



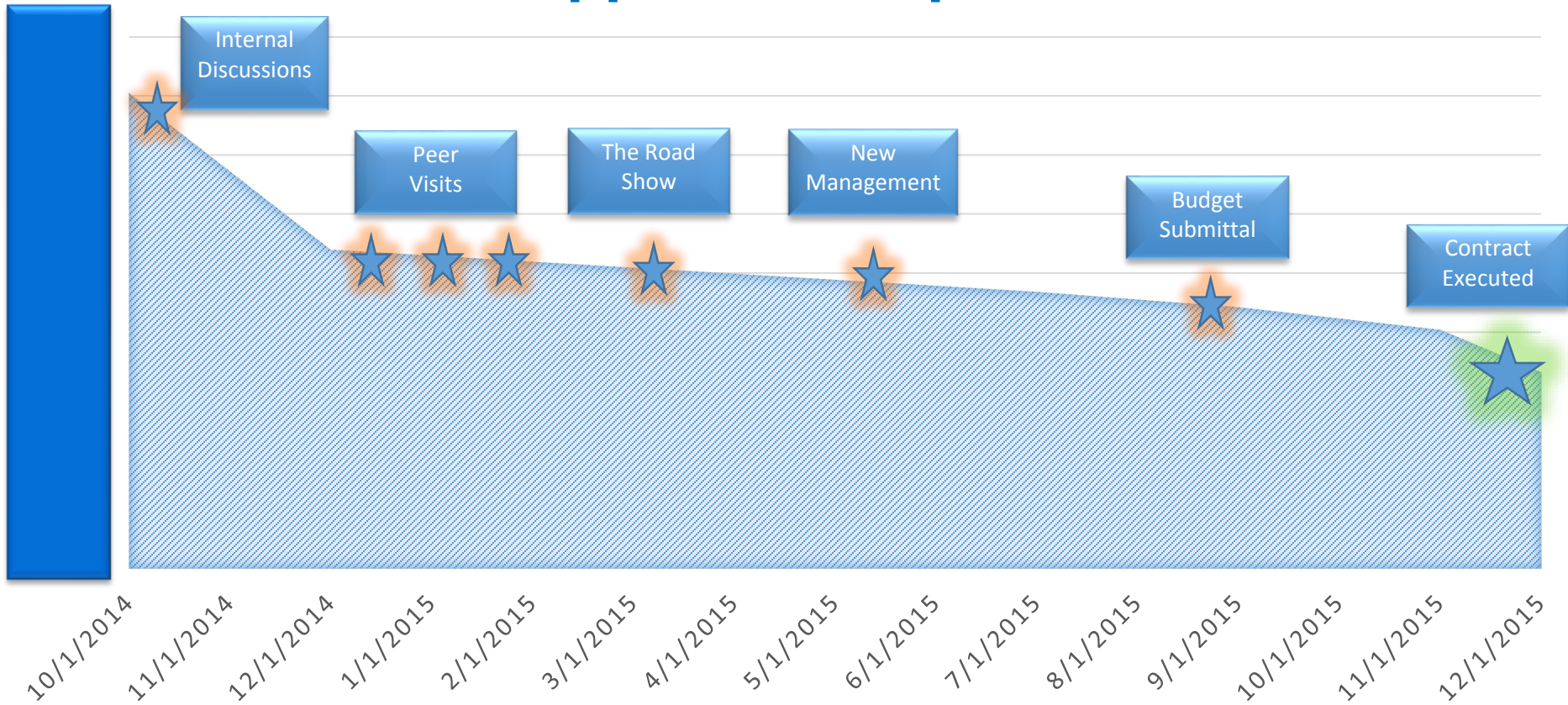
Utilizing Apache's New PI Infrastructure to Improve Situational Awareness and Extend Asset Life

