

# Leveraging CIM for Electrical, Water and Wastewater Asset Management at JEA

CIMUG – Dallas, TX  
October, 2018

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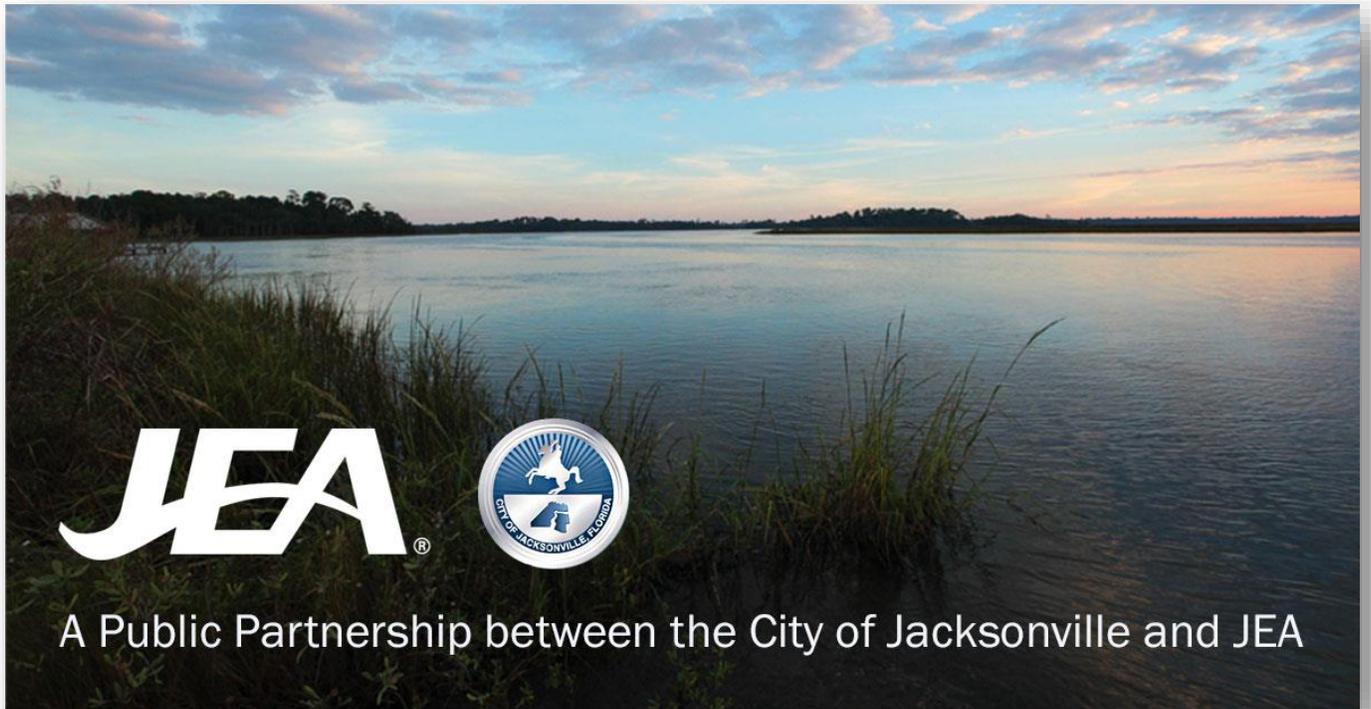


- JEA Overview
- Project Overview and Background
- Reference Architecture
- Need For Change
- Systems Vision
  - Integration / SOA:
  - Analytics :
  - EIM
  - Edge Computing (IoT)
  - Mobile / Composite applications

# JEA Overview

- Not-For-Profit, Community-Owned Utility
- Located in Jacksonville, Florida
- Services:
  - Electric
  - Water & Waste Water
  - Reclaimed Water
  - Chilled Water
- Estimated Customers:
  - 458,000 electric
  - 341,000 water
  - 264,000 sewer

[jea.com](http://jea.com)



**JEA**®



A Public Partnership between the City of Jacksonville and JEA



- Electric

- Generation, transmission & distribution
  - 5 generating plants
  - > 745 circuit miles of transmission lines
  - > 6,760 miles of distribution lines.
- Purchases solar energy
  - Including Jacksonville Solar  
100-acre / 200,000 panels.
- Sold 14.5 million MWh in 2016.

