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Data Integration Support for Offshore Decommissioning Waste Management

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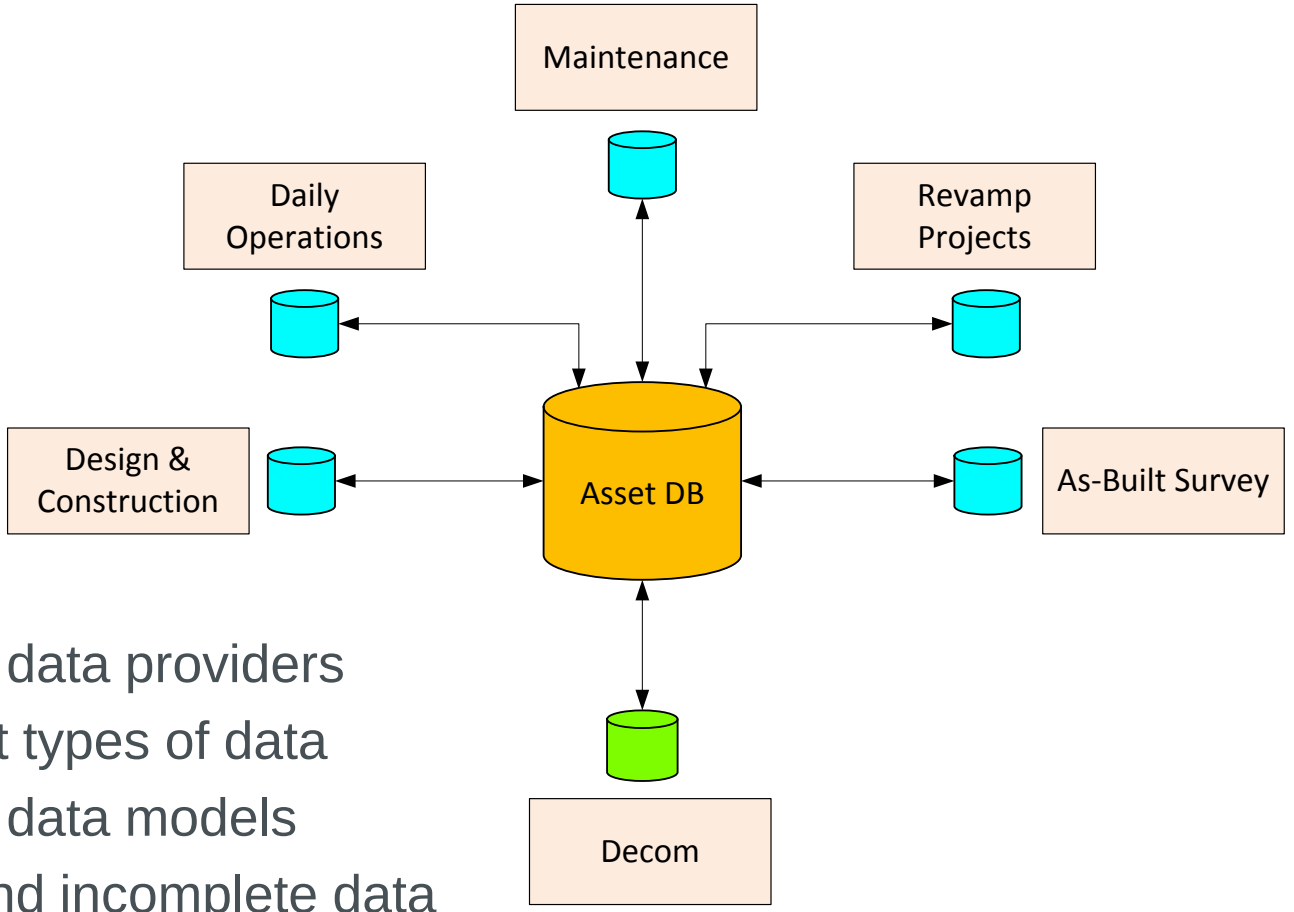
Outline

