



Leveraging OSIsoft PI Data in a Maintenance & Reliability Program Discussion

Presented by **Scott Larson - CMRP**



LSI Overview

LSI an Engineering Provider started in 1985

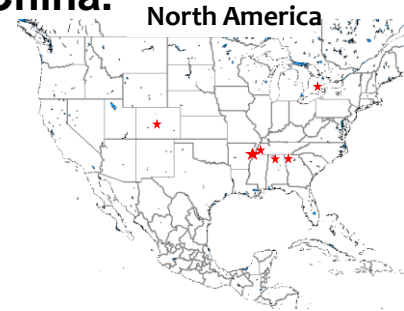
- ≡ LSI's Customer #1 is still a customer today
- ≡ Recognized Controls Engineering Expertise
- ≡ Including Advanced Controls Capabilities
- ≡ MES and Intelligent Data
- ≡ Diverse Industrial Presence
- ≡ Relationship based culture and value long-term relationships that strengthen over time.
 - ≡ ~225 people located in 6 offices around the U.S, Canada & China.

China



Memphis, TN (Hdqt) • 112
Jackson, TN / Decatur, AL • 24
Rossville, GA • 16

Golden, CO • 50
Guangzhou, PRC • 9
Toronto, CAN • 5



Scott Larson, CMRP

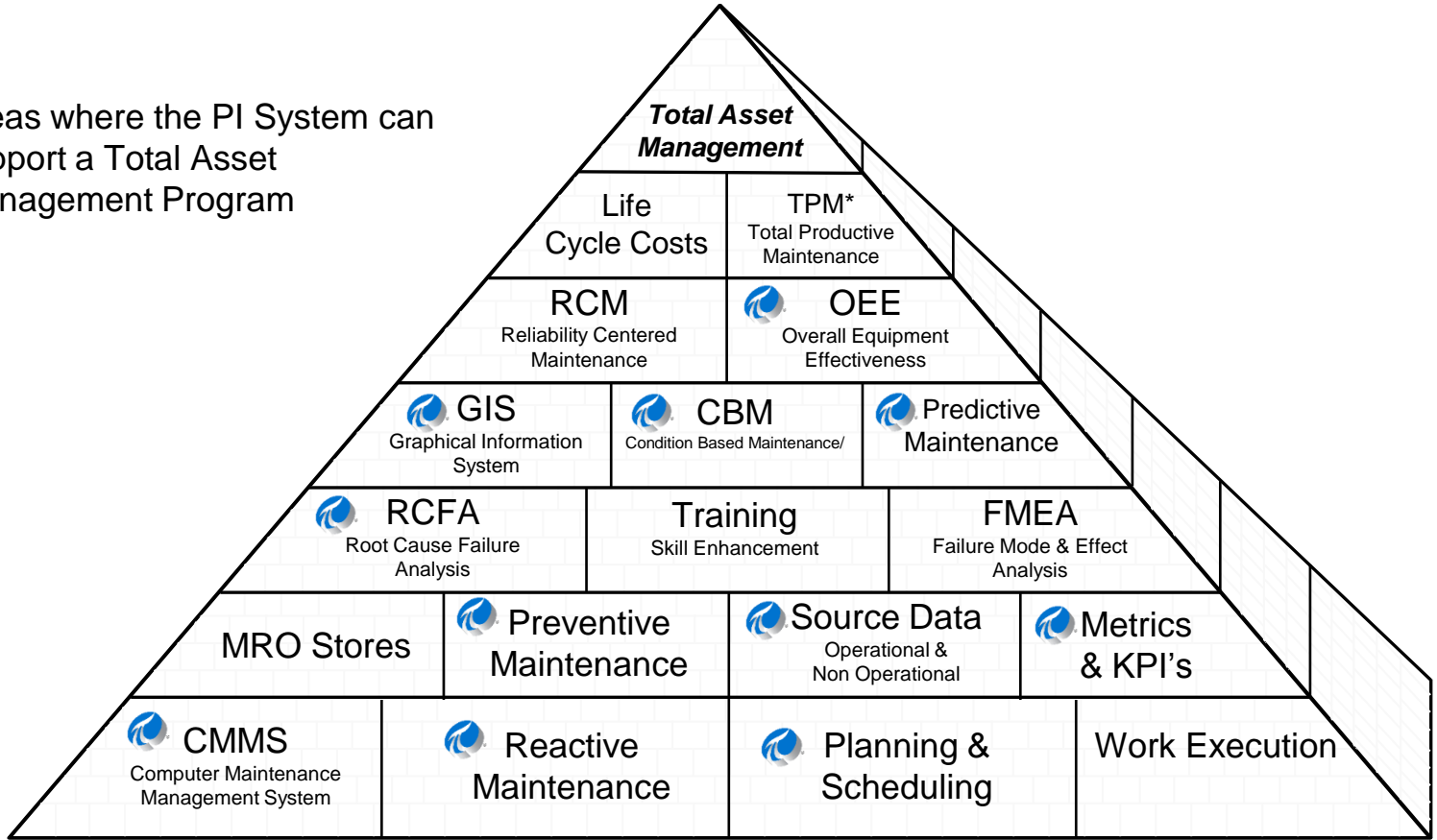
- Maintenance Management Certificate from University of Wisconsin – Madison in May 2015
- CMRP in June 2015
- Sr. Operational Intelligence Consultant for Logical Systems, LLC, specializing in OSIsoft PI System applications, Asset Reliability and Asset Maintenance.
- Provides clients with consulting services to realize additional values to OSIsoft PI System in a variety of industries
- Provides Asset Maintenance consulting services to improve asset reliability as well as Innovate and develop new system functionality using existing applications to solve business challenges.
- Received Masters Certificate in Business Analysis in July 2015 from Auburn University and Watermark Learning

- **Logical Systems is a global provider of process, mechanical, and electrical engineering services specializing in *process improvement, automation, systems integration and information systems.***

The Asset Management Strategy Pyramid

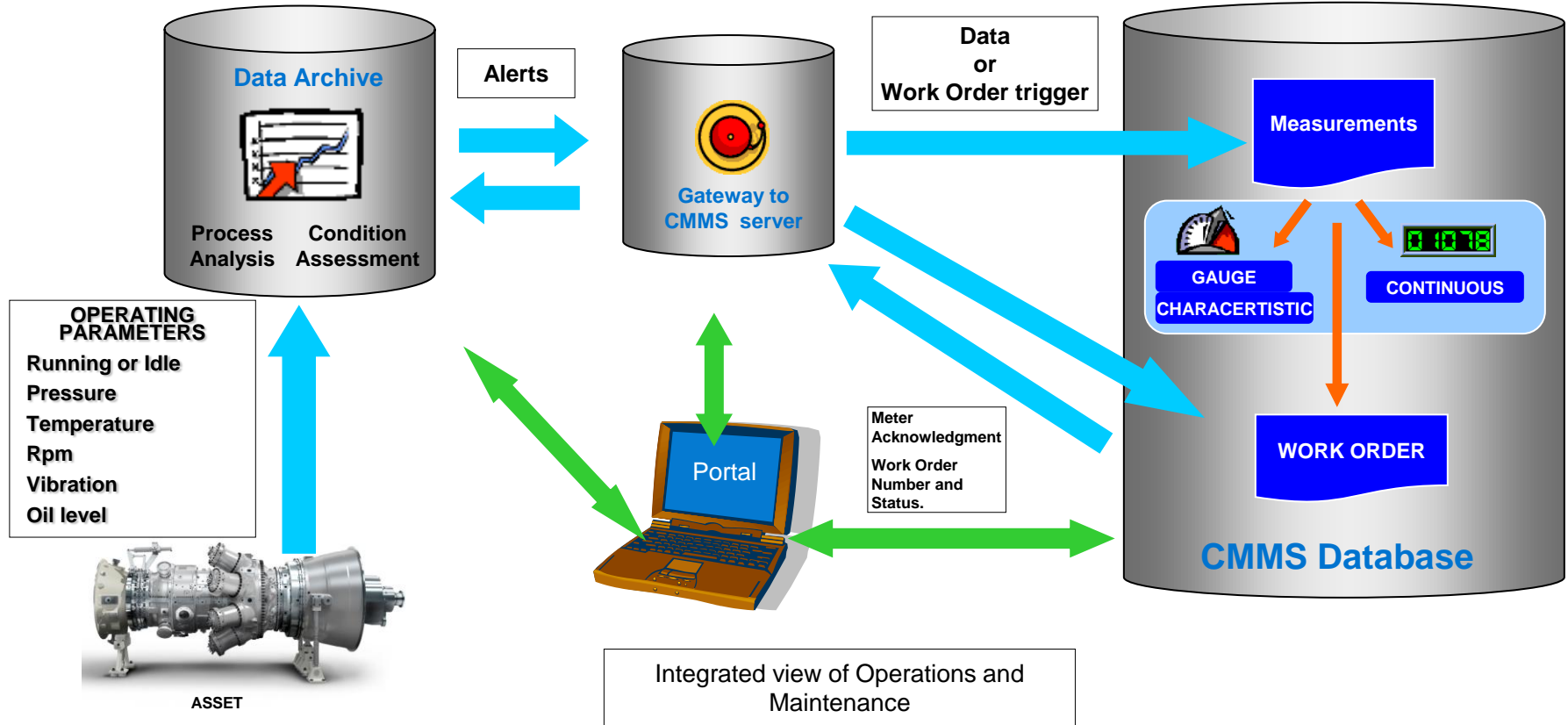


Areas where the PI System can support a Total Asset Management Program



* Also referred to as OBM – Operator Based Maintenance

CMMS Interface – Bi Directional



Condition Based Maintenance

The 6 Steps of CBM

1. Connect to relevant sources

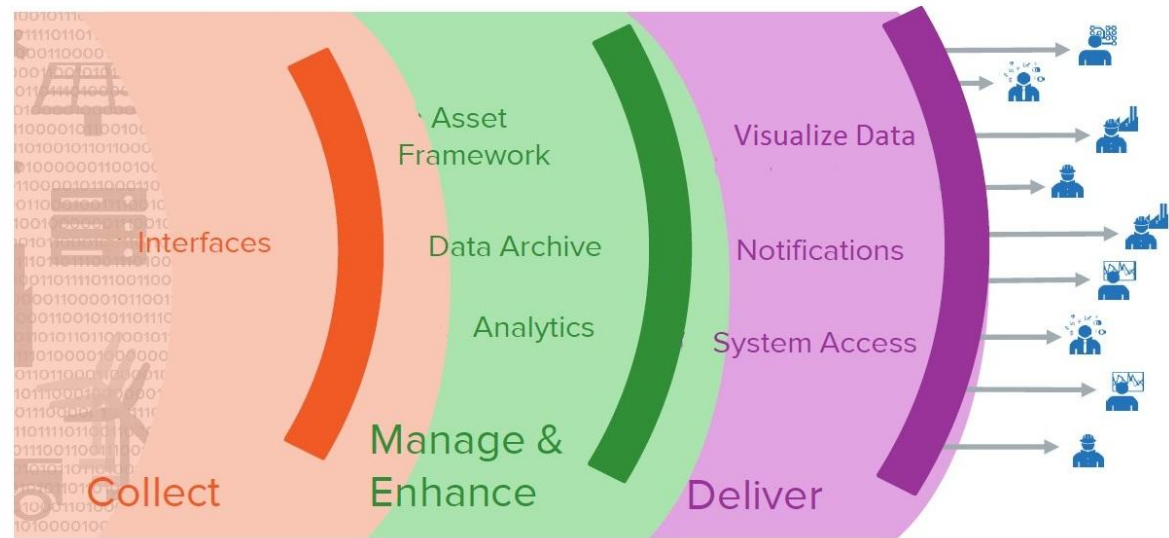
2. Collect and archive data

3. Assign context (asset based)

4. Execute condition monitoring logic

5. Visualize real-time conditions

6. Alert & notify



Root Cause Failure Analysis



Event Frames
Captures Event



Generate child root cause event frame before parent event frame starts

Duration:

Name:

Category:

- AF Asset Analytics (Event Detection)**
- Configurable Event Detection
 - Create Rules Once, Apply to Many
 - History Regeneration
 - Root Cause Events

- PI Coresight (Related Events)**
- Automatically Discover Related Events
 - Event Trending
 - Root Cause Trending
 - View Event Attribute Values
 - Event Comparison (Overlay Trending)

- PI DataLink (Events in Excel)**
- Explore Events and Compare events
 - Easy Event Analysis and Reporting
 - Build Flexible Ad hoc Reports Out of the Box

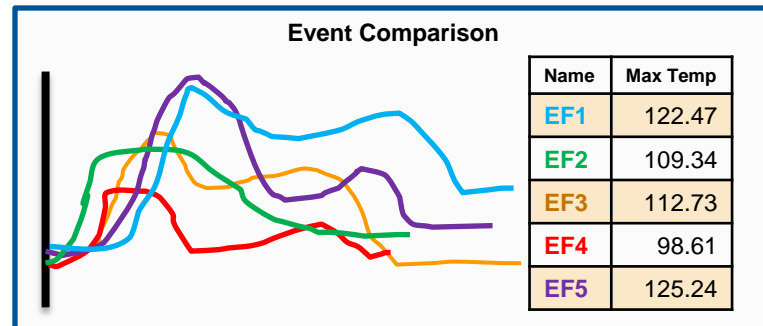
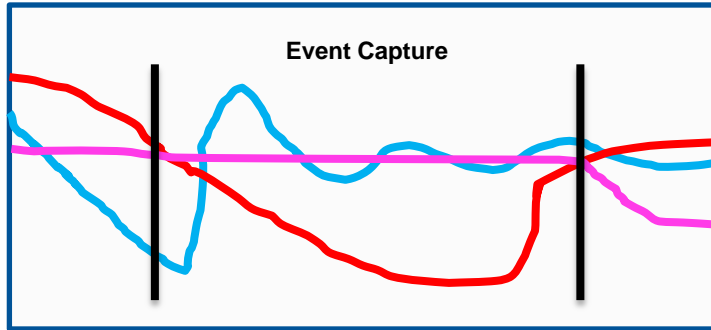
Predictive Maintenance PdM

- Tube leaks causing unscheduled downtime
- Operational interruptions & Emergency Repairs
- Performed RCA after one incident
- Discovered leak could have been detected seven hours earlier
- Created calculation to predict and alert on possible leaks
- Provided early notification and time to mobilize parts and resources
- Operations was able to plan for the outage and bring equipment down in controlled manner




Event Frames

Contextualizing the data in terms of events with Event Frames:



Metrics and Key Performance Indicators

- SMRP Metrics
 - ~ 67 different Metrics
 - Many rely upon Operational Data
 - Overall Equipment Effectiveness - OEE
 - Total Effective Equipment Performance – TEEP
 - Availability
 - Uptime/Downtime

- 
- Operational and non-operational data can support a maintenance and reliability program in many different aspects.
 - What we have hopefully provided was a way to improve and enhance these concepts by utilizing data that is most likely currently being captured in your organization.
 - We did not touch on several key areas that have been around for many years but are becoming more common in organizations, such as vibration analysis, infrared thermography, ultrasonic analysis and oil analysis.
 - Look for more opportunities to leverage data in your maintenance and reliability area.

Recap

Contact Information

Scott Larson

slarson@logicalsysinc.com

Sr. Operational Intelligence
Consultant

Logical Systems, LLC



Questions

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감사합니다

谢谢

Danke

Merci

Gracias

Thank You

ありがとう

Спасибо

Obrigado