- Water and Sewer Systems

- Water System
  - 134 artesian wells into Floridan aquifer.
  - 38 water treatment plants
  - > 4,449 miles of water lines.
- Wastewater System
  - > 3,900 miles of wastewater collection lines
  - 11 wastewater treatment plants.
- Reclaimed Water System
  - Highly-treated water for irrigation.
  - 227 miles of lines / 8,361 customers
  - St. Johns River water quality improvement
  - Reduced demand on Floridan aquifer.
- Sold 36.3 million kgals in 2016 FY
  - Water & sewer

# Project Overview and Background

- EIM project; covers data in motion, data at rest
- Focus on Assets (initial)
- Leverage Standards
  - Information, processes, information exchange : IEC TC57
  - Strategy, Processes, Organization : ISO 55000 / IAM

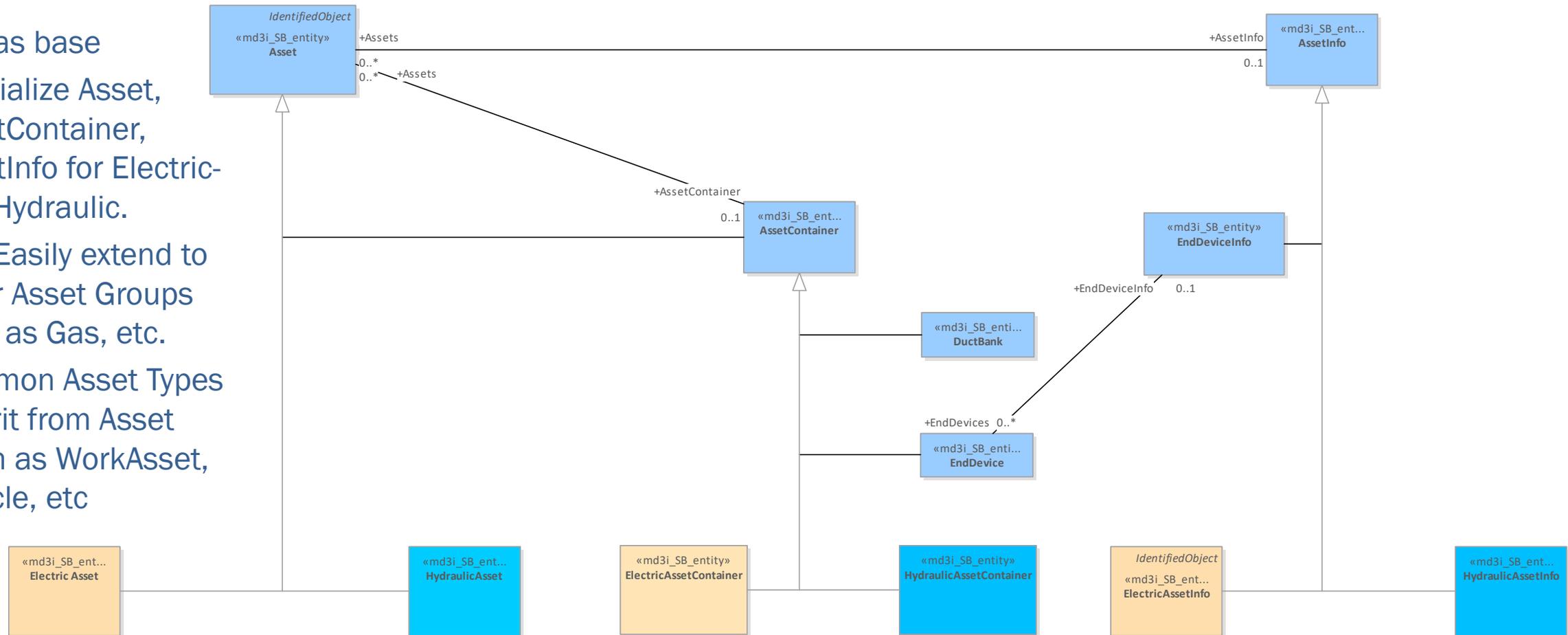


# Reference Architecture

- Address
  - SOA and Integration (Data in Motion)
  - Information and Analytics (Data at Rest)
- JIM (JEA Information Model) 
  - Based on IEC TC57 CIM 
  - Modify and extend
    - include Water and Wastewater Asset, Equipment, Topology, Measurement
  - Anticipate additional reference models in future
    - e.g. SID, HRXML, OAG

# JEA JIM - Core Asset Extensions

- CIM as base
- Specialize Asset, AssetContainer, AssetInfo for Electric and Hydraulic.
- Can Easily extend to other Asset Groups such as Gas, etc.
- Common Asset Types inherit from Asset (such as WorkAsset, Vehicle, etc)