Kelly Sherrill - Manager Automation,
Optimization & Production Data Management

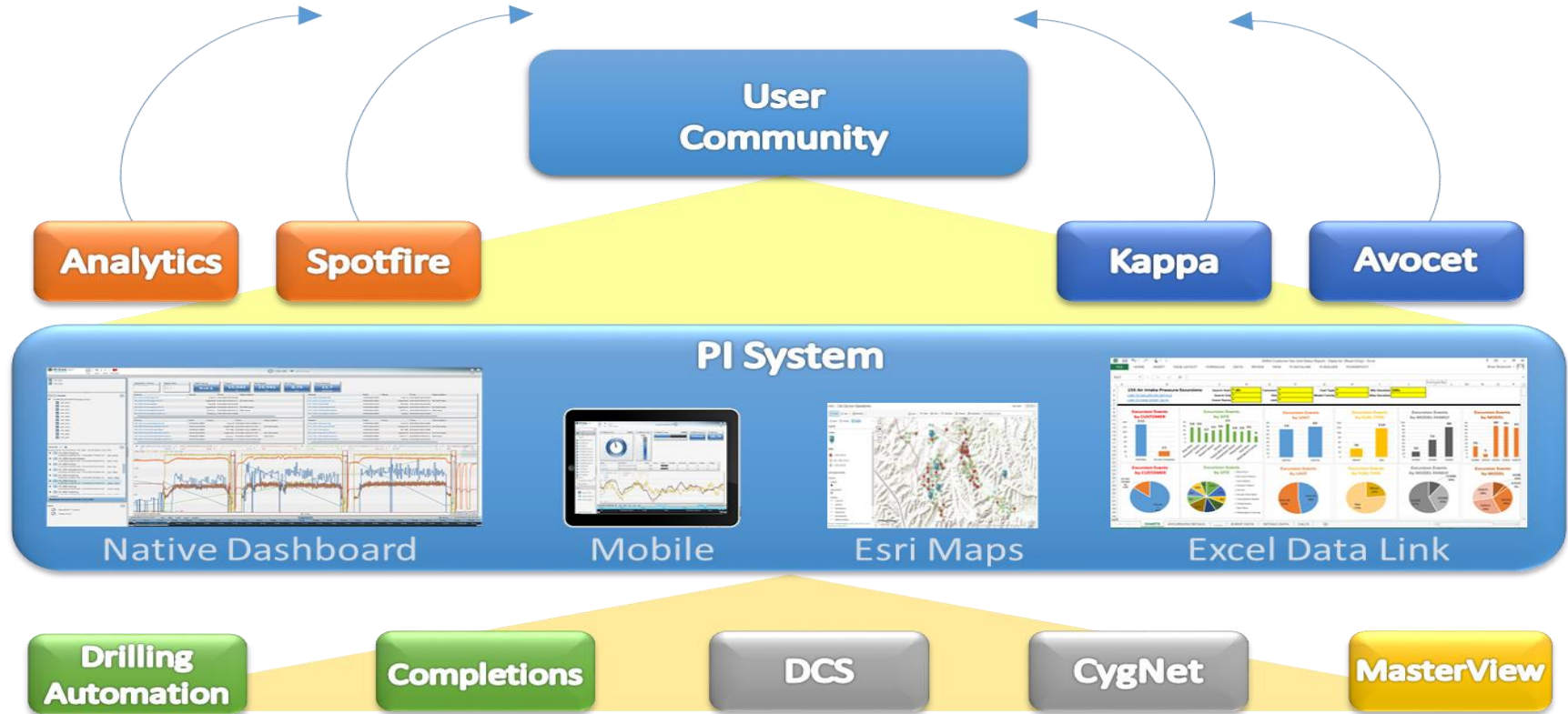
10/11/2016



OSIsoft Path To Approval at Apache



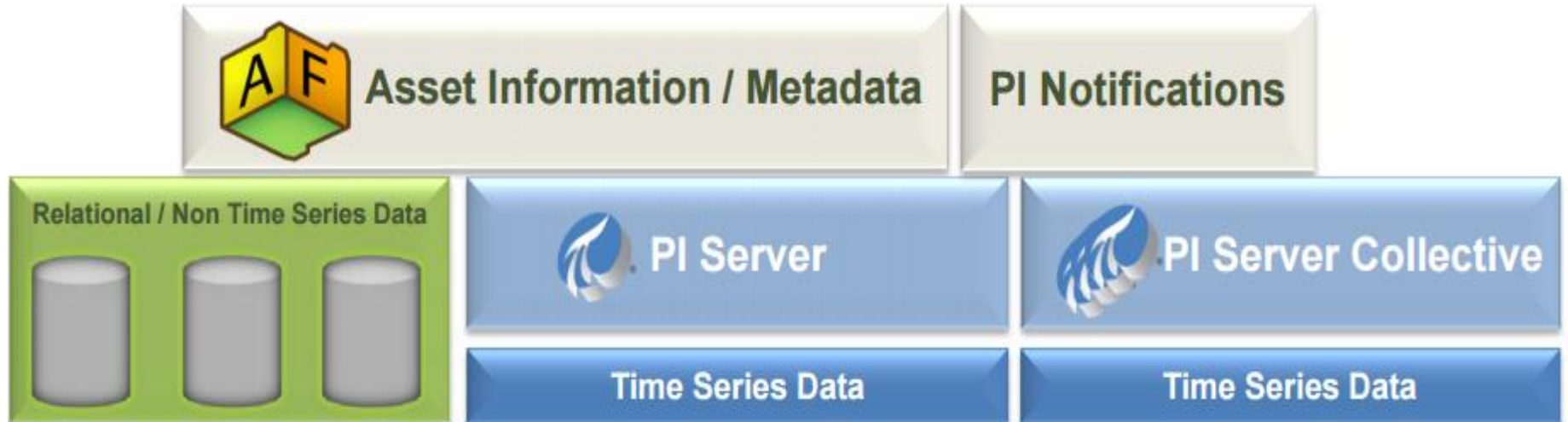
Conceptual Data Flow & Design



PI System Implementation Project

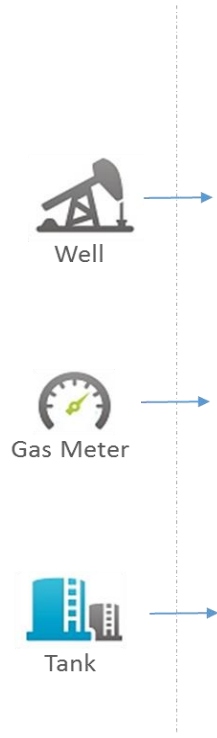
- Steering Committee
- Phased Implementation
- Development of Asset Framework
- Connectors
- Messaging

Asset Framework Overview

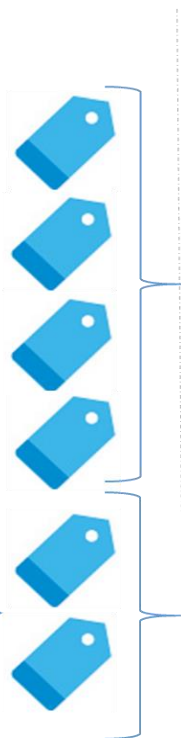


Asset Framework Overview – The “Aha!” Moment

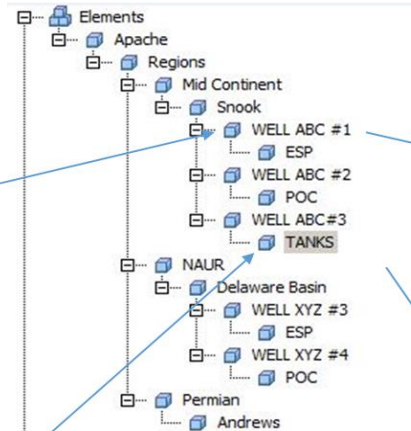
FIELD ASSETS



CYGNET



PI ASSET FRAMEWORK - ASSETS



