Using Industry Standards to Drive Analytic Value

Analytic Iceberg Effect

Xtensible

Speaker Overview

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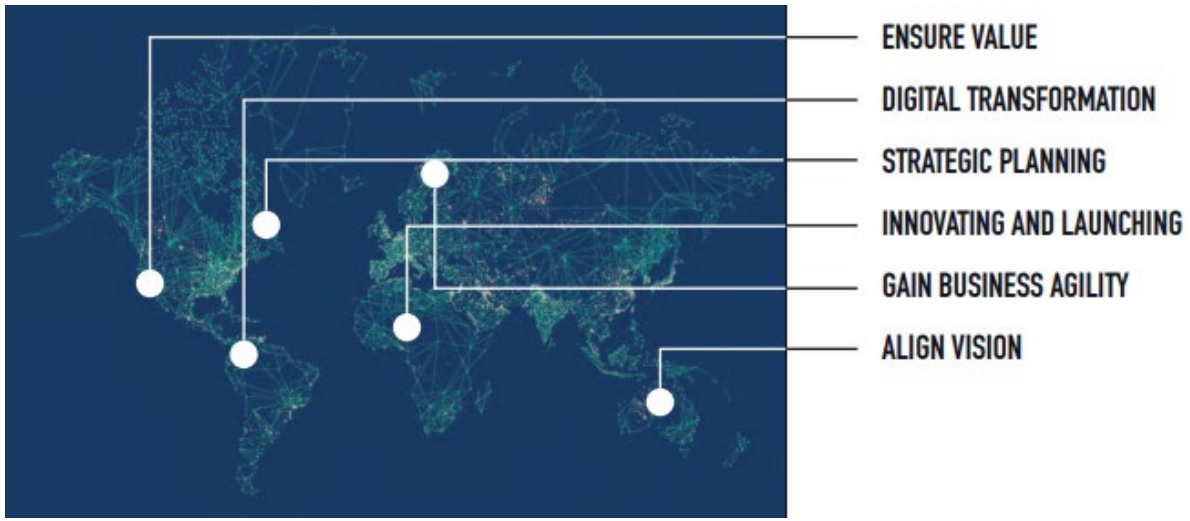
GO DEVILS!

Xtensible Services & Products

Company Background

A leading provider of **standards-based** smart grid integration solutions and services for the utility industry, founded 1998, with headquarter in Orlando, FL USA.



Business & Technology Consulting	Strategy & Architecture	Utility Standards Training
System Integration	Enterprise Information Management	Business Intelligence & Data Analytics
Affirma	MD3i Semantic modeling Service modeling Data modeling	

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ENTERPRISE SEMANTIC AND METADATA MANAGEMENT SOLUTION

Reduce Complexity. Gain Business Value.

Value from your data, across your organization, all the time

How many of you have heard of the Utility CIM?

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How many of you know what the CIM consist of?

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What is the CIM?

- The CIM is a starting point
  - The end game is for the company (utility) to have a data model that is not tied to a specific technology or vendor and ensure ***interoperability with the Smart Grid***.

- Comprehensive industry model for:
  - Software Interfaces for Operation and Planning of the Electric Grid (IEC 61970)
  - Enterprise Business Function Interfaces for Utility Operations (IEC 61968)
  - Market Operations IEC 62325

- Well-defined data and associations

Change from:
- Transmission (IEC 61970)
- Distribution (IEC 61968)

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Role of the CIM in the Utility

- Enable system integration and information
- Information model and message/file schemas data exchanged
- Key differentiators:
  - World-Wide Standard
  - Real-world objects and information entities within the value chain of the electric power industry
  - Not tied to a particular application's view of the world
- Xtensible has been utilizing the standards for both data-in-motion and data-at-rest
- Employs a semantic model approach

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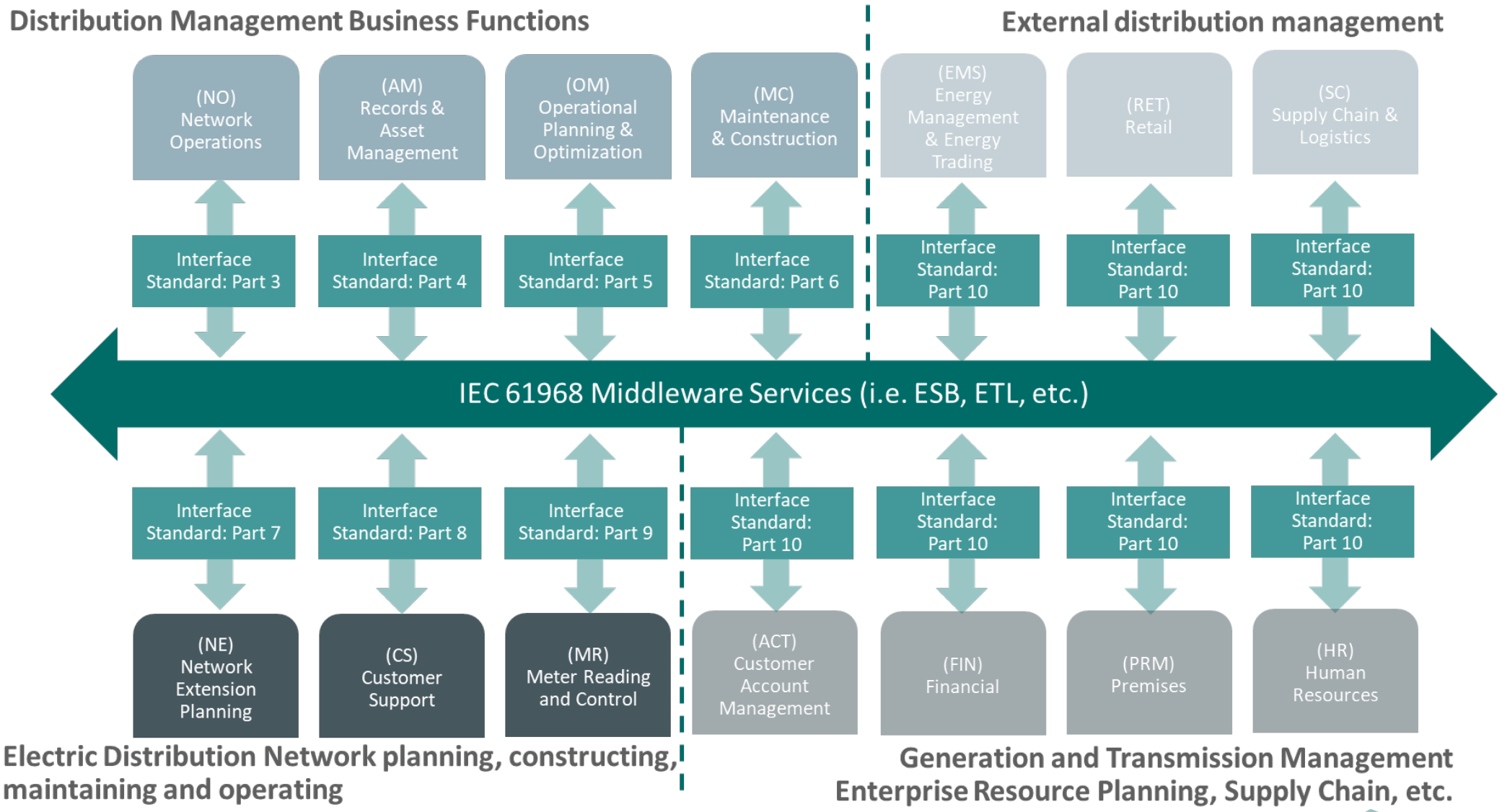
What CIM Covers



