CIM Adapter for PI AF

Summary

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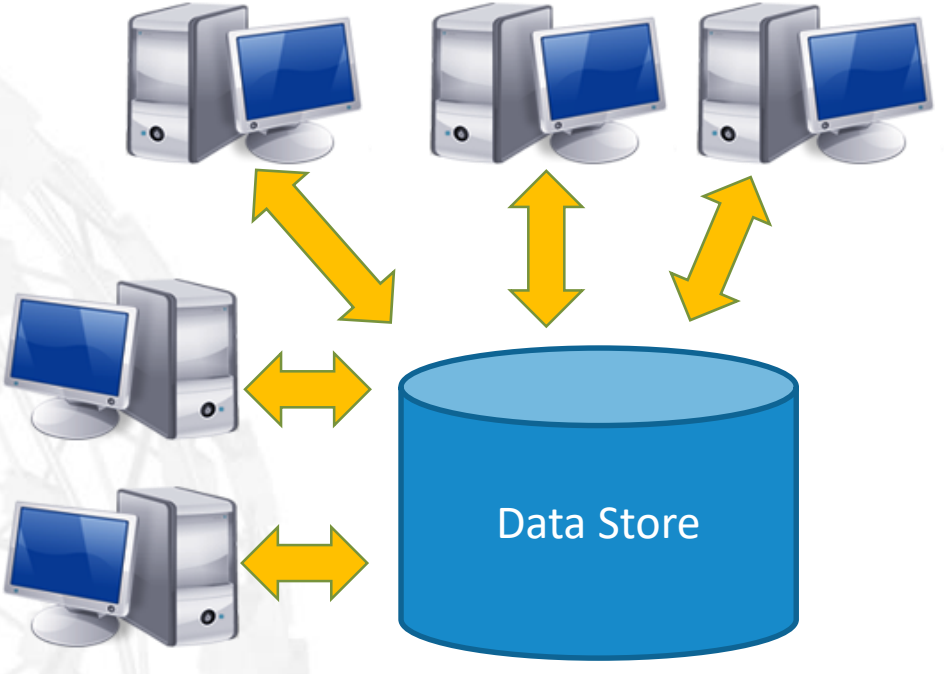
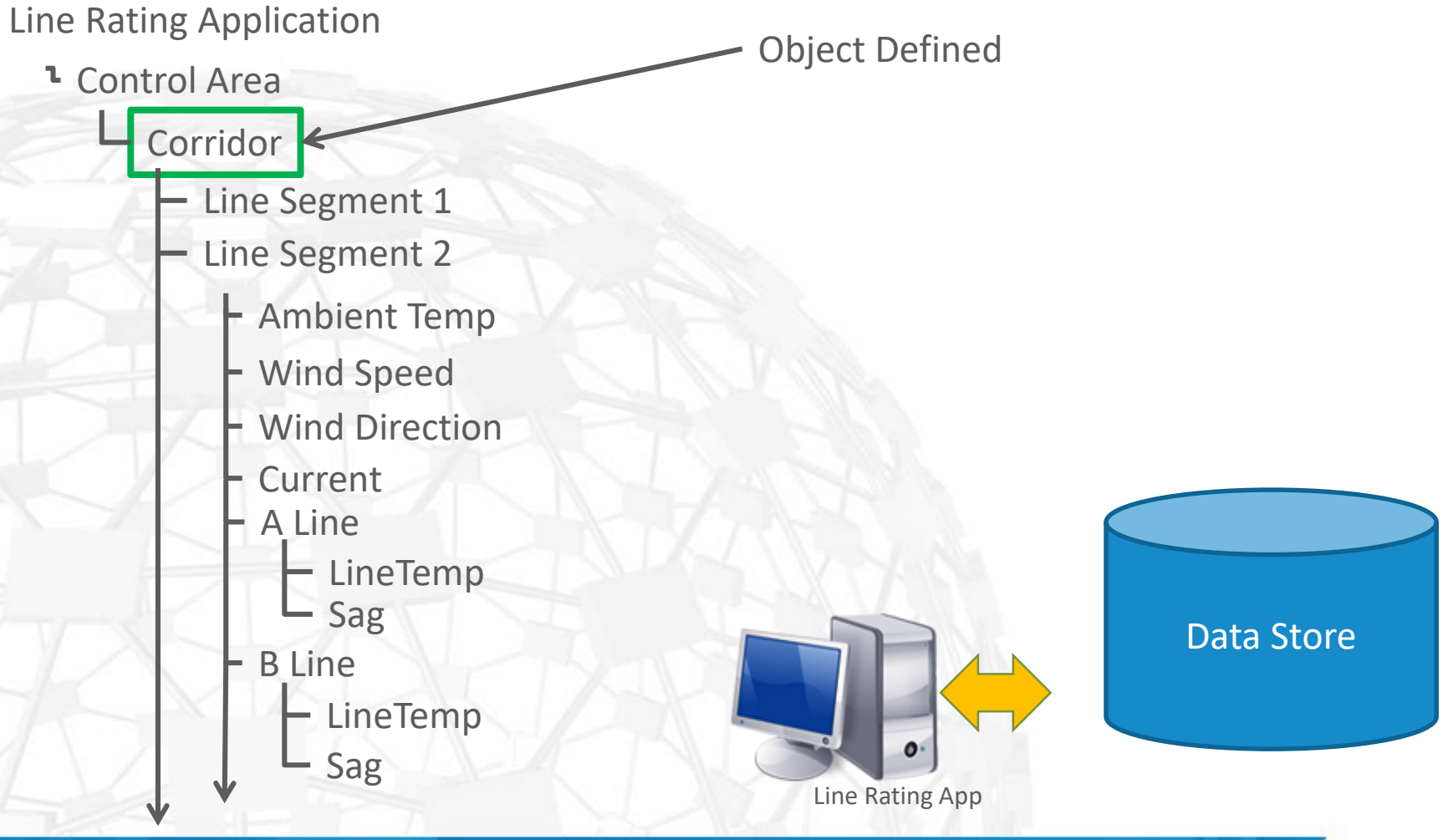
Legacy Approach for Analytic Data Modeling

