

# Learn how DEME Group uses Asset Framework for advanced asset management and analytics

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# Presenters:



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Solutions  
Expert -  
Lead DBA



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Paridaens  
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Process &  
Feedback  
Engineer

# Overview

- Asset Framework: What's in it for me?
- Hear from DEME Group
- Best Practices
- How to get started?

# Asset Framework: What's in it for you?

- Data becomes information
  - Structure your data
  - Let you find the relevant information
- Unify disparate source systems – single version of truth
- Basis for comparison and collaboration
- Retain domain expertise
- Context for searching, analyzing and viewing data
- Anything you do with PI Server tags, you can do better with AF!



**DEME**

**Dredging, Environmental  
& Marine Engineering**



# Asset Framework @ DEME

**Advanced Asset Management & Analytics**

**An OSIsoft Webinar**





More than **140 years** of  
experience in its core dredging  
and land reclamation activities

Making the difference through  
high-tech **innovation**

A global player active in  
**+90** different countries

Providing **solutions**  
for Global Challenges  
(Energy, Climate Change, Resources,  
Environment)

A fleet of **+100** main  
vessels backed by a broad  
range of auxiliary equipment





## Typical DEME Production Unit:

- Mobile
- Operating 24/7
- Difficult to Access
- Anywhere in the World
- Frequently changes location





Build a database  
that suits you!

Templates &  
Structures

Event Frames  
& Analytics







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& Analytics





- Numerous PI Tags and growing
- Names become more abstract
- Access becomes more difficult
- Organization becomes more complex





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- Names become more abstract
- Access becomes more difficult
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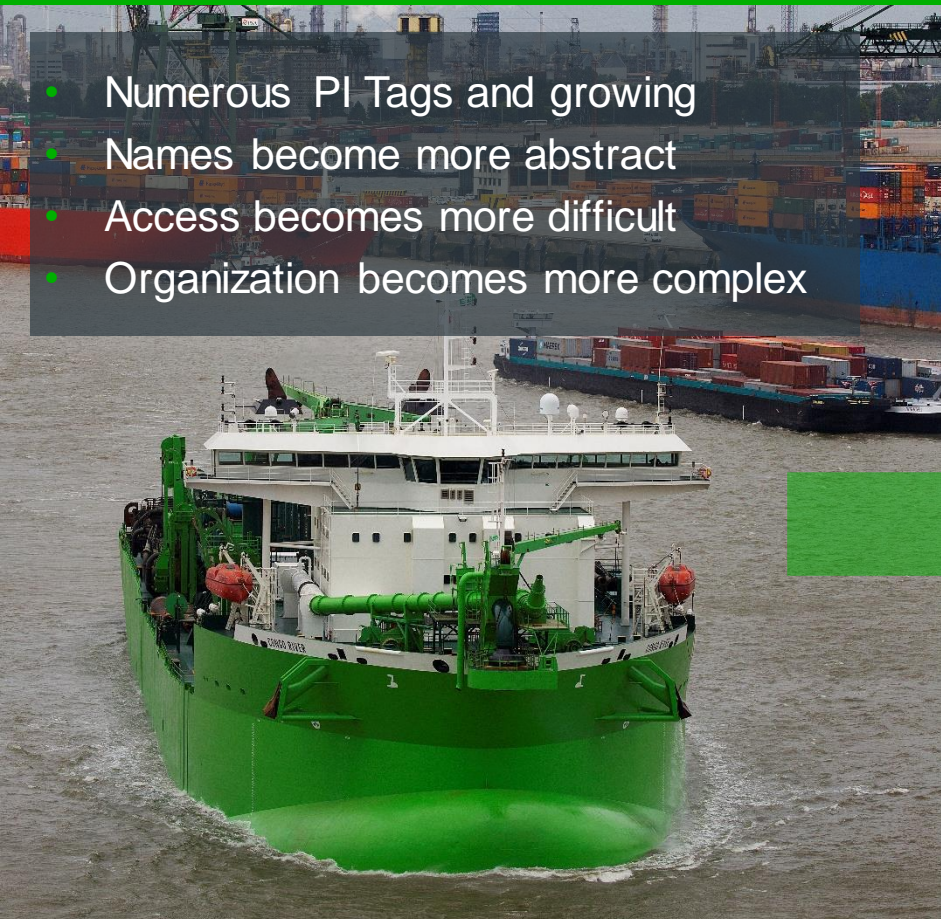
Tag Name	Server	Collective	Timestamp
H037.06.01.01.01.U1_03_08_36			29/06/2016 8:18:46
H037.06.01.01.01.U1_03_08_35			29/06/2016 8:18:46
H037.06.01.01.01.U1_03_07_04			29/06/2016 8:18:46
H037.06.01.01.01.U1_03_07_03			29/06/2016 8:18:46
H037.06.01.01.01.U1_03_04_04			29/06/2016 8:18:46
H037.06.01.01.01.U1_02_15_00			29/06/2016 8:18:46
H037.06.01.01.01.U1_02_14_07			29/06/2016 8:18:46
H037.06.01.01.01.U1_02_12_00			29/06/2016 8:18:46
H037.06.01.01.01.U1_02_11_07			29/06/2016 8:18:46
H037.05.10.03.01.U1_03_14_05			29/06/2016 8:18:46
H037.05.10.03.01.U1_03_14_04			29/06/2016 8:18:46
H037.05.10.03.01.U1_03_13_07			29/06/2016 8:18:46
H037.05.10.02.01.U1_03_11_37			29/06/2016 8:18:46
H037.05.10.02.01.U1_03_11_06			29/06/2016 8:18:46
H037.05.10.02.01.U1_02_08_01			29/06/2016 8:18:46
H037.05.10.02.01.U1_02_07_05			29/06/2016 8:18:46
H037.05.10.02.01.A1_03_11_07			29/06/2016 8:18:46
H037.05.10.01.01.U1_02_07_00			29/06/2016 8:18:46
H037.05.09.04.01.U1_03_14_14			29/06/2016 8:18:46
H037.05.09.04.01.U1_03_08_15			29/06/2016 8:18:46
H037.05.09.01.01.U1_03_08_14			29/06/2016 8:18:46
H037.05.09.01.01.U1_03_04_34			29/06/2016 8:18:46
H037.05.08.03.01.U1_03_06_25			29/06/2016 8:18:46
H037.05.08.03.01.T1_02_07_03_C			29/06/2016 8:18:46
H037.05.08.03.01.T1_02_05_05_C			29/06/2016 8:18:46
H037.05.08.02.01.U1_03_06_26			29/06/2016 8:18:46
H037.05.08.01.02.U1_03_14_16			29/06/2016 8:18:46
H037.05.08.01.01.U1_03_10_22			29/06/2016 8:18:46
H037.05.06.02.01.U1_03_12_06			29/06/2016 8:18:46
H037.05.06.01.03.U1_03_12_30			29/06/2016 8:18:46
H037.05.06.01.02.U1_03_12_07			29/06/2016 8:18:46
H037.05.06.01.02.U1_03_06_27			29/06/2016 8:18:46
H037.05.06.01.01.U1_03_14_12			29/06/2016 8:18:46
H037.05.06.01.01.U1_03_12_16			29/06/2016 8:18:46
H037.05.06.01.01.U1_03_12_12			29/06/2016 8:18:46
H037.05.06.01.01.U1_03_12_11			29/06/2016 8:18:46
H037.05.05.03.01.U1_03_12_05			29/06/2016 8:18:46