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Arnhem , Netherlands
October 3 – 5, 2022
DSO of the Future: Integrating the Total Energy Solution

What is semantic model?

“semantic model acts as a sort of glue between disparate and federated data sources, describe the data and how it fits together”

Science Direct Journal

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Think of the United Nations

A Common Language used to share information

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Why is a semantic model important for data analytics?

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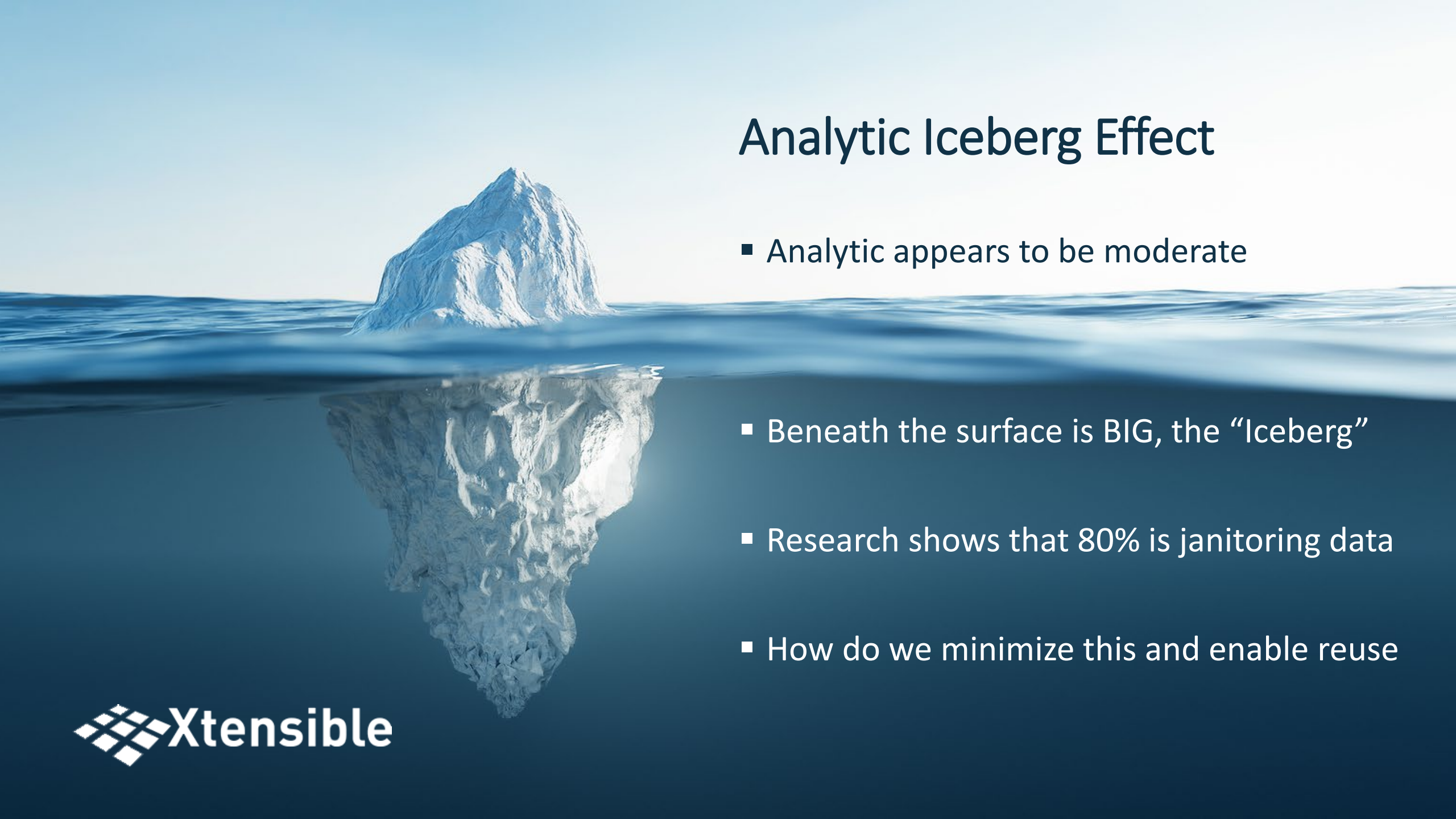

Analytic Iceberg Effect

- Analytic appears to be moderate
- Beneath the surface is BIG, the “Iceberg”
- Research shows that 80% is janitoring data
- How do we minimize this and enable reuse

