



Astrimar
Reliability by Design

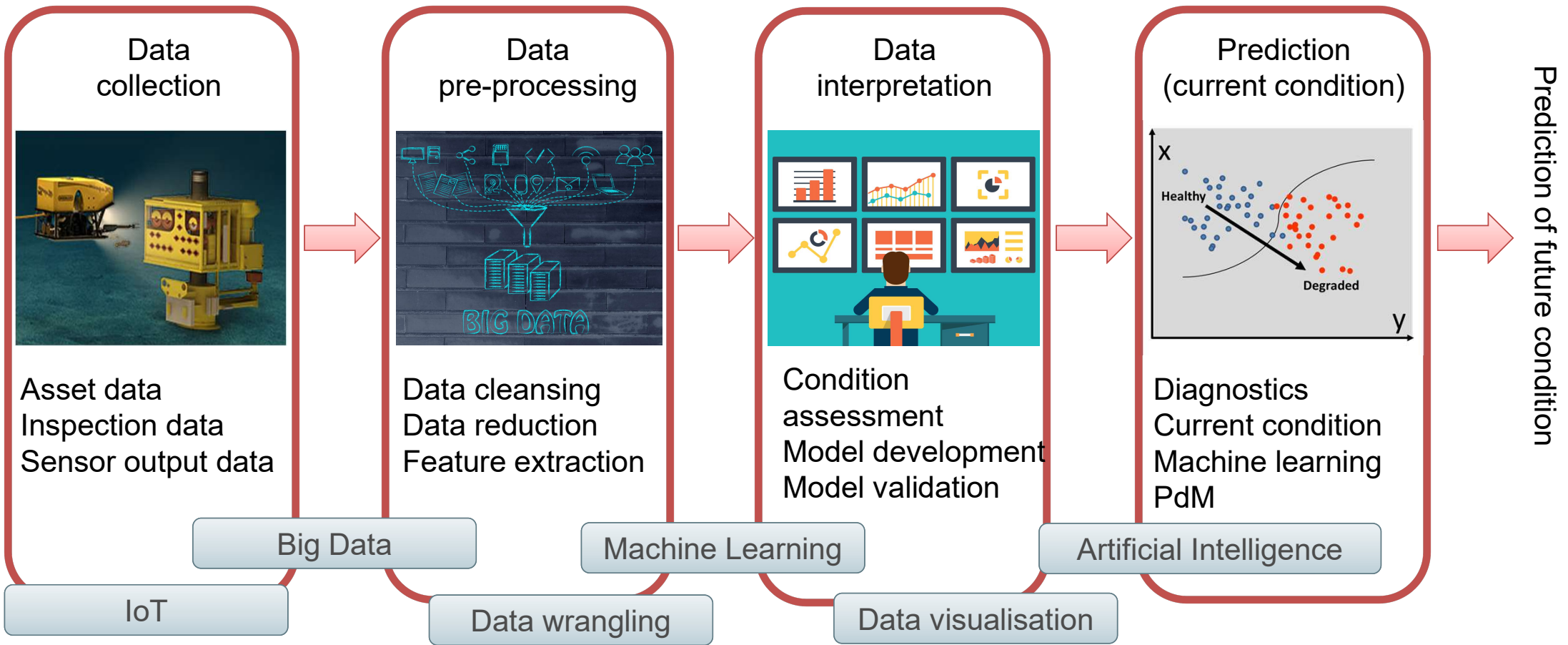
The Power of “Engineering Insight” to Unlock the Value of Data Analytics