- Business Case
- Data Integration Challenges
- ISO 15926
- Semantic Web
- Integration Framework
- Use case
- Conclusion

Business Case

• Commercial	Tax rebate
	Low oil price
	Business opportunities
• Safety	Offshore trips
	Safe working
• Regulation	OSPAR
	UK Energy Act

Integration Challenges



- Multiple data providers
- Different types of data
- Multiple data models
- Noisy and incomplete data
- Legacy Data

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ISO 15926

13 Parts - 5 important for integration

15926 Part 2 Core Data Model	Natural Language Grammar Basic Rules
15926 Part 4 Reference Data	Dictionary & Thesaurus Words & terms
15926 Part 7 Templates	Phrase, Sentence, Paragraph Useful semantic structures
15926 Part 8 RDF/OWL	Paper, File, Stone Tablet Representation technology
15926 Part 9 Facades	Website Read, write, query, service technology

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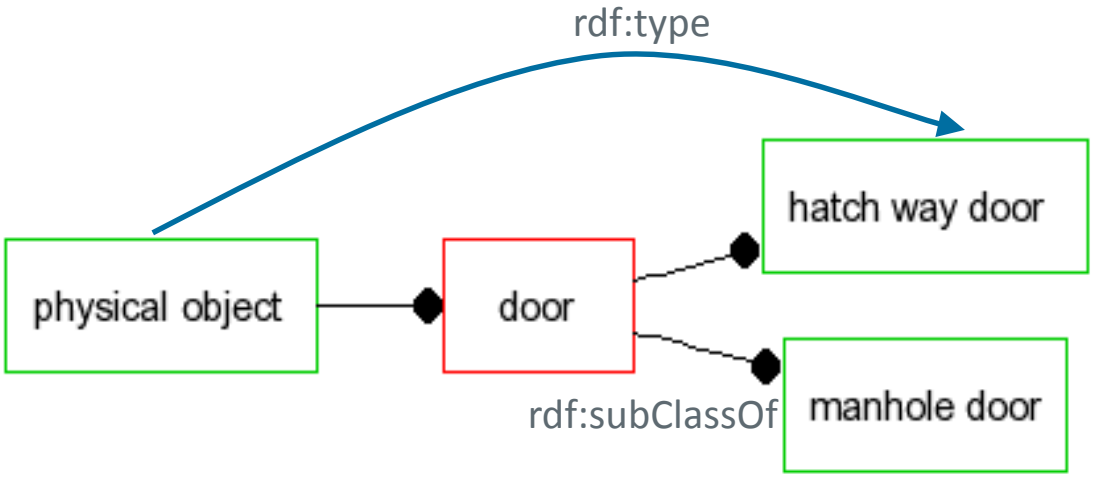
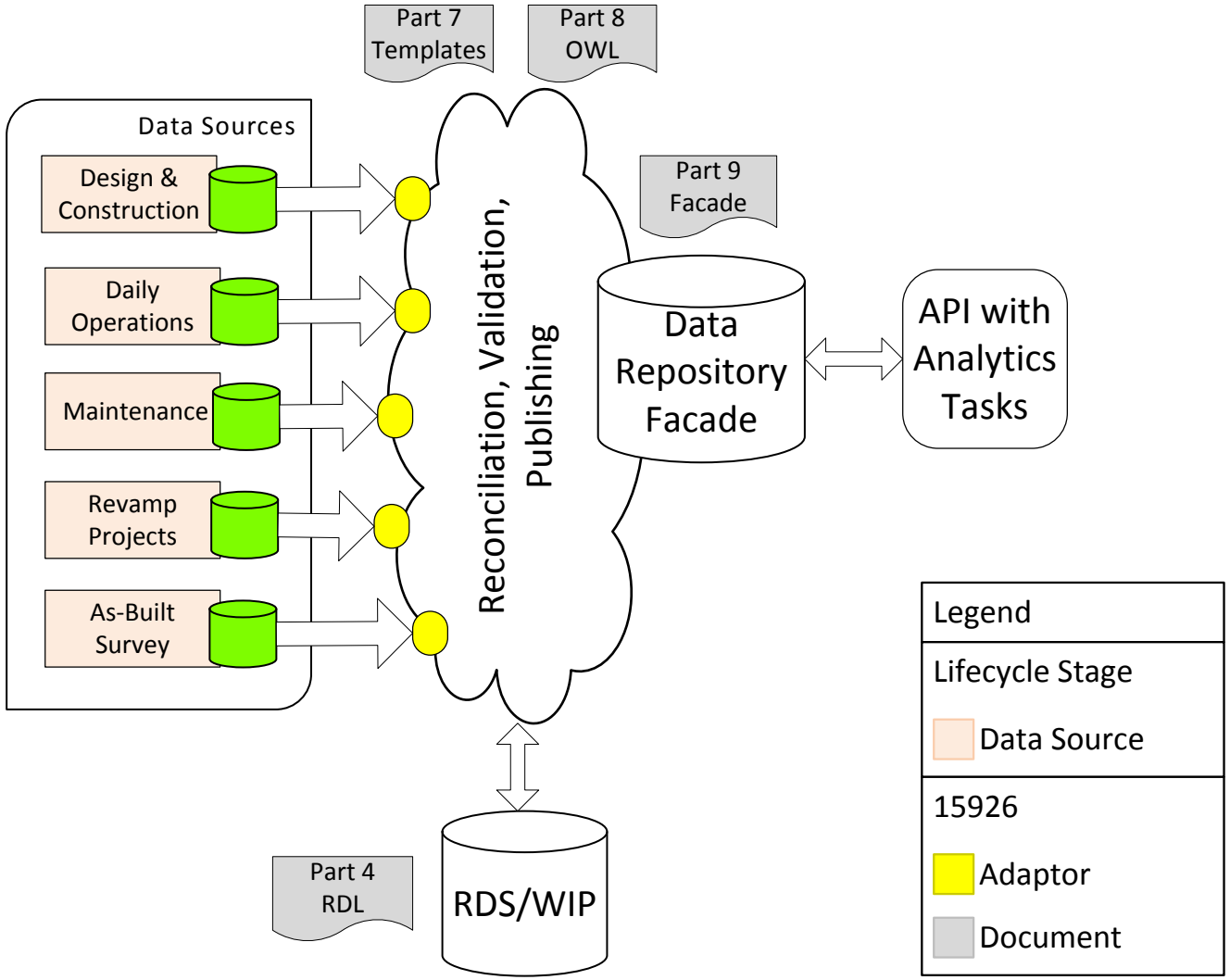
Semantic Web

