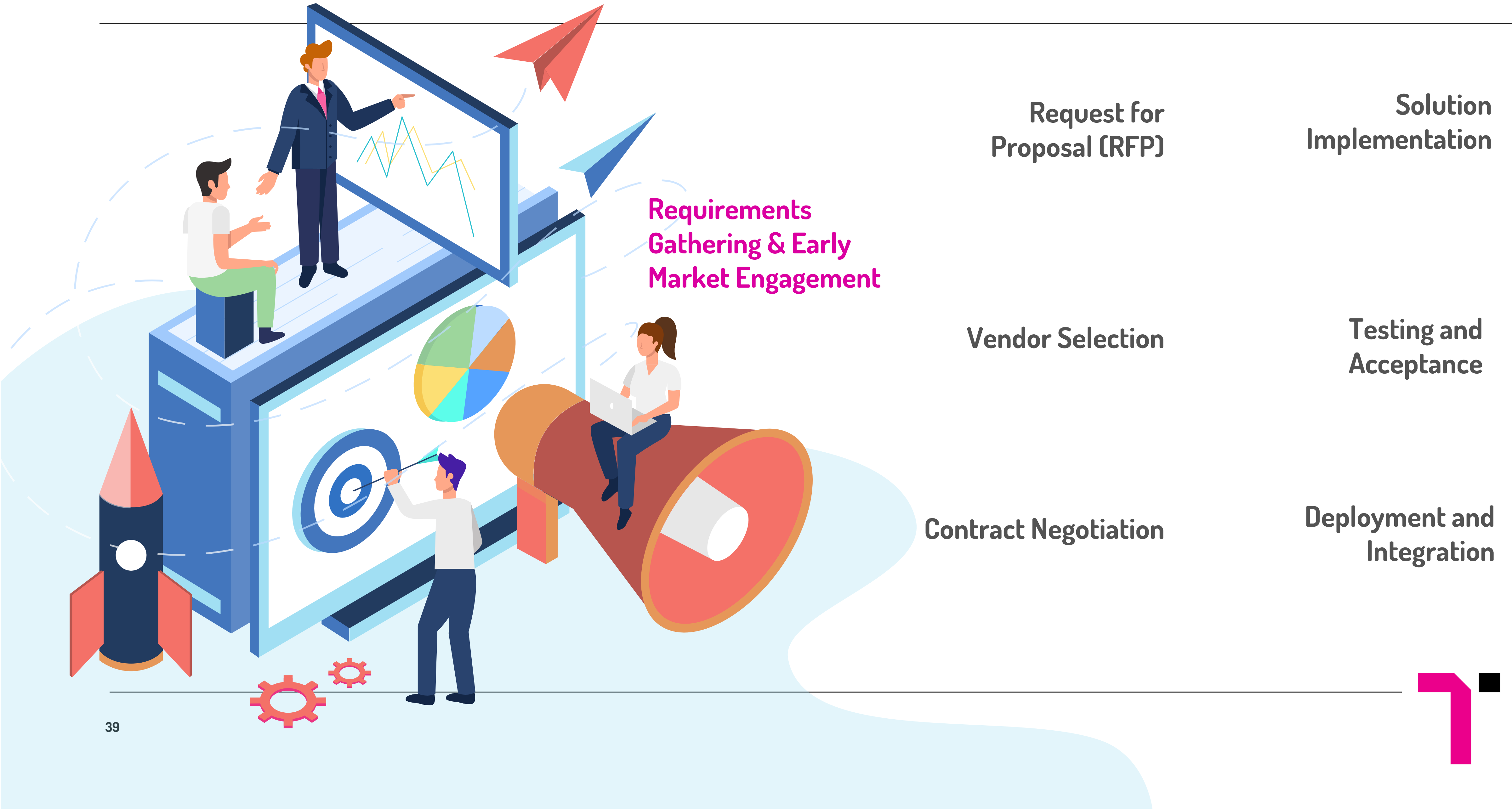
RFP Clarity: Define project scope, requirements, and evaluation criteria in the RFP to attract qualified vendors.

Strategic Procurement: Engage with the market, objectively evaluate proposals, and negotiate favourable terms for a successful partnership.

Phased Rollout: Implement in phases with clear milestones, prioritizing key use cases and iterating for scalability and long-term value.