Dr Caroline Roberts Haritonov

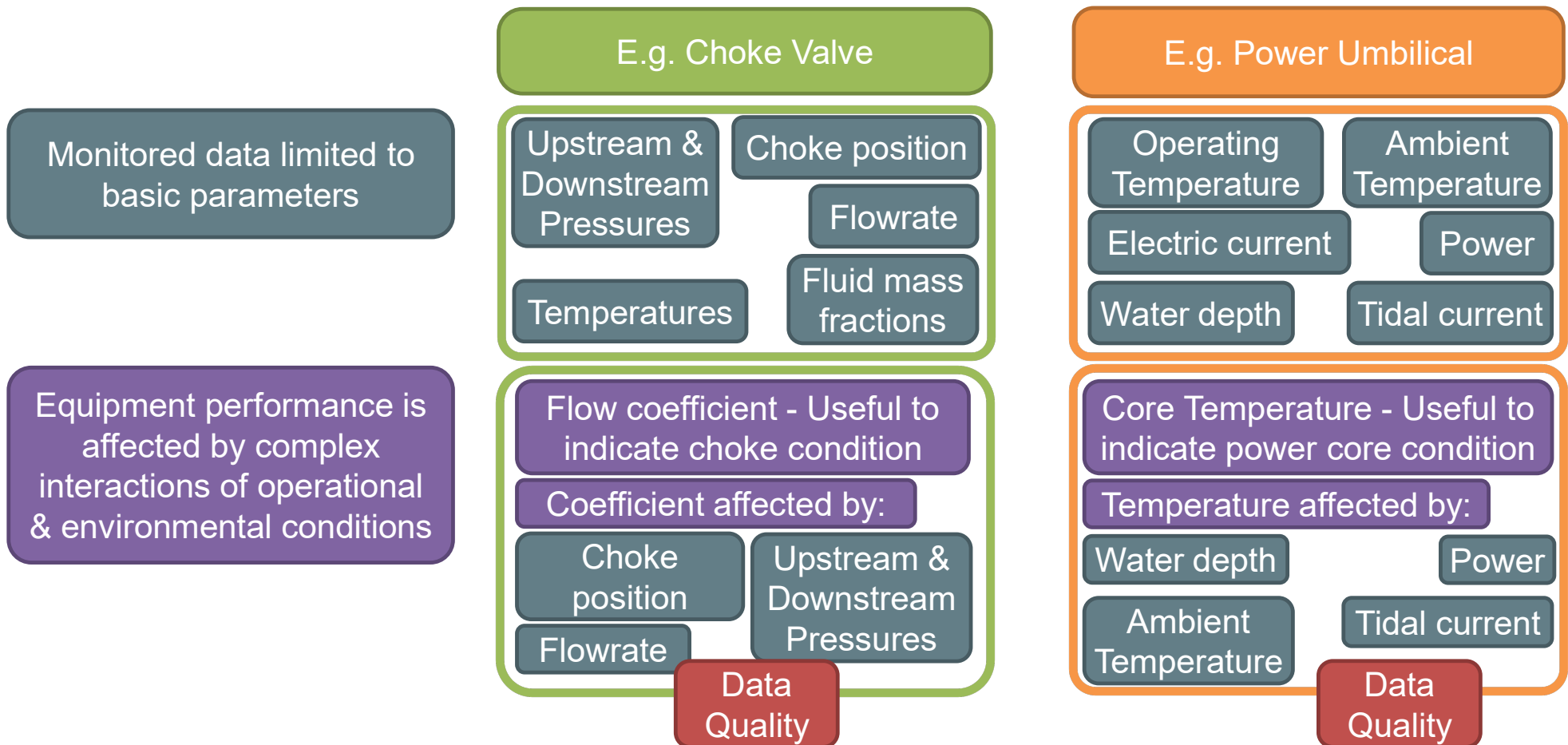
Subsea Expo

21st February 2023

Data analytics for asset integrity management