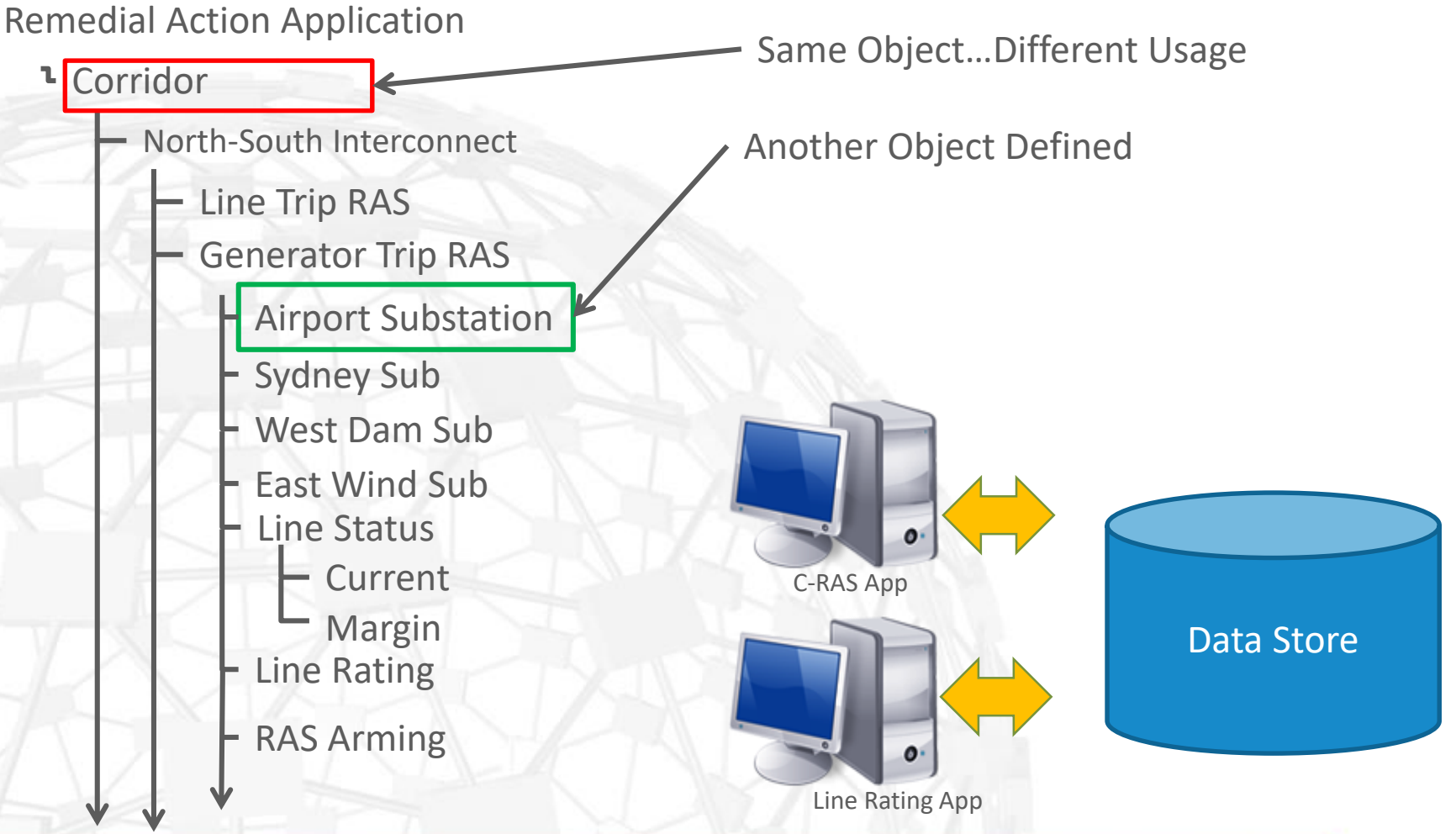
- Each group looks at its own application needs and develops a data model that is optimized for its own use:
  - » Only data needed for its application is considered.
  - » New data model elements are added as needed based on needs of individual applications.
- The "Ad-Hoc" Approach



Ad Hoc Approach for Line Rating Application



Ad Hoc Approach for Remedial Action Schemes

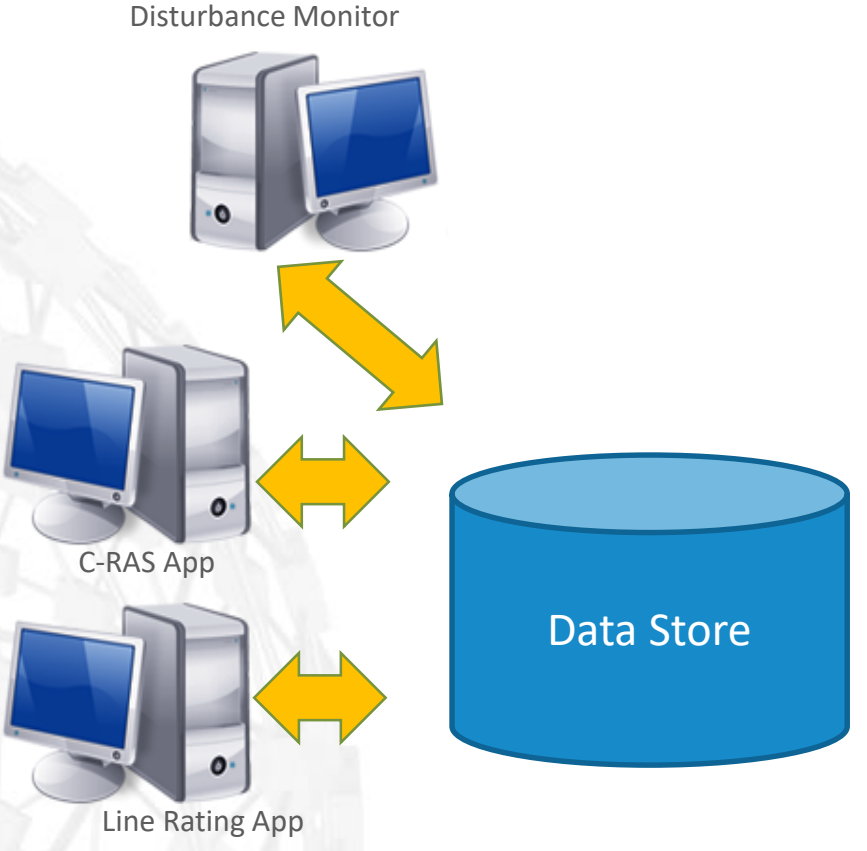


Ad Hoc Approach for Disturbance Monitoring

Disturbance Monitor App

- Control Area
  - Airport Sub
  - Sydney Sub
  - East Wind Sub
    - Bus Monitoring
    - Battery
    - Breakers
    - Transformer
      - Voltage Level
        - 138KV
        - 69KV
        - DFR1
  - West Dam Sub

