



OSIsoft®

REGIONAL SEMINAR 2012

E M E A

The **Power** of **Data**



Predictive Equipment Diagnostics in PI Networks

Presented by

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Agenda

- **Company Overview**
- **Problem Statement**
- **Predictive Vision**
- **Solution Overview**
- **Utilization of OSI PI**
- **Case Studies**

About OSyS



- **Optimized Systems and Solutions**
 - Founded in 1999
 - Part of the Rolls-Royce Group
- **350+ Customers Across Multiple Industries**
 - Oil and Gas, Power-Gen, Aerospace, Marine, Defence



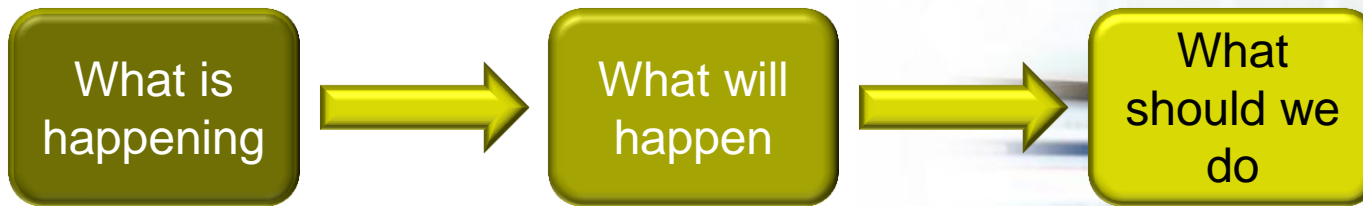
- Predictive Equipment Health Management
- Process Assurance and Compliance
- Operational Optimization
- Maintenance Management