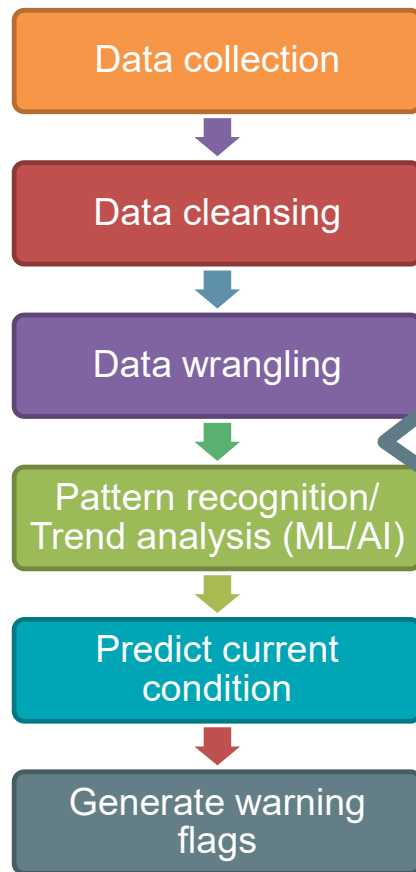
The complexities of subsea data



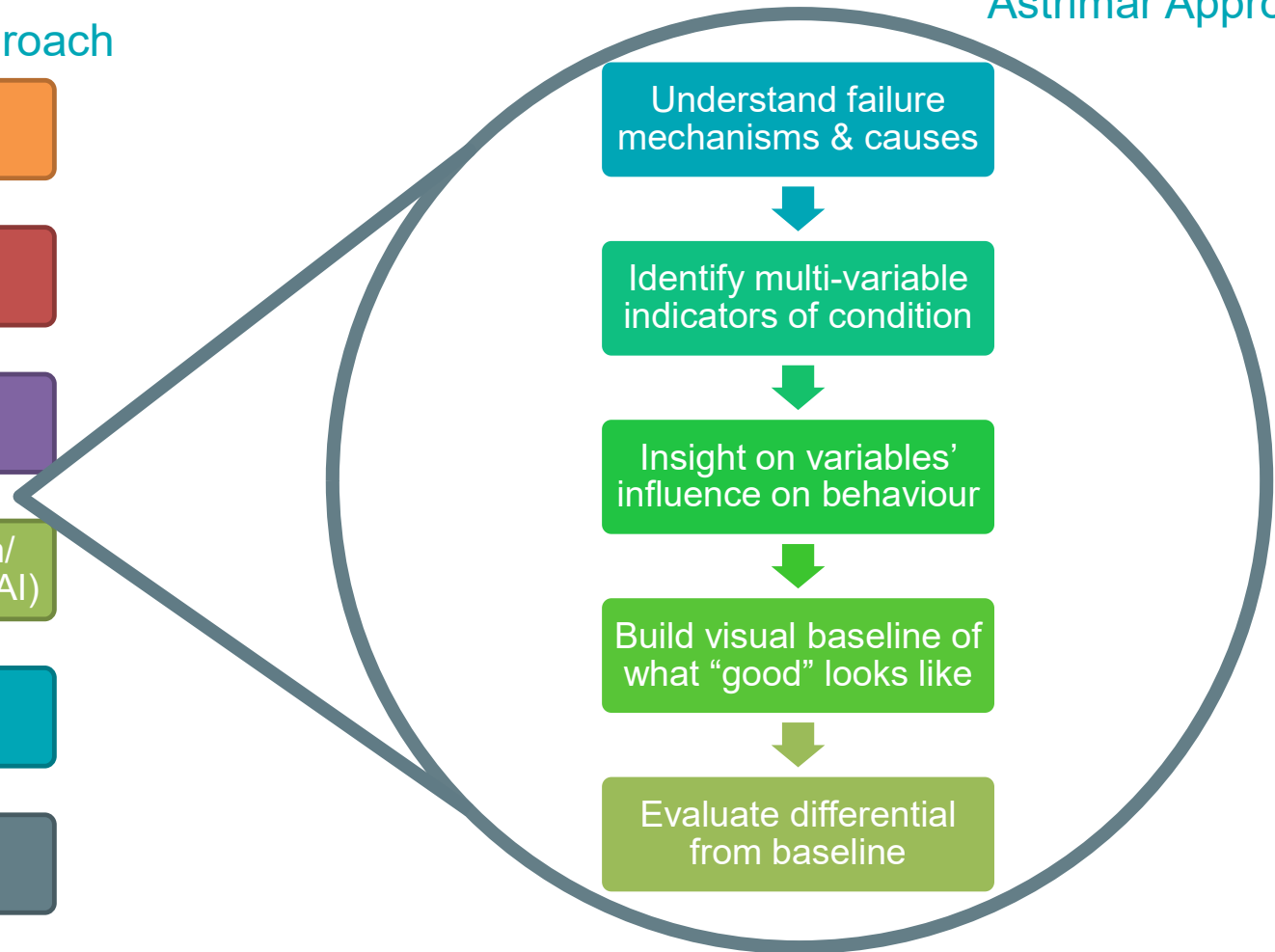
Alternative approaches