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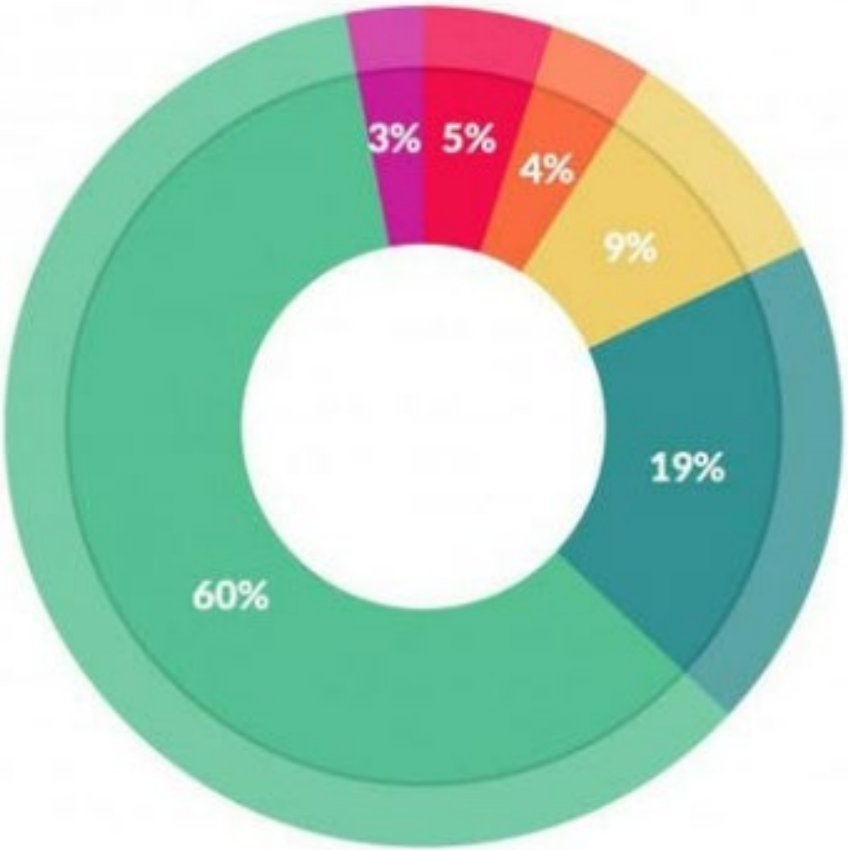
Why a semantic model approach?

According to a Forbes survey, data scientists spend almost
80% of their time on data preparation!



What data scientists spend the most time doing

- *Building training sets: 3%*
- *Cleaning and organizing data: 60%*
- *Collecting data sets; 19%*
- *Mining data for patterns: 9%*
- *Refining algorithms: 4%*
- *Other: 5%*

Forbes - Cleaning Big Data: Most Time-Consuming, Least Enjoyable Data Science Task, Survey Says

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"Data and analytics leaders need to adopt a semantic approach to their enterprise data; otherwise, they will face an endless battle with data silos."

Leverage Semantics to Drive Business Value From Data
Gartner

Xtensible

Utilizing the IEC CIM to manage DER and drive analytic value

Case Study

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Southern California Edison

15 million residents

118,000 miles of transmission and distribution lines

4,600+ circuits

Most US energy storage installation for past 2 years

46% carbon-free electric supply (2017 numbers)

50,000 square mile service area

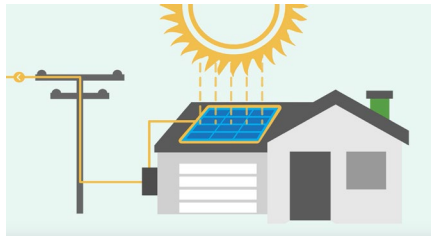
a leader in solar in US- since 2007

Figure: DistribuTECH 2020 – Enterprise Analytics for Distribution Planning

California Rule 21: Net Energy Metering Interconnection Agreements for a Distribution Provider

- State driven regulatory is requiring the need reporting and to meet net zero goals and renewable utilization
- DERs are “Grid connected distributed generation resources such as energy efficiency, demand response, customer generation (e.g., rooftop solar), Wholesale Generation, energy storage, alternative fuel vehicles (e.g., electric vehicles)