PROCUREMENT APPROACH



KEY FOCUS AREAS FOR AN RFP



- **Clearly Define Requirements**
- **Include Evaluation Criteria**
- **Address Data Management**
- **Consider Interoperability**
- **Include Support and Maintenance**

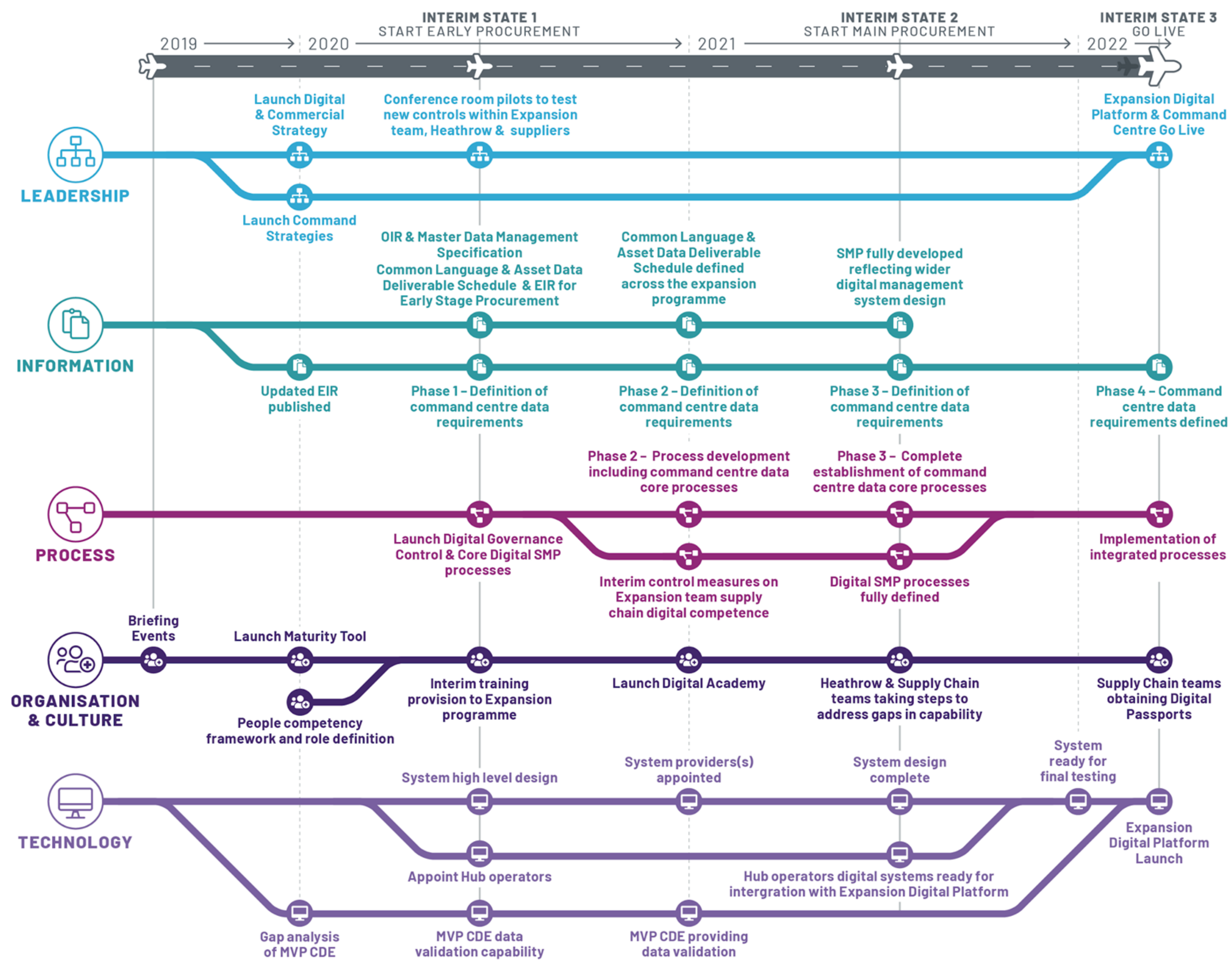


DELIVERY CONSIDERATIONS

	Outsource	Co-design	Delivery Partner	In-house
Procurement & Implementation Options				
Description	An external provider contracted to deliver the DTw with minimal activity	External provider contracted to deliver DTw in collaboration	External organisation and business form a partnership to share responsibility for outputs	Undertakes all activity associated with the project
Advantages	Risk is outsourced and no impact on resourcing	Influence over project but does not assume all risk	Shared resources, skills and experience	Full autonomy over project outcomes
