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Model-driven Utility Enterprise Data Warehouse Solution

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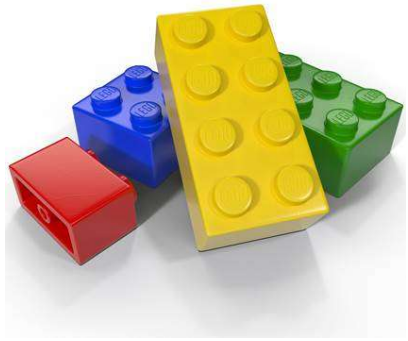
Topics

- Goals
- Enterprise Semantic Model
- IEC CIM Model
- Modeling Approach
- Use Cases

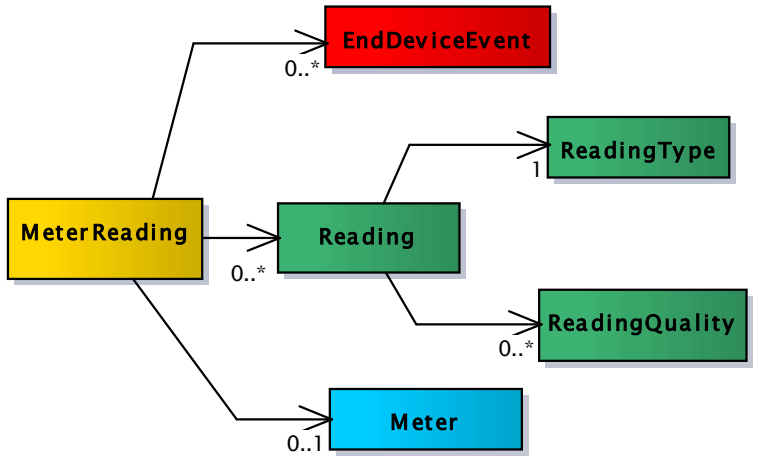
Goals

- Common data model for both data warehouse and data integration to achieve:
  - Precise semantics
  - Better business intelligence
  - Seamless data integration
  - Business agility
  - Less maintenance cost



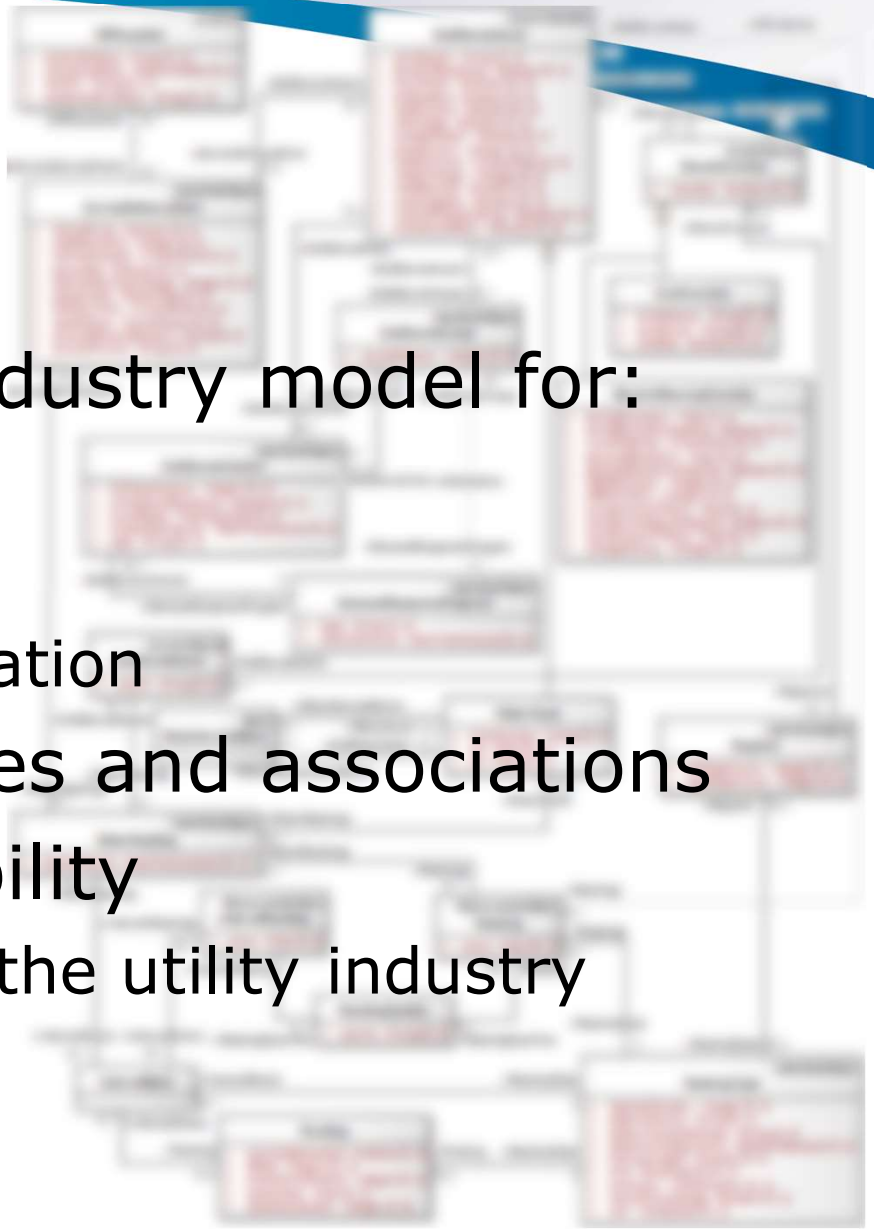
What to build?