Over \$50 billion in asset value utilize OSyS solutions

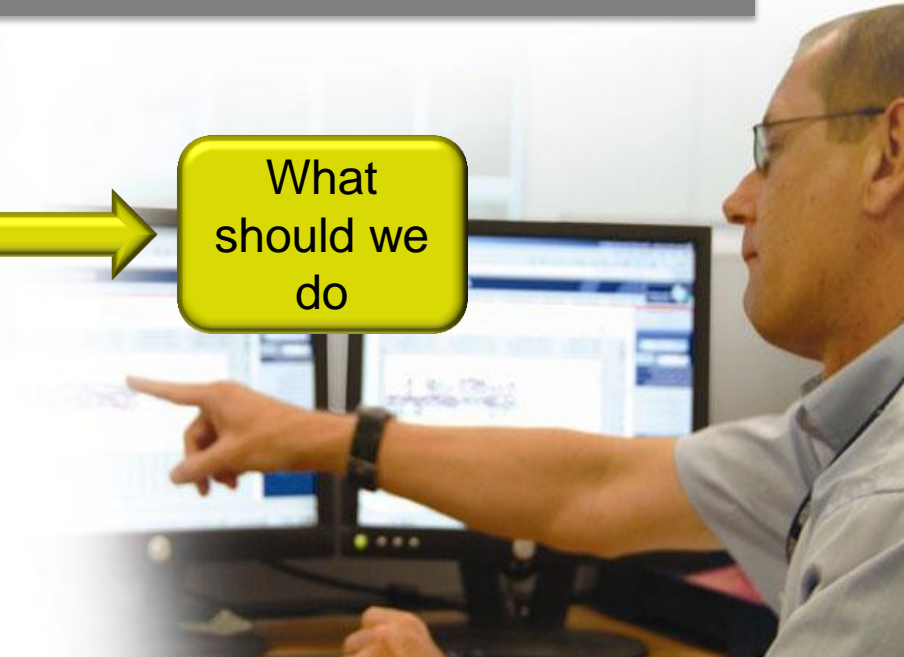
Problem Statement



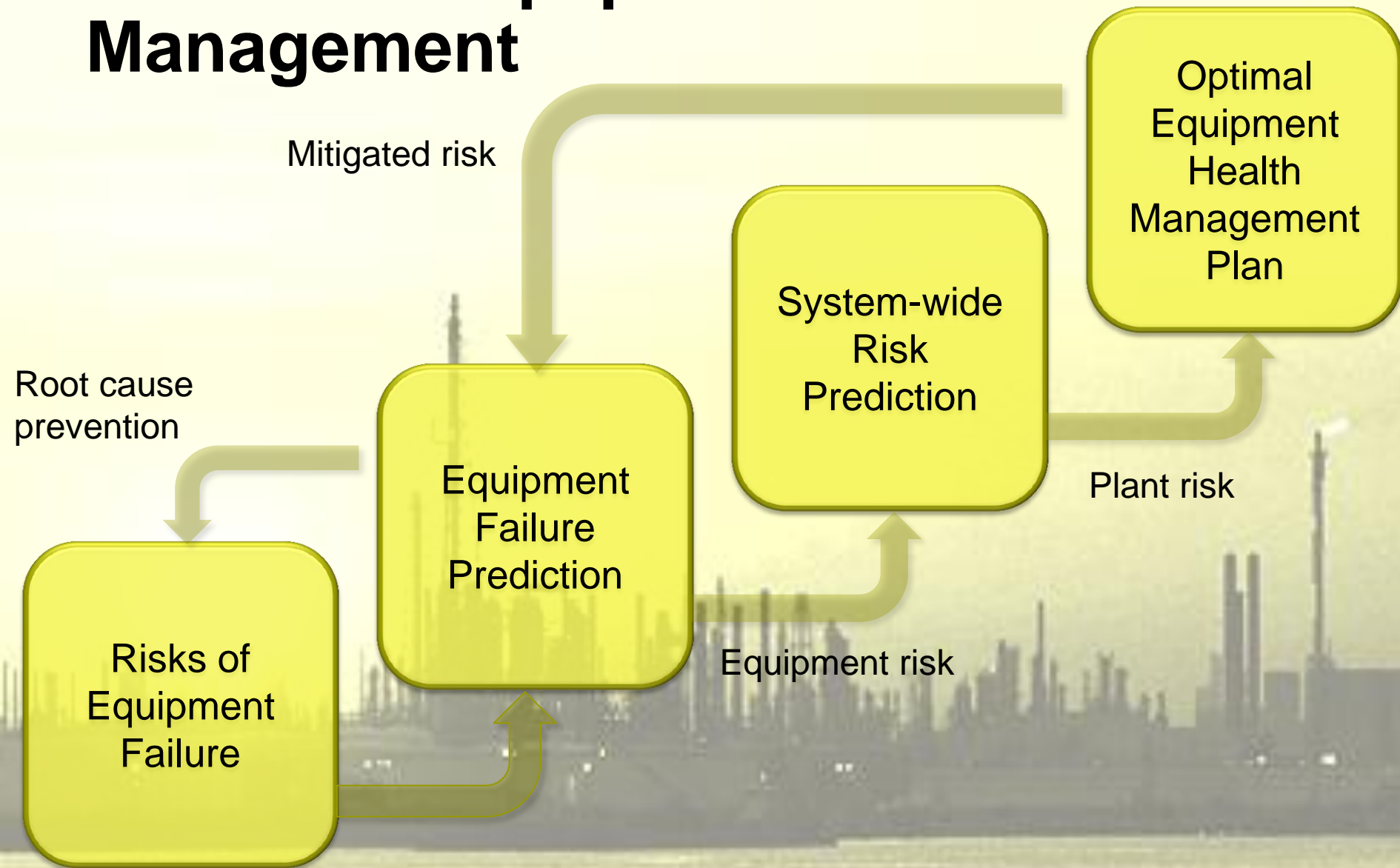
Centralize, analyze and report on globally distributed, high-frequency equipment data to drive informed business decisions



If we know what is likely to happen, we can plan to prevent it, or plan to reduce its impact