- Numerous PI Tags and growing
- Names become more abstract
- Access becomes more difficult
- Organization becomes more complex

Tag Name	Server	Collective	Timestamp
H037.06.01.01.01.U1_03_08_36			29/06/2016 8:18:46
H037.06.01.01.01.U1_03_08_35			29/06/2016 8:18:46
H037.06.01.01.01.U1_03_07_04			29/06/2016 8:18:46
H037.06.01.01.01.U1_03_07_03			29/06/2016 8:18:46
H037.06.01.01.01.U1_03_04_04			29/06/2016 8:18:46
H037.06.01.01.01.U1_02_15_00			29/06/2016 8:18:46
H037.06.01.01.01.U1_02_14_07			29/06/2016 8:18:46
H037.06.01.01.01.U1_02_12_00			29/06/2016 8:18:46
H037.06.01.01.01.U1_02_11_07			29/06/2016 8:18:46
H037.05.10.03.01.U1_03_14_05			29/06/2016 8:18:46
H037.05.10.03.01.U1_03_13_07			29/06/2016 8:18:46
H037.05.10.02.01.U1_03_11_37			29/06/2016 8:18:46
H037.05.10.02.01.U1_03_11_06			29/06/2016 8:18:46
H037.05.10.02.01.U1_02_08_01			29/06/2016 8:18:46
H037.05.10.02.01.U1_02_07_05			29/06/2016 8:18:46
H037.05.10.02.01.A1_03_11_07			29/06/2016 8:18:46
H037.05.10.01.01.U1_02_07_00			29/06/2016 8:18:46
H037.05.09.04.01.U1_03_14_14			29/06/2016 8:18:46
H037.05.09.04.01.U1_03_08_15			29/06/2016 8:18:46
H037.05.09.01.01.U1_03_08_14			29/06/2016 8:18:46
H037.05.09.01.01.U1_03_04_34			29/06/2016 8:18:46
H037.05.08.03.01.U1_03_06_25			29/06/2016 8:18:46
H037.05.08.03.01.T1_02_07_03_C			29/06/2016 8:18:46
H037.05.08.03.01.T1_02_05_05_C			29/06/2016 8:18:46
H037.05.08.02.01.U1_03_06_26			29/06/2016 8:18:46
H037.05.08.01.02.U1_03_14_16			29/06/2016 8:18:46
H037.05.08.01.01.U1_03_10_22			29/06/2016 8:18:46
H037.05.06.02.01.U1_03_12_06			29/06/2016 8:18:46
H037.05.06.01.03.U1_03_12_30			29/06/2016 8:18:46
H037.05.06.01.02.U1_03_12_07			29/06/2016 8:18:46
H037.05.06.01.02.U1_03_06_27			29/06/2016 8:18:46
H037.05.06.01.01.U1_03_14_12			29/06/2016 8:18:46
H037.05.06.01.01.U1_03_12_16			29/06/2016 8:18:46
H037.05.06.01.01.U1_03_12_12			29/06/2016 8:18:46
H037.05.06.01.01.U1_03_12_11			29/06/2016 8:18:46
H037.05.05.03.01.U1_03_12_05			29/06/2016 8:18:46

H037.06.01.01.U1\_03\_04\_04 = ???





## Adding AF Structure:

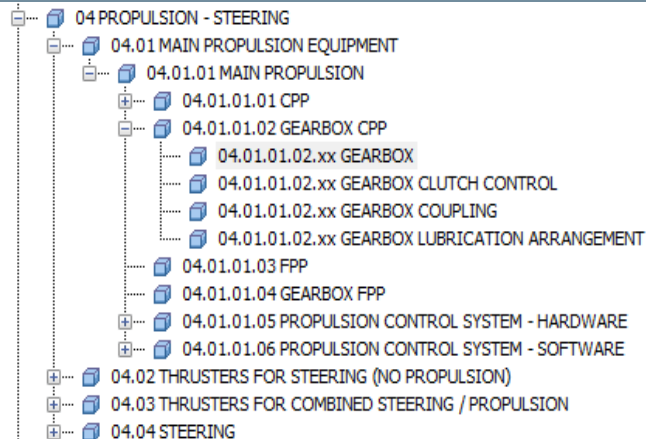
- Clear naming
- Logical, easy to understand structure
- Based on real world
- Straight forward access for users





## Adding AF Structure:

- Clear naming
- Logical, easy to understand structure
- Based on real world
- Straight forward access for users



