# Increased Equipment Reliability Using Smart Data Analysis

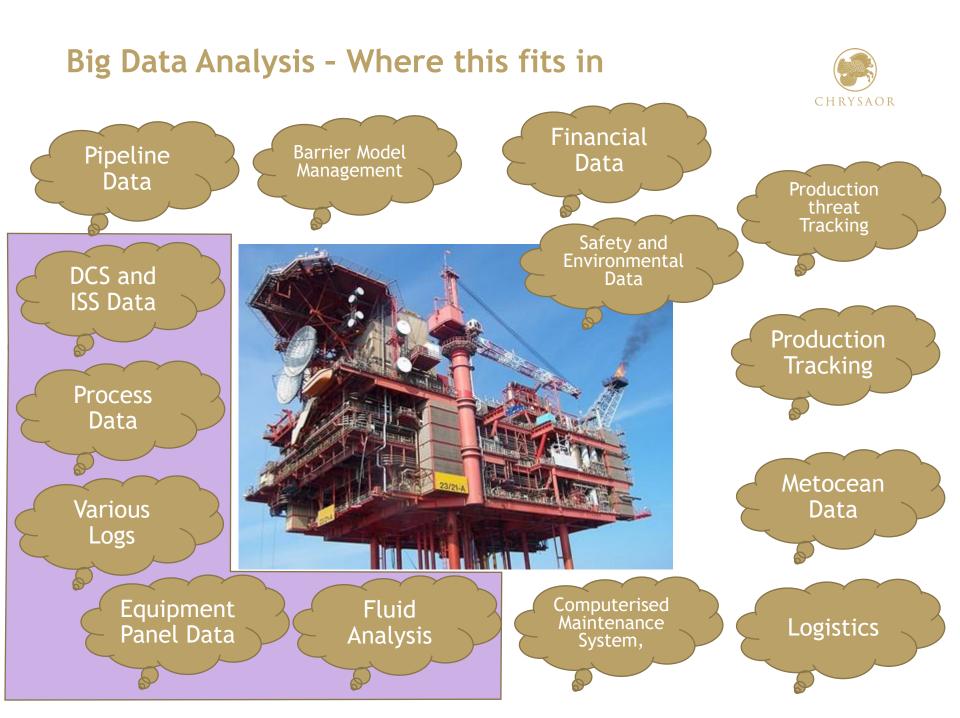
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### **Objectives**

- How Chrysaor are intending to use smart data analysis to achieve the following on topside equipment:
  - □ Maximise production
  - Reduce cost
  - □ Reduce onshore and offshore man hours
- Early findings from one of our process modules using Smart Data Analysis
- The current plan for Smart Data Analysis trials in Chrysaor



### Smart Data Analysis Levels

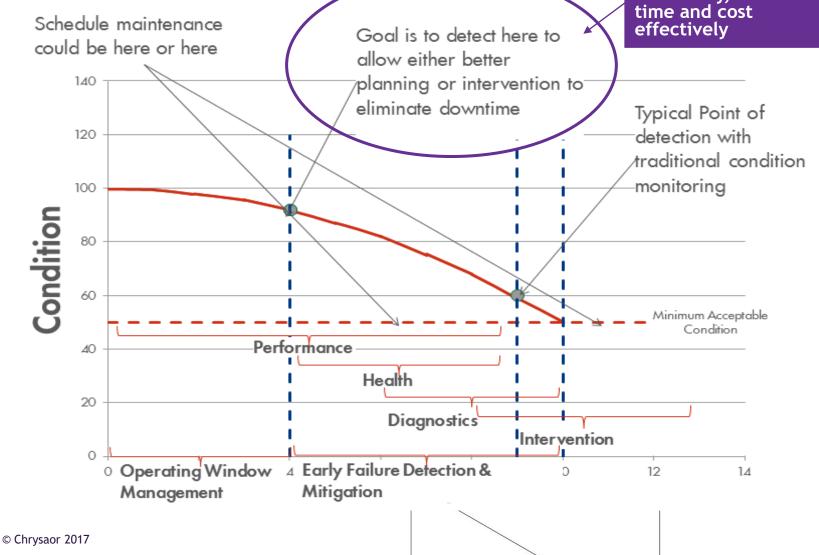


			Prescriptive Analytics
		Predictive Analytics	What's Needed
Real-time Analytics What's Happening • Processing of real time data • Typically done Ad hoc • Some monitoring tools can be used with alerts	<ul> <li>Descriptive Analytics</li> <li>What's Happened</li> <li>Assessment of historical data</li> <li>Tools used to filter data, compare events and produce Trends</li> <li>Used for KPIs on dashboards, Root Cause Analysis etc.</li> <li>Typically used for Process data &amp;</li> </ul>	<ul> <li>What If</li> <li>Analytical model based on assessment of steady state operation</li> <li>Models could be deterministic or non deterministic</li> <li>Algorithms used to assess all the data simultaneously with human intervention for QA/QC and improve the model</li> <li>Used to pick-up deviations from</li> </ul>	<ul> <li>Comprehensive model based possible operation</li> <li>Models could be deterministic or non deterministic automatic with self leaning</li> <li>Can pick up deviations from normal, knows why the deviation has occurred and offers recommendations to correct</li> </ul>
	Process data & maintenance data, etc	normal and informs of consequences	