Electric Vehicles &
Hybrid Electric Vehicles



Distributed Generation

Distributed Energy Storage

Demand Response

Understanding the Context of the Process

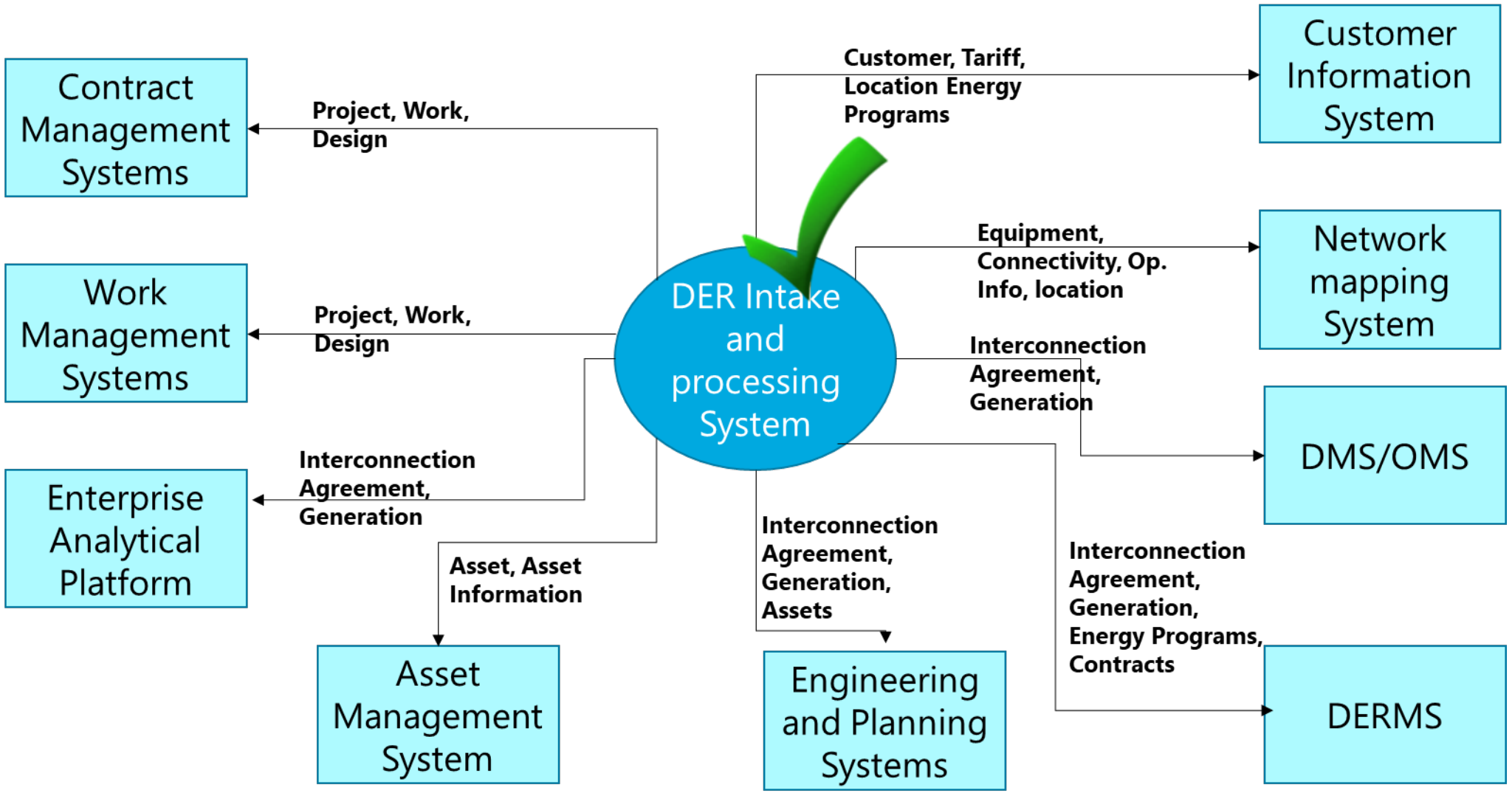
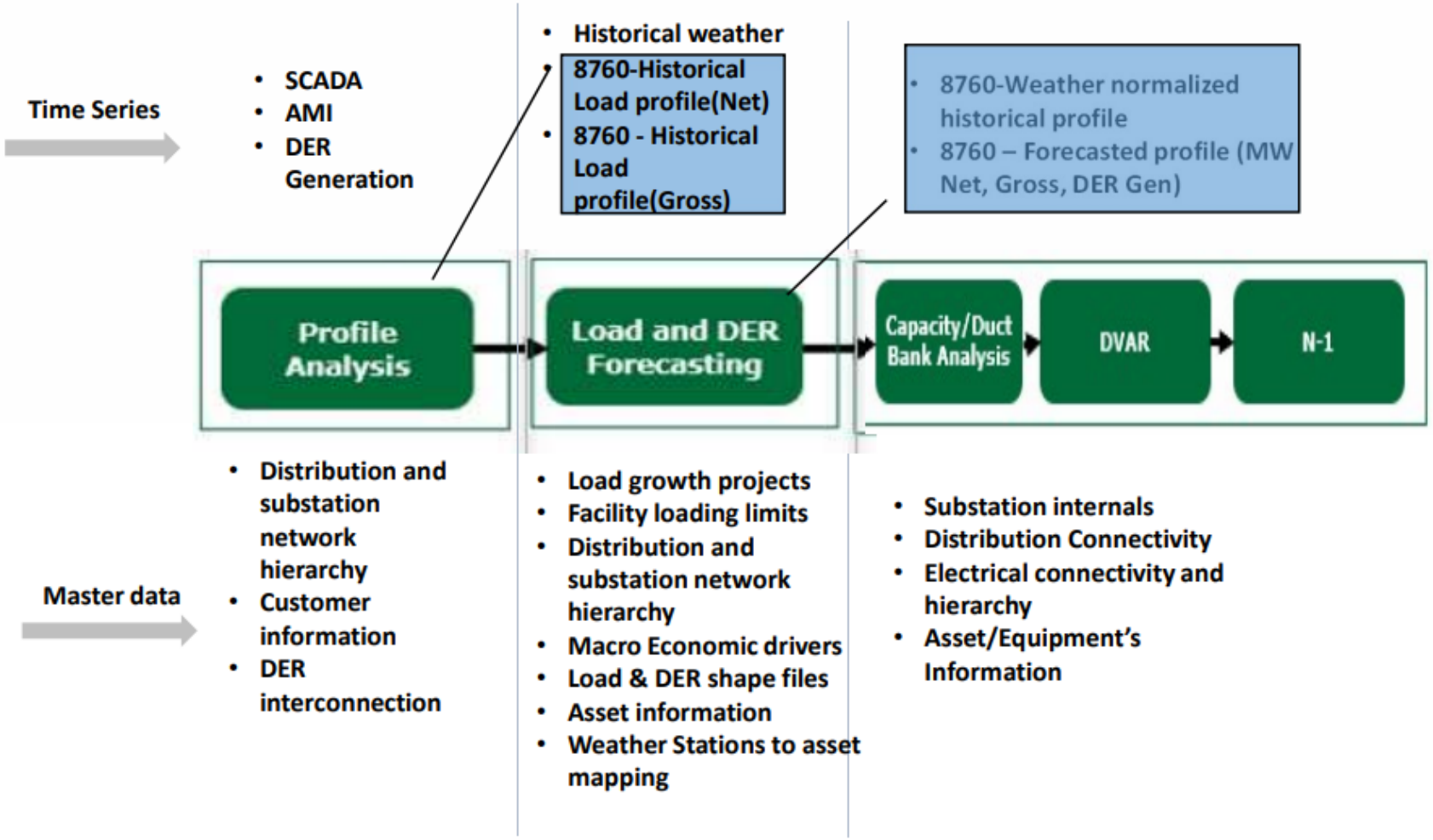
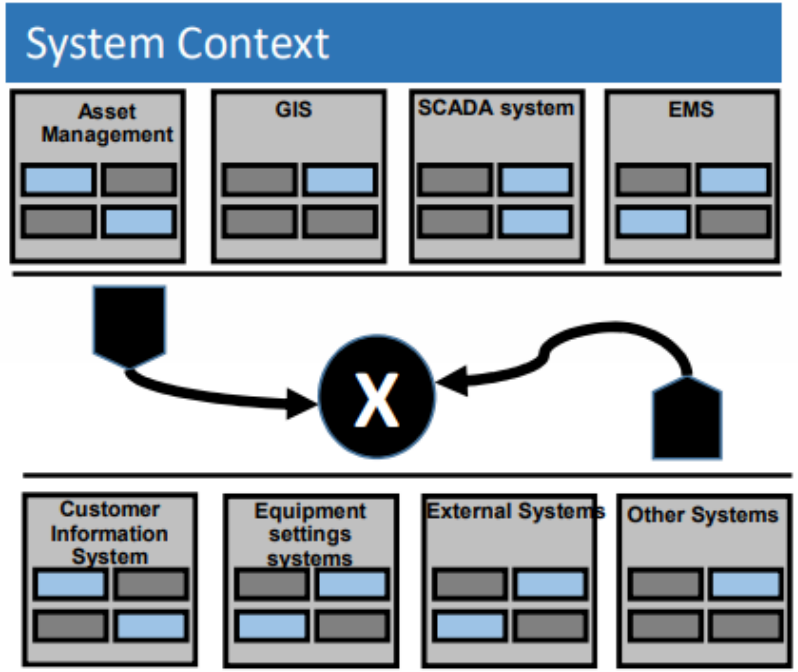


Figure: CIMUG 2019 – Information Modeling Distributed Energy Resources (DER)

DER Analytics Forecasting



Spread across the enterprise, some of the data sources does not exist !