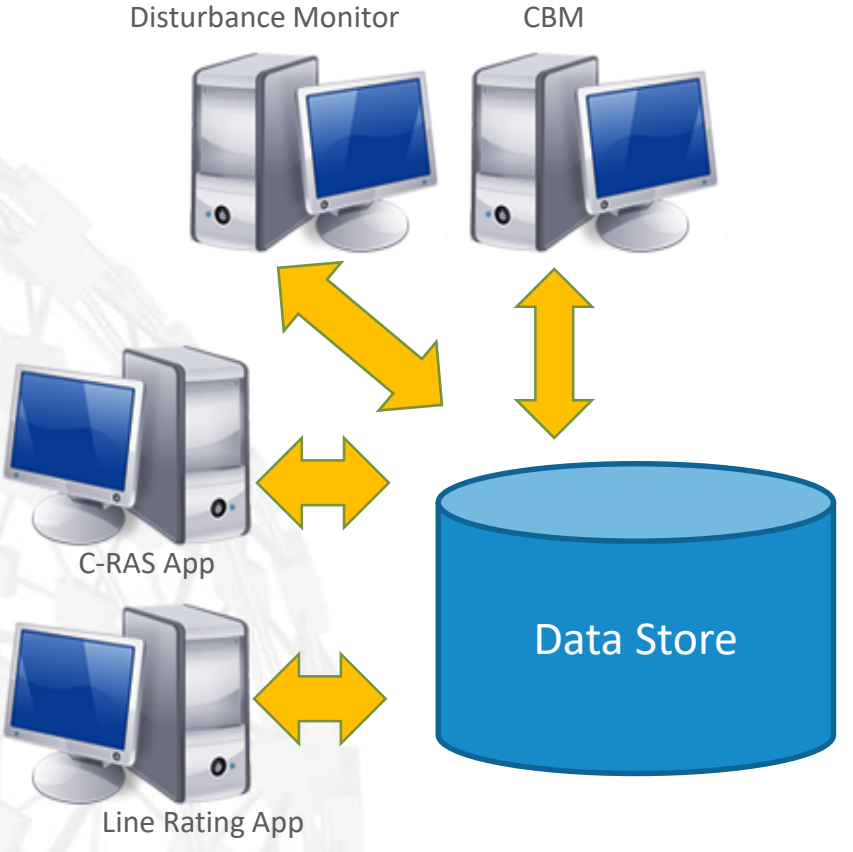
Same Object…Different Usage AGAIN



Ad Hoc Approach for CBM Applications

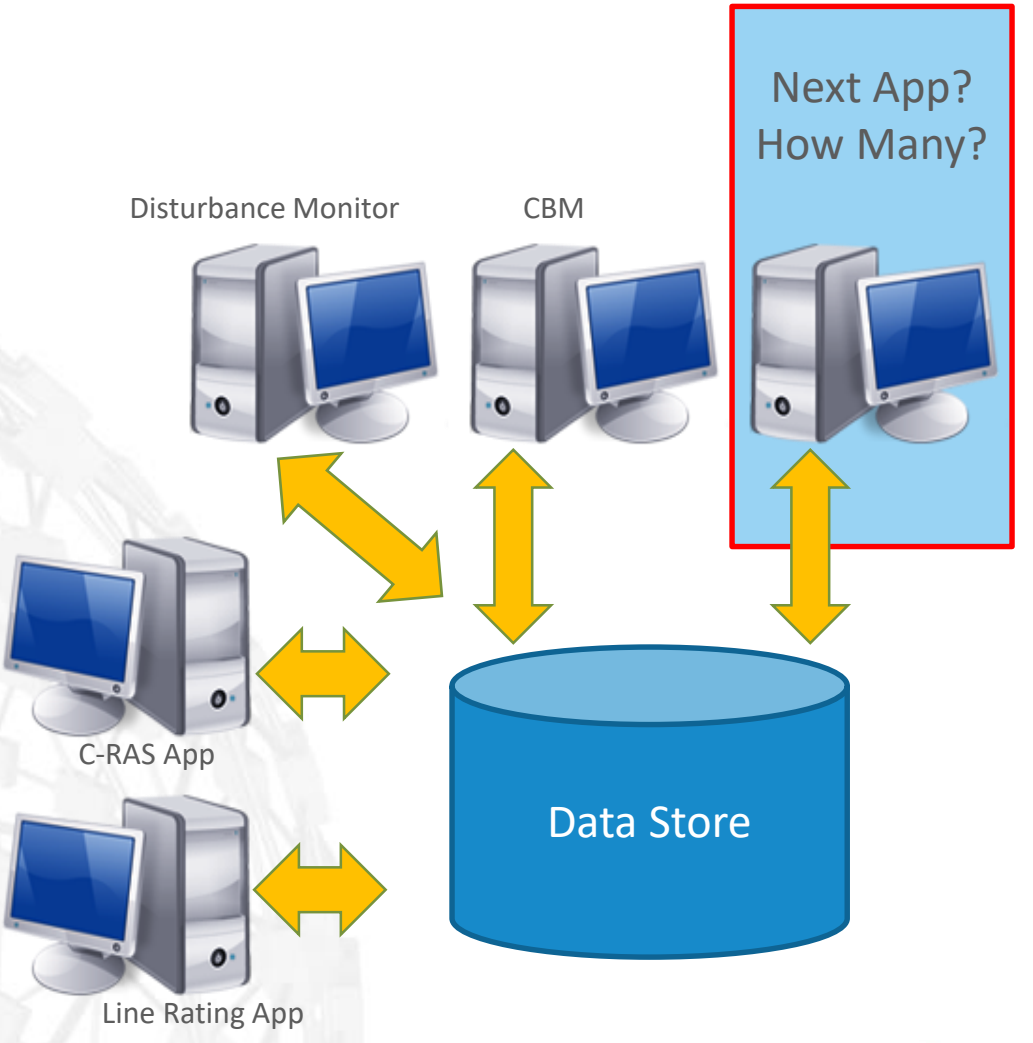
Additional overlapping object definitions used