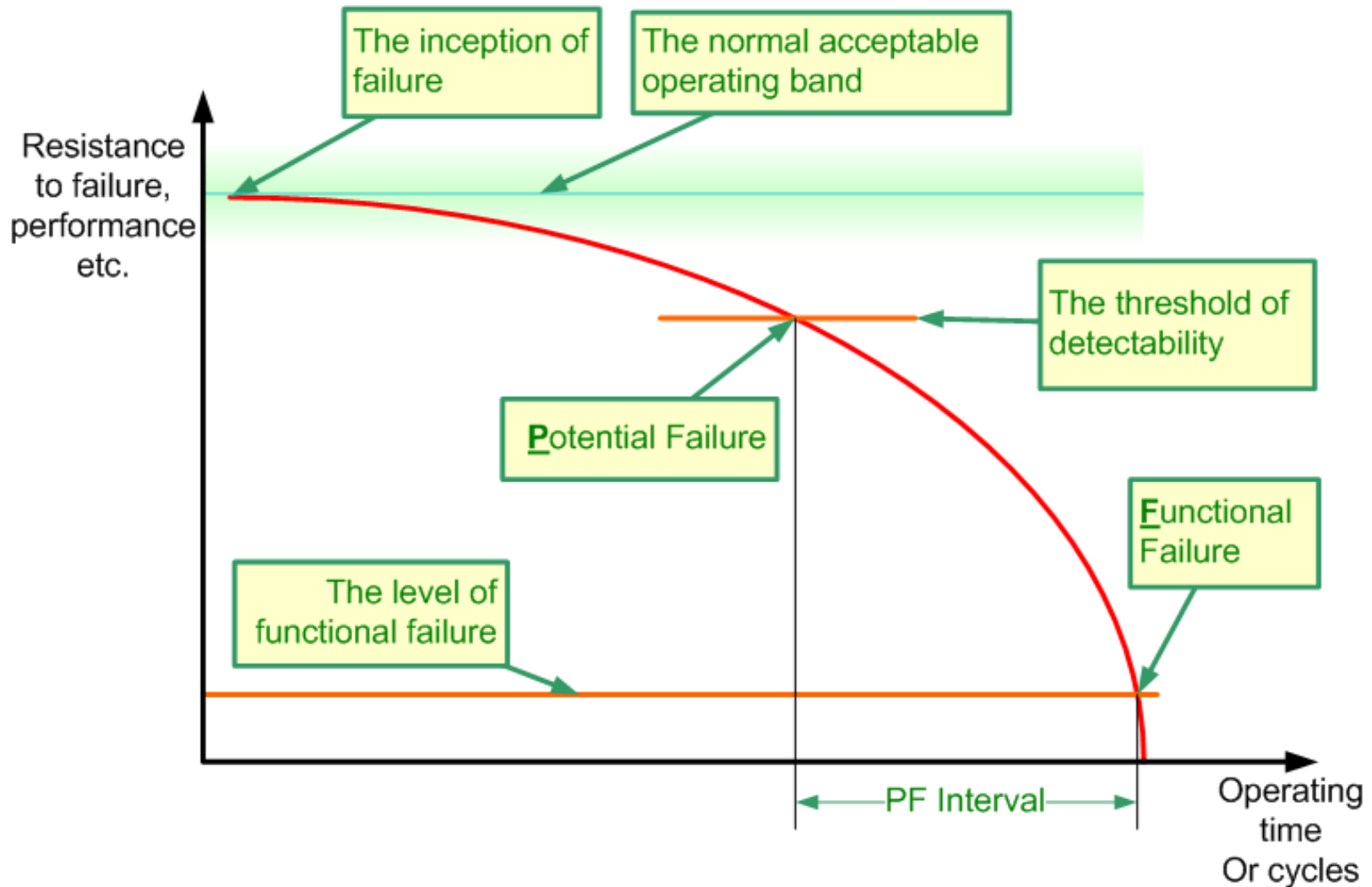


Predictive Equipment Health Management

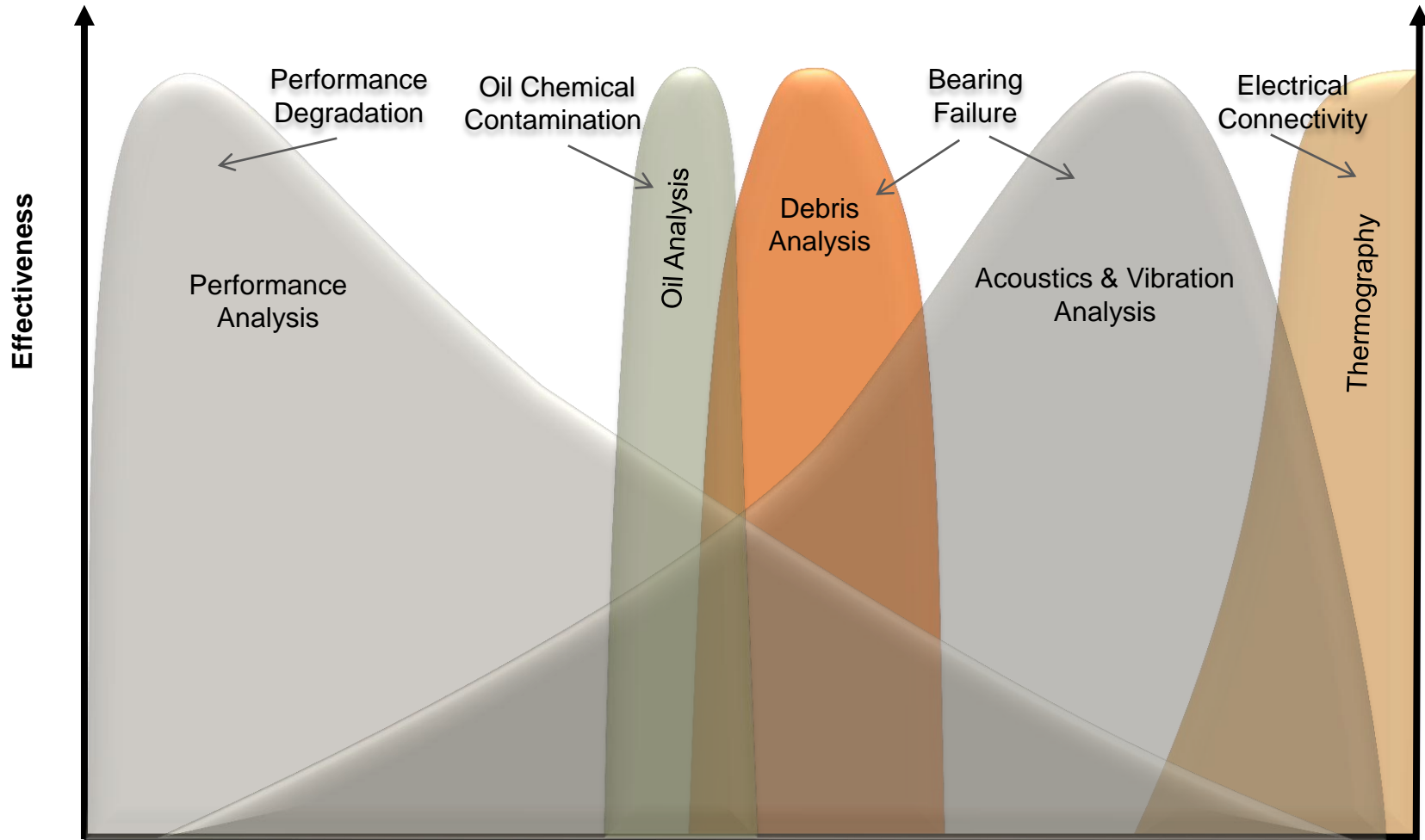


How value is delivered

detect earlier with more confident diagnosis