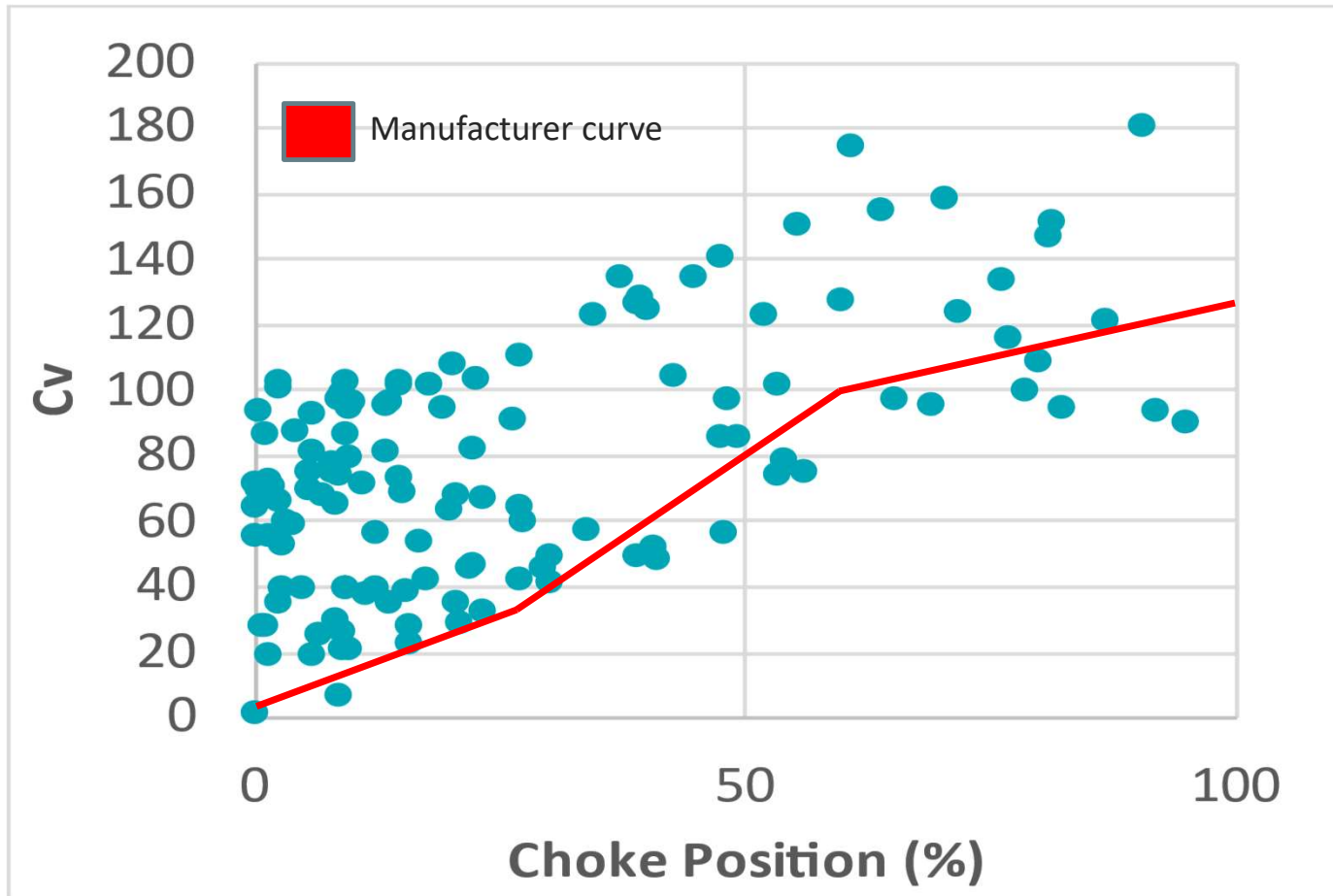
Conventional Data Analytics Approach



Astrimar Approach



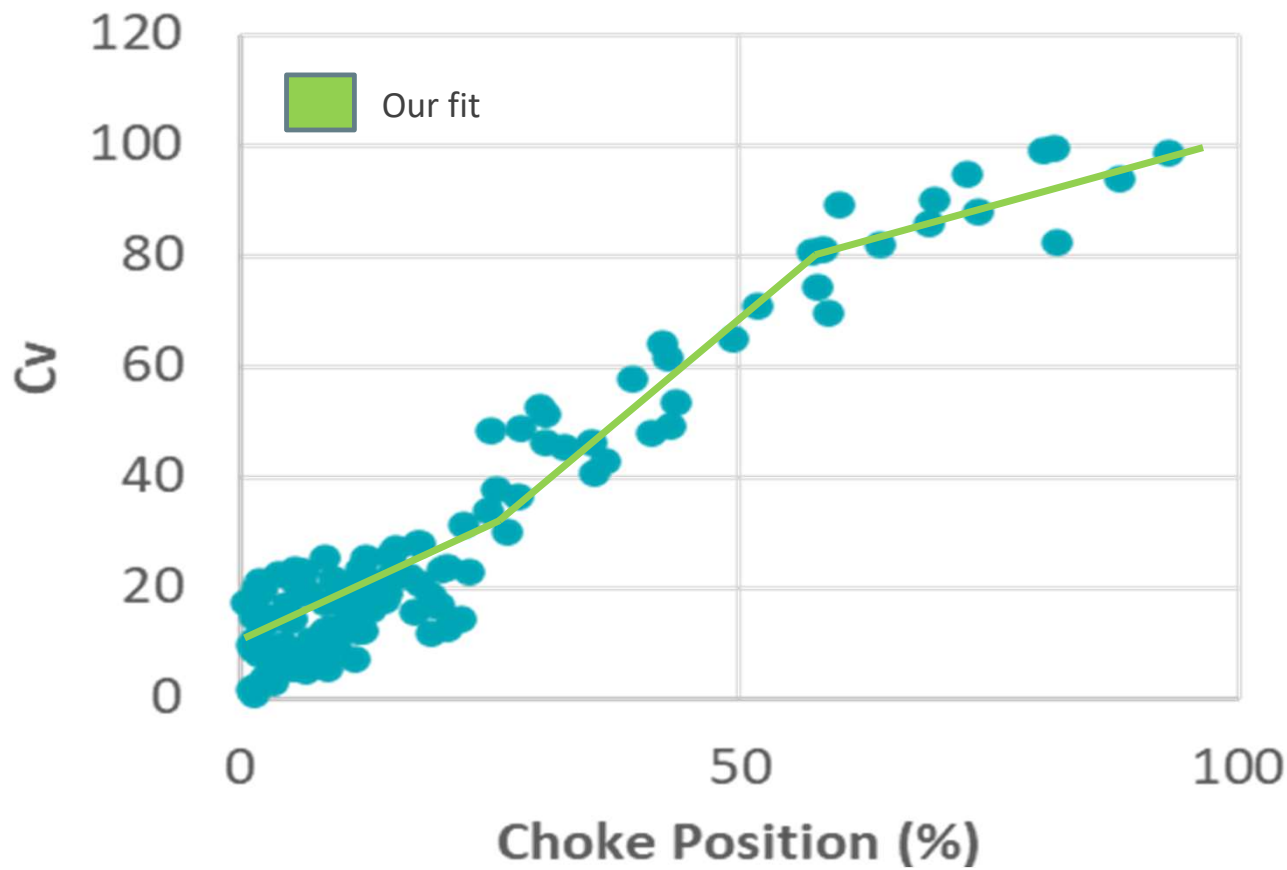
Choke valve illustration (2)