PI ASSET FRAMEWORK - ATTRIBUTES



Phase II: Electrical Submersible Pumps

- Identify Issues
- Capabilities of Current Systems
- External Solutions
- Justifications

ESP Video

ESP Video

Apache Production Tools

Region: NAUR

Field: MENTONE WAHA (BP)

Wells: Robin 101H ESP, Robin 102H ESP, Robin 103H ESP, Robin 104H ESP, Robin 105H ESP

Facilities Dashboard Annotations Overview Detail View Pump Downtime Pump Field DT Pump Curve Production

Server: Production User: APACHECORP\trisha.saiz Updated: 10/10 18:35

Field Dashboard Custom Trends Settings Snapshot Export Print System Exit

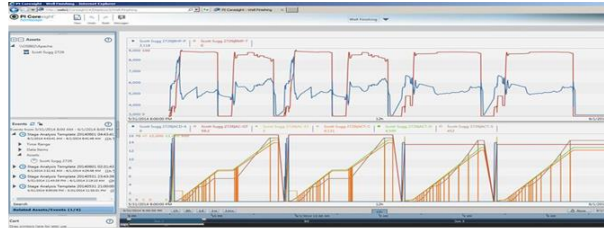
Show: ☒ All Wells ☐ Stopped ☐ Well: robin