04.01.01.02.xx GEARBOX

General Child Elements Attributes Ports Analyses Version

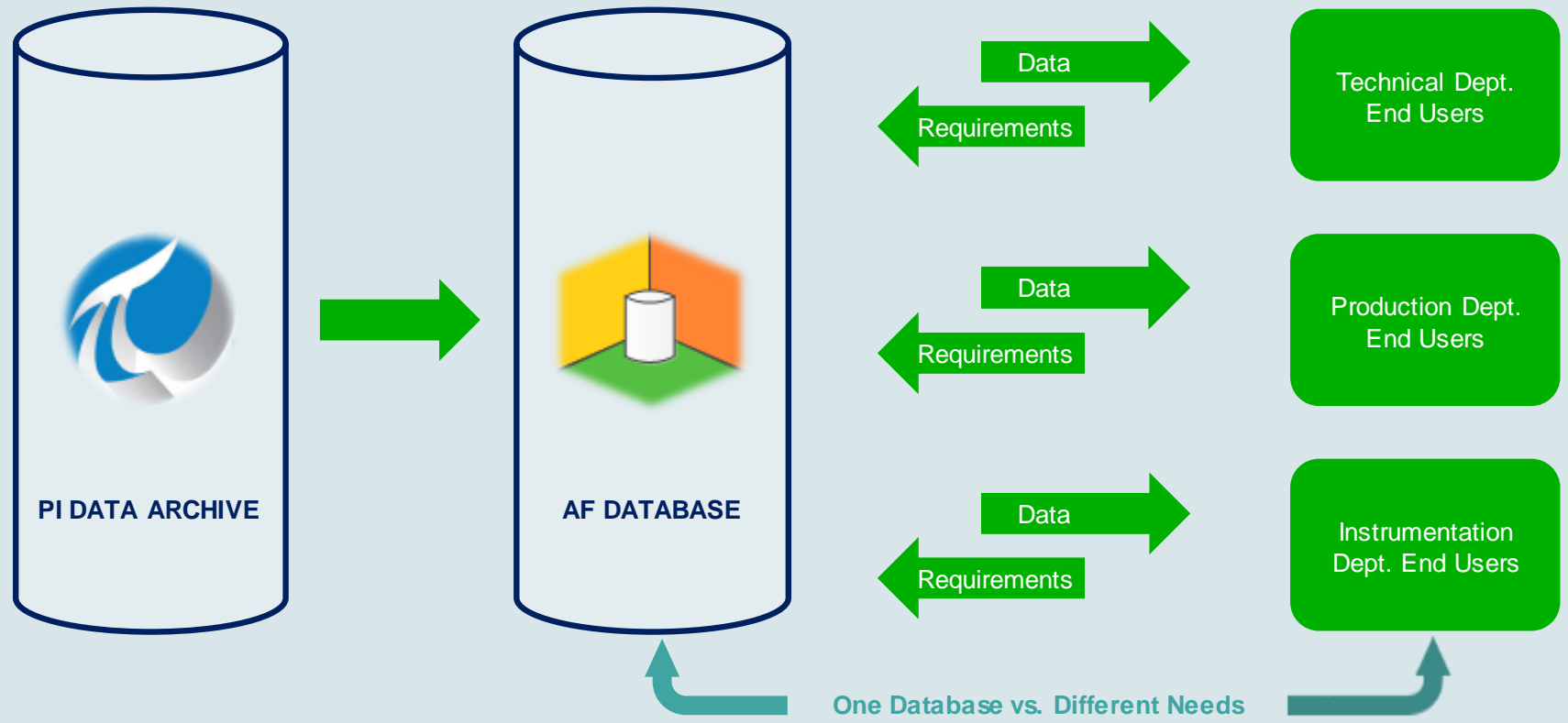
Filter

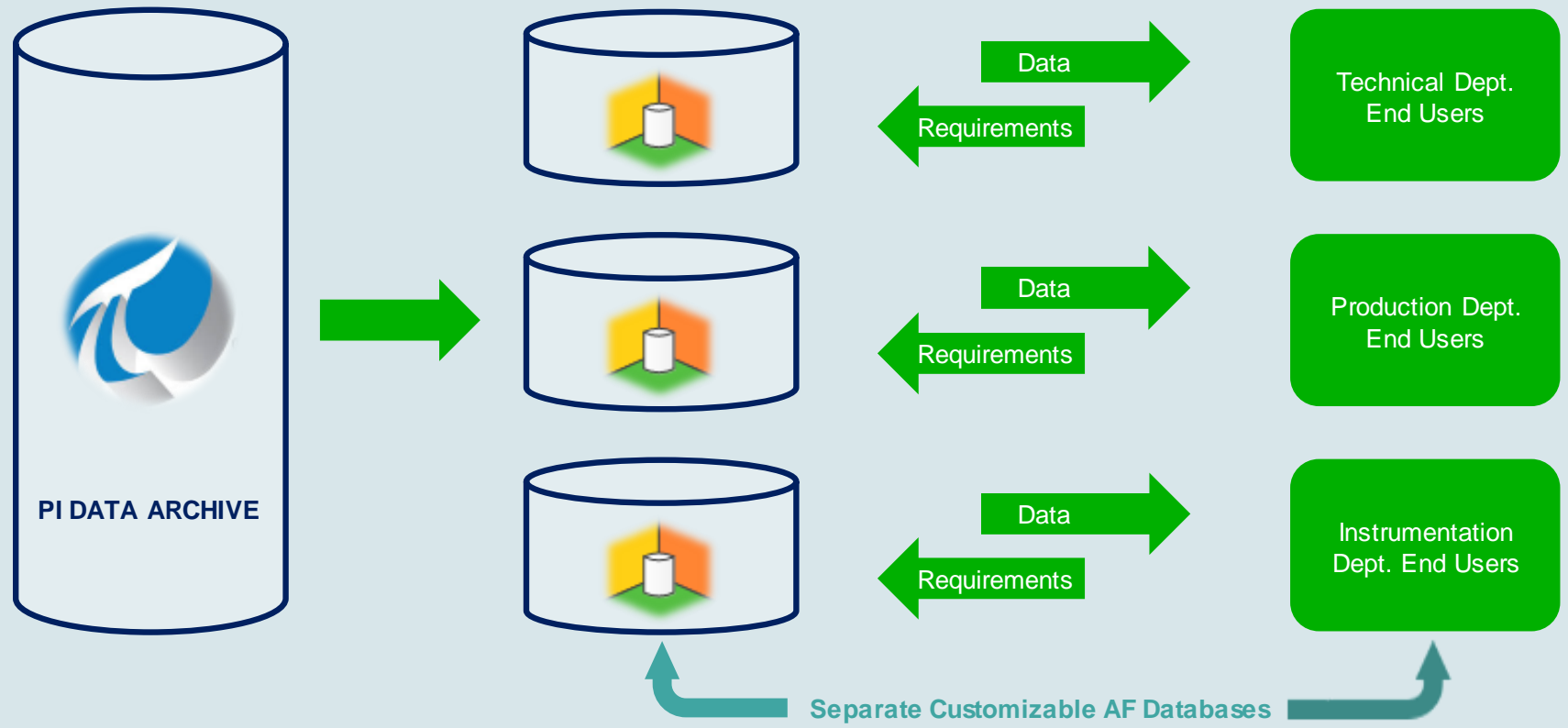
Name

Category: <None>

<input type="checkbox"/>	<input type="checkbox"/>	Propulsion control system propulsion portside gearbox thrust bearing temperature high
<input type="checkbox"/>	<input type="checkbox"/>	Propulsion control system propulsion portside shaft start failure
<input type="checkbox"/>	<input type="checkbox"/>	Propulsion gearbox portside control oil pressure transmitter
<input type="checkbox"/>	<input type="checkbox"/>	Propulsion gearbox portside radial plain bearing motor side temperature transmitter
<input type="checkbox"/>	<input type="checkbox"/>	Propulsion gearbox portside radial plain bearing propulsion side temperature transmitter
<input type="checkbox"/>	<input type="checkbox"/>	Propulsion gearbox portside thrust bearing ahead temperature transmitter
<input type="checkbox"/>	<input type="checkbox"/>	Propulsion gearbox portside thrust bearing astern temperature transmitter











- Separate customizable AF databases allow each department to create their own ideal AF Environment(s) by :
  - Adopting their own Asset Structure and Naming Conventions
  - Defining their own Calculations and Analyses
  - Reducing clutter by including only relevant parameters & data
- Security can be set-up at database level to manage data access across different departments





Build a database  
that suits you!

Templates &  
Structures

Event Frames  
& Analytics





The screenshot displays the software interface with three main panels:

- Library:** A tree view under 'RMPEAnalysis' showing 'Element Templates' with a list of components: CSD, Cutterhead, Draghead, Electro Motor, Engine, Engines, Hopper, IBP, Meters, Navigation, Pumps, SDP, Spud, Spuds, TSHD, and Velocity Meter.
- Engine:** A table with columns 'Name', 'Description', and 'Default Value'. It shows two categories: 'Configuration' (with 'Location') and 'Sensor Output' (with 'IsRunning', 'RPM', and 'Torque'). The 'Torque' row is selected.
- Settings:** A configuration panel for 'Torque' with fields for Name, Description, Properties, Categories, Default UOM, Value Type, Default Value, and Data Reference. The Data Reference field contains the expression: `..\ElementDescription%.ER.%ELEMENTDESCRIPTION %Load.Percentage;UOM="%"`.

Name	Description	Default Value
Category: Configuration		
Location		
Category: Sensor Output		
IsRunning		0
RPM		0 rpm
Torque		0 %

## Starting Point:

- Our production units are similar
- Our production units have the same components
- AF database should be built as generic as possible





The screenshot displays the software interface with three main panels:

- Library:** A tree view on the left showing a hierarchy of templates. Under 'Element Templates', the 'CSD' item is circled in green.
- Engine:** A central table with tabs for 'General', 'Attribute Templates', 'Ports', and 'Analysis Templates'. The 'General' tab is active, showing a table with columns for Name, Description, and Default Value. The table is filtered to show 'Category: Sensor Output' items. The 'Torque' item is selected.
- Settings:** A panel on the right for configuring the selected 'Torque' item. It includes fields for Name, Description, Properties, Categories, Default UOM, Value Type, Default Value, and Data Reference. The 'Settings...' button is visible at the bottom.