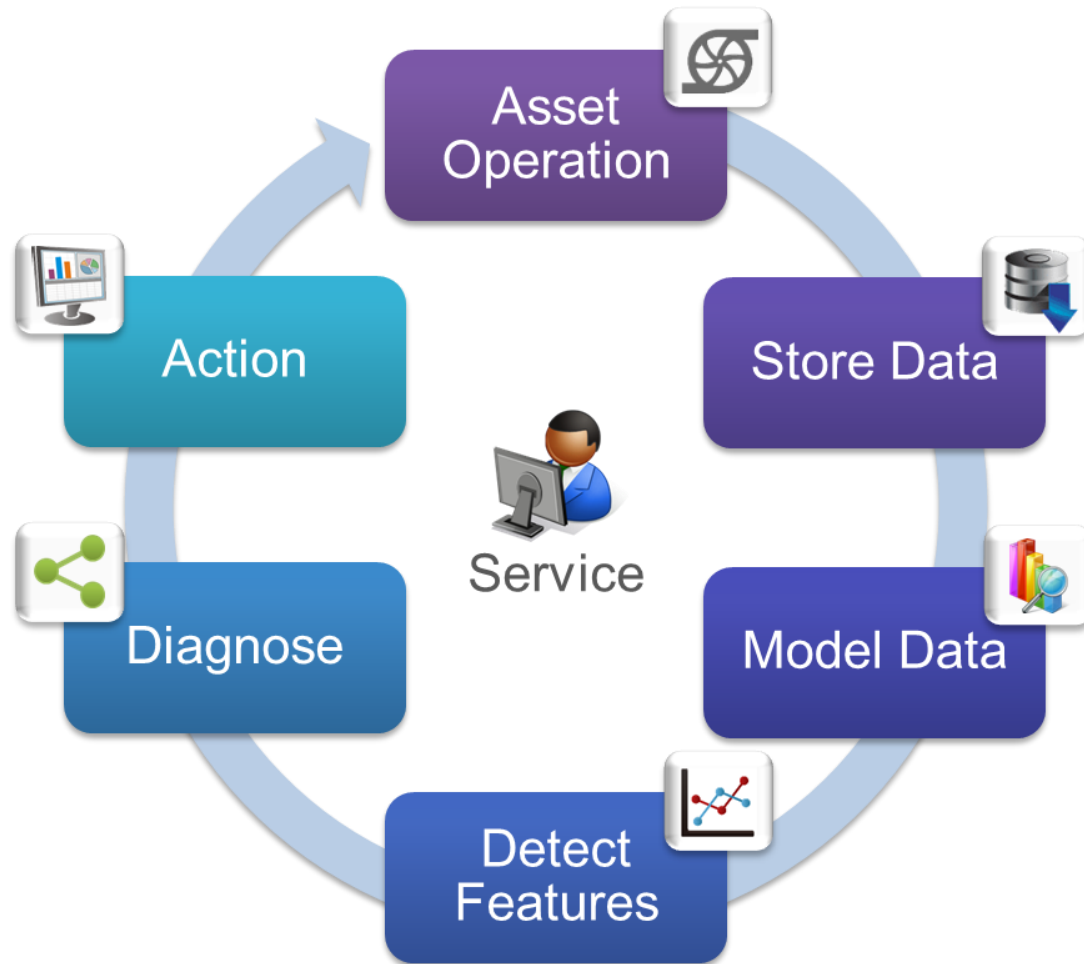


Fusing techniques delivers coverage

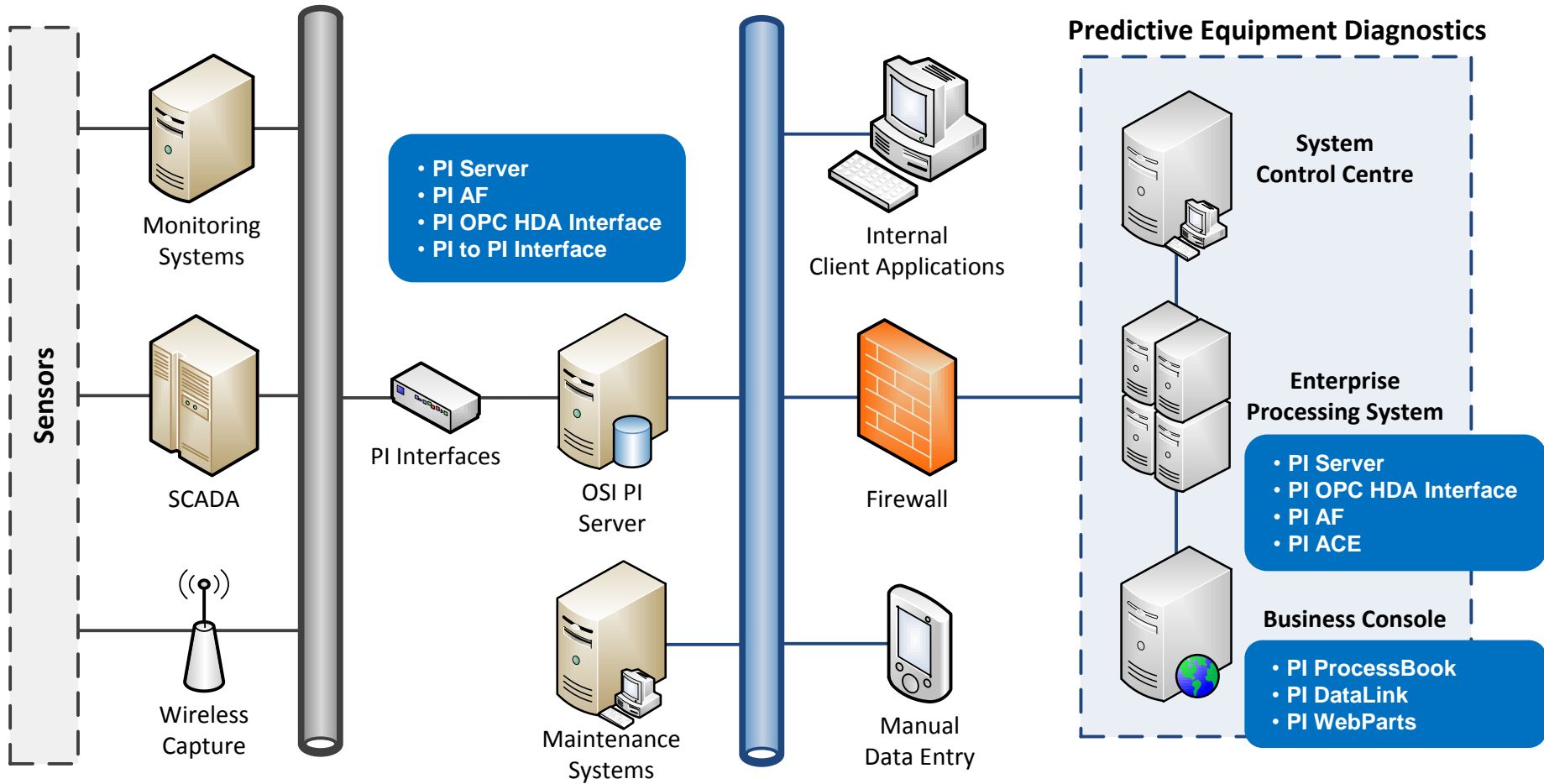


Spectrum of Failure Modes for Given Equipment

Predictive Equipment Diagnostics