- Condition Based Maintenance
  - Circuit Breakers
    - Sydney Sub
      - 69KV
      - 138KV
        - Breaker Q1A1
        - Breaker Q1A2
        - Breaker Q1A3
        - Breaker Q2B1
        - Breaker Q2B2
          - Last Operate
          - NumOperations
  - Transformers
    - Sydney Sub
    - West Wind Sub



Impact of Ad Hoc Approach for Application Data Models

- Each Application has its own data model.
- Impact of cross-organizational integration and data sharing ignored.
- Each group is individually satisfied with their own custom view until…..



Change Happens

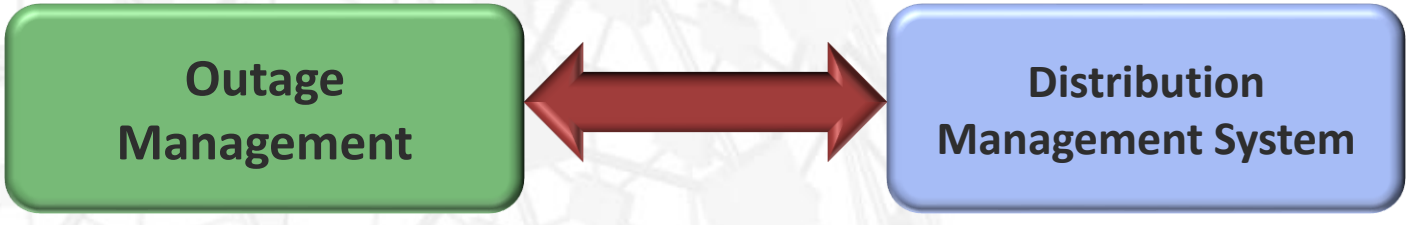
- Addressing change becomes too difficult when each application uses its own incompatible data modeling:
  - » Business needs demand organizational changes and new levels of data sharing and integration.
  - » New technology must be addressed (e.g. renewables, DER, "deregulation", etc.

- Result: **Application rewrites, reintegration, project delays, barriers to data sharing.**

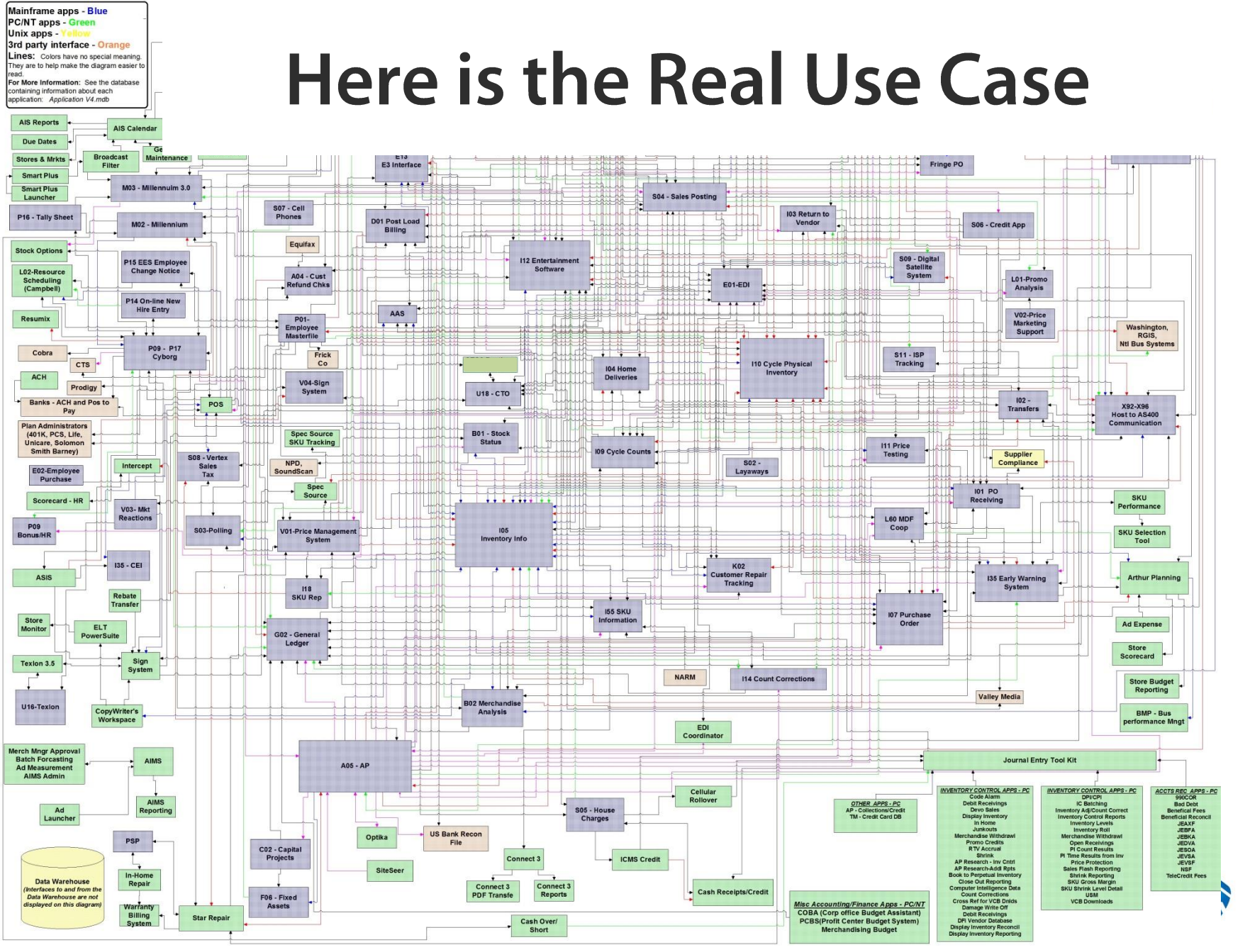
- **The "Bigger" the data, the bigger the negative impact will be of not using a common data model.**

How Does This Happen?