- Web of linked data (Berners-Lee et. al, 2001)
- URI representation of things
- Use of HTTP URIs
- OWL – building of ontologies
- RDF – publishing of linked data (Triple: Subject –predicate-object)
- SPARQL – querying of RDF data



Integration Framework



Use Case: Steel Reuse

- Typical North Sea Platform = 97% Steel
- 1/2 million tonnes steel to be decommissioned by 2023 (RSA Great Recovery Report, 2015)

Information Requirement

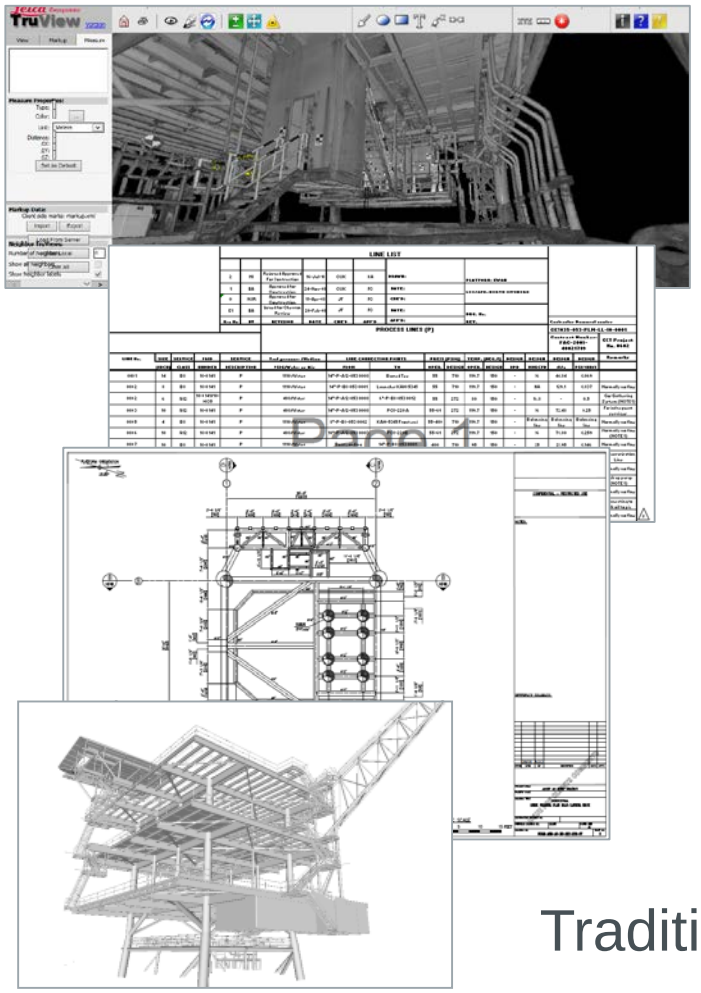
- Structural MTO (Excel)
- Virtual 3D (Point Cloud)
- Framing Plan (PDF)
- 3D CAD Model
- Weight Report
- Condition Reports
- Maintenance Logs
- Revamp Project Data
- Materials Inventory

Assessment Criteria

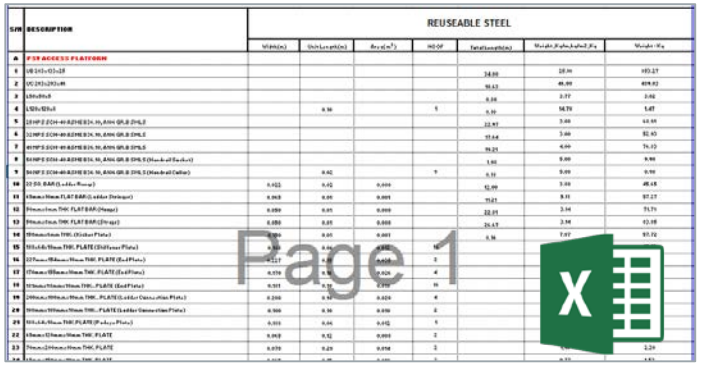
- Age
- Coating
- Certification
- Fabrication features e.g. welding, boring and resizing

