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USERS CONFERENCE 2016
April 4-8, 2016 | San Francisco
TRANSFORM
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Best Practices for Using and Deploying PI Asset Framework

Presented by **Stephen Kwan, Product Manager**

What does Asset Framework do for me?

- “Data Dictionary”
  - Aggregate your data
  - Let’s you find the relevant information
- Unify disparate source systems – single version of truth
- Embed domain expertise
- Basis for comparison and collaboration
- Context for searching, analyzing and viewing data

The Value of AF: Structure

- Asset Framework (AF) is a meta-data structure of the data
  - PI Data Archive supplies “data”
  - AF supplies structure and access across the “data”

Asset Framework

- Elements
  - Boilers
  - Equipment
  - NuGreen
    - Houston
      - Cracking Process
        - Equipment
          - B-210
          - B-235
          - F-321
          - F-409
          - H-2043
          - H-230
          - K-304
          - K-556
          - P-214
          - P-456
          - P-560
      - Extruding Process
      - Milling Process
    - Little Rock
    - Tucson
    - Wichita
  - Pumps
    - P-007
    - P-009
    - P-020
    - P-099
    - P-101

Analyses
- Efficiency analysis
- Key Performance Indicators (KPI)

Time-series
- In-Flow
- Pressure
- Vibration data

Events
- Downtime
- Startup
- Failure

Asset details
- Name
- Model
- Manufacturer

Notifications
- High speed
- Rotor failure
- Low pressure

External data
- Performance curves
- Last maintenance date
- Design documents
- Best operating procedures

Things to Keep in Mind

Who will consume the data?

There is no “right way” to building AF

Start small and build up

Solve a specific problem

Don’t Try to Boil the Ocean!

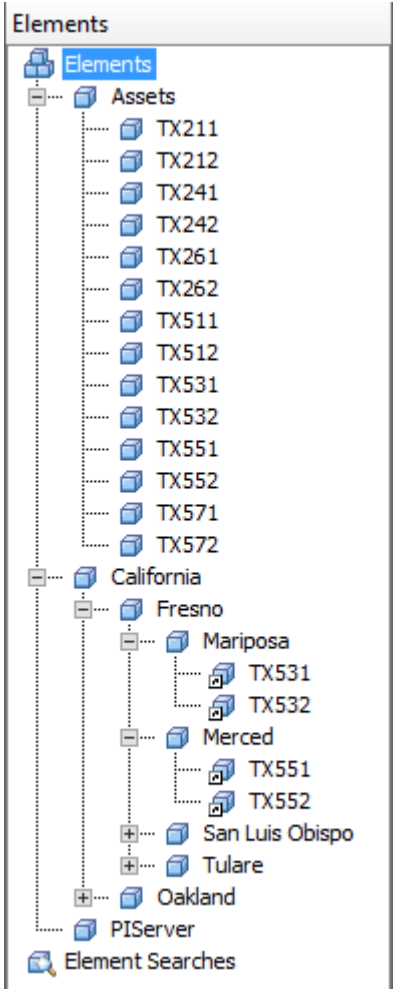
Before you start to “cook” – prepare “recipe”

Look for one or two business cases to define:

- Critical assets
- Data sources of
  - Time series
  - Meta data
  - Structure
- Responsibilities for maintenance
- Workflow for changes

Designing the hierarchy

- Group by geography or business units
- Group by asset types
- Group by problems you need to solve
- Use references for different “views”



Templates

Used to define particular class of objects

- Definitions are used throughout the PI System
- Element, attribute, event frame, analysis, notification, etc.

