Atypical EJP

Expanding Target Data Architecture (INV-25)

Contents

Summary Table

Title Section	AEJP 1 for Digitalisation Investment, Interoperability Investment: Expanding Target Data Architecture (INV-25)
Name of Scheme	Expanding Target Data Architecture (INV-25)
Investment Driver	This investment introduces new capabilities and builds on the data foundations set up in RIIO-2. Our ambition is to simplify and reduce the number of interactions our staff have with multiple IT systems and to drive greater interoperability between our data.
BPDT/Scheme Reference Number	M8.19
Outputs	For gas assets, the ability to present location, condition, risk and hazard information and to visualise in 3D design and/or in an engineering scheme of gas assets, for the purpose of identifying corrective action. Ability to execute "what-if" analysis: re-calculate multi data source scenario by modifying a set of assumptions to stress-test the outcomes and understand the boundary of feasible strategies and investment plans. Links between physical gas assets and Operational Technology (OT) devices to increase data availability and enable historical sensor data to be available for analysis purposes.
Cost	[cost-sensitive data]
Delivery Year	FY 27/28 - FY 30/31
Applicable Reporting Tables	N/A
Historic Funding interactions	Investments in Data Transformation and Advanced Analytics From RIIO-2 allowance resulted in setting up a foundation of Data Architecture
Interactive Projects	INV-03 Unified Asset Investment Portfolio Management, BPDT: Table M8.19 ERP Clean Core (INV28), BPDT: Table C4.06

We expect the Spend Apportionment table below to be merged with the summary table above but have included separately for accessibility purposes.

Spend Apportionment (£m)	(£m – 2023/24 prices)
RIIO-2	[cost-sensitive data]
RIIO-3	[cost-sensitive data]
RIIO-4	[cost-sensitive data]

1. Introduction

To sustain our strong performance and optimise operational efficiency we need to leverage new data capabilities, by enabling a 360° view of our gas assets, including data and insights from the Internet of Things and OT devices to drive preventative actions, proactive working and optimise our interventions.

In RIIO-2, we have invested in the foundation of our target data architecture establishing:

- A modern Data Warehouse platform that accommodates the development and processing of reusable data models.
- An Analytic Platform that gives us base capabilities in Data Science and Analytics and can act as a big data store.

We are developing additional capabilities to facilitate:

- Scenario modelling,
- Building information modelling; and
- Greater visibility of telemetry and business systems data.

2. Background

In our RIIO-3 Business Plan, we have articulated our ambition to expand and further digitalise our business.

Our Appendix 2, Climate Resilience Strategy and Appendix 10: Network Asset Management Strategy, highlight the increasing need for "one-stop shop" solutions for investment planning, and network monitoring. This is needed to allow our business experts to quickly understand the asset risk and the impact of this risk on network investments and design.

To address this, we need to invest in scenario modelling capability to equip our internal staff with tools to stress test different types of intervention.

In addition, we currently do not have digital solutions that would support the design and operation of more complex gas assets and gas sites. We are planning to address this need by investing in a dedicated Building Information Model solution.

In RIIO-3, we plan to heavily invest in operational technology, therefore need to create capabilities and solutions that will allow the organisation to collate and understand performance and insights from OT devices.

3. Optioneering

The following options have been considered to fulfil the needs of stakeholders.

Option 1: Do Nothing.

Continue with shortcomings in our technical capability to deliver the desired outcomes.

This option is considered inadequate, the failure to deliver capabilities would prevent progress, lead to lost opportunities to become more proactive, efficient and productive and meet ambitions set out in our Business Plan.

Option 2: Custom build capability: Build custom in-house software/solutions.

This option is considered suboptimal as it does not align with our architectural principles and target data architecture. The complexities involved in custom building software to deliver the capabilities required in this area of data and analytics would result in time-consuming, resource-intensive development and ongoing support.

Option 3 (Preferred): Composable extension: Build on our emerging composable architecture design.

Our preference is to expand on the emerging data architecture design, ensuring that our landscape is rationalised, interoperability is simplified, cost, support and development remains efficient. Utilising our core strategic partners and platforms to create a cohesive, reusable and extensible set of data capabilities and products aligns with our vision for effective management of digital landscape.

4. Cost

The cost of the preferred investment option is driven by:

- Gross Staff Cost to support the delivery of the investment.
- Resources to design appropriate integration of new components to our existing target architecture.
- Contractors cost to increase our capacity and allow us to deliver the investment in the timely manner without putting the constraints on delivery of other investments.
- Licence and maintenance costs.

To estimate the cost for new components for our target architecture we have used an average cost provided by suitable third-party vendors in response to RFIs issued in support of collecting information for this investment.