- Enterprise Semantic Model (ESM) based on industry standards
  - IEC CIM as foundation
  - Extension as needed
  - Common vocabulary
  - Reusable model items for business contexts



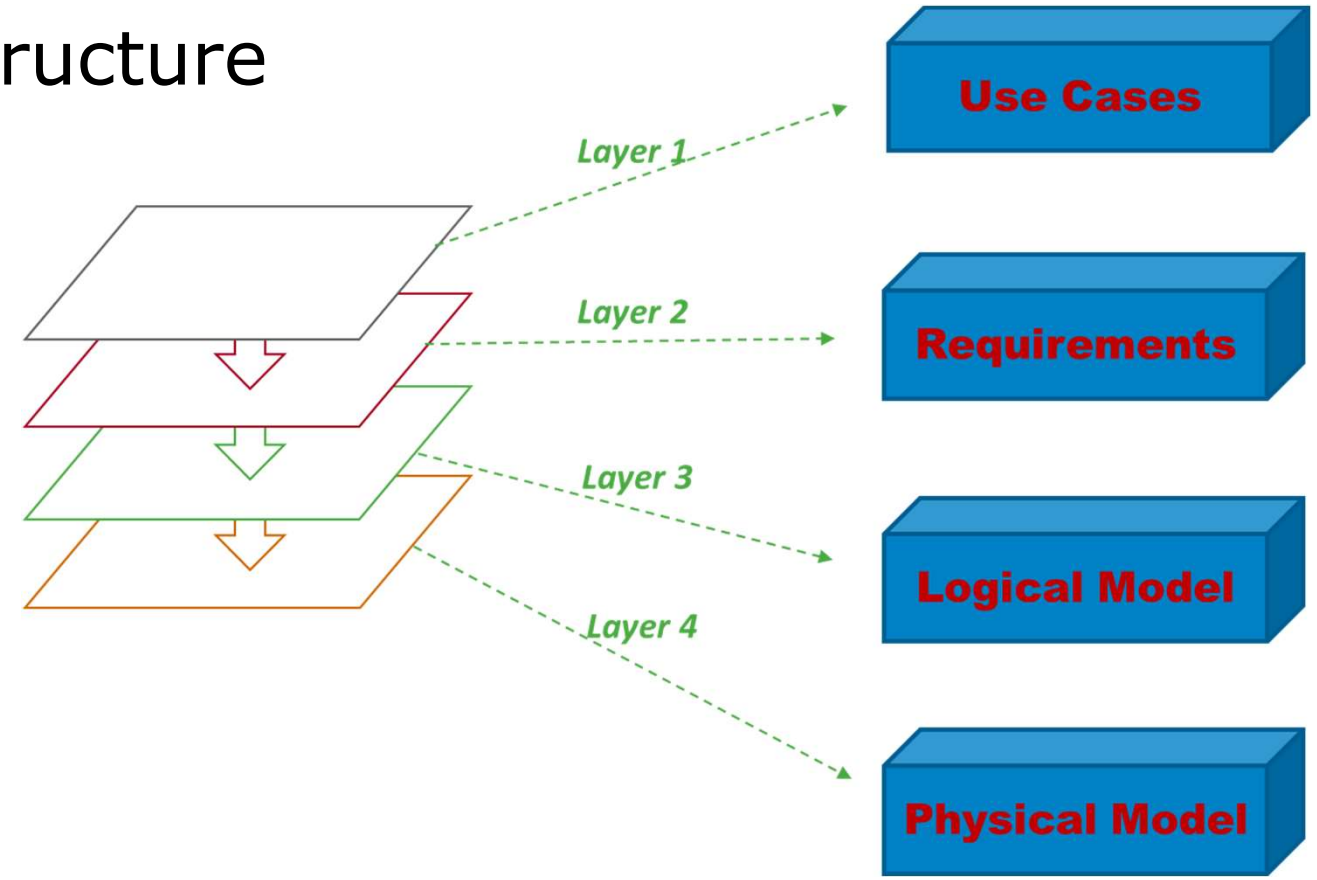
Why IEC CIM?