Can be used to auto-create PI Points

- Ensure PI Point naming consistency

Template inheritance

- Further define relationships between assets
- Start small and grow as needed

Elements and Attributes

Elements

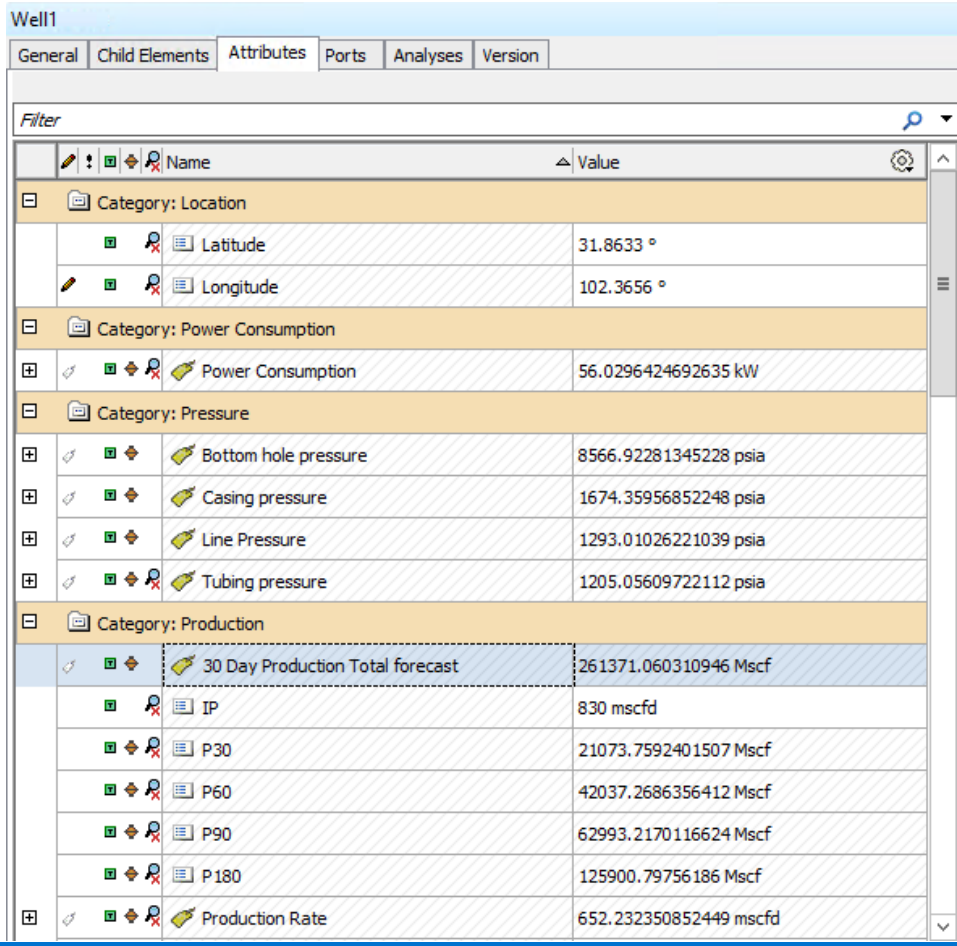
- Physical object
- Logical entity
- E.g. Pump, motor, California, New York, etc.

Attributes

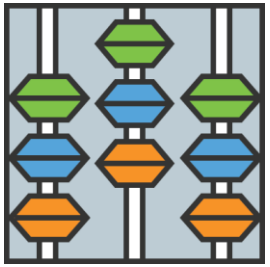
- Element properties
- E.g. Temperature, pressure, flow, manufacturer, model name, etc.

Data and data references

- Static data
- Data references
  - Analysis, Formula, PI Point, PI Point Array, String Builder, Table Lookup, URI Builder



Analyses



- 150+ built in functions
- Use variables in expressions for readability
- Scheduled analyses should write outputs to PI Points
- Ensure PI Analysis Service has proper security
- Use templates for standardization and scalability

Event Frames (EF)

- Use EF to define important events for assets
  - Batch processes
  - Start-ups and shutdowns
  - Shifts & crew shift reports
  - Tests on operating equipment (e.g. well tests)
  - Downtime, curtailment, production loss tracking
- Use templates for standardization and scalability

Some Best Practices

Organize your hierarchy

- Elements of the same type at each level
- Use industry standards for your hierarchy

Use templates

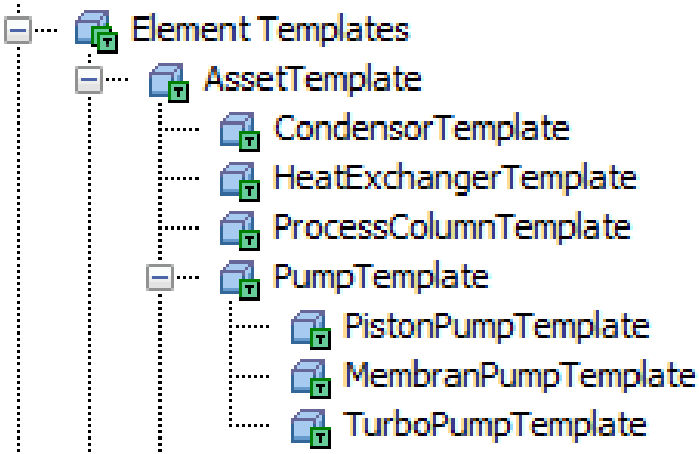
- Easier maintenance
- Dimension for BI analyses and reports