Analysis of Cv vs choke position compared with manufacturers baseline showed significant variations

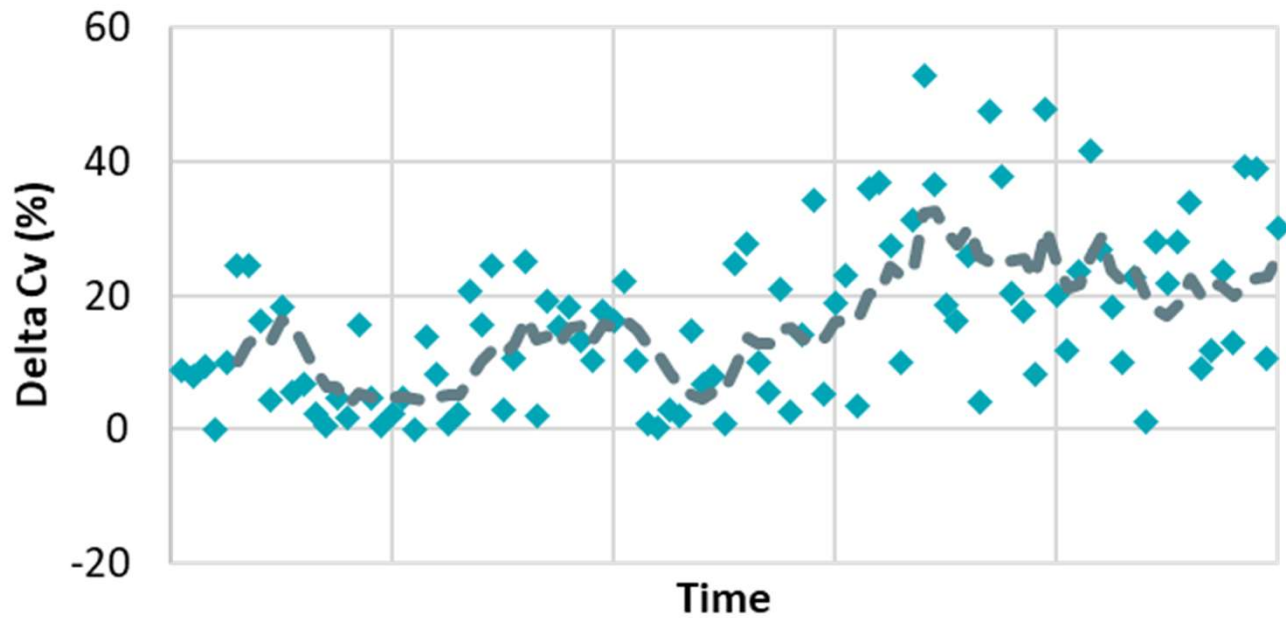
- Calibrated in factory test conditions

Choke valve illustration (3)