- Comprehensive industry model for:
  - Transmission
  - Distribution
  - Market Communication
- Well defined classes and associations
- Better interoperability
  - Used extensive in the utility industry



Modeling Approach

- Business driven
- Layered structure
- Traceable

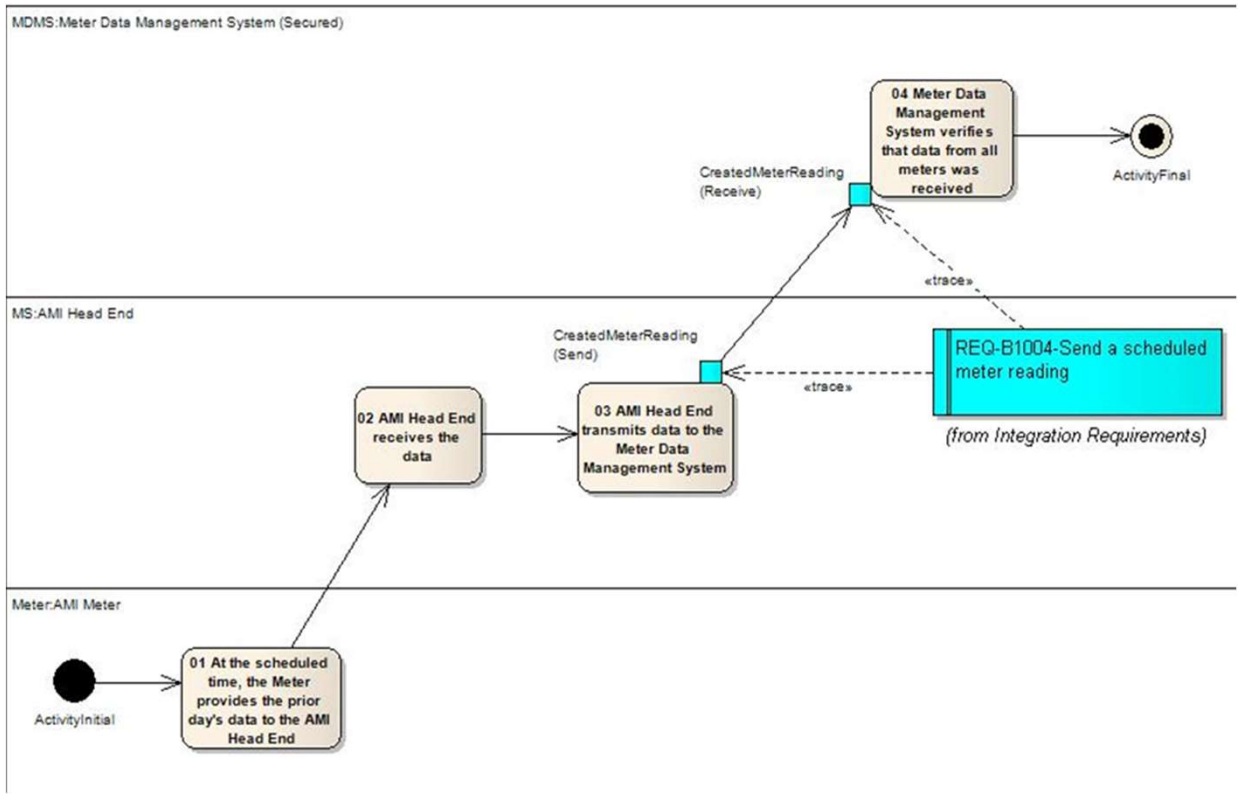


Layered Model-Driven Methodology

- Business use cases layer
  - Identify use cases such as asset health or transmission planning.