- Misunderstanding the Integration Use Case
  - The tendency is to focus only on the specific project at hand
  - Ignores the long-term cost and complexity of trying to do many projects
- Is this is the use case that drives choices (for example)?



Here is the Real Use Case

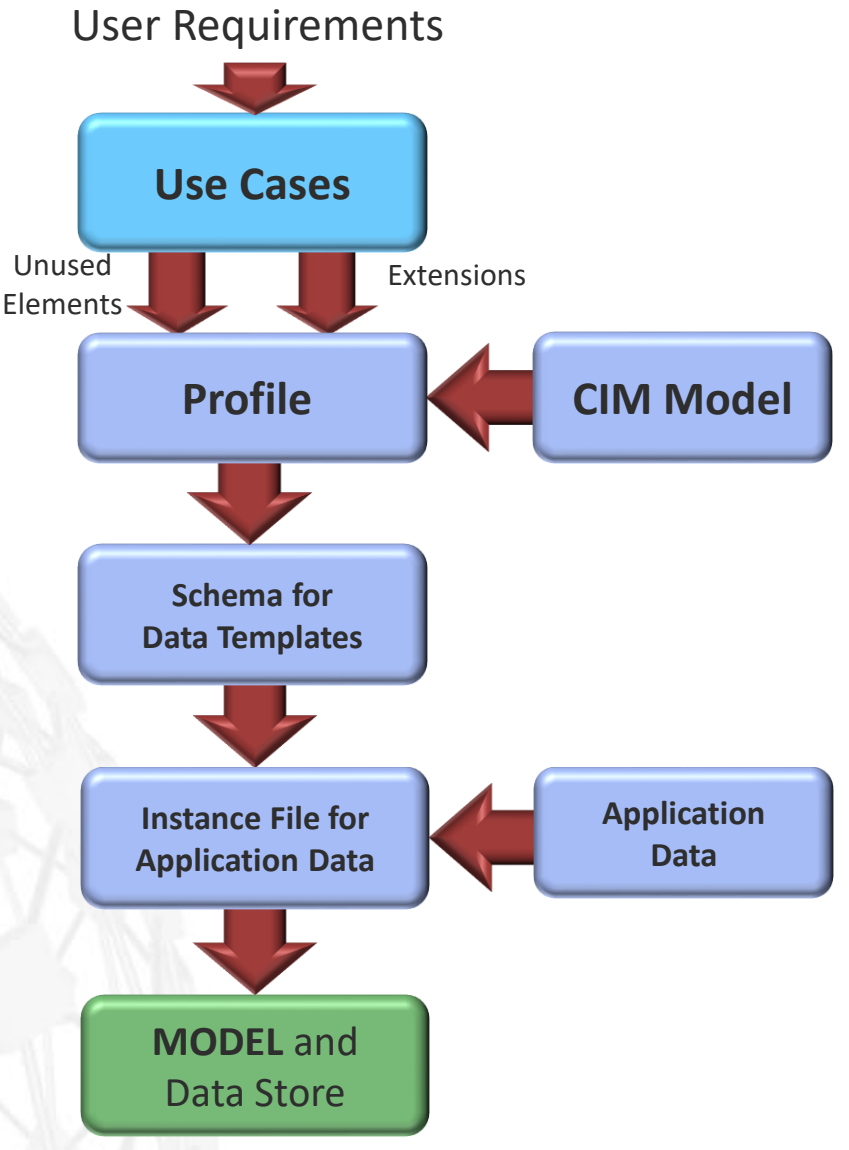


CIM Is The Only Choice for the Model-Driven Utility

- Developing your own comprehensive utility data model to replace CIM will take many decades of effort
  - How many world-class experts can your utility hire to design this from scratch?
- CIM is specifically designed to be adapted to fit the needs of individual utility use cases:
  - » Extensions and Profiles
  - » Messages and Integration Patterns
- New applications can extend independently yet share the existing models where needs overlap without breaking existing applications and integration
- SISCO's CIM Adapter for PI brings these benefits to the PI System
- CIM is not the easiest way to do any **one thing**. CIM is the only way to do **everything**.