# JEA JIM - Core Asset Extensions

- Extend to include specializations of ElectricAsset

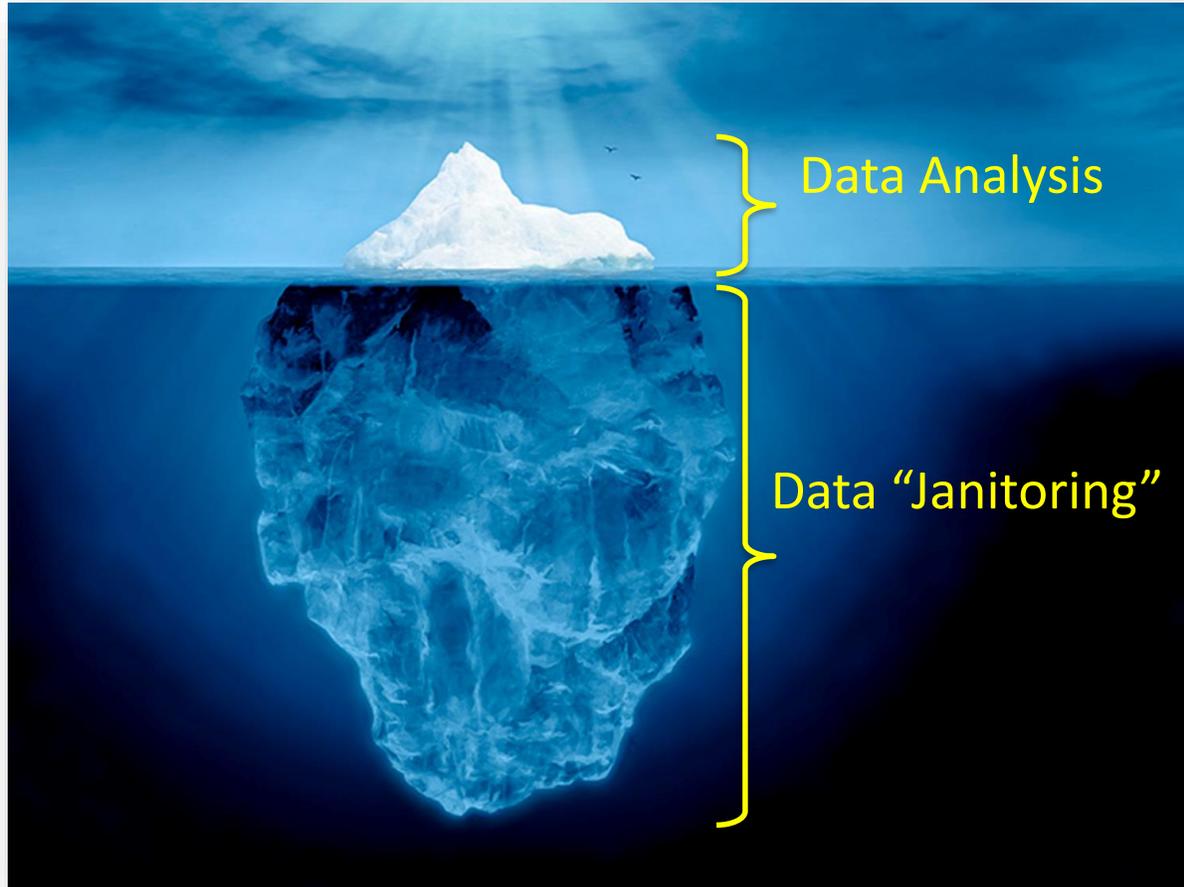


- Includes a set of Water- and Sewer Assets
- Attributes derived from existing systems meta data

# Need For Change



# Turn the Analytics Paradigm Around for Assets



## Current State:

- 80% Data “Janitorial” / 20% Analysis

## Future State:

- 10% Data Discovery / 90% Analysis
- Connect current data with external data
- Predictive analytics

# What will change

We avoid Accidental Architectures in our Power network...

... we should avoid accidental architectures in our Integration & Data management solutions!



Expensive to maintain

Hard to Adapt / Scale

Functionally Deficient

## Treating Data As an Asset

*“It’s the **data** that makes the business successful. This requires a cultural mindset change that focuses on data collection, movement, storage and dissemination, not the software”.*