Name	Description	Default Value
Category: Configuration		
Location		
Category: Sensor Output		
IsRunning		0
RPM		0 rpm
Torque		0 %

Settings...  
Name: Torque  
Description:   
Properties: <None>  
Categories: Sensor Output  
Default UOM: percent  
Value Type: Double  
Default Value: 0 %  
Data Reference: PI Point

```
Settings...  
.\..\ElementDescription%.ER.%ELEMENTDESCRIPTION  
%Load.Percentage;UOM="%"
```

## Starting Point:

- Our production units are similar
- Our production units have the same components
- AF database should be built as generic as possible





Library

Library

- RMPEAnalysis
  - Templates
    - Element Templates
      - CSD**
      - Cutterhead
      - Draghead
      - Electro Motor
      - Engine
      - Engines
      - Hopper
      - IBP
      - Meters
      - Navigation
      - Pumps
      - SDP
      - Spud**
      - Spuds
      - TSHD
      - Velocity Meter

Engine

General Attribute Templates Ports Analysis Templates

Filter

Name	Description	Default Value
Category: Configuration		
Location		
Category: Sensor Output		
IsRunning		0
RPM		0 rpm
<b>Torque</b>		0 %

Group by:  Category  Template

Name: Torque

Description:

Properties: <None>

Categories: Sensor Output

Default UOM: percent

Value Type: Double

Default Value: 0 %

Data Reference: PI Point

Settings...

.\ElementDescription%.ER.%ELEMENTDESCRIPTION  
%Load.Percentage;UOM="%"

## Starting Point:

- Our production units are similar
- Our production units have the same components
- AF database should be built as generic as possible





Library

Library

- RMPEAnalysis
  - Templates
    - Element Templates
      - CSD
      - Cutterhead
      - Draghead
      - Electro Motor
      - Engine
      - Engines
      - Hopper
      - IBP
      - Meters
      - Navigation
      - Pumps
      - SDP
      - Spud
      - Spuds
      - TSHD
      - Velocity Meter

Engine

General Attribute Templates Ports Analysis Templates

Filter

Name	Description	Default Value
Category: Configuration		
Location		
Category: Sensor Output		
IsRunning		0
RPM		0 rpm
Torque		0 %

Group by:  Category  Template

Name: Torque

Description:

Properties: <None>

Categories: Sensor Output

Default UOM: percent

Value Type: Double

Default Value: 0 %

Data Reference: PI Point

Settings...

.\..\ElementDescription%.ER.%ELEMENTDESCRIPTION  
%Load.Percentage;UOM="%"

### Starting Point:

- Our production units are similar
- Our production units have the same components
- AF database should be built as generic as possible





Library

RMPEAnalysis  
Templates  
Element Templates  
CSD  
Cutterhead  
Draghead  
Electro Motor  
Engine  
Engines  
Hopper  
IBP  
Meters  
Navigation  
Pumps  
SDP  
Spud  
Spuds  
TSHD  
Velocity Meter

Engine

General Attribute Templates Ports Analysis Templates

Filter

Name	Description	Default Value
Category: Configuration		
Location		
Category: Sensor Output		
IsRunning		0
RPM		0 rpm
Torque		0 %

Group by:  Category  Template

Name: Torque

Description:

Properties: <None>

Categories: Sensor Output

Default UOM: percent

Value Type: Double

Default Value: 0 %

Data Reference: PI Point

Settings...

.\..\ElementDescription%.ER.%ELEMENTDESCRIPTION  
%Load.Percentage;UOM="%"

### Starting Point:

- Our production units are similar
- Our production units have the same components
- AF database should be built as generic as possible





The screenshot shows the 'Library' panel on the left with a tree view of templates. The 'Engine' template is selected and highlighted with a blue oval. A green arrow points from this template to the 'Engine' configuration panel on the right. The 'Engine' panel has tabs for 'General', 'Attribute Templates', 'Ports', and 'Analysis Templates'. The 'General' tab is active, showing a table of attributes. The 'Torque' attribute is selected and highlighted with a blue oval. The 'Properties' panel on the right shows the configuration for the 'Torque' attribute, including its name, description, categories, and default value.

Name	Description	Default Value
Category: Configuration		
Location		
Category: Sensor Output		
IsRunning		
RPM		0 rpm
Torque		0 %

### Starting Point:

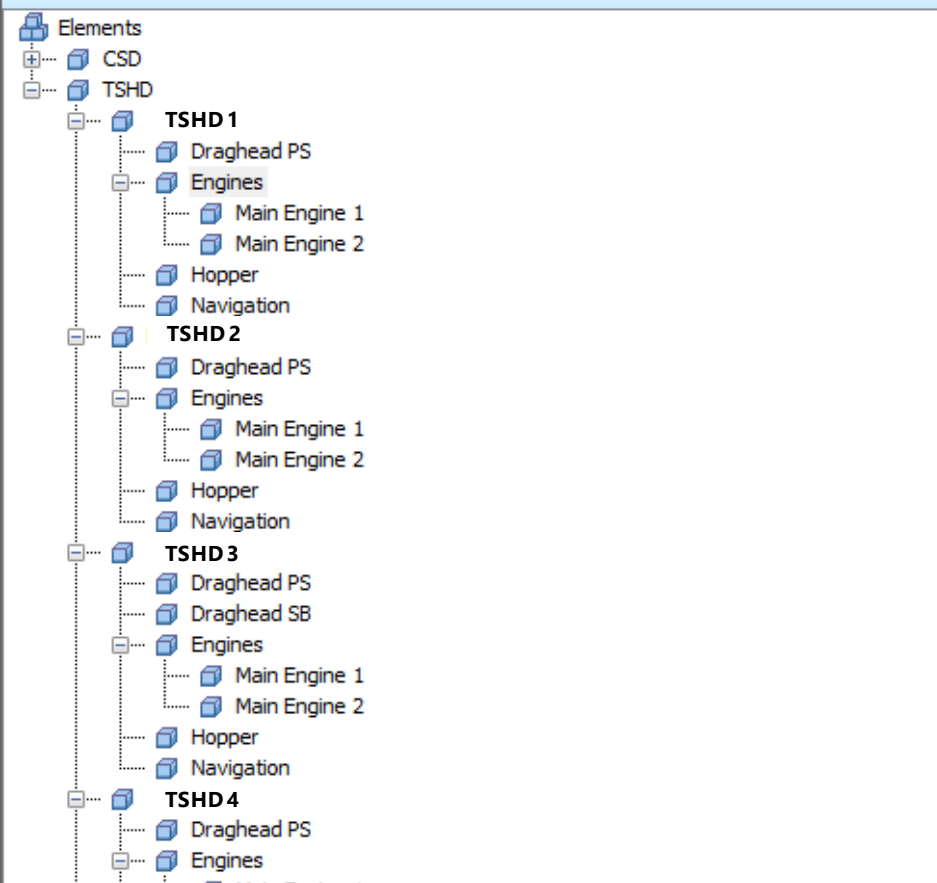
- Our production units are similar
- Our production units have the same components
- AF database should be built as generic as possible