- Requirements layer
  - Collect requirements including KPIs
  - Map to CIM business functions and sub functions
- Logical model layer
  - IEC CIM as foundation
- Physical model layer
  - Data integration model such as XSD
  - Data warehouse model such as DDL

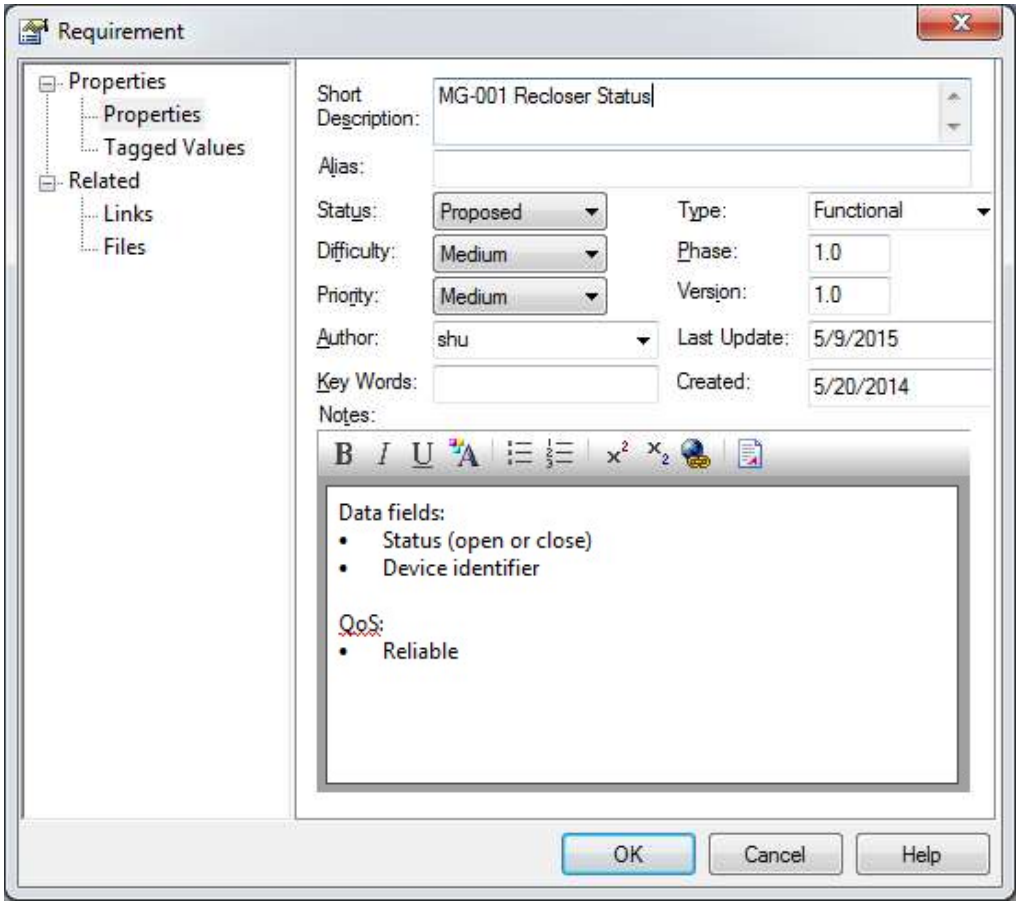
Model Layer
- Business Use Cases

- Model business use cases and identify requirements (blue box below)