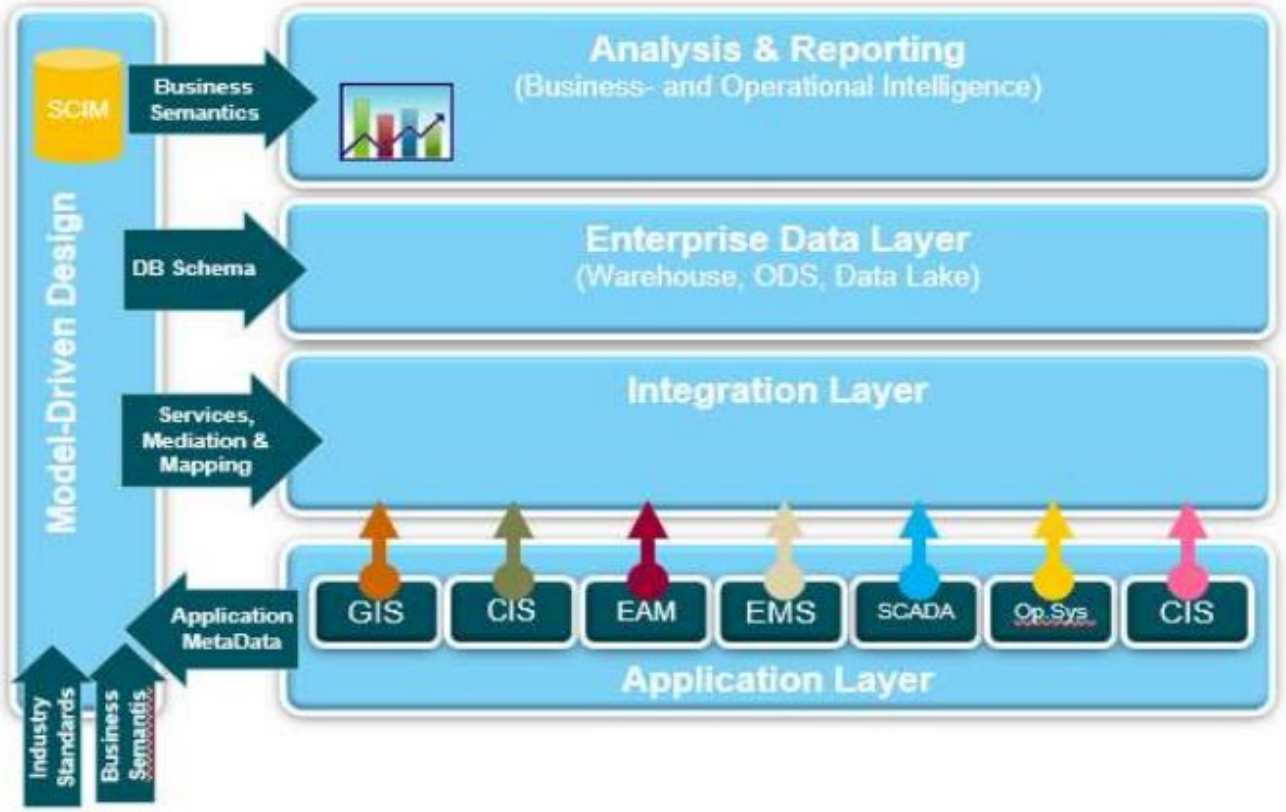


Most of the data is not connected or never correlated

Figure: DistribuTECH 2020 – Enterprise Analytics for Distribution Planning

Common Information Model

- SCE's Common Information Model (SCIM), which is in UML notation
- Based on **IEC Common Information Model (CIM)**
- Used for both 'data-in-motion' and 'data-at-rest'



Unified data model, integrating data from desperate sources to provide, end-end view of data

Figure: DistribuTECH 2020 – Enterprise Analytics for Distribution Planning

Semantic Model-Driven Process

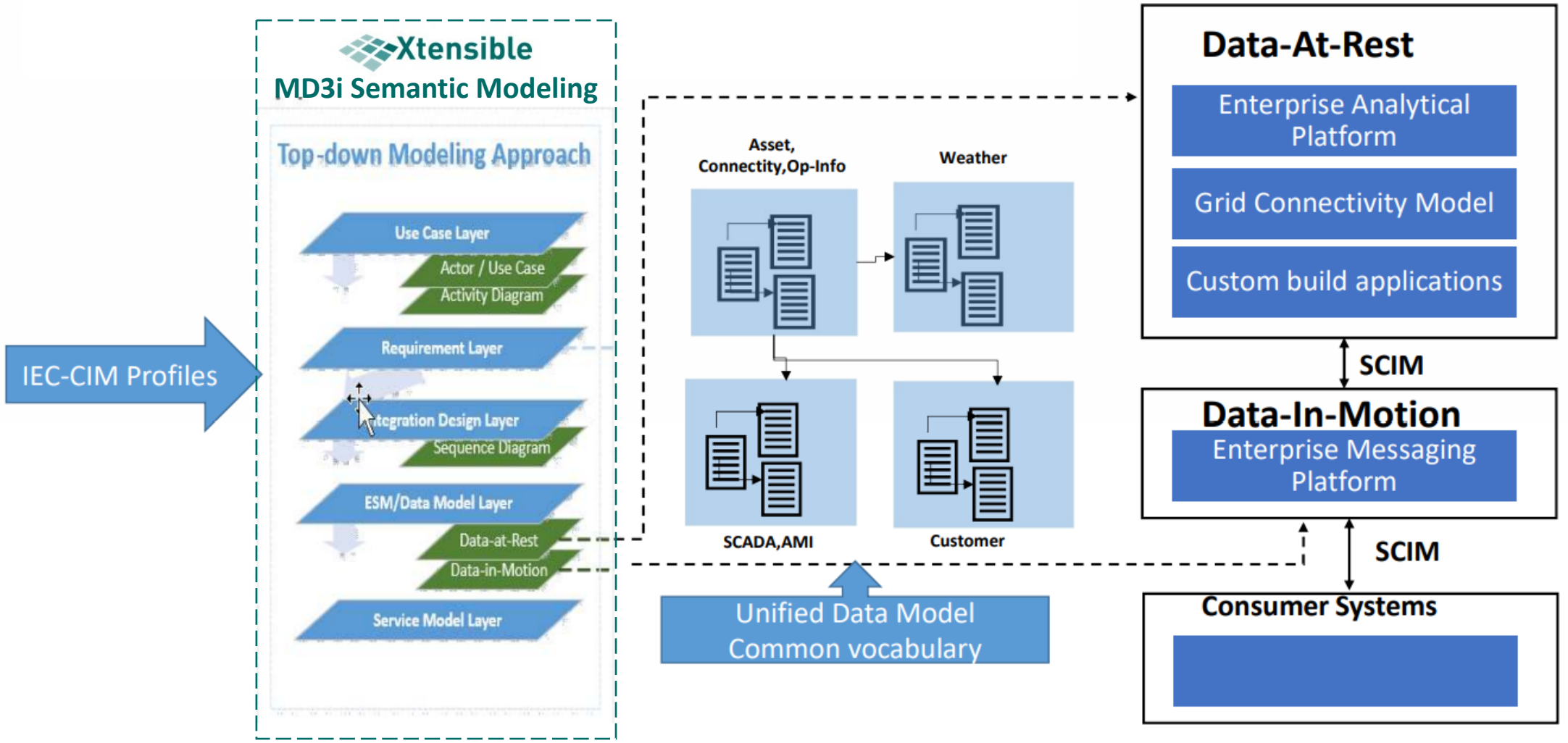


Figure: DistribuTECH 2020 – Enterprise Analytics for Distribution Planning

Enterprise Semantic Data Model

CIM Native

SCIM Extensions (SCE specific)