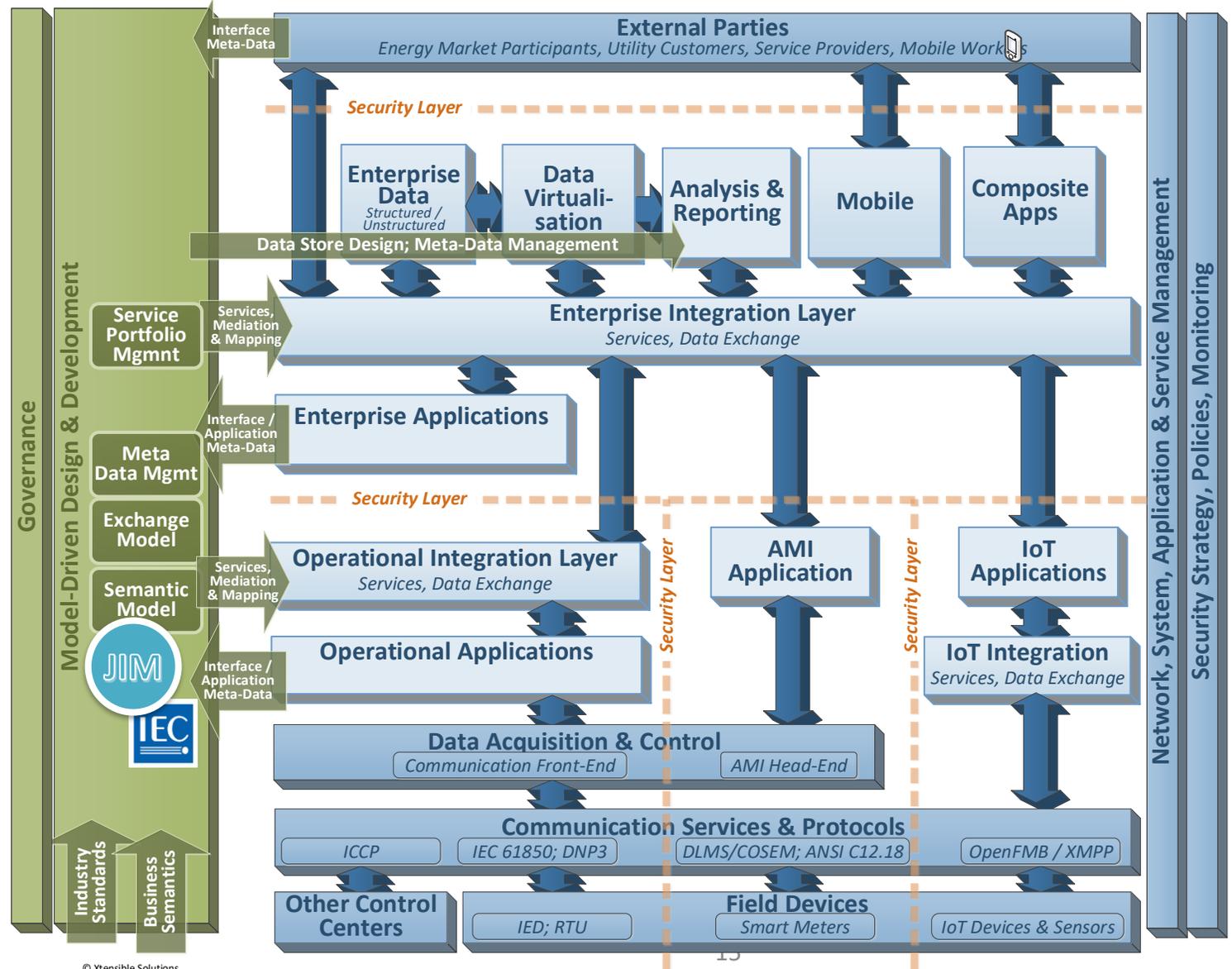
Enterprise Information Management is the program that defines data governance, collection, movement, storage and dissemination. This is how we will create the Golden Record.

# Systems Vision



# Systems Vision I System Reference Architecture

- Service Orientated Architecture
  - Layered approach - Guidance for project-specific designs.
  - Loose coupling - Between applications & component layers
- IT/OT Integration
  - Information Technology (IT) & Operation Technology (OT) integration
- Analytics
  - Relational & NoSQL (Big Data)
- Edge Devices / IoT
- Composite Apps
- Mobile



# Systems Vision: Integration / SOA

- JIM-based canonical APIs / services, APIs as assets
- Focus on maximizing re-use
- Loose coupling & change isolation
- Event-driven (“information at the speed of business”)
- Master data management “baked in” to design



# Systems Vision: Analytics

- Unified view of enterprise data, based on JIM
- Provision data to all consumers
  - Data analysts & scientists, Citizen data analysts, Packaged Analytic Applications
- Transcends storage technologies
  - Relational, NoSQL (“big data”), Time-series
- Designed for re-use
- Support all information needs
- Near-zero data latency
- Data lineage, Meta-data
- Data access - based on organizational role & data security classification



# Systems Vision: Edge Computing (IoT)

- Interfaces based on JIM
- Follow OpenFMB approach
- Collaboration with OpenFMB on new JEA use cases
- PoC just kicked off



# Discussion – Q&A

