More Flexibility and Enhanced O&M for Hydro Plants with GE Digital Hydro Solutions

Farid Mazzouji
GE Renewable Energy

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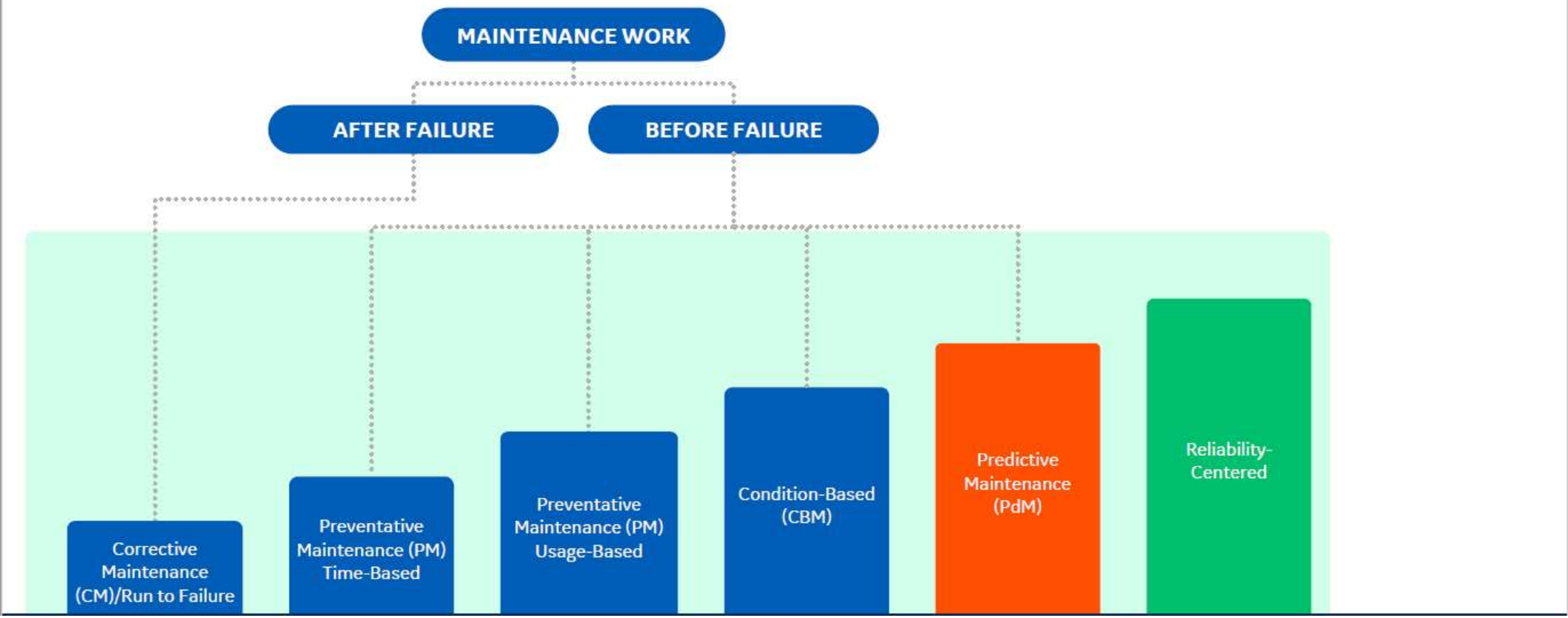