Disadvantages	Low level of control over outcomes	Autonomy	Governance and accountability may be unclear, and priorities diluted	All ownership of risk, high costs and domain expertise compromised.
Approach Suitability based on key evaluation criteria				
Data: acquisition & distribution				
Technology: future readiness				
Process: standard methods				
Leadership: strategy & governance				
Organisation & Culture: capacity and capability				



PHASED IMPLEMENTATION



MENTI POLL

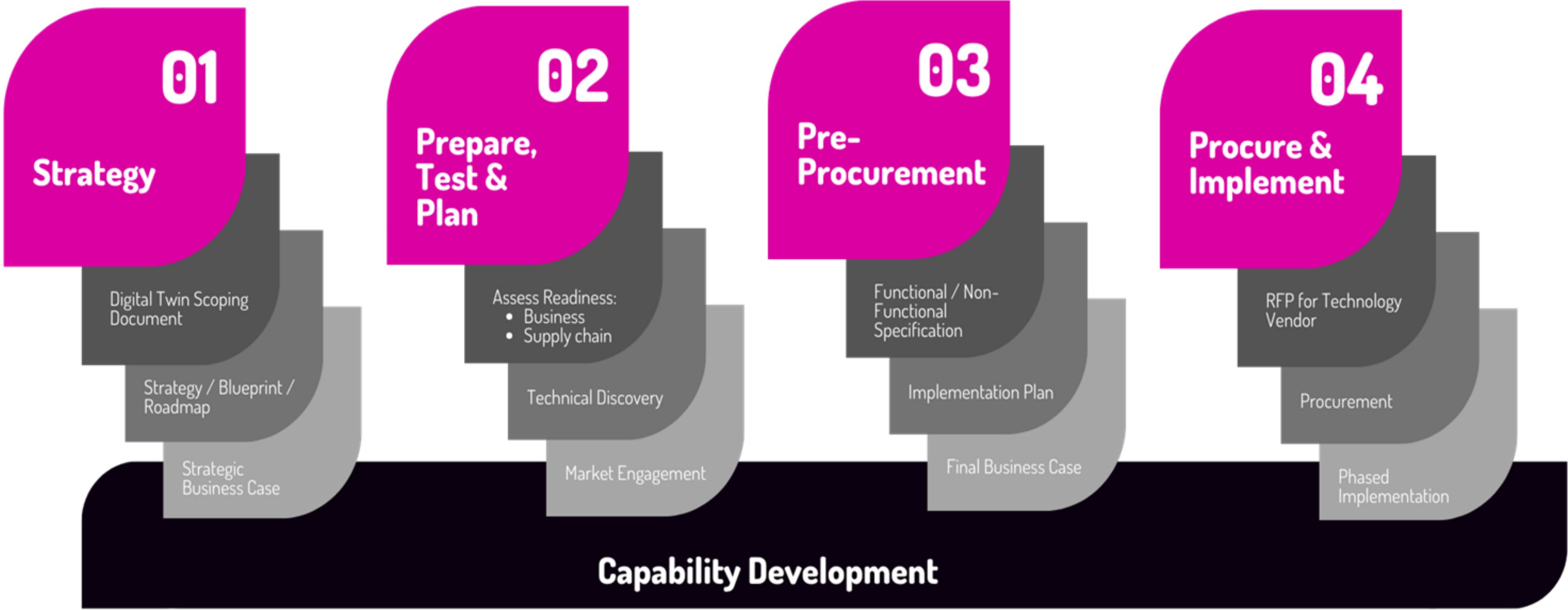
- How do you feel now about your level of Digital Twin awareness following this session?

Go to: **www.menti.com**

Enter code: **3760 1004**



SUMMARY





TEMPO
INSTITUTE
DIGITAL BUILT KNOWLEDGE

**50% off Digital Twin Microcredential
Modules for NPC delegates**

**Email the code NPC50 to:
info@tempoinstitute.co**

www.tempoinstitute.co

**THANK
YOU**