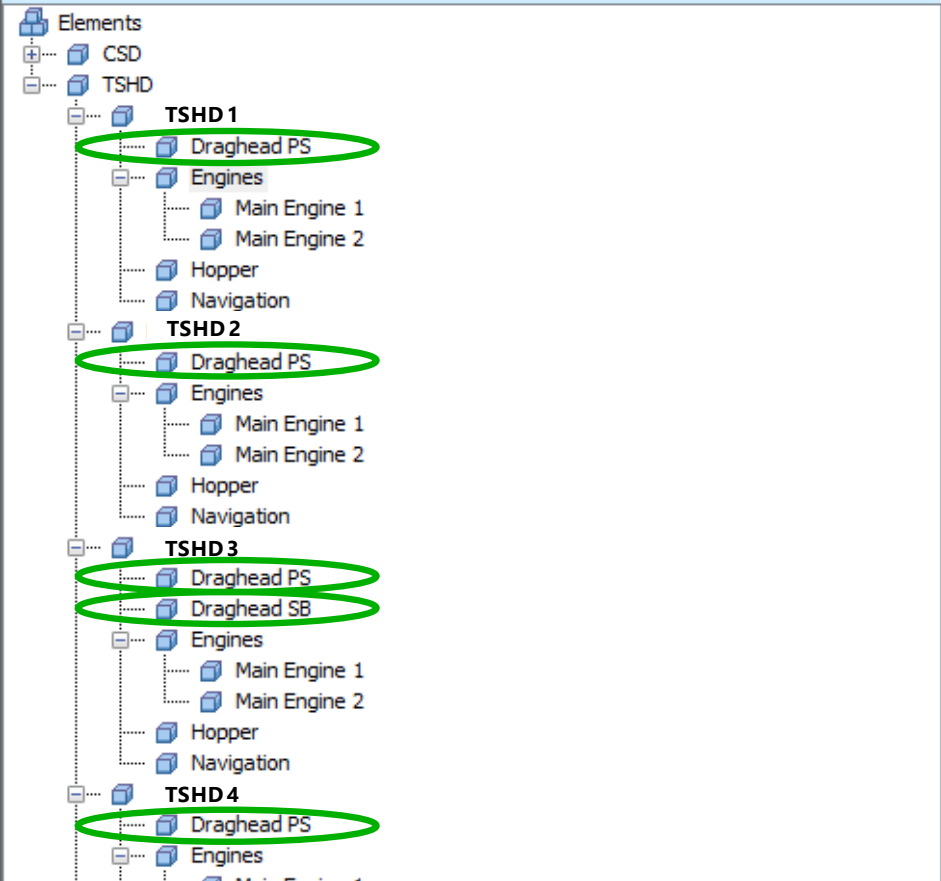


Elements



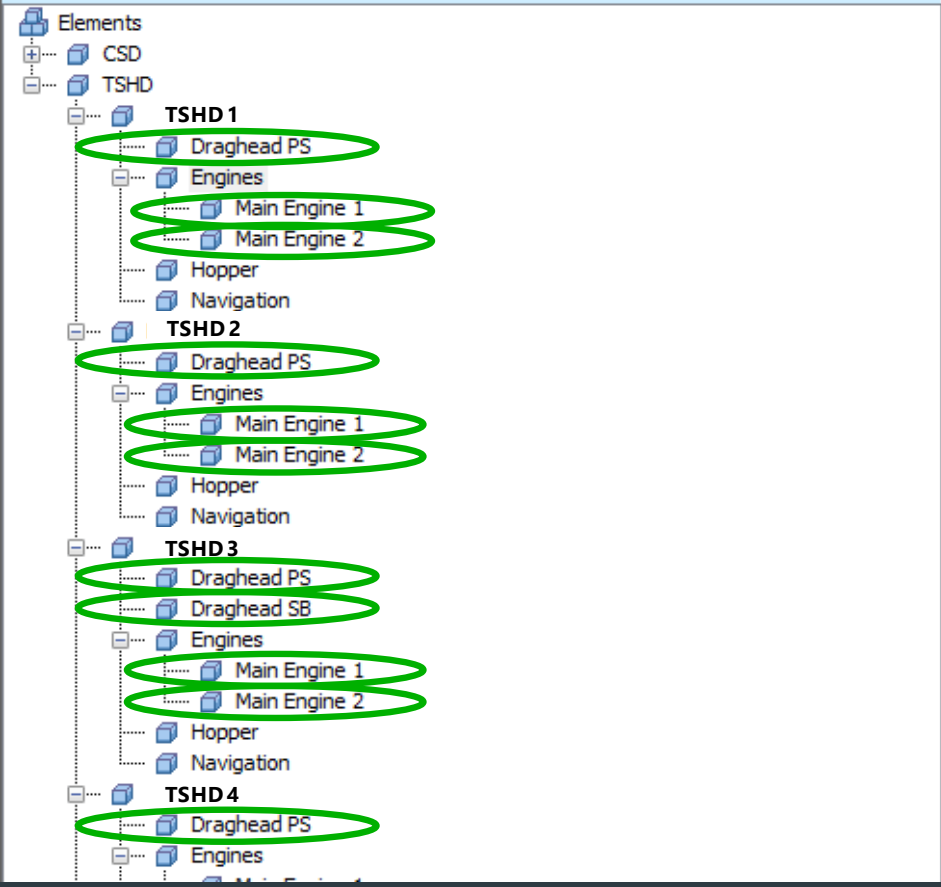


Elements





Elements





Elements

Elements

- ... CSD
  - ... TSHD
    - ... TSHD 1
      - ... Draghead PS
      - ... Engines
        - ... **Main Engine 1**
        - ... Main Engine 2
      - ... Hopper
      - ... Navigation
    - ... TSHD 2
      - ... Draghead PS
      - ... Engines
        - ... Main Engine 1
        - ... Main Engine 2
      - ... Hopper
      - ... Navigation
    - ... TSHD 3
      - ... Draghead PS
      - ... Draghead SB
      - ... Engines
        - ... Main Engine 1
        - ... Main Engine 2
      - ... Hopper
      - ... Navigation
    - ... TSHD 4
      - ... Draghead PS
      - ... Engines

Main Engine 1

General Child Elements Attributes Ports Analyses Version

Filter

Name	Value	Time Stamp
Category: Configuration		
Location	PS	1/1/1970 12:00:00 AM
Category: Sensor Output		
IsRunning	1	5/7/2016 10:50:13.395 AM
RPM	746 rpm	5/7/2016 10:50:13.395 AM
Torque	95 %	5/7/2016 10:50:13.395 AM

Name: Torque

Description:

Properties: <None>

Categories: Sensor Output

Default UOM: percent

Value Type: Double

Value: 95 %

Data Reference: PI Point

Settings...