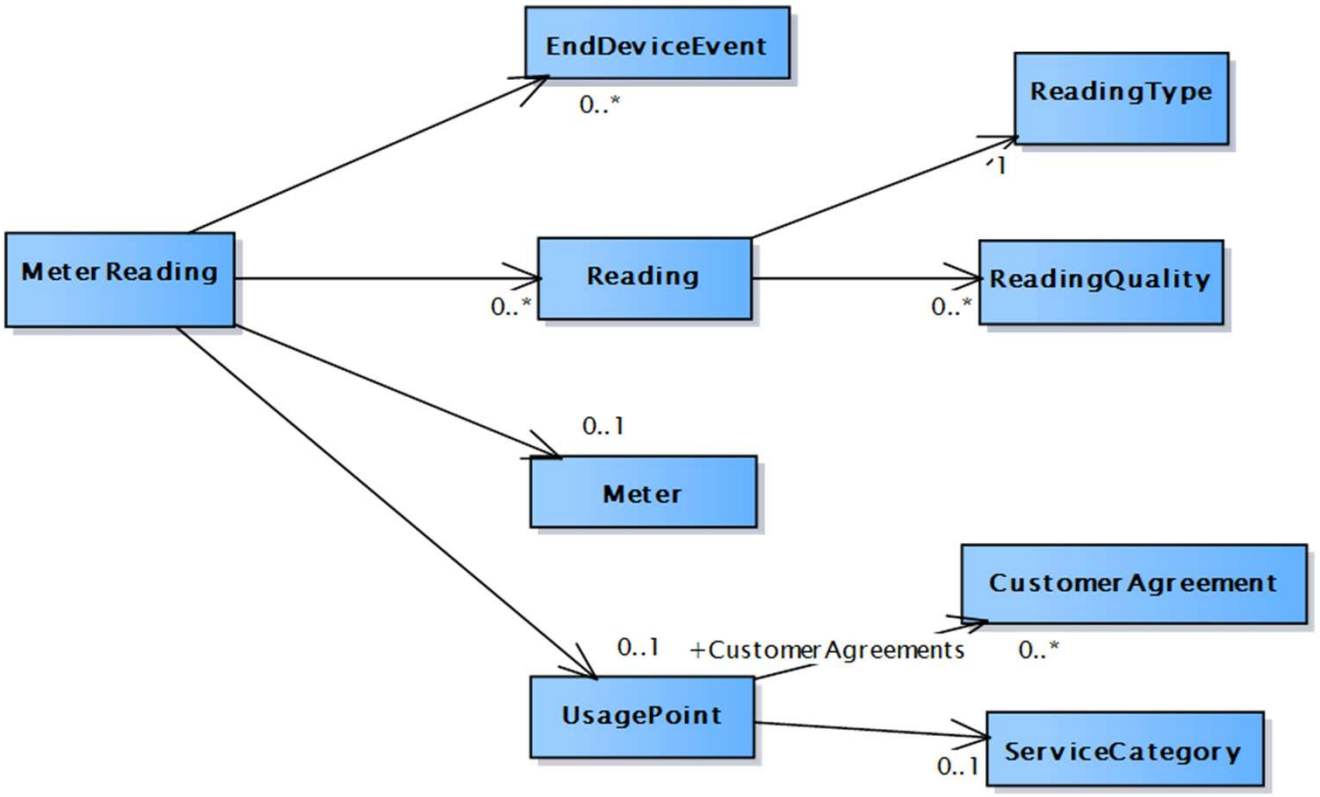
Model Layer
- Requirements

- Requirements are identified in the use case modeling process and modeled using UML Requirement element.