- 2019 CIM cover 80% of the needs
- SCE employed Xtensible work to add the “20%” for DER into the CIM through the CIM IEC TC57 Workgroups

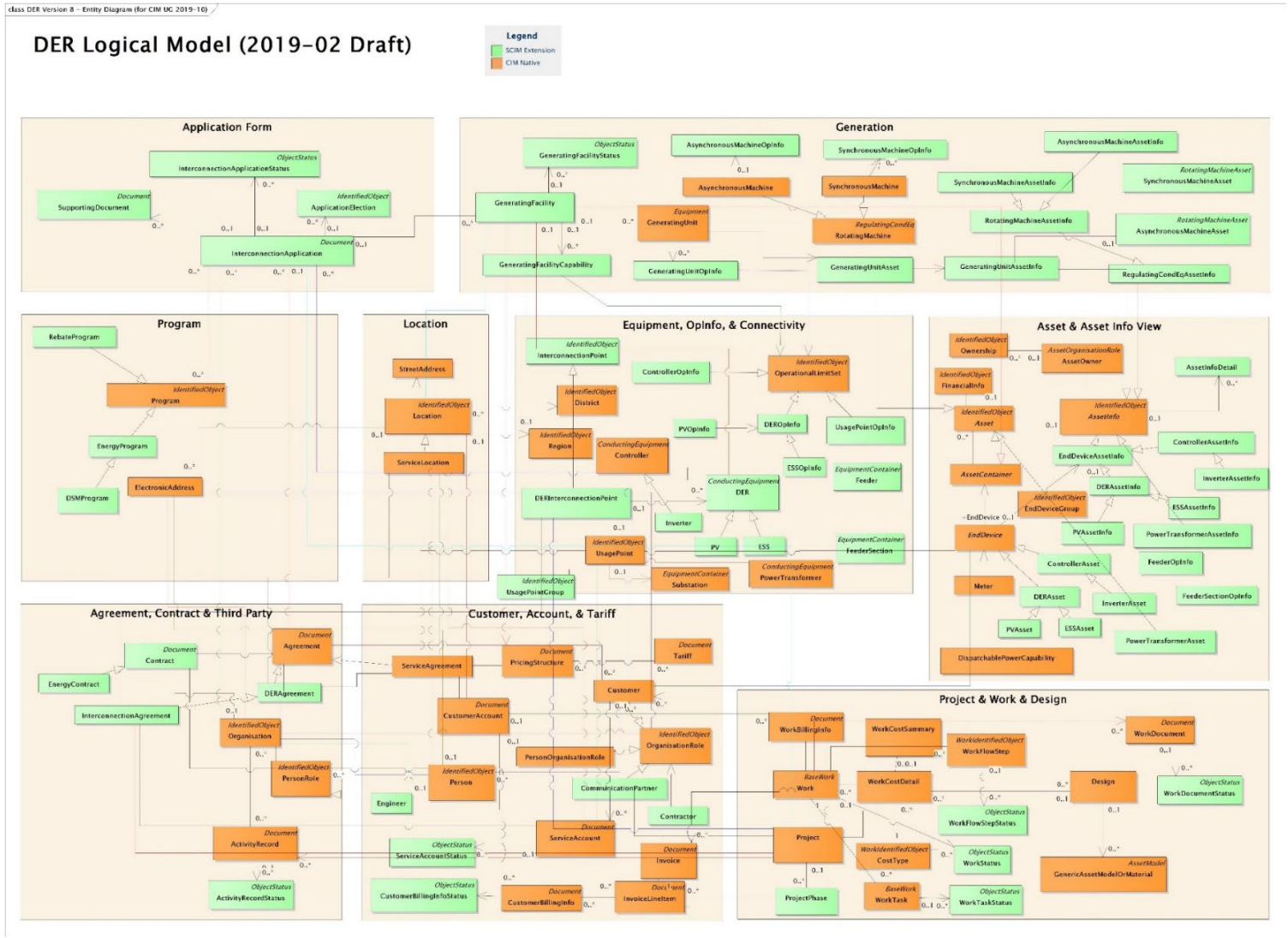


Figure: CIMUG 2019 – Information Modeling Distributed Energy Resources (DER)