New baseline created from filtered early life data

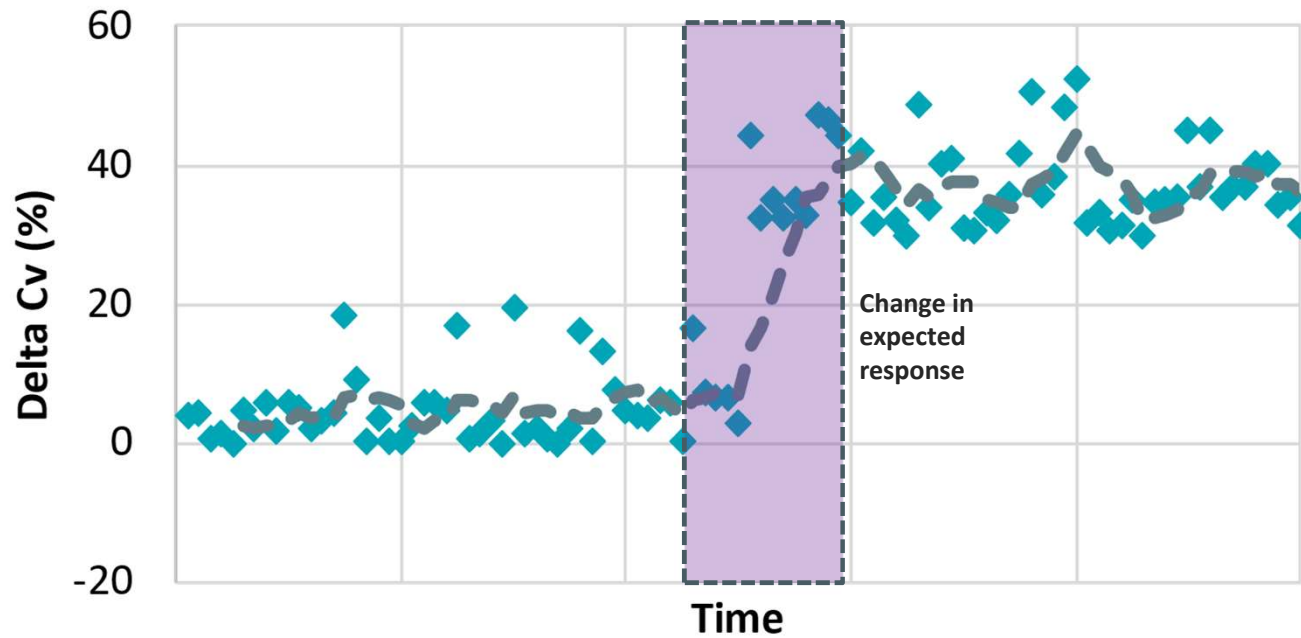
Choke valve illustration (4)



Analysis of Cv against new baseline undertaken

Comparison of change in Cv relative to baseline over time analysed

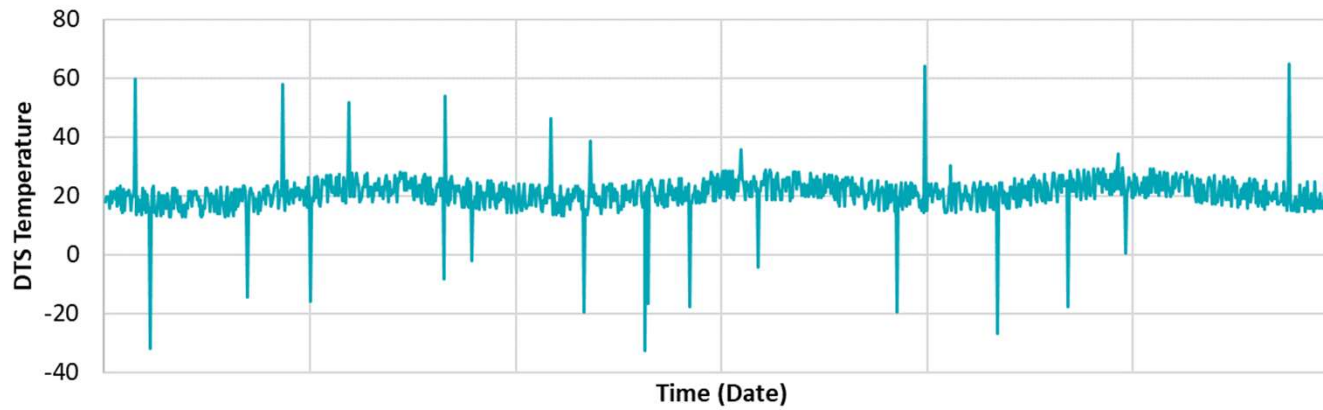
Choke valve illustration (5)