Solution Infrastructure



Utilization of PI

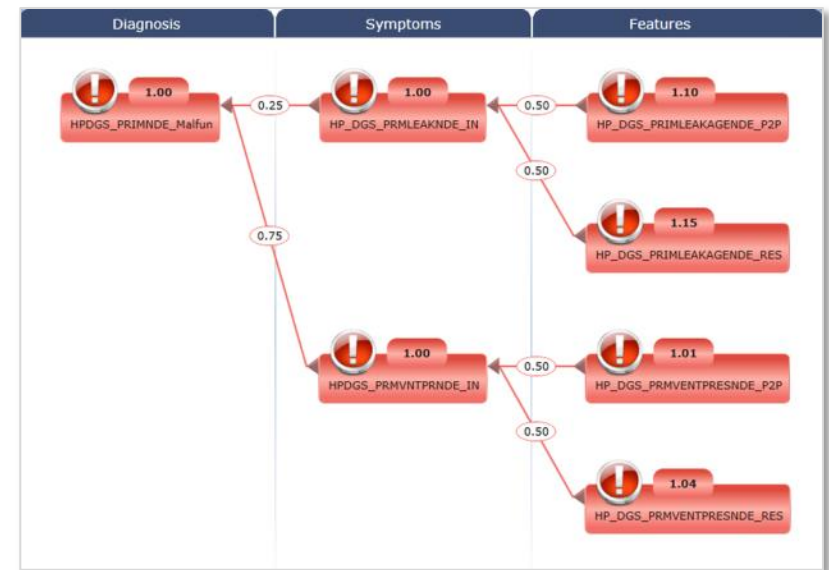
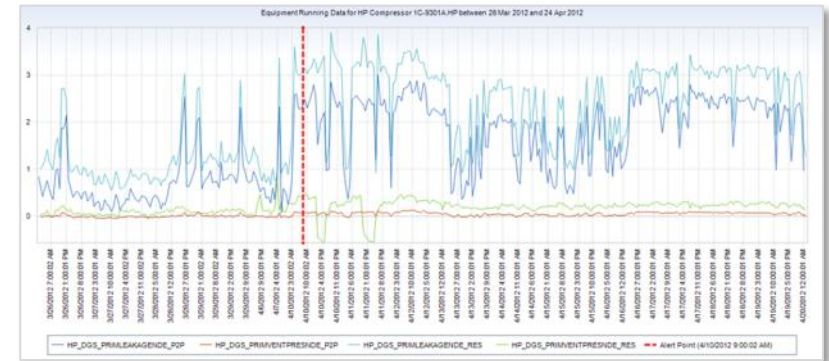
- **Centralisation of data**
 - PI to PI links
 - Other historians to PI
- **Downstream consumption**
 - Write back analytical outputs
 - Consumption by other systems
- **Visualisation**
 - Supplements OSyS Business Console
 - Mimics and dashboards
 - Overlay OSyS analytical outputs