Resulting Architecture

Generating 10 terabytes of data a week

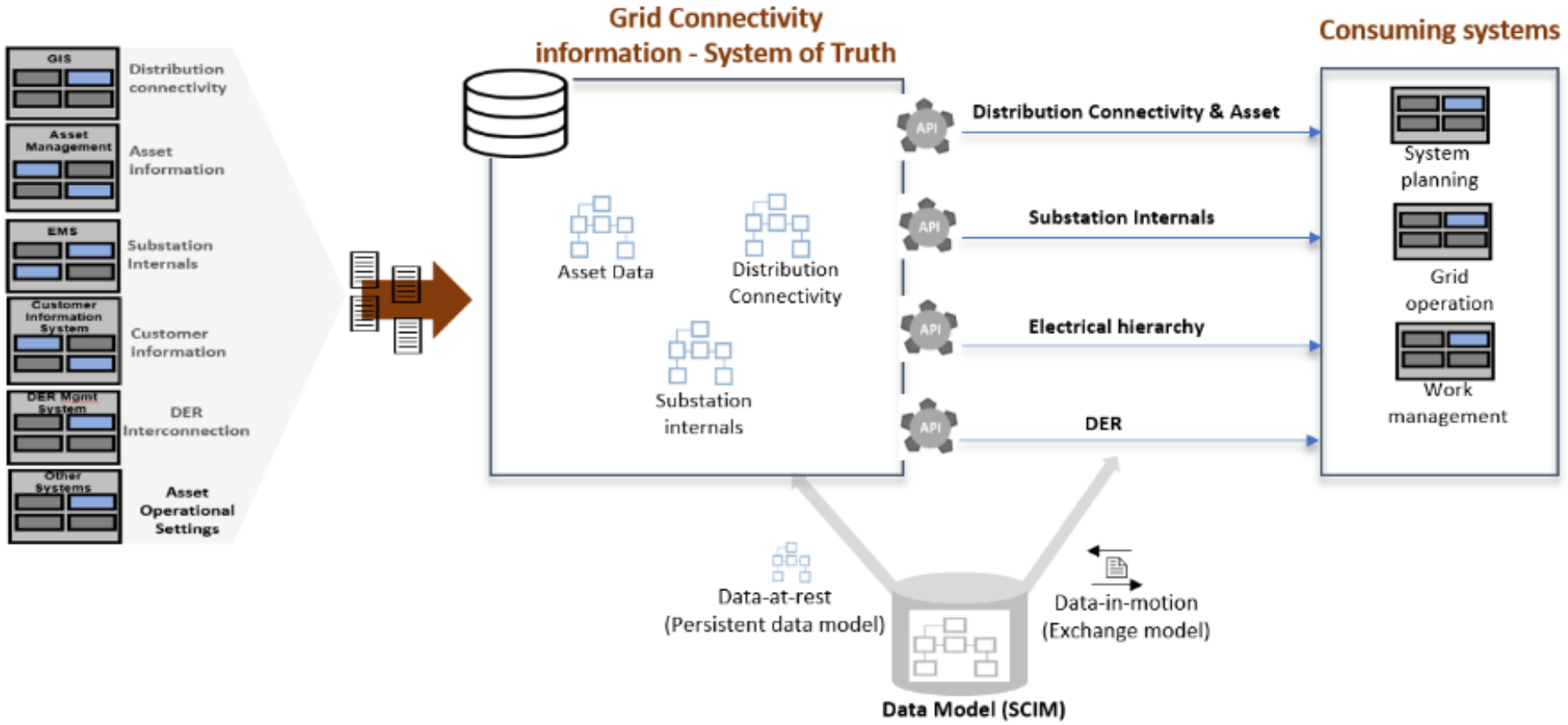
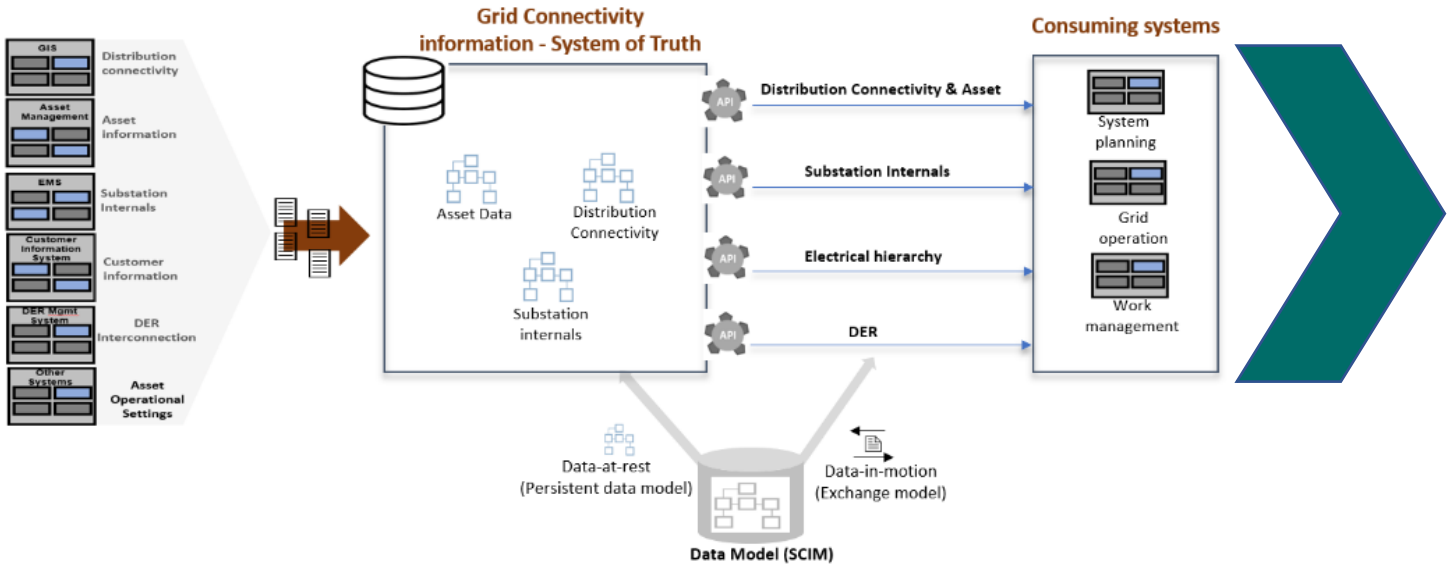


Figure: CIMUG 2019 – Information Modeling Distributed Energy Resources (DER)

Enterprise Semantic Model Enables Reusability & Innovation



- Wildfire Protection Analytics
- Asset Transformer Load Analytics
- Engineering Analytics
- Planning Analytics
- AND MUCH MORE…

Figure: CIMUG 2019 – Information Modeling Distributed Energy Resources (DER)

How are you building your data architecture to deliver analytics?

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Data Fabric or Data Mesh?

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What is the commonality of these approaches?

Both share the common goal of easy of access to data across the organization.

Strategic Focus Points	Data Fabric	Data Mesh	Commonality
Deployment	Technology Automation	Project Approach	Common definition of the data and the supporting level of data management and governance.
Metadata Decisions	Auto discovery driven	Design driven	
Data Definition	Data Definition	SME	
Metadata Management	Active (automated, discovery)	Passive	