Data smoothing provided additional clarity

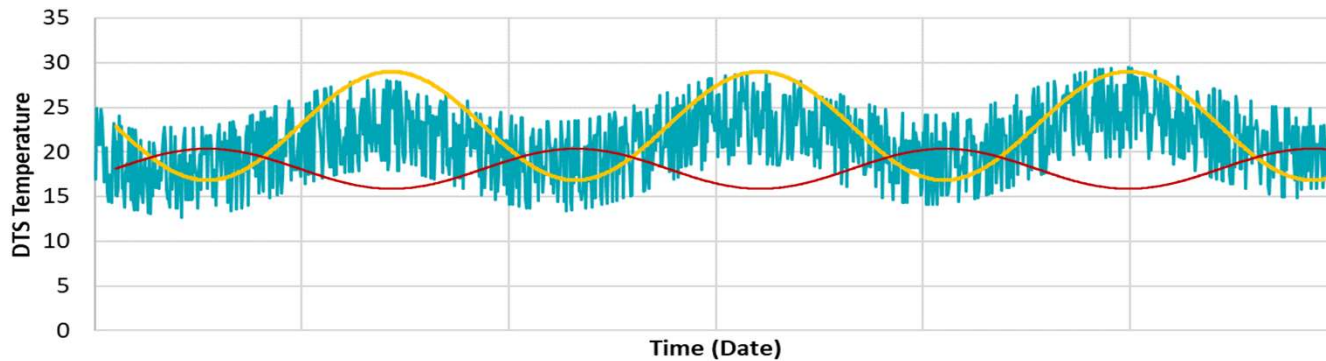
Clear indication of when degradation / failure occurred

Power umbilical illustration (1)



Initial analysis of DTS data provided no value

Power umbilical illustration (2)

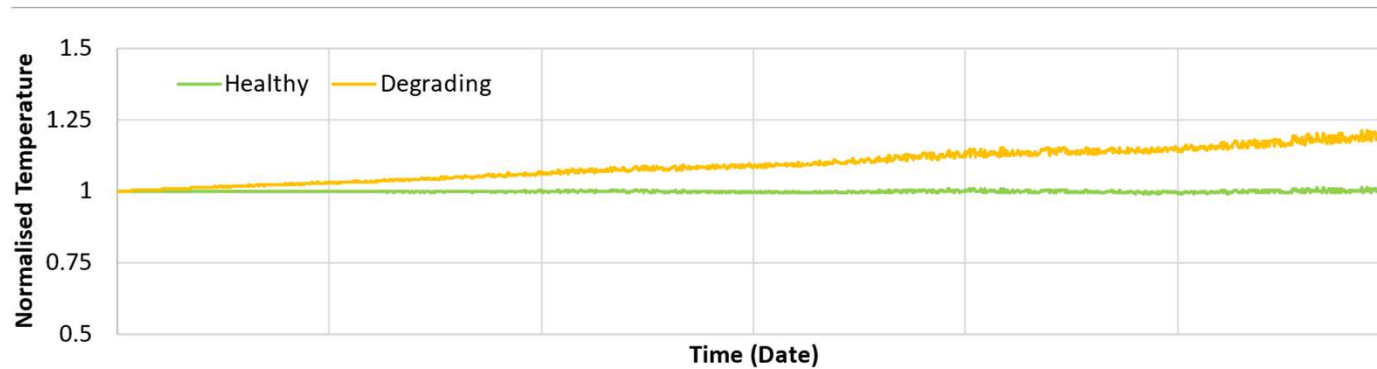


Filtered data indicated influences of seasonality

- Ambient temperature
- Power transmission

Data influenced by location on cable, local environmental conditions

Power umbilical illustration (3)



