

Data Analytics in Support of Advanced Planning & System Operations (EPIC-2 Project)



A  Sempra Energy utility®



EPIC Public Stakeholder Workshop
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Data Analytics in Support of Advanced Planning & System Operations



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Project Objectives



- Address the anticipated “data tsunami” and improve data management
 - Demonstrate solutions to problems stemming from the extensive amount of real-time and stored data being archived from field devices
 - Identify the data mining procedures and the data-archiving methods
 - Utilize this data to improve power system operations
- Document solutions deemed to be best practices and make available to stakeholders

Project Team

Internal groups

- Technology and System Demonstration (Lead)
- Electric Distribution Engineering
 - Equipment Engineering
 - Risk & Technical Analysis
- Information Management
 - Business Intelligence & Analytics Open Source Solutions

External

- Contracted Work



Project Milestones

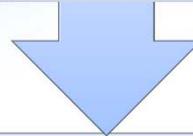


Phase 1 – Requirements Definition

Task #1 – Identify Data Sources & Data Types

Task #2 – Identify Prospective Uses of Data

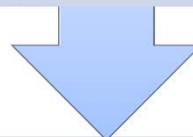
Task #3 – Specify Data Analytics System Needs



Phase 2 – System Implementation

Task #4 - Design Test System

Task #5 - Implement Test System



Phase 3 – Demonstration, Analysis and Reporting

Task #6 – Conduct Demonstration (lab/field)

Task #7 – Analysis and Reporting

Prescriptive Analytics for Distribution Asset Management



What are the most impactful attributes/properties of an asset that are trending in a noticeable manner?

Number of expected days to failure for any given asset (e.g. cable)

With other cost, labor factors included; recommendation for which assets are highest ranked for replacement

Risk (confidence) level: expected or calculated % accuracy based on the type of model used or historic prediction

The Proposed Use Cases



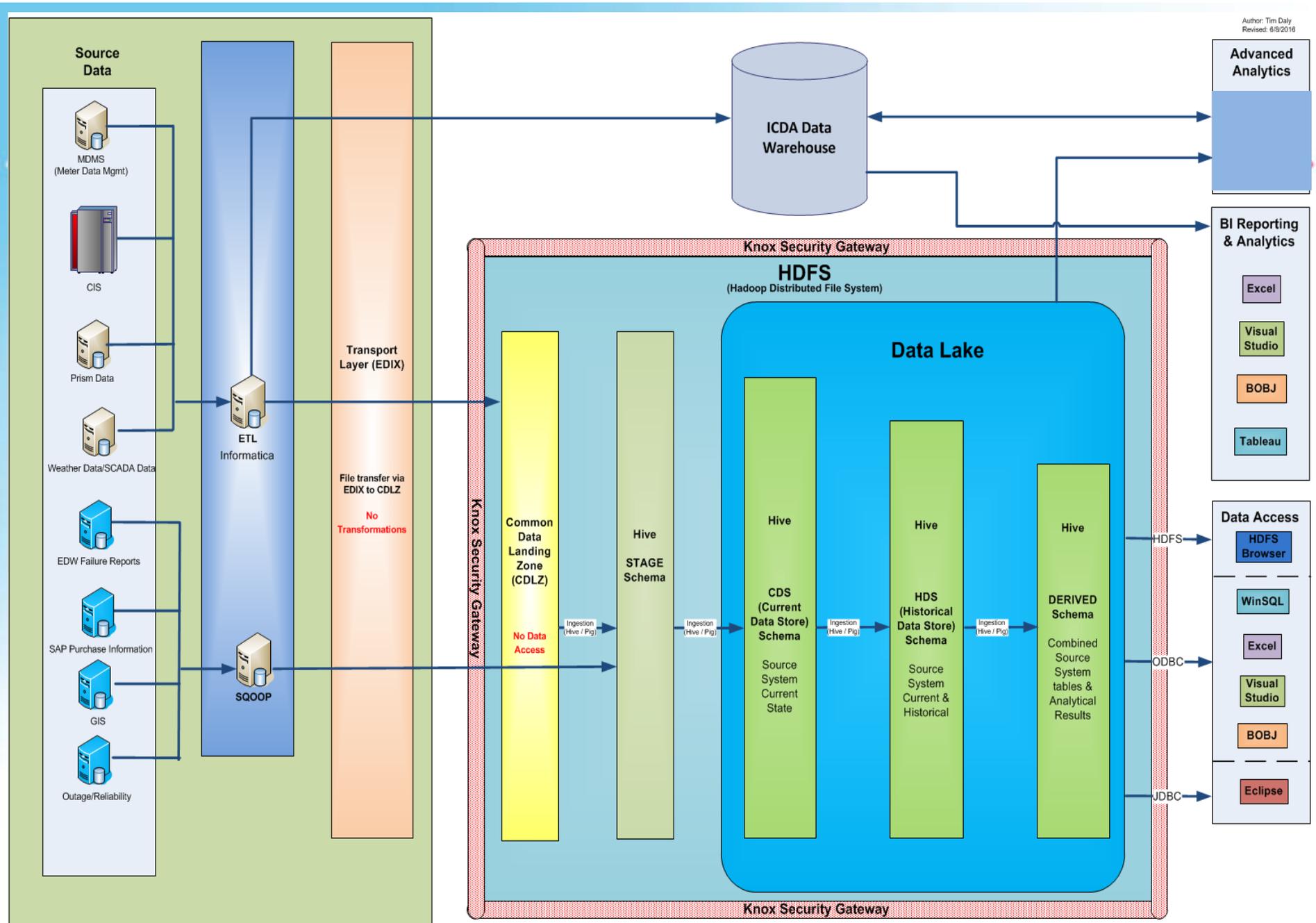
The following use cases describe the electric distribution assets most commonly responsible for failures and subsequent forced primary outages:

- Faulted underground cable is the most common equipment failure code observed in 2015 and several previous years.
- Underground transformers often fault under leaking and other conditions.

The Proposed Use Cases (Continued)



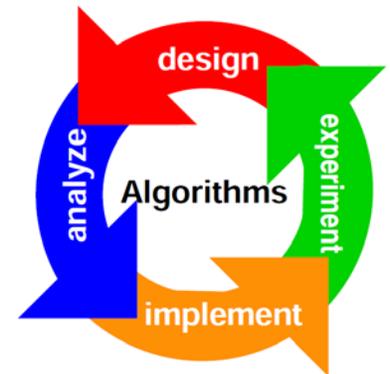
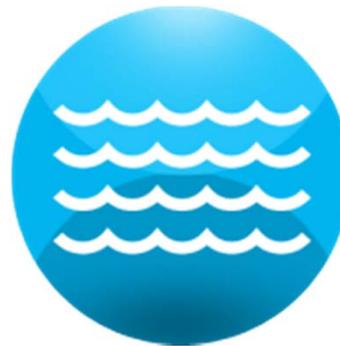
- Dead-break tees and other underground connectors sometimes fail, leading to extended outages due to fault finding and repair times.
- Underground fuse cabinets and overhead fuse cutout failures (hardware failures, not coordinated trips) are somewhat common, especially in correlation to rainy weather conditions.



Our Expectations



The contracted scope of work will include data integration, modeling, and testing.



Our Challenges



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- Data Population
- Algorithms Development
- Model Creation
- Analytics



Current Status



- ✓ Project Plan Development
 - ✓ Role of internal team and contractors determined
 - ✓ Internal work has been launched
 - ✓ Roles & responsibilities for internal work clarified
 - ✓ Analyze the stakeholders business needs and requirements around data capture, information delivery, and uses of the data
 - ✓ Demonstrate use of data analytics for specific applications
- ✓ Scope of contracted work clarified:
 - ✓ The contractor(s) shall supply staff and resources with necessary skills to develop interfaces from various IT systems for ingestion into a Hadoop data lake. RFP respondents shall demonstrate their knowledge and history of working with electric utilities and data analytics to model predictive and prescriptive analytics for the proposed use cases.
- ✓ Next steps: Issue RFP in Summer 2016 and continue internal work

Contact Us



For questions or interest in this project:

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