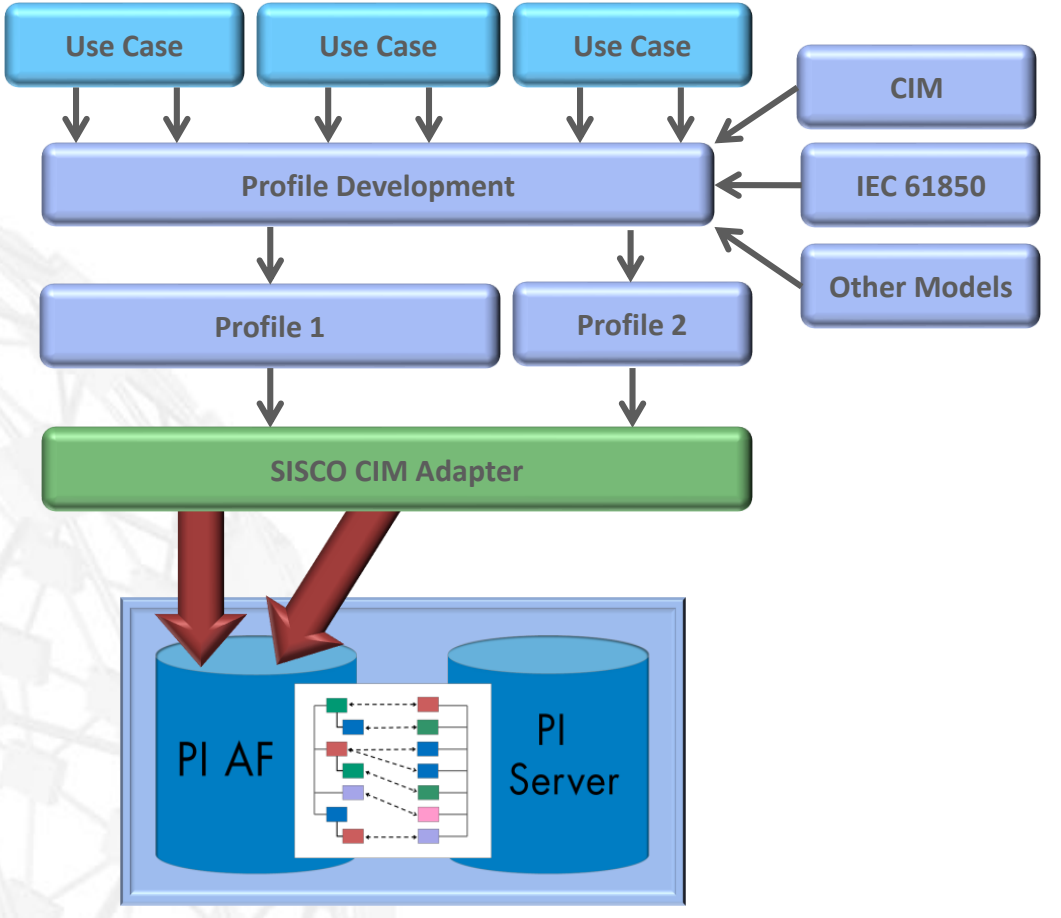
The CIM Model-Driven Process

- CIM is flexible to accommodate:
  - » Extensions for non-standard business needs
  - » Eliminate the complexity of unused models
- Profiles are created based on use cases to address your specific needs
- Instances created to relate existing data to the CIM Profile schema
- Model used to configure analytics.
- Applications use models to access data eliminating custom tag name dependency.

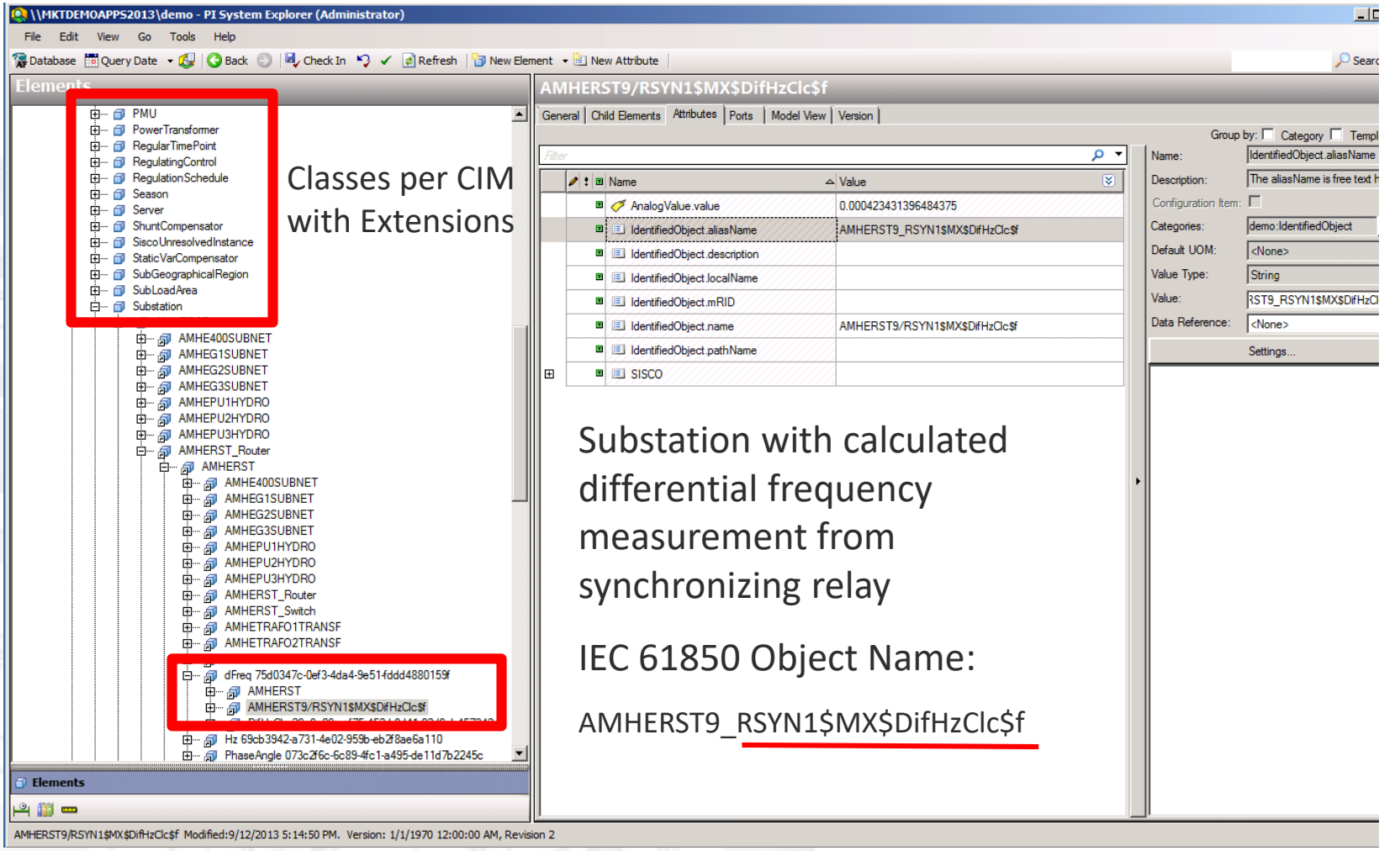


CIM Adapter and PI AF Deliver Flexibility

- Multiple uses cases can be addressed with one profile.
- Multiple profiles can be supported for use cases that can't share a profile
- PI AF is flexible to support many models
- A disciplined modeling process with SISCO CIM Adapter brings it all into the PI System