Predictive Equipment Diagnostics - Case Study

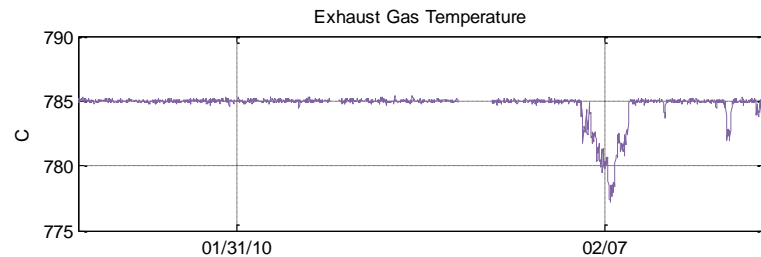
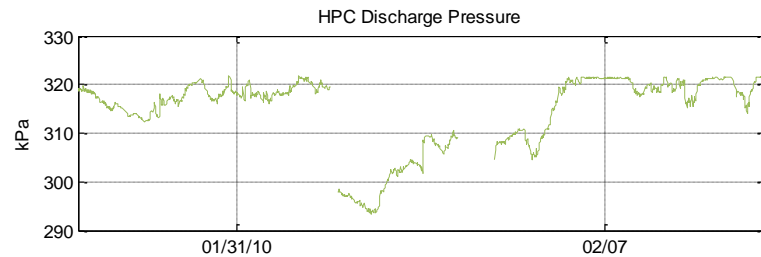
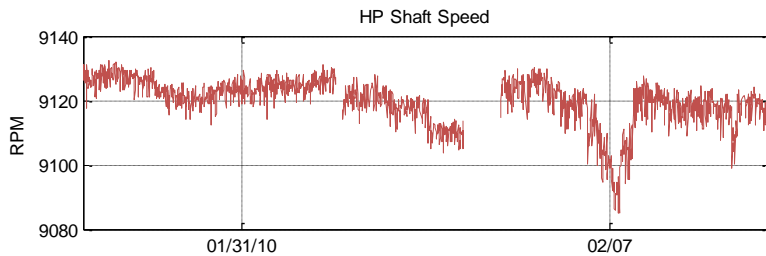
Centrifugal Compressor – Dry Gas Seal Failure

- Using **Multiple Data Sources**
 - OSI PI Server (performance data)
 - CSV Files (operational data)
 - XML (oil laboratory data results)
- **Comprehensive Diagnostics Across**
 - Multiple Modeling Methods
 - Multiple Diagnostic Techniques
 - Multiple Sub-Components
 - Multiple Machine States
- **Four Weeks of Early Warning Enabled**
 - Customer Coordinated Preventative Measures
 - Spare Parts to be Available Onsite
 - Equipment put Under Daily Surveillance
- Estimated **Cost Savings of \$250k** per event

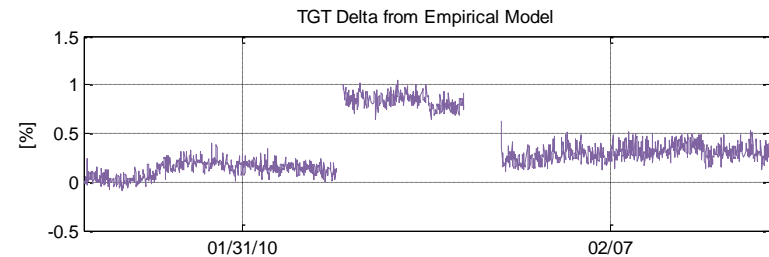
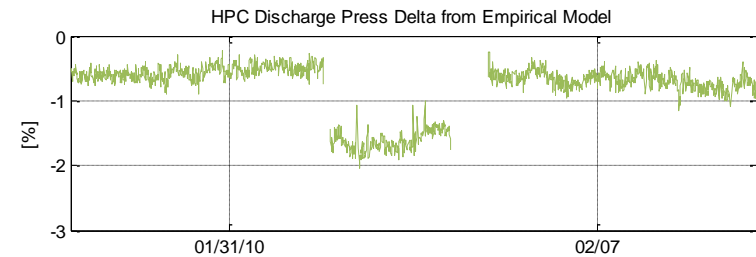
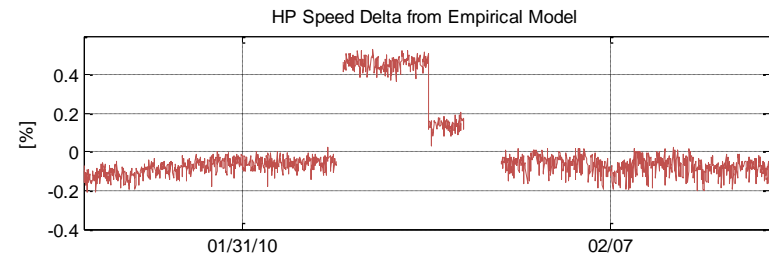