Enterprise Semantic Model

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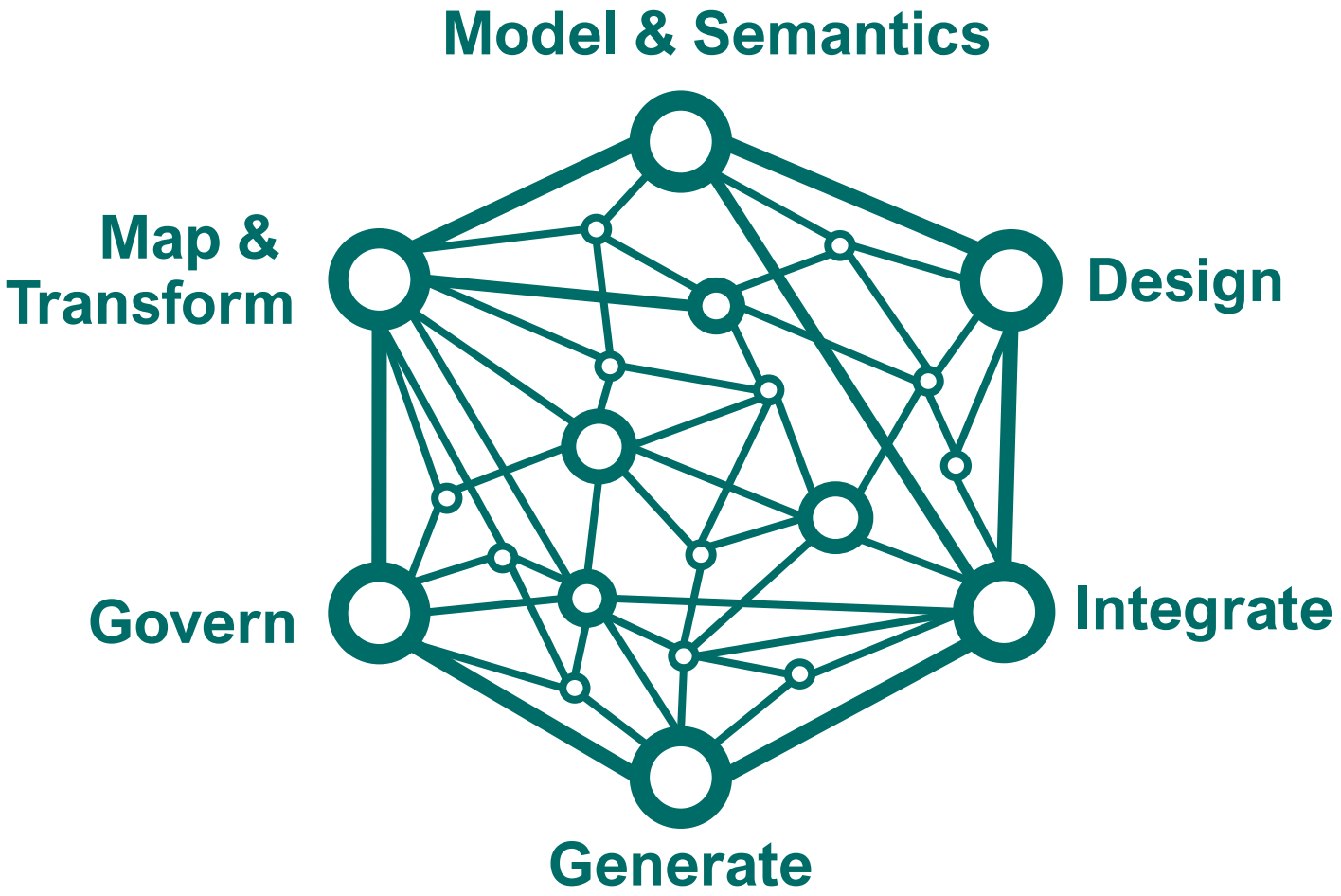
Data Fabric or Data Mesh requires interconnected capabilities



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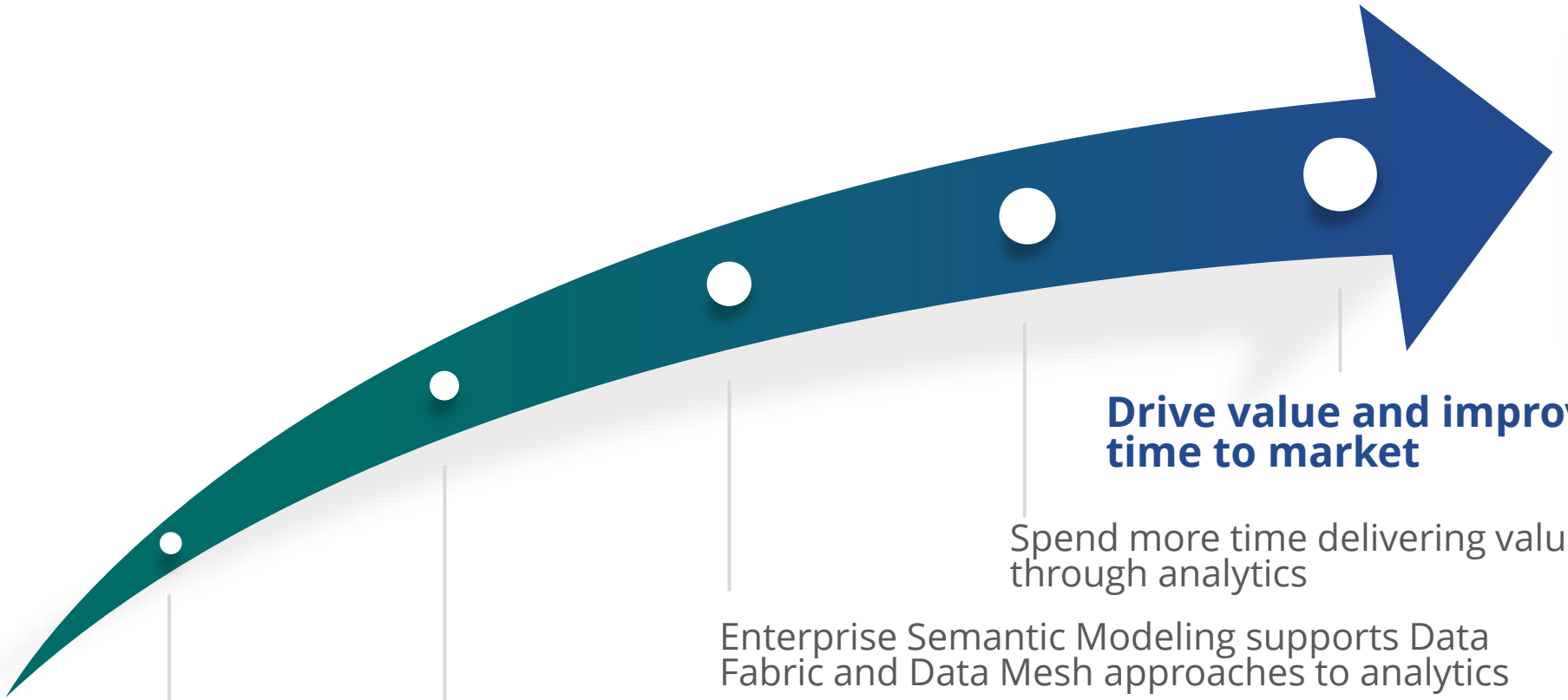
In Summary



Industry standard(s) accelerate enterprise semantic modeling

Enterprise semantic modeling reduces the size of the “Iceberg”

Enterprise Semantic Modeling supports Data Fabric and Data Mesh approaches to analytics

Spend more time delivering value through analytics

Drive value and improve time to market

SCAN ME

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Questions

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