Result of Integration with PI AF



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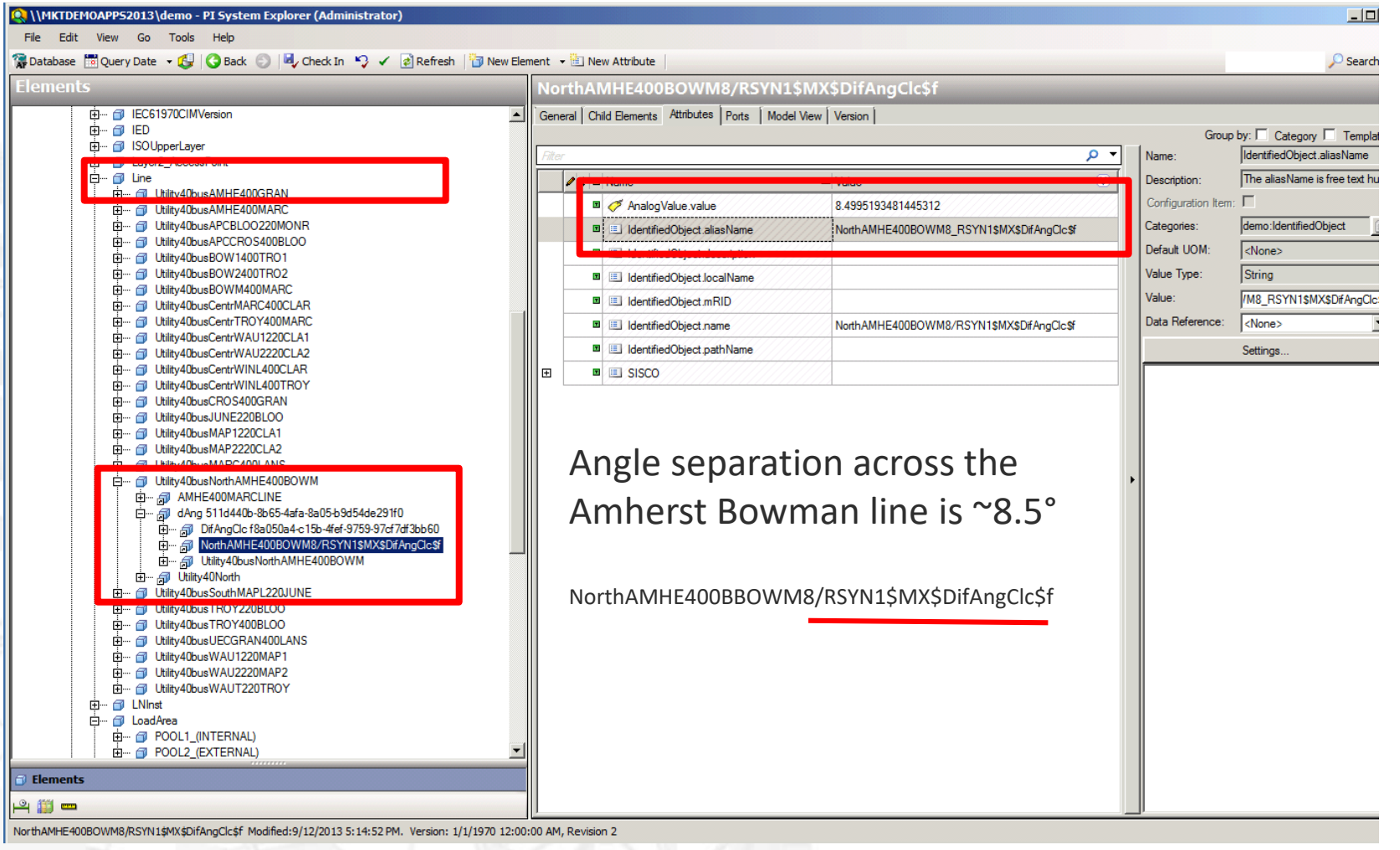