\H022.ER.ME\_PS.Load.Percentage;UOM="%"





Elements

Elements

- CSD
- TSHD
  - TSHD 1
    - Draghead PS
    - Engines
      - Main Engine 1
      - Main Engine 2
    - Hopper
    - Navigation
  - TSHD 2
    - Draghead PS
    - Engines
      - Main Engine 1
      - Main Engine 2
    - Hopper
    - Navigation
  - TSHD 3
    - Draghead PS
    - Draghead SB
    - Engines
      - Main Engine 1
      - Main Engine 2
    - Hopper
    - Navigation
  - TSHD 4
    - Draghead PS
    - Engines

Main Engine 1

General Child Elements Attributes Ports Analyses Version

Filter

Name	Value	Time Stamp
Category: Configuration		
Location	PS	1/1/1970 12:00:00 AM
Category: Sensor Output		
IsRunning	1	5/7/2016 10:50:13.395 AM
RPM	746 rpm	5/7/2016 10:50:13.395 AM
Torque	95 %	5/7/2016 10:50:13.395 AM

Name: Torque

Description:

Properties: <None>

Categories: Sensor Output

Default UOM: percent

Value Type: Double

Value: 95 %

Data Reference: PI Point

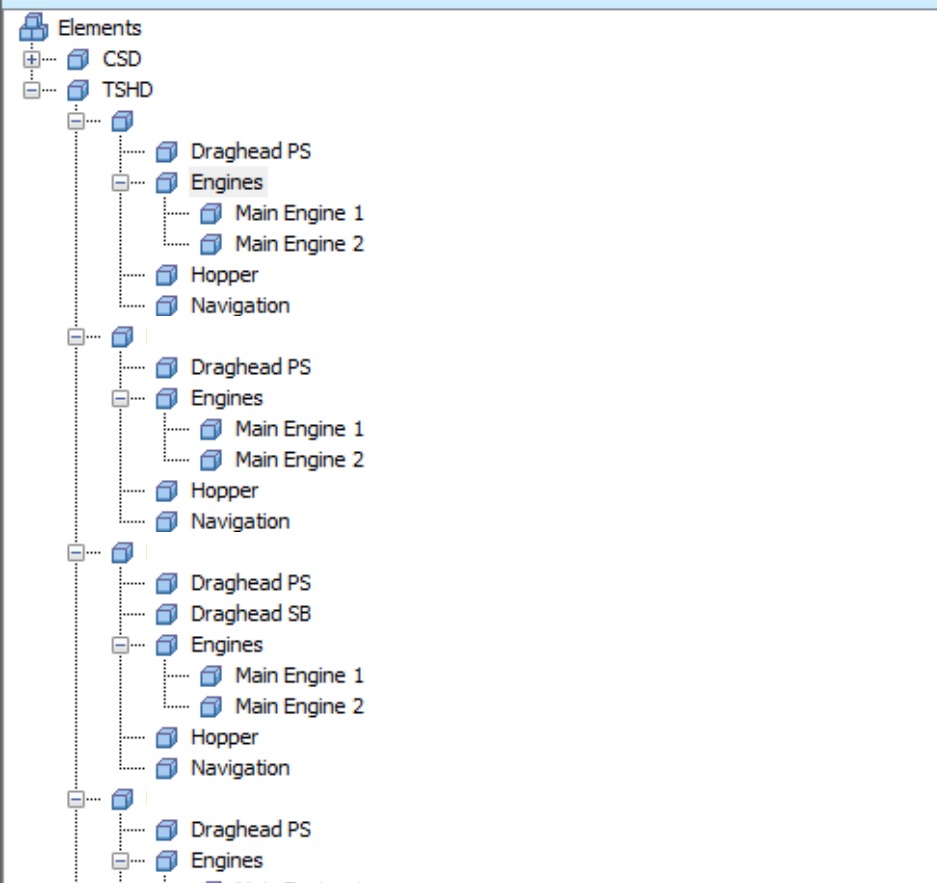
Settings...

\H022.ER.ME\_PS.Load.Percentage;UOM="%"





Elements



- Via Element – Child Element Structures, Production units, their components and their attributes are defined in a consistent way:
  - Improves Access (e.g. PI Coresight, PI Datalink)
  - Allows Programming / Automated Analysis
- Using Templates:
  - Greatly simplifies maintenance
  - Allows updates & extensions to be applied across all production units in a quick way





Build a database  
that suits you!

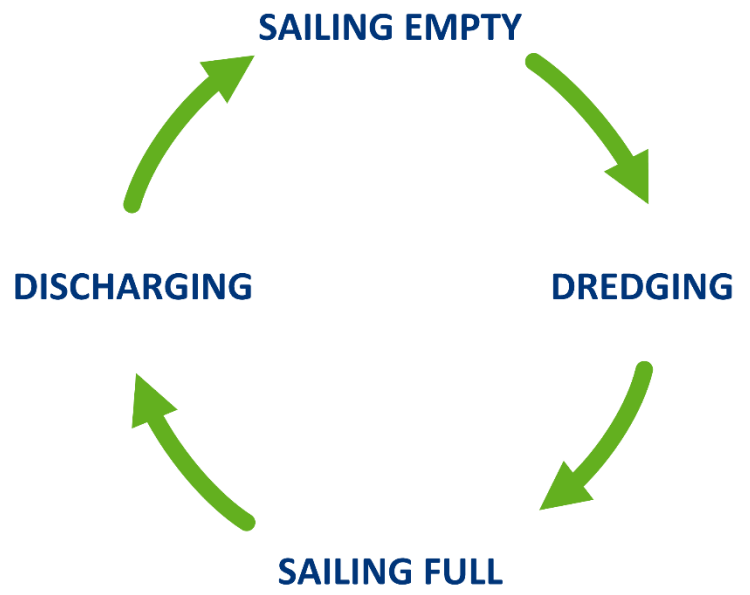
Templates &  
Structures

Event Frames  
& Analytics





(Simplified) Typical TSHD work cycle



- Production Cycles are characterized by:
  - Variable cycle lengths
  - Variable sub-processes
- Analysis may be required on cycle level or on sub-process level









Elements

- Elements
- CSD
- TSHD

General Child Elements Attributes Ports Analyses Version

Name: TSHDTrip  
Categories: TSHDTripAnalysis

## Activity / Sub-process captured in "Status" Tag

Category: TSHD Status	
Trip Status DEME	trailing 5/7/2016 02:24:41.558 PM
TripSailingEmpty	
TripSailingFull	
TripTrailing	
TripTurning	
TripUncoupling	
TSHDDelay	
TSHDTrip	

Event Frame Template: TSHD\_Trip

Name	Expression	Value
Add a new expression		

StartTrigger true for: 1 Minutes

Generate child root cause event frame before parent event frame starts

Functions

Insert functions into the expression

All

- Abs
- Acos
- And
- Ascii
- Asin
- Atn
- Atn2
- Avg
- BadVal
- Bod
- Bom
- Bonm
- Ceiling
- Char
- Compare
- Concat
- Contains
- Convert
- Cos
- Cosh
- Cot
- Abs(number x)

Return the absolute value of an integer or real number





Elements

- Elements
- CSD
- TSHD

General Child Elements Attributes Ports Analyses Version

Name: TSHDTrip  
Categories: TSHDTripAnalysis

**Activity / Sub-process captured in "Status" Tag**

Category: TSHD Status

Trip Status DEME trailing 5/7/2016 02:24:41.558 PM

**"Events" generated by AF Analytics based on status or sequence**

Name	Expression
StartTrigger	
EndTrigger	

Add a new expression

StartTrigger true for: 1 Minutes

Generate child root cause event frame before parent event frame starts

- Acos
- And
- Ascii
- Asin
- Atn
- Atn2
- Avg
- BadVal
- Bod
- Bom
- Bonm
- Ceiling
- Char
- Compare
- Concat
- Contains
- Convert
- Cos
- Cosh
- Cot
- Abs(number x)  
Return the absolute value of an integer or real number.