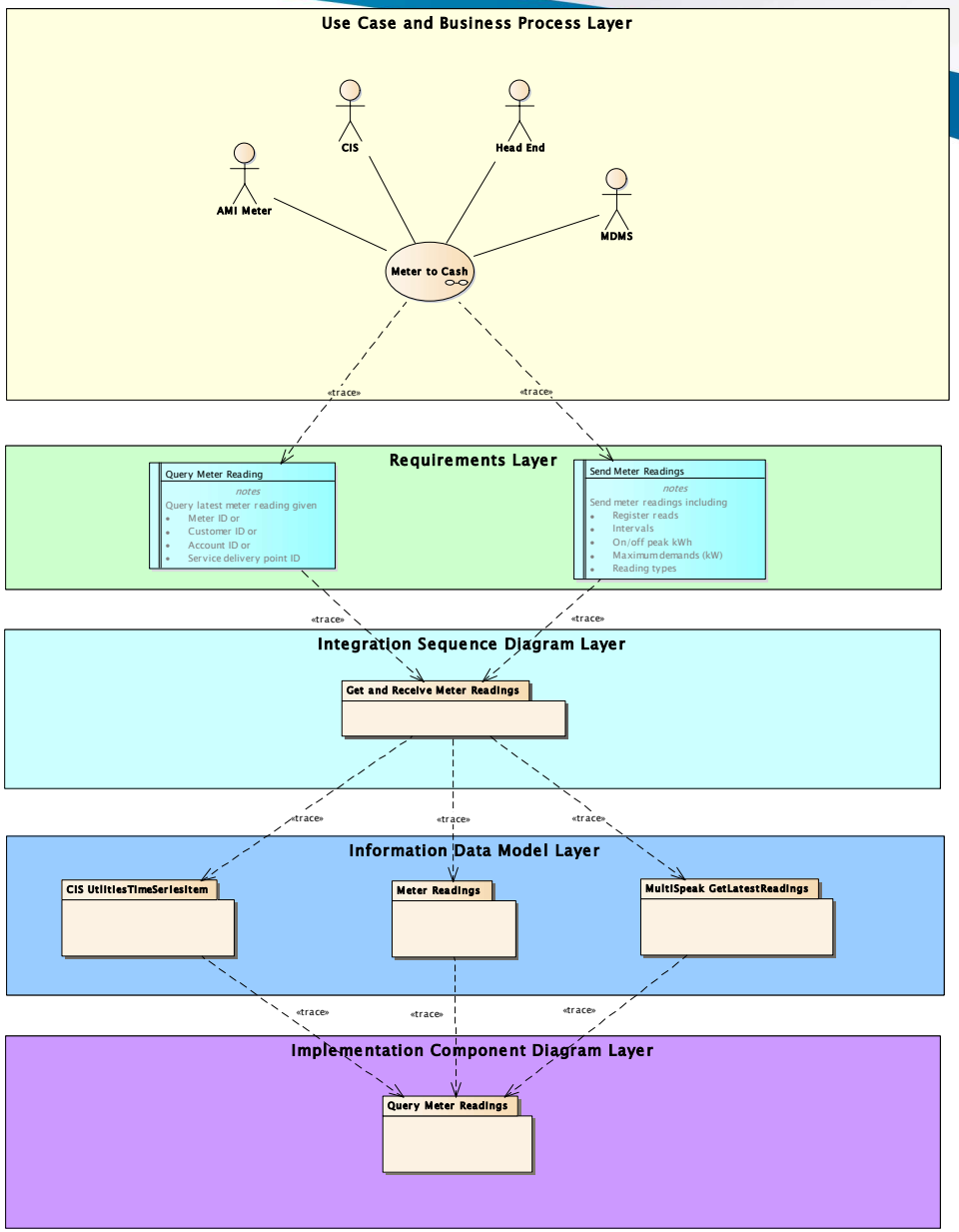
Model Layer
- Data Model

- Modeled in UML class diagrams based on the IEC CIM

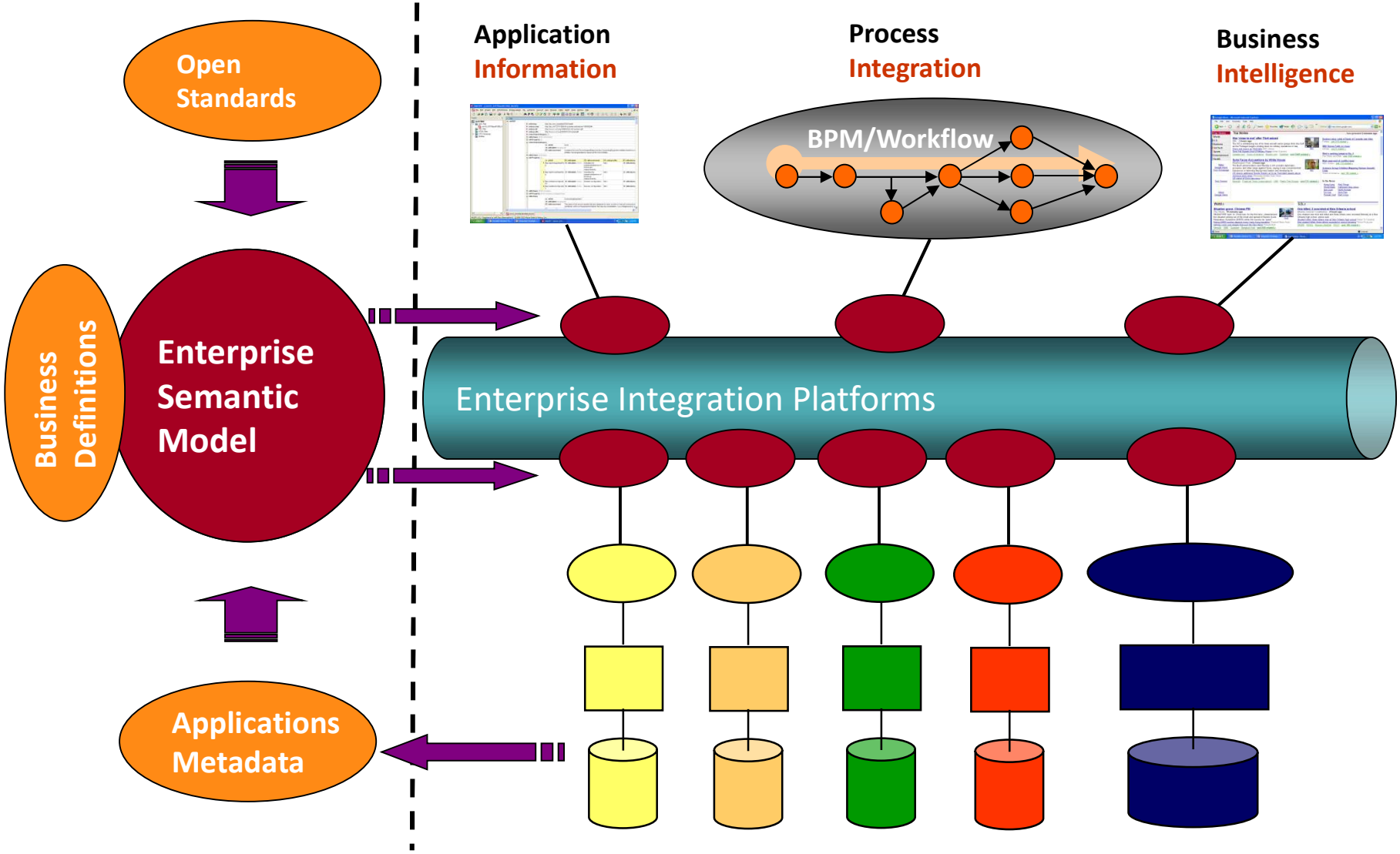


Traceability

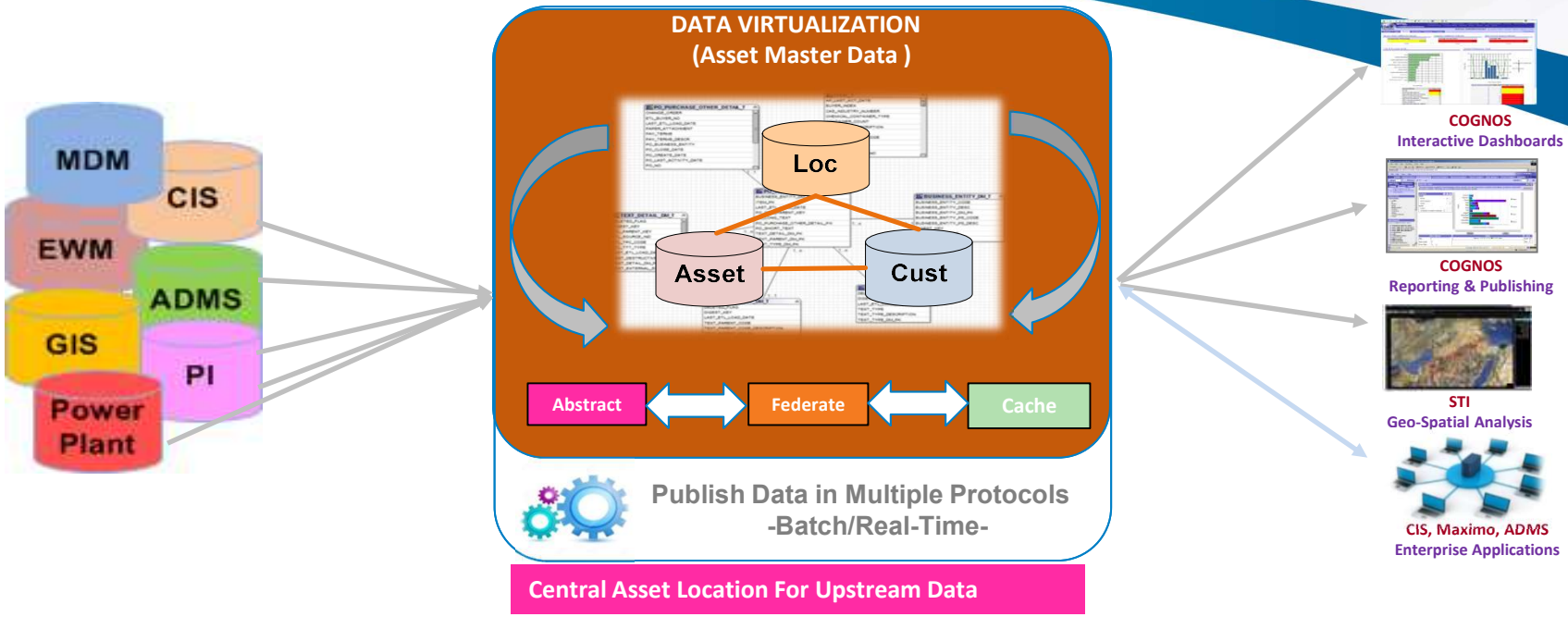
- All model layers are linked



ESM for Common Services



Asset Health Use Case



Business Challenge

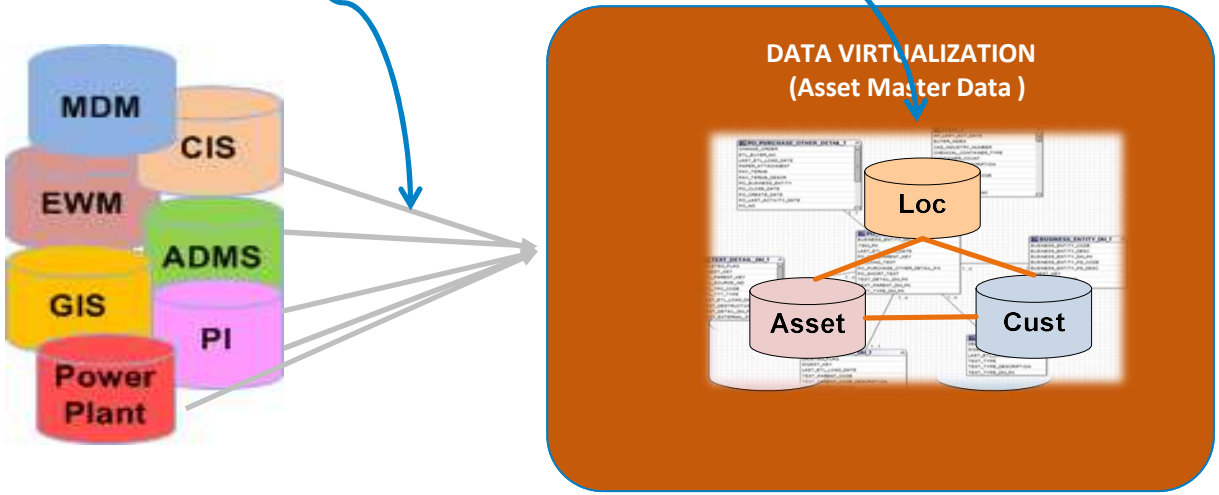
- Needed visibility into all assets (i.e. Transformers, Feeders, Circuit breakers etc.,) , such that each asset and asset-location is uniquely identified
- Needed an Asset hierarchy model to rollup/ aggregate by plant/Unit/location
- Ability to view the assets in a geo-spatial format and have the ability to drill down into each asset to see status and maintenance history

Business Benefits

- Single source of truth accelerates Application Development and Drives Better Visibility
- Asset Master Data allows users to have a single view of all assets and asset-location.
- The portal increases productivity by making processes such as repair and maintenance more efficient. For example, prioritizing repairs of higher productivity (most critical) assets based on Asset health Index

ESM as Common Model for Data Virtualization

- Use ESM for both
  - Data integration and
  - Data store



Discussion – Q&A