Area	Field	Well	Region	Area	Field	Route	Foreman	Status	Reason
Area: ANDREWS (4 items)									
Field: THREE BAR (4 items)									
		TBSU PW 119	PERMIAN	ANDREWS	THREE BAR	6606	ANDREWS [GRYDER]	Running	
		TBSU PW 119	PERMIAN	ANDREWS	THREE BAR	6606	ANDREWS [GRYDER]	Running	
		THREE BAR SHALLOW UN #114H	PERMIAN	ANDREWS	THREE BAR	6606	ANDREWS [GRYDER]	Running	
		THREE BAR SHALLOW UN #116H	PERMIAN	ANDREWS	THREE BAR	6606	ANDREWS [GRYDER]	Stopped	Underload
Area: CRANE (85 items)									
Field: ROEPKE (1 item)									
		KING SUB 59-1	PERMIAN	CRANE	ROEPKE	6801	SAND HILLS [AGUILAR]	Running	
Field: MCELROY (79 items)									
		NMU SUB 0013	PERMIAN	CRANE	MCELROY	4409		Running	
		NMU SUB 0015	PERMIAN	CRANE	MCELROY	4404		Running	
		NMU SUB 2636BH	PERMIAN	CRANE	MCELROY	4502	CRANE [CLEMENTS]	Running	
		NMU SUB 2727BH	PERMIAN	CRANE	MCELROY	4411	CRANE [CLEMENTS]	Running	
		NMU SUB 2742	PERMIAN	CRANE	MCELROY	4411	CRANE [CLEMENTS]	Running	
		NMU SUB 2804BH	PERMIAN	CRANE	MCELROY	4411	CRANE [CLEMENTS]	Running	
		NMU SUB 3334BH	PERMIAN	CRANE	MCELROY	4408	CRANE [CLEMENTS]	Running	
		NMU SUB 3338	PERMIAN	CRANE	MCELROY	4408	CRANE [CLEMENTS]	Running	
		NMU SUB 3354	PERMIAN	CRANE	MCELROY	4408	CRANE [CLEMENTS]	Running	
		NMU SUB 3403	PERMIAN	CRANE	MCELROY	4411	CRANE [CLEMENTS]	Running	
		NMU SUB 3411F	PERMIAN	CRANE	MCELROY	4411	CRANE [CLEMENTS]	Running	
		NMU SUB 3412	PERMIAN	CRANE	MCELROY	4411	CRANE [CLEMENTS]	Running	
		NMU SUB 3420	PERMIAN	CRANE	MCELROY	4411	CRANE [CLEMENTS]	Running	
		NMU SUB 3425	PERMIAN	CRANE	MCELROY	4411	CRANE [CLEMENTS]	Running	
		NMU SUB 3434	PERMIAN	CRANE	MCELROY	4411	CRANE [CLEMENTS]	Running	
		NMU SUB 3550	PERMIAN	CRANE	MCELROY	4502	CRANE [CLEMENTS]	Running	
		NMU SUB 3559	PERMIAN	CRANE	MCELROY	4502	CRANE [CLEMENTS]	Running	
		NMU SUB 3701BH	PERMIAN	CRANE	MCELROY	4502	CRANE [CLEMENTS]	Running	
		NMU SUB 3811	PERMIAN	CRANE	MCELROY	4502	CRANE [CLEMENTS]	Running	

<< Select TBSU PW 119

Next Steps – Future Phases

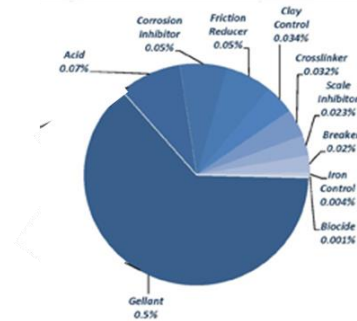
- Well Flowback Monitoring



- Tank Management



- Chemical Usage



- Pump Off Control



Contact Information

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Questions

Please wait for the
microphone before asking
your questions



State your
name & company

Please don't forget to...

Complete the Survey
for this session



The **Power of Data**

DECISION READY IN REAL-TIME

Evaluation Form (Seminar Location - Date)

Name: _____ Company: _____

Email: _____

Quality and content of the presentations

Poor Good Excellent N/A

Welcome	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
The Journey To Real-Time Operational Intelligence	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
The Power of Connection	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Tank Level Management System	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Using the PI System to Aid in Troubleshooting Operational Aspects of Oil and Gas Well Drilling and Completion	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Unleash your Infrastructure	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Information on the Spot	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Wrap-up/Seminar Conclusion	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Quality and organization of the seminar

Choice of date	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Time allowed for lunch/breaks	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Choice of presentations	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Days and time allowed for the presentation	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>



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2016 REGIONAL SEMINARS

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감사합니다

谢谢

Danke

Merci

Gracias

Thank You

ありがとう

Спасибо

Obrigado



- 1 ESP system failure \$70k (downhole equipment only)
Apache operated ESP's ~500
- Apache mean run life 2.5 years, industry average +3
- Company average utilizing smart analytics:
12 – 15 major “saves” per year
- Utilizes PI as primary data source
- Identifies how problems evolve such as:
Cycling Gas Lock, Scale, Power Issues
- System can be utilized for compressors, POC, rotating equipment, well analysis . . .