Cost driver	Cost (£m – 2023/24 prices)
Gross Staff Cost	[cost-sensitive data]
Contractor Cost	[cost-sensitive data]
Licence & maintenance cost	[cost-sensitive data]

Table 1: Cost information for initiative

The diagram below illustrates the conceptual design that has been used to derive the cost estimates for the investment.
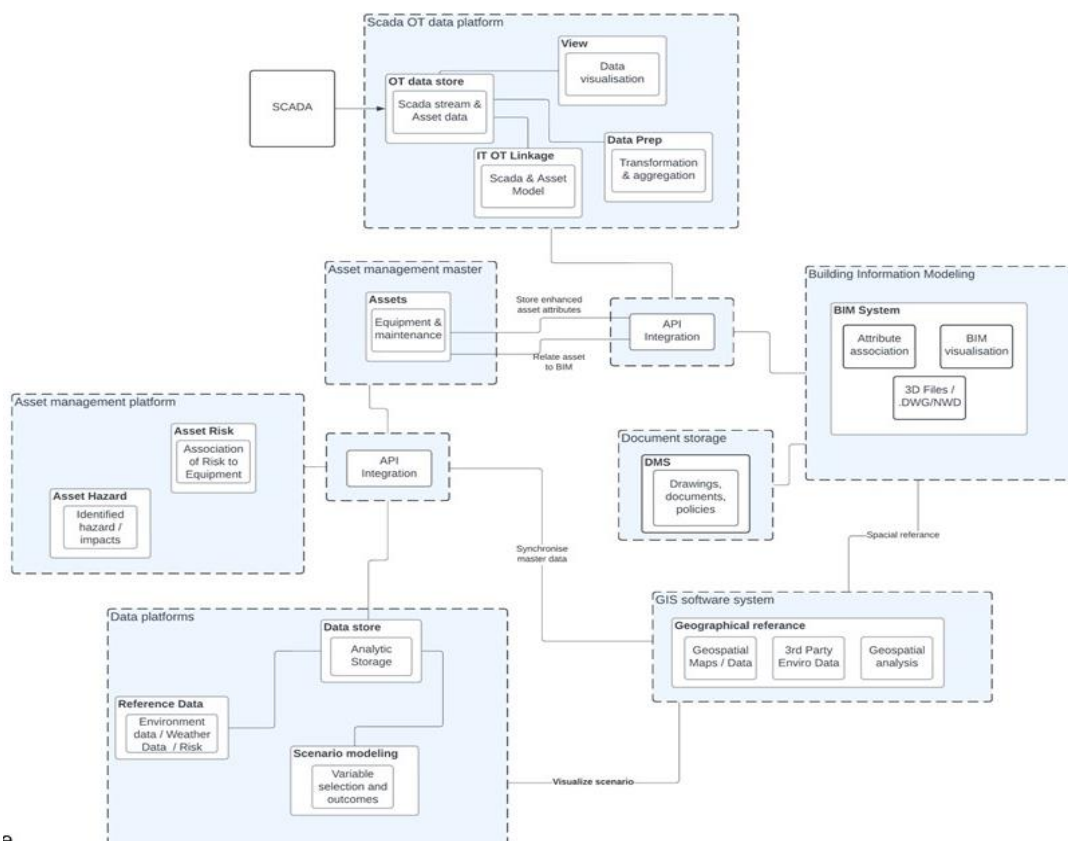

Figure 1: Conceptual architecture for costing purposes

5. Scope overview

The scope of this investment is to configure and integrate the following new components of our target data architecture, specifically:

- Scenario modelling capability.
- OT analytics platform.
- Building information modelling; and
- Environmental Risk analysis.

We are planning for the iterative delivery of the scope, to ensure that we are evaluating the capability and aligning it closely with business requirements.

This investment introduces new capabilities in our organisation and builds on data foundations set up in RIIO-2. Our business ambition is to simplify and reduce the number of interactions our staff have with multiple IT systems and drive greater interoperability between our data.

- For gas assets, the ability to present location, condition, risk and hazard information and to visualise in 3D design and/or in an engineering scheme of gas assets, for the purpose of identifying corrective action.
- Ability to execute "what-if" analysis: re-calculate multi data source scenario by modifying a set of assumptions to stress-test the outcomes and understand the boundary of feasible strategies and investment plans.
- Links between physical gas assets and OT devices to increase data availability and enable historical sensor data to be available for analysis purposes.

As the investment is related to new data capabilities, we will iterate and test the success through several Proof of Concepts with individual criteria, for example this will include:

- Confirmation from Energy Operations team that they are able to display 3D design of a gas asset, understand the asset location, condition and risk.
- Confirmation from our Investment teams that they are able to modify a scenario parameter, and the solution returns to them a recalculated outcome with no need to manually transform any calculations.
- Confirmation from our Innovation team that they can access and understand historic performance data from OT devices.