Angle separation across the Amherst Bowman line is ~8.5°

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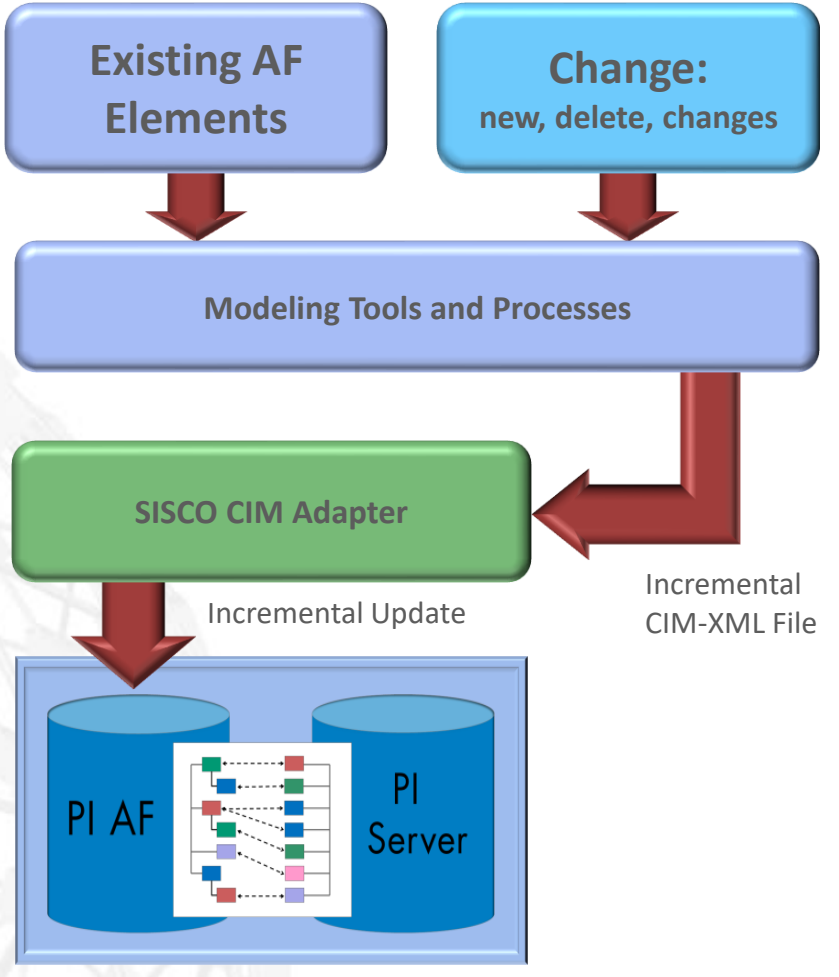
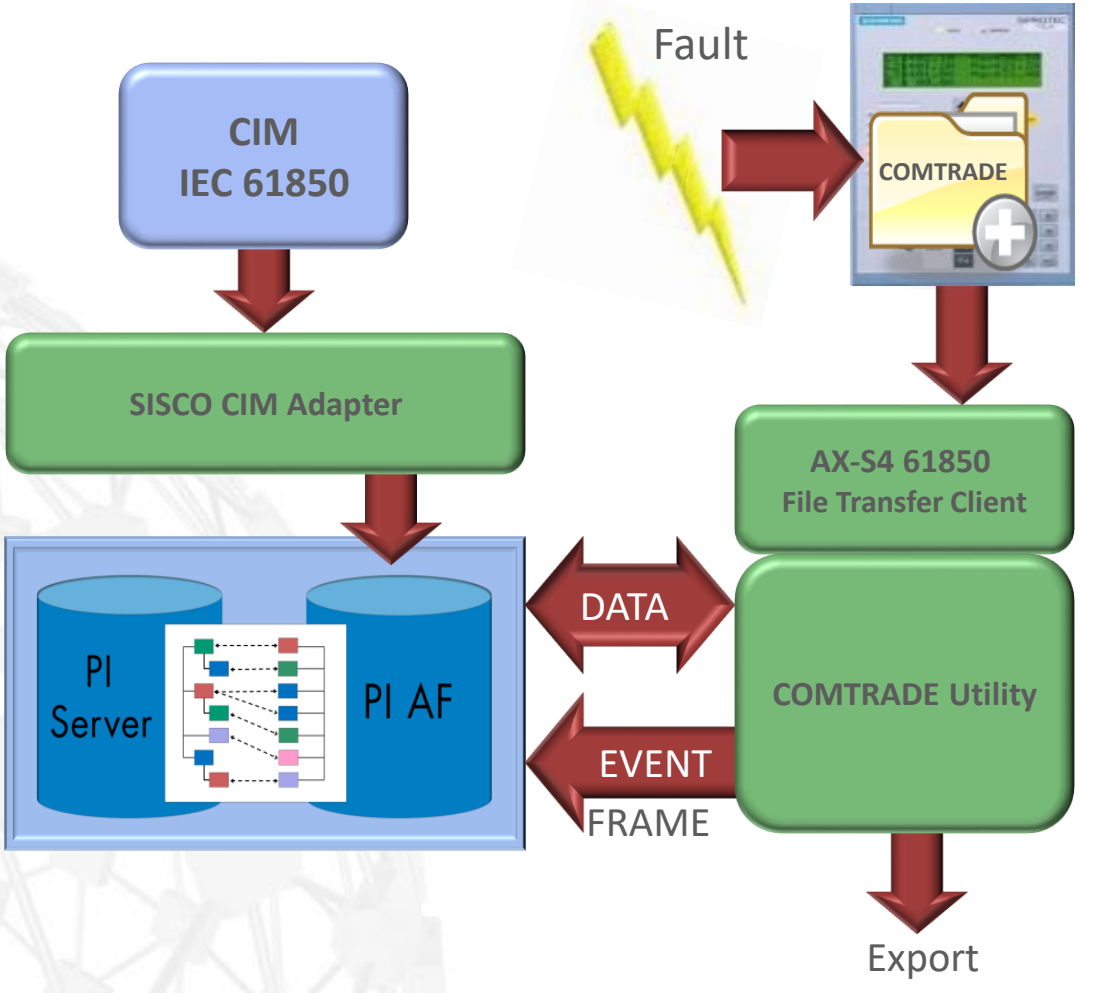
CIM Adapter Helps You Embrace Change

- The model driven process captures change and creates incremental updates
- SISCO CIM Adapter incrementally updates PI AF models.
- The individual hierarchies can be updated and kept synchronized with each other.



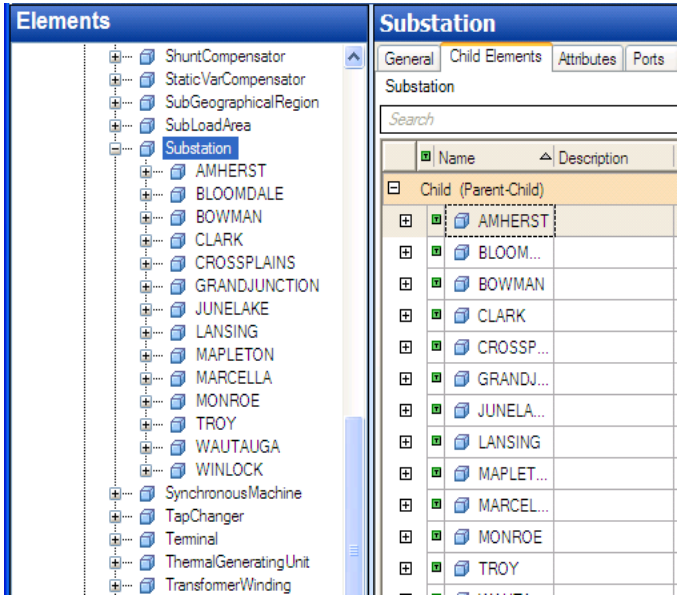
PI AF with CIM Works Across Applications

- SISCO COMTRADE Utility brings disturbance data into the PI System using PI Event Frames
- CIM and PI AF models help correlate all the data in the context needed by the individual application needs.



Summary

- CIM is a pre-existing standardized utility oriented data model that provides a platform to build an application data model that addresses enterprise level needs.
- IEC 61850 provides a data model that provides context and meaning to telemetry data that can be associated to CIM
- PI AF and SISCO CIM Adapter provide an excellent foundation to support effective application of application data models for utilities.



Business Challenge

- Taking advantage of application data models that meets individual group needs while supporting enterprise wide integration and data sharing that can be adapted to changes.

Solution

- PI AF to organize all PI System data
- SISCO CIM Adapter to automate PI AF modeling
- CIM based model driven process to manage change

Results and Benefits

- A single enterprise level based for PI AF that can be optimized for individual application needs
- Flexibility to minimize effort adapting to change

Thank You

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