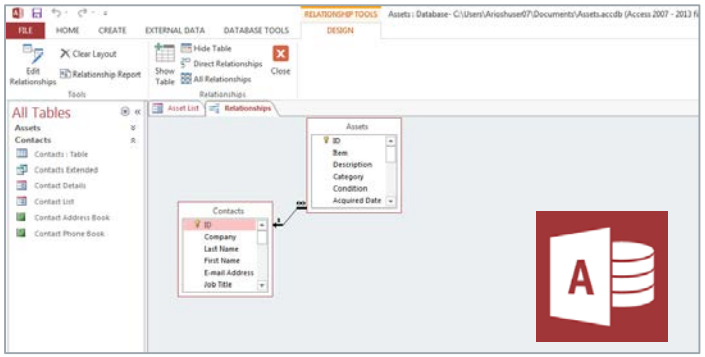
Use Case: Steel Reuse

Search, navigate, extract…



Populate, qualify, quantify…





Traditional approach

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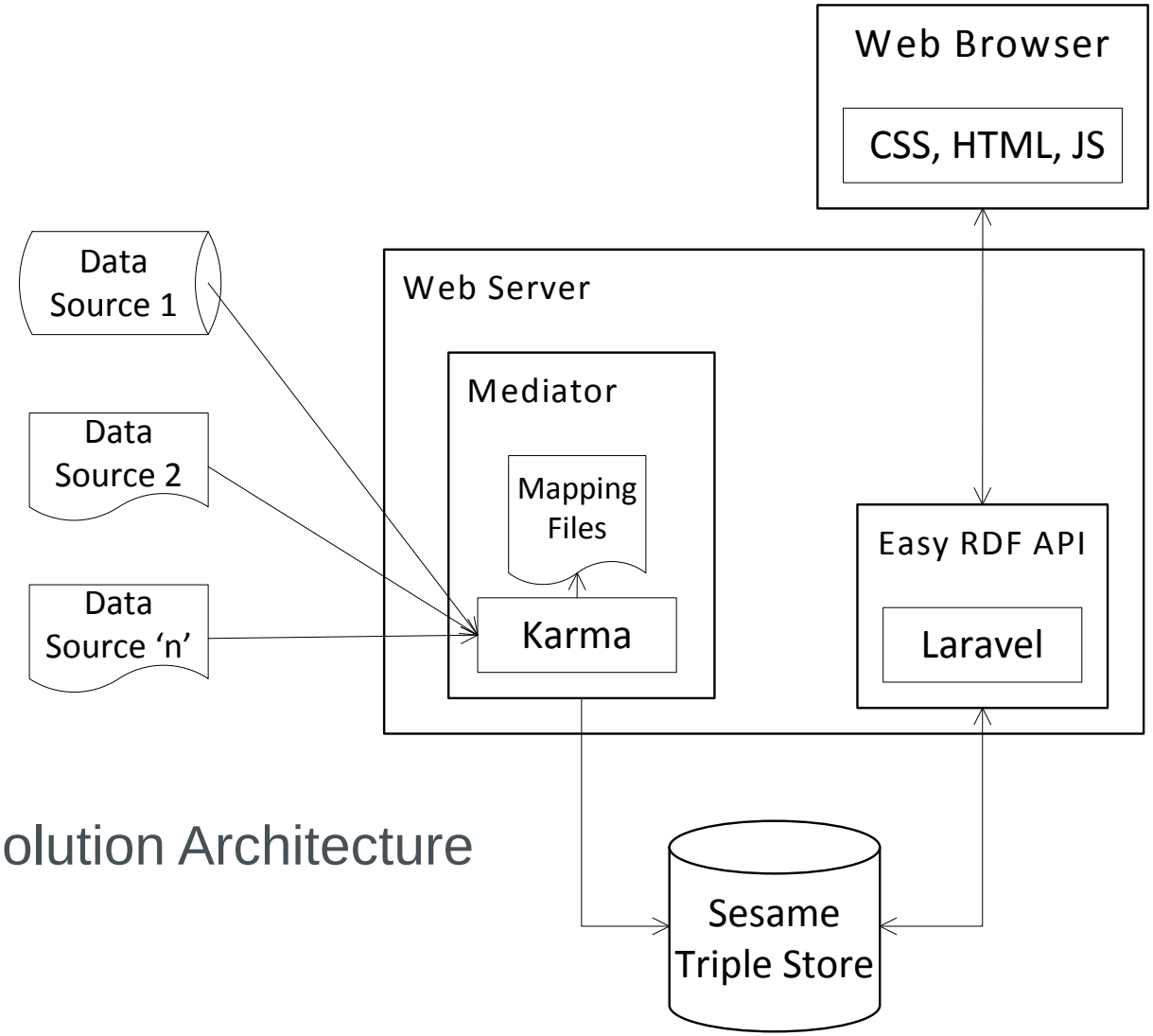
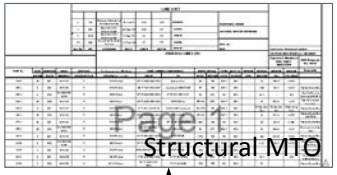
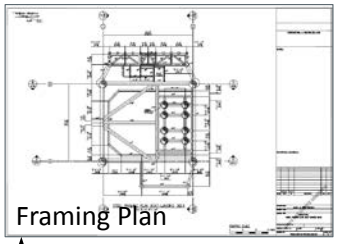
Use Case: Steel Reuse