Elements

- Elements
- CSD
- TSHD

General Child Elements Attributes Ports Analyses Version

Name: TSHDTrip  
Categories: TSHDTripAnalysis

Activity/ Sub-process captured in "Status" Tag

Category: TSHD Status

Trip Status DEME trailing 5/7/2016 02:24:41.558 PM

Events generated by AF Analytics based on status or sequence

Event Frame Template: TSHD\_Trip

Name	Expression	Value
StartTrigger		
EndTrigger		

StartTrigger true for: 1 Minutes

Generate child root cause event frame before parent event frame starts

Duration: 5 Minutes

Name: Root Cause

Category:

Scheduling:  Event-Triggered  Periodic

Advanced...

Generate child root cause event frame before parent event frame starts

Abs(number x)  
Return the absolute value of an integer or real number.





Event Frames

Event Frame Searchbar

- TRIP 18/03/2016 0:36:38
- TRIP 18/03/2016 10:41:58
- TRIP 18/03/2016 11:55:53
- TRIP 18/03/2016 13:17:17
- TRIP 18/03/2016 14:43:51
- TRIP 18/03/2016 16:25:10
- TRIP 18/03/2016 18:02:31
- TRIP 18/03/2016 2:20:00
- TRIP 18/03/2016 20:22:41
- TRIP 18/03/2016 21:51:52
- TRIP 18/03/2016 23:00:34
- TRIP 18/03/2016 4:02:55
- TRIP 18/03/2016 5:46:35
- TRIP 18/03/2016 7:06:00
- TRIP 18/03/2016 8:15:54
- TRIP 18/03/2016 9:25:17
- TRIP 19/03/2016 0:25:55
- TRIP 19/03/2016 1:53:12
- TRIP 19/03/2016 10:20:24
- TRIP 19/03/2016 11:43:34
- TRIP 19/03/2016 12:50:08
- TRIP 19/03/2016 14:02:18
- TRIP 19/03/2016 15:36:05
- TRIP 19/03/2016 17:18:06
- TRIP 19/03/2016 19:26:46
- TRIP 19/03/2016 21:14:26
- TRIP 19/03/2016 22:45:45
- TRIP 19/03/2016 3:39:21
- TRIP 19/03/2016 5:26:41
- TRIP 19/03/2016 7:09:53
- TRIP 19/03/2016 8:59:43
- TRIP 20/03/2016 0:03:07
- TRIP 20/03/2016 1:30:05
- TRIP 20/03/2016 11:06:59
- TRIP 20/03/2016 12:32:23
- TRIP 20/03/2016 13:53:41
- TRIP 20/03/2016 15:19:55
- TRIP 20/03/2016 17:02:39
- TRIP 20/03/2016 19:09:57
- TRIP 20/03/2016 21:07:15
- TRIP 20/03/2016 2:08:07
- TRIP 20/03/2016 4:46:41
- TRIP 20/03/2016 6:36:36
- TRIP 20/03/2016 8:09:17
- TRIP 20/03/2016 9:50:17

Filter [2..22:07:59.9...]

Name	Duration	Start Time	End Time	Description	Category	Template	Primary Element
TRIP 18/03/2016 0:36:38	1:43:22.093	18/3/2016 12:36:38.388 AM	18/3/2016 02:20:00.481 AM	Full Trip	TSHD Trip Analysis	TSHD_Trip	
TRIP 18/03/2016 10:41:58	1:13:55.443	18/3/2016 10:41:58.427 AM	18/3/2016 11:55:53.87 AM	Full Trip	TSHD Trip Analysis	TSHD_Trip	
TRIP 18/03/2016 11:55:53	1:21:23.228	18/3/2016 11:55:53.87 AM	18/3/2016 01:17:17.098 PM	Full Trip	TSHD Trip Analysis	TSHD_Trip	
TRIP 18/03/2016 13:17:17	1:26:34.992	18/3/2016 01:17:17.098 PM	18/3/2016 02:43:51.69 PM	Full Trip	TSHD Trip Analysis	TSHD_Trip	
TRIP 18/03/2016 14:43:51	1:41:19.116	18/3/2016 02:43:51.69 PM	18/3/2016 04:25:10.806 PM	Full Trip	TSHD Trip Analysis	TSHD_Trip	
TRIP 18/03/2016 16:25:10	1:37:20.435	18/3/2016 04:25:10.806 PM	18/3/2016 06:02:31.241 PM	Full Trip	TSHD Trip Analysis	TSHD_Trip	
TRIP 18/03/2016 18:02:31	2:20:10.585	18/3/2016 06:02:31.241 PM	18/3/2016 08:22:41.826 PM	Full Trip	TSHD Trip Analysis	TSHD_Trip	
TRIP 18/03/2016 2:20:00	1:42:54.773	18/3/2016 02:20:00.481 AM	18/3/2016 04:02:55.254 AM	Full Trip	TSHD Trip Analysis	TSHD_Trip	
TRIP 18/03/2016 20:22:41	1:29:10.721	18/3/2016 08:22:41.826 PM	18/3/2016 09:51:52.547 PM	Full Trip	TSHD Trip Analysis	TSHD_Trip	
TRIP 18/03/2016 21:51:52	1:08:41.894	18/3/2016 09:51:52.547 PM	18/3/2016 11:00:34.441 PM	Full Trip	TSHD Trip Analysis	TSHD_Trip	
TRIP 18/03/2016 23:00:34	1:25:21.081	18/3/2016 11:00:34.441 PM	19/3/2016 12:25:55.522 AM	Full Trip	TSHD Trip Analysis	TSHD_Trip	
TRIP 18/03/2016 4:02:55	1:43:40.22	18/3/2016 04:02:55.254 AM	18/3/2016 05:46:35.474 AM	Full Trip	TSHD Trip Analysis	TSHD_Trip	
TRIP 18/03/2016 5:46:35	1:19:24.944	18/3/2016 05:46:35.474 AM	18/3/2016 07:06:00.418 AM	Full Trip	TSHD Trip Analysis	TSHD_Trip	
TRIP 18/03/2016 7:06:00	1:09:54.102	18/3/2016 07:06:00.418 AM	18/3/2016 08:15:54.52 AM	Full Trip	TSHD Trip Analysis	TSHD_Trip	
TRIP 18/03/2016 8:15:54	1:09:22.601	18/3/2016 08:15:54.52 AM	18/3/2016 09:25:17.121 AM	Full Trip	TSHD Trip Analysis	TSHD_Trip	
TRIP 18/03/2016 9:25:17	1:16:41.306	18/3/2016 09:25:17.121 AM	18/3/2016 10:41:58.427 AM	Full Trip	TSHD Trip Analysis	TSHD_Trip	
TRIP 19/03/2016 0:25:55	1:27:17.282	19/3/2016 12:25:55.522 AM	19/3/2016 01:53:12.804 AM	Full Trip	TSHD Trip Analysis	TSHD_Trip	
TRIP 19/03/2016 1:53:12	1:46:09.049	19/3/2016 01:53:12.804 AM	19/3/2016 03:39:21.853 AM	Full Trip	TSHD Trip Analysis	TSHD_Trip	
TRIP 19/03/2016 10:20:24	1:23:09.328	19/3/2016 10:20:24.699 AM	19/3/2016 11:43:34.027 AM	Full Trip	TSHD Trip Analysis	TSHD_Trip	
TRIP 19/03/2016 11:43:34	1:06:34.55	19/3/2016 11:43:34.027 AM	19/3/2016 12:50:08.577 PM	Full Trip	TSHD Trip Analysis	TSHD_Trip	
TRIP 19/03/2016 12:50:08	1:12:09.945	19/3/2016 12:50:08.577 PM	19/3/2016 02:02:18.522 PM	Full Trip	TSHD Trip Analysis	TSHD_Trip	
TRIP 19/03/2016 14:02:18	1:33:46.988	19/3/2016 02:02:18.522 PM	19/3/2016 03:36:05.51 PM	Full Trip	TSHD Trip Analysis	TSHD_Trip	
TRIP 19/03/2016 3:39:21	1:42:00.579	19/3/2016 03:36:05.51 PM	19/3/2016 05:18:06.089 PM	Full Trip	TSHD Trip Analysis	TSHD_Trip	
TRIP 19/03/2016 5:26:41	2:08:39.952	19/3/2016 05:18:06.089 PM	19/3/2016 07:26:46.041 PM	Full Trip	TSHD Trip Analysis	TSHD_Trip	
TRIP 19/03/2016 7:09:53	1:47:40.61	19/3/2016 07:26:46.041 PM	19/3/2016 09:14:26.651 PM	Full Trip	TSHD Trip Analysis	TSHD_Trip	
TRIP 19/03/2016 21:14:26	1:31:19.283	19/3/2016 09:14:26.651 PM	19/3/2016 10:45:45.934 PM	Full Trip	TSHD Trip Analysis	TSHD_Trip	
TRIP 19/03/2016 22:45:45	1:17:21.475	19/3/2016 10:45:45.934 PM	20/3/2016 12:03:07.409 AM	Full Trip	TSHD Trip Analysis	TSHD_Trip	
TRIP 19/03/2016 3:39:21	1:47:19.874	19/3/2016 03:39:21.853 AM	19/3/2016 05:26:41.727 AM	Full Trip	TSHD Trip Analysis	TSHD_Trip	
TRIP 19/03/2016 5:26:41	1:43:11.624	19/3/2016 05:26:41.727 AM	19/3/2016 07:09:53.351 AM	Full Trip	TSHD Trip Analysis	TSHD_Trip	
TRIP 19/03/2016 7:09:53	1:49:50.55	19/3/2016 07:09:53.351 AM	19/3/2016 08:59:43.901 AM	Full Trip	TSHD Trip Analysis	TSHD_Trip	
TRIP 19/03/2016 8:59:43	1:20:40.798	19/3/2016 08:59:43.901 AM	19/3/2016 10:20:24.699 AM	Full Trip	TSHD Trip Analysis	TSHD_Trip	
TRIP 20/03/2016 0:03:07	1:26:57.835	20/3/2016 12:03:07.409 AM	20/3/2016 01:30:05.244 AM	Full Trip	TSHD Trip Analysis	TSHD_Trip	
TRIP 20/03/2016 1:30:05	1:37:57.6	20/3/2016 01:30:05.244 AM	20/3/2016 03:08:02.844 AM	Full Trip	TSHD Trip Analysis	TSHD_Trip	
TRIP 20/03/2016 11:06:59	1:25:24.717	20/3/2016 11:06:59.102 AM	20/3/2016 12:32:23.819 PM	Full Trip	TSHD Trip Analysis	TSHD_Trip	
TRIP 20/03/2016 12:32:23	1:21:18.061	20/3/2016 12:32:23.819 PM	20/3/2016 01:53:41.88 PM	Full Trip	TSHD Trip Analysis	TSHD_Trip	
TRIP 20/03/2016 13:53:41	1:26:13.598	20/3/2016 01:53:41.88 PM	20/3/2016 03:19:55.478 PM	Full Trip	TSHD Trip Analysis	TSHD_Trip	
TRIP 20/03/2016 15:19:55	1:42:44.365	20/3/2016 03:19:55.478 PM	20/3/2016 05:02:39.843 PM	Full Trip	TSHD Trip Analysis	TSHD_Trip	
TRIP 20/03/2016 17:02:39	2:07:17.484	20/3/2016 05:02:39.843 PM	20/3/2016 07:09:57.327 PM	Full Trip	TSHD Trip Analysis	TSHD_Trip	