The illustration below indicates how this investment contributes to the RIIO-3 Target Data Architecture landscape at Cadent.
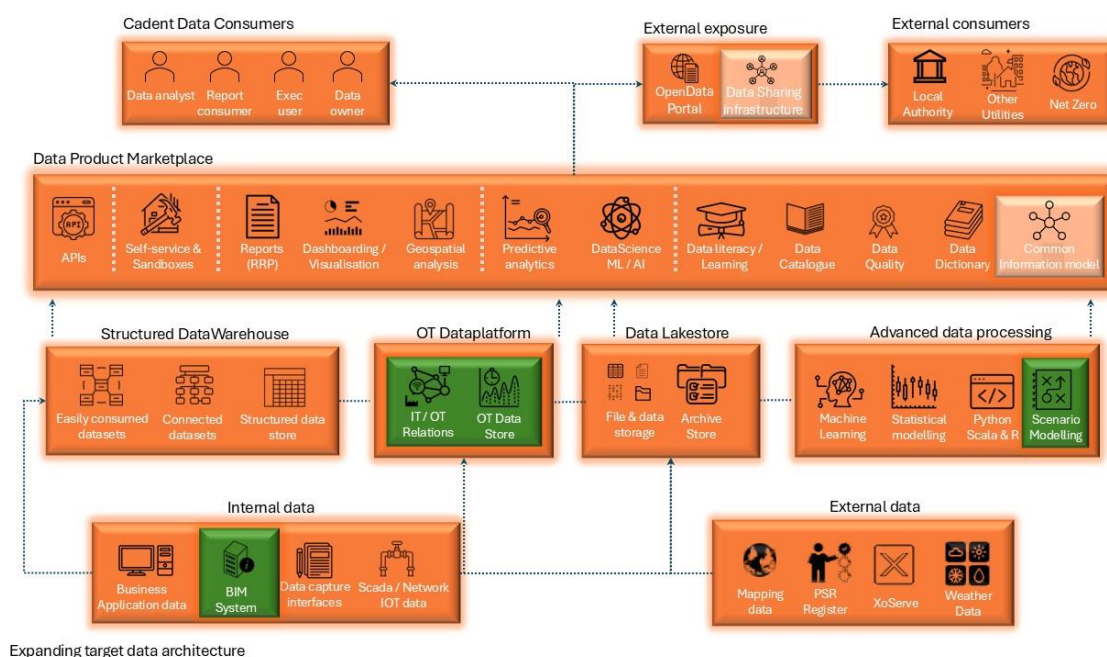

Figure 2: Cadent Target Data Architecture capability view

6. Deliverability

This investment delivers four capabilities to be utilised by our subject matter experts to support the work of our engineering, asset investment and climate resilience teams.

These capabilities will bring the greatest value when they are used in combination with our asset data. Appendix 9 (IT & Telecoms Strategy) describes investment aimed at removing the complexity and enhancements from our strategic enterprise systems and simplifying and standardising the data model we have in these systems (ERP Clean Core (INV28)). To maximise the benefit of this investment, we will first focus on the appropriate standardisation and quality of asset data in ERP Clean Core (INV28) before setting up new capabilities through Expanding Target Data Architecture (INV-25).

The proposed timeline is to start the investment in the second year of RIIO-3. This allows us the opportunity to standardise gas asset data hierarchy as part of ERP Clean Core (INV28) investment set out as part of our Appendix 9: IT & Telecoms Strategy.

We see this investment as the main digital enabler for our staff to support the delivery of RIIO-3 Business Plan and we will realise this investment over 4 years of RIIO-3 period.

Digitalisation RIIO-3 Roadmap	FY2026/27	FY2027/28	FY2028/29	FY2029/30	FY2030/31
Expanding Target Data Architecture (INV-25) in £m	[cost-sensitive data]	[cost-sensitive data]	[cost-sensitive data]	[cost-sensitive data]	[cost-sensitive data]

Table 2: Proposed investment timeline

7. Conclusion

This investment allows us to mature our offering to internal staff in line with our planned increasing maturity against Principle 10 of the Data Best Practice guidance. It will also reduce manual ad-hoc processing and data matching, and further build interoperability between the engineering and GIS data that today is siloed (increasing the maturity of our compliance with Principle 8 of Data Best Practice guidance).

The technical components delivered through this investment, in combination with the foundational data capabilities established in RIIO-2, will allow Cadent to consider the areas of the business which would most benefit from virtual data representations of our network encompassing various risk, resilience and environmental factors.