Sample Solution Architecture

Use Case: Steel Reuse

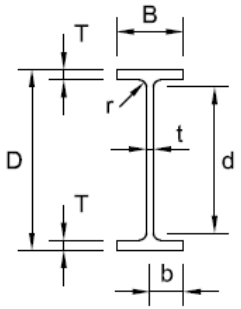




ISO 15926 Data Integration Platform

SPARQL END POINT

Integra | Enter Search Term | Search | Search by Structure | Help



Location	Cellar Deck
Grid Ref	A23
Length	5400
Section Name	Universal Beam
Section Properties	B 308.5
	T 54.1
	D 1036.3
	b 154.3
	d 868.1
	r 30
	t 30
Ref Drawing	Ref Drawing
TrueView	TrueView
Connections	1B
	3B

Interfaces

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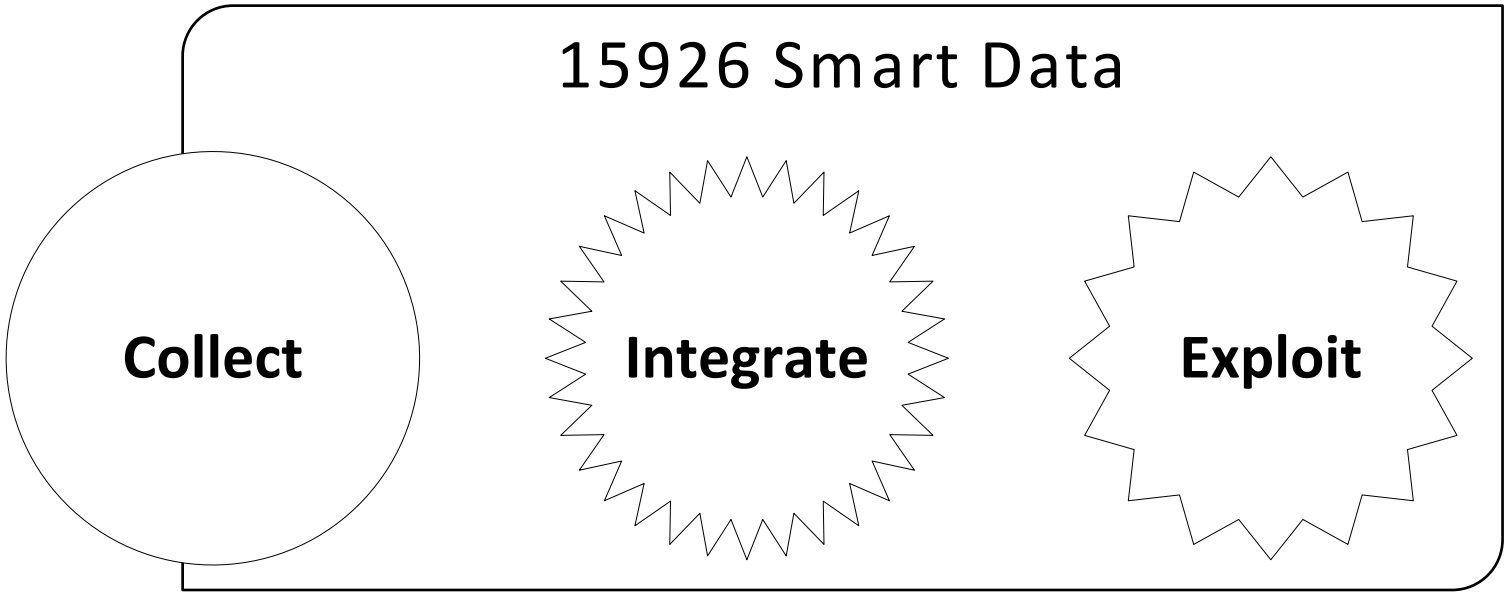
Conclusion

- Cost Savings
- Work Efficiency
- New skill for decom engineers



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Resources

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LEADERS IN IDEAS AND SOLUTIONS

Thanks

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