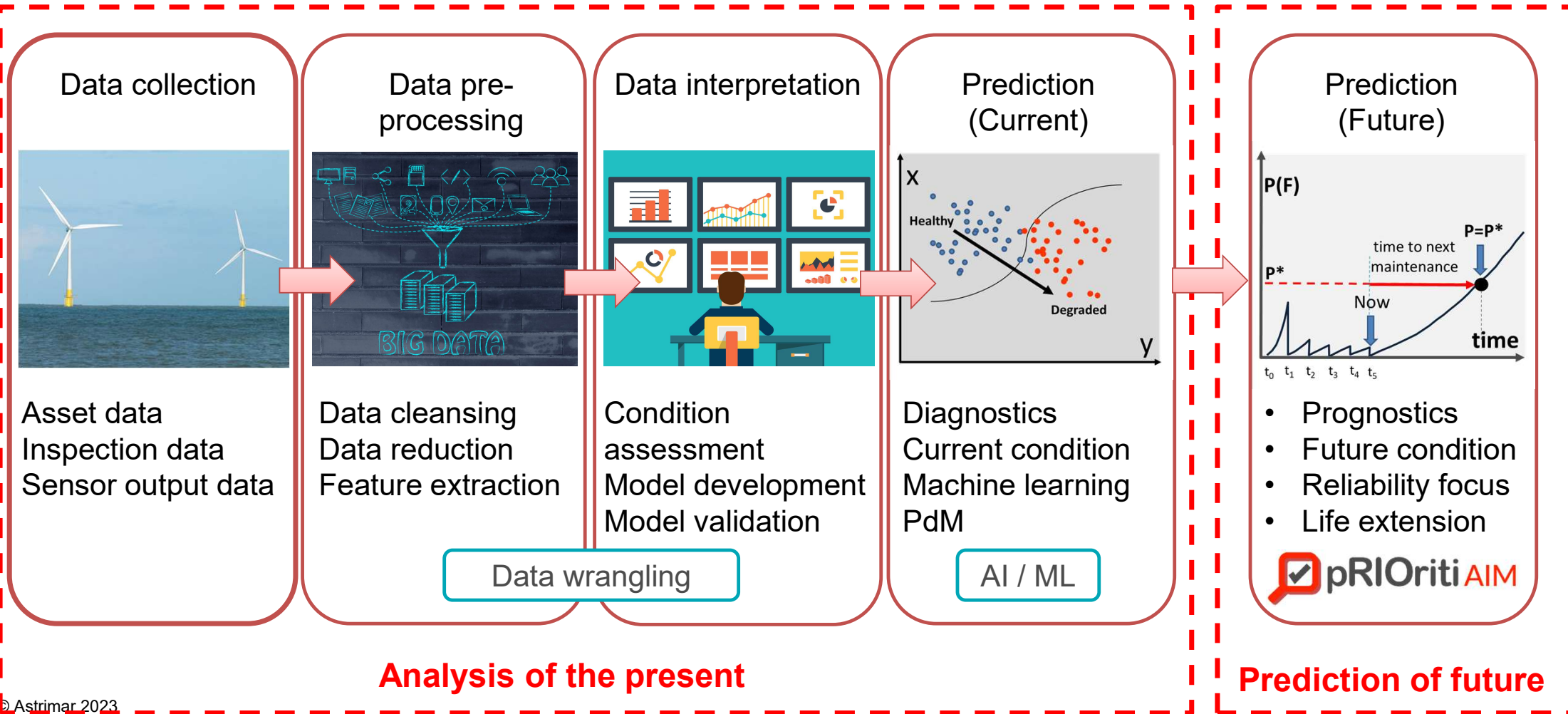
Baseline created from comparative analysis

- Removes influence of changing parameters

Behaviour normalised to reveal healthy vs degradation

Clear indication of when degradation initiated

Moving from present to future



Conclusions



- Application of approach has shown the importance of:

Understanding failure mechanisms

Identifying influencing factors

Recognising indicators of healthy/degraded condition

Addressing system operational conditions & performance

- Essential to have the right mix of technical capabilities:

Data analysis evaluates the data on face value without engineering perspective of what is expected

Engineering analysis addresses the engineering perspective but difficult to make best use of high volumes of data

Integration of both enables effective analysis and interpretation of the data in terms of engineering first principles



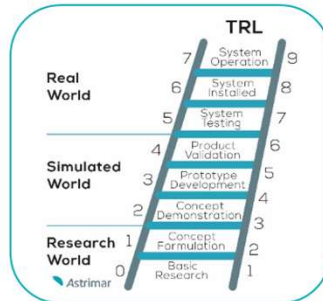
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Thank you for listening
If you have questions or would like more information
please visit us at Stand #127

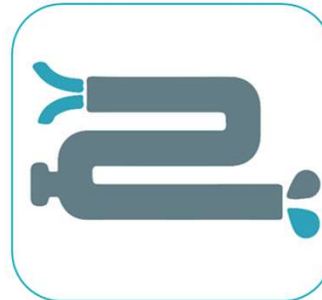
Engineered solutions



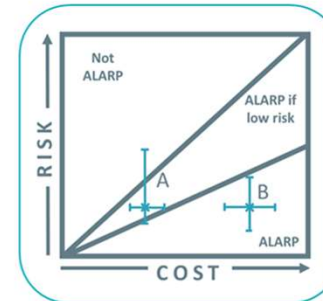
Technology qualification



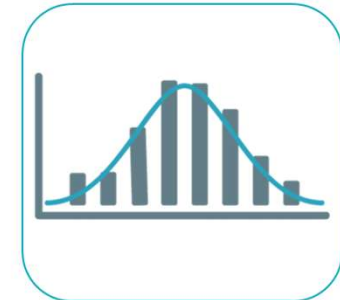
Asset integrity



Risk based well P&A



Reliability & Data analysis



For more information contact: info@astrimar.com

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