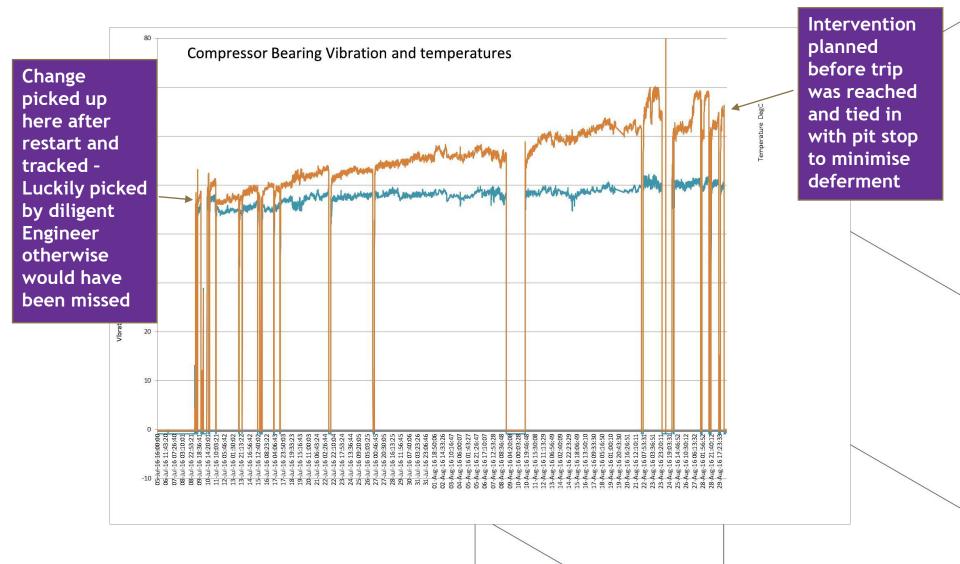
#### Complexity

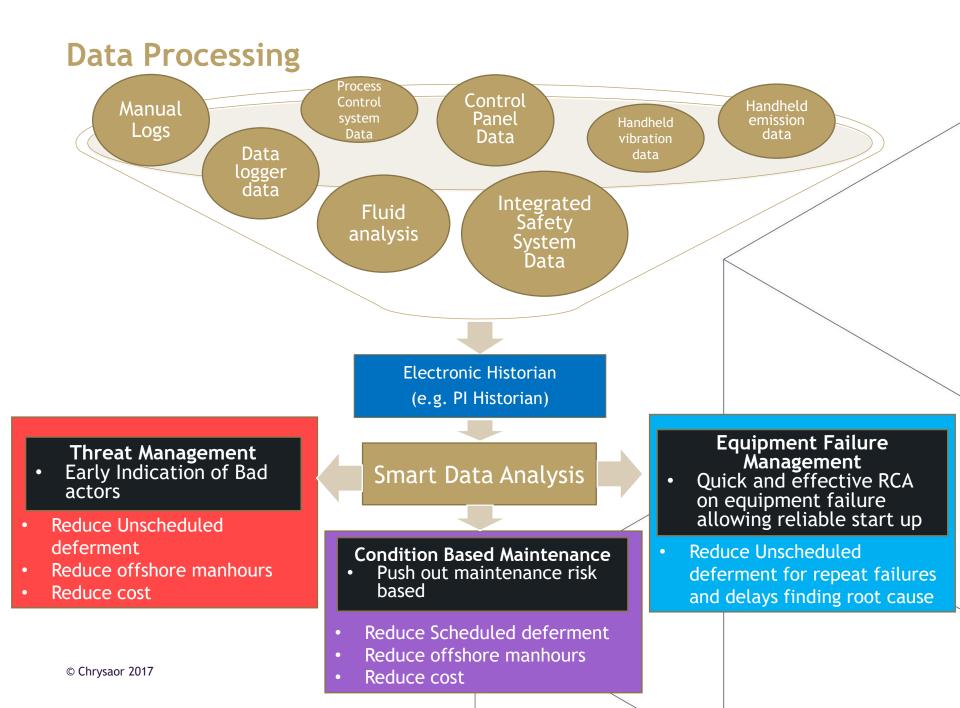
# **Equipment Monitoring**

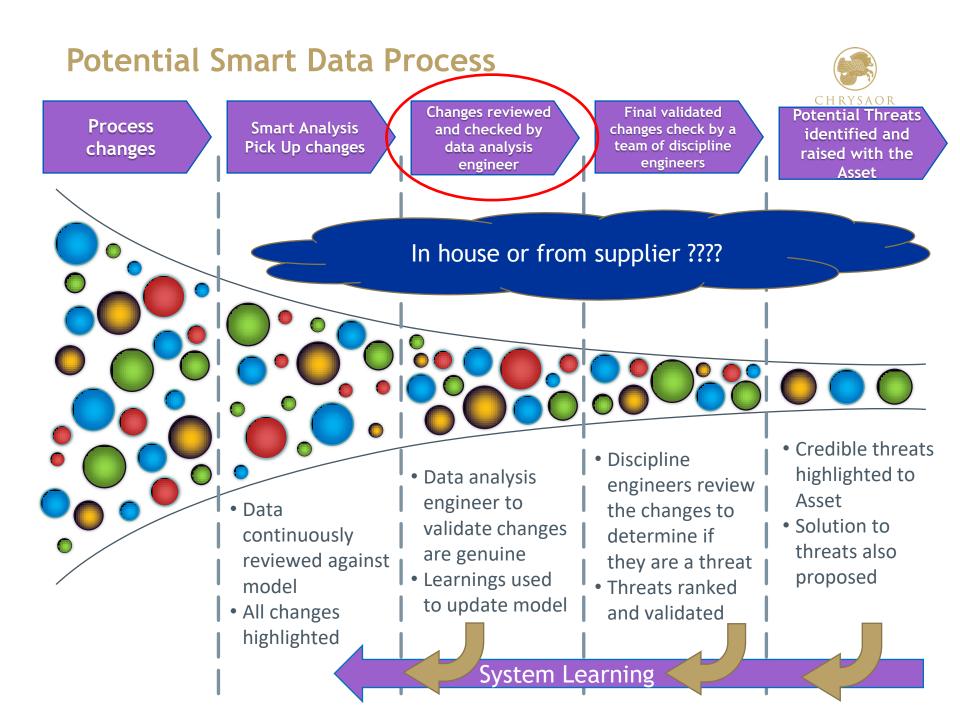
The goal of an Equipment analysis system, is to do this accurately, as well as time and cost effectively



## **Example - Compressor Bearing Deterioration**

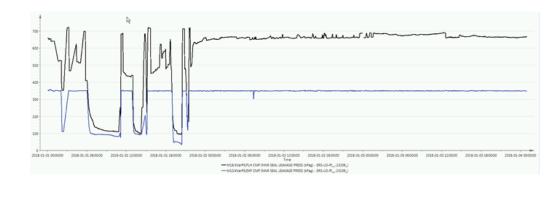


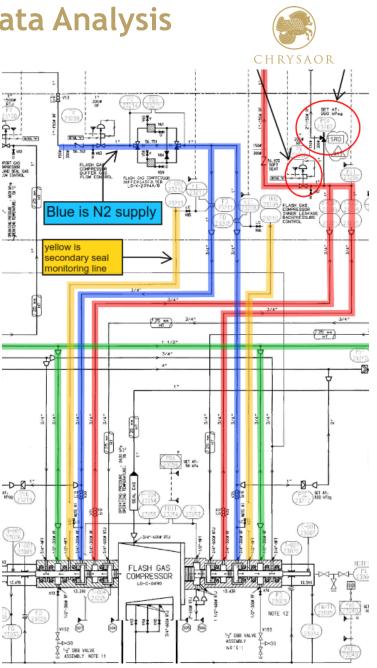




#### **Example of Success with Smart Data Analysis**

- Issue raised due to instability of primary vent pressure and back pressure PCV on dry gas seal system
- Investigation confirmed PCV control was not operating correctly
- PCV bypass PSV was not set correctly approx. 1.5barg over design set point
- Indications are that DGS on the DE was hung up due to fouling TBC as facility shut down due to other issue and could not be restarted





#### Summary

- Chrysaor are intending to use smart data analysis to achieve the following on topside equipment:
  - □ Maximise production
  - Reduce cost
  - **Gamma** Reduce onshore and offshore man hours
- Early indications on a trial shows that using Smart Data Analysis can be beneficial
- Further 12 months trail to be carried out with OPEX on two Chrysaor installations from Q3 2018 - 2019, then re-evaluate if there is value doing this
- One of the key challenges will be getting the data & telemetry digitized cost effectively so it can be made available for analysis now an in the future



# CHRYSAOR