Use categories

- Easier searches
- Easier maintenance
- Dimension for BI analyses and reports

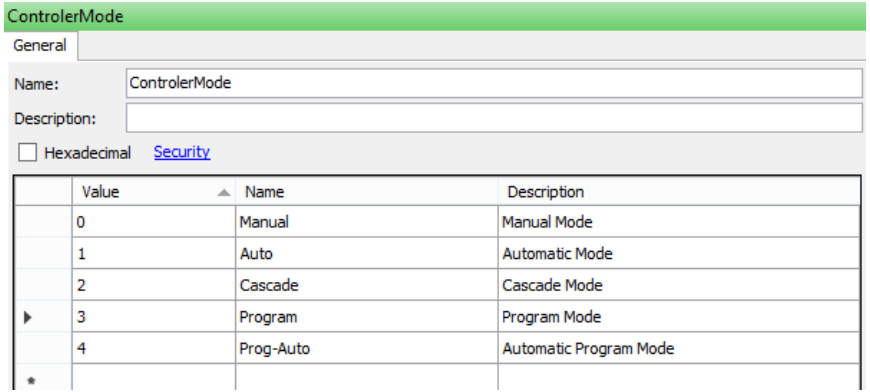
Some Best Practices

- Use units of measure (UOM)
  - Critical for calculations and reporting
- Build separate “views” based on needs
  - Weak references
  - Search on these views
- Use inherited templates



Some Best Practices

- Use enumerations
  - Minimize mistakes
- Use distinct element names
  - Less confusing
  - Easier reporting
- Keep relation data in relational database
  - Use AF tables
- Add as much context as possible so all clients would benefit



More Tools

Moving or copying

- XML import/export
- CSV import/export

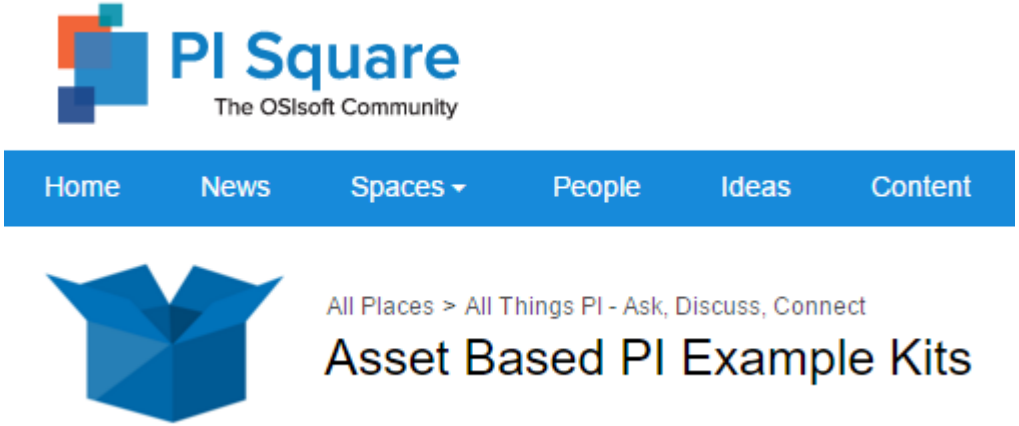
Define relationships

- Use reference types
- Parent/child, Composition, Weak
- Adds another level of context

Mass edits

- Use PI Builder
- Avoid single instances – use templates

Need Example to get Started?



- Customer examples - http://www.osisoft.com/templates/presentation-list.aspx?id=1818

Deployment

- Factors affecting performance
  - Network latency between client and server
  - SQL Server
    - More **RAM**
    - Fast disks (IOPS)
- Data access
  - AF Server never talks to PI Data Archive
  - Optimize client to server connection

Deployment

- Segregate PI Data Archive, AF Server, SQL Server and PI Analysis Service based on performance and IT requirements
- Be aware of SQL Server Express limitations
  - Single threaded
  - Limited DB size
  - Limited RAM
  - No AF audit tables
  - No High Availability

- Several AF High Availability options – consult OSIsoft tech support KB article

Product Booth

Product Manager
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Q&A

Contact Information

Stephen Kwan
skwan@osisoft.com
Product Manager
OSIsoft, LLC

Questions

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감사합니다

谢谢

Danke

Gracias

Merci

Thank You

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Спасибо

Obrigado


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