- Automated Analysis in AF Analytics replaces manual cycle identification
- Summary results per production cycle are directly available for users via PI DataLink for evaluation & reporting
- Backfilling allows new Event based analyses to be applied to past data
- AF Analytics allows users to define their own custom status attributes based on PI Tags and generate Event Types for their specific analyses
- By using Event Frame Templates:
  - New Event Types can be implemented consistently across Production Units
  - New Event Attributes can be added easily to each type of Event





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# Some best practices

- **Organize your hierarchy**
  - Elements of the same type at each level
  - Use industry standards e.g. S88 standard
- **Use templates**
  - Easier maintenance
  - Dimension for BI analyses and reports

# Some best practices

- **Use categories**
  - Easier searches
  - Easier maintenance
  - Dimension for BI analyses and reports
- **Use Units of Measure (UOM)**
  - Critical for calculations and reporting

# Some best practices

- **Build separate “views” based on needs**
  - Weak references
  - Search on these views
- **Use inherited templates**
- **Use enumerations**
  - Minimize mistakes

# Some best practices


- **Use distinct element names**
  - Less confusing
  - Easier reporting
- **Keep relation data in relation database**
- **Use AF tables**
  - Table lookup data reference
- **Add as much context as possible so all clients would benefit**

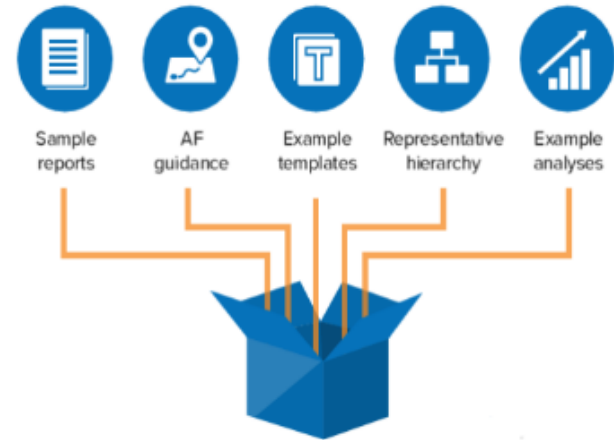
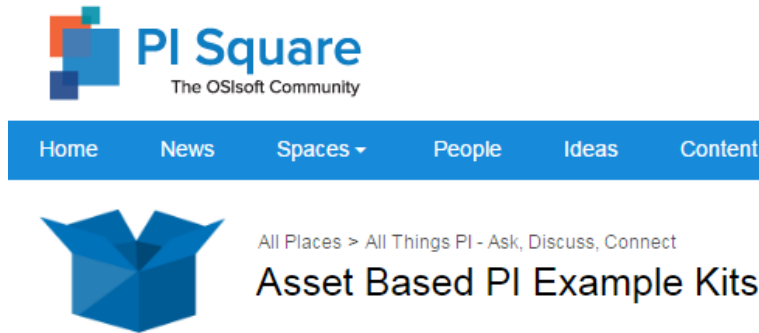
# Some things to keep in mind...

- Who will consume the data?
- No “right way” to building AF
- Start small and build up
- Solve a specific problem



# Getting started..

- Asset Based PI Jumpstart
- Asset Based PI Example Kits
  -  to all of our customers
  - Available via PI Square



# Questions?



**OSI**soft®

감사합니다

谢谢

Danke

Merci

Gracias

**Thank You**

ありがとう

Спасибо

Obrigado