The Value of Data Models

Raw Data Signature



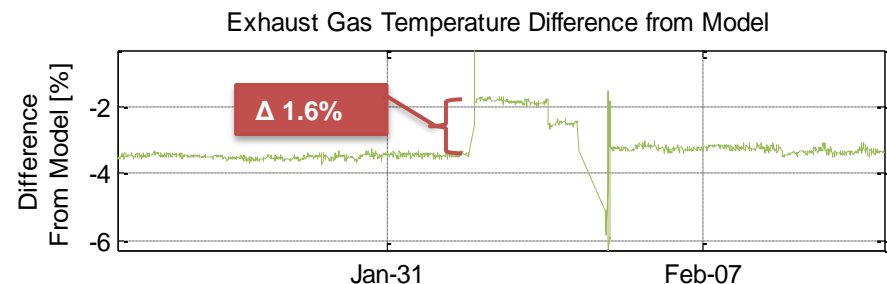
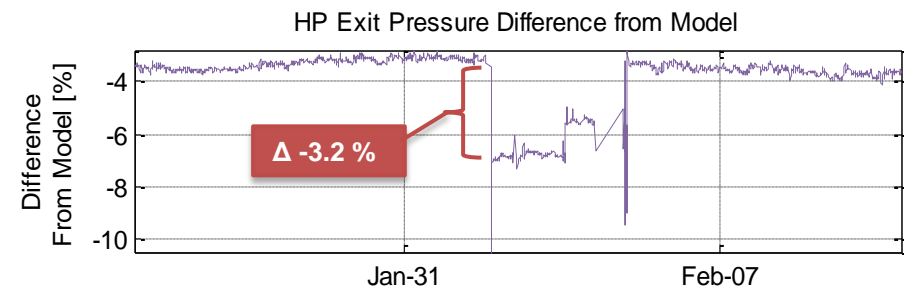
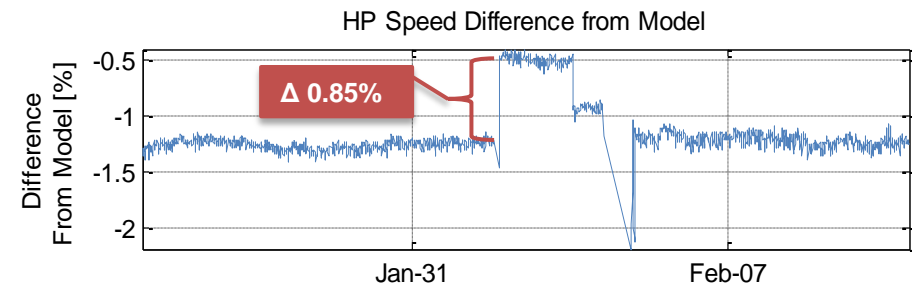
Model Residual Signature



Predictive Equipment Diagnostics - Case Study

Gas Turbine – HP Bleed Valve Failure

- Models Generated **Clear Signature**
 - Multiple Correlated Parameter Shifts
- **Failure Mode Library** used to Identify and Diagnose
 - Diagnostic Network Identified HP Bleed Valve Failure
 - Network Detected Both Simultaneous and Consecutive Parameter Shifts
- Recommended **Recovery Actions** Provided **Correct Course of Action**
 - Averted Catastrophic Failure
 - Reduced Potential for Further Loses Estimated at \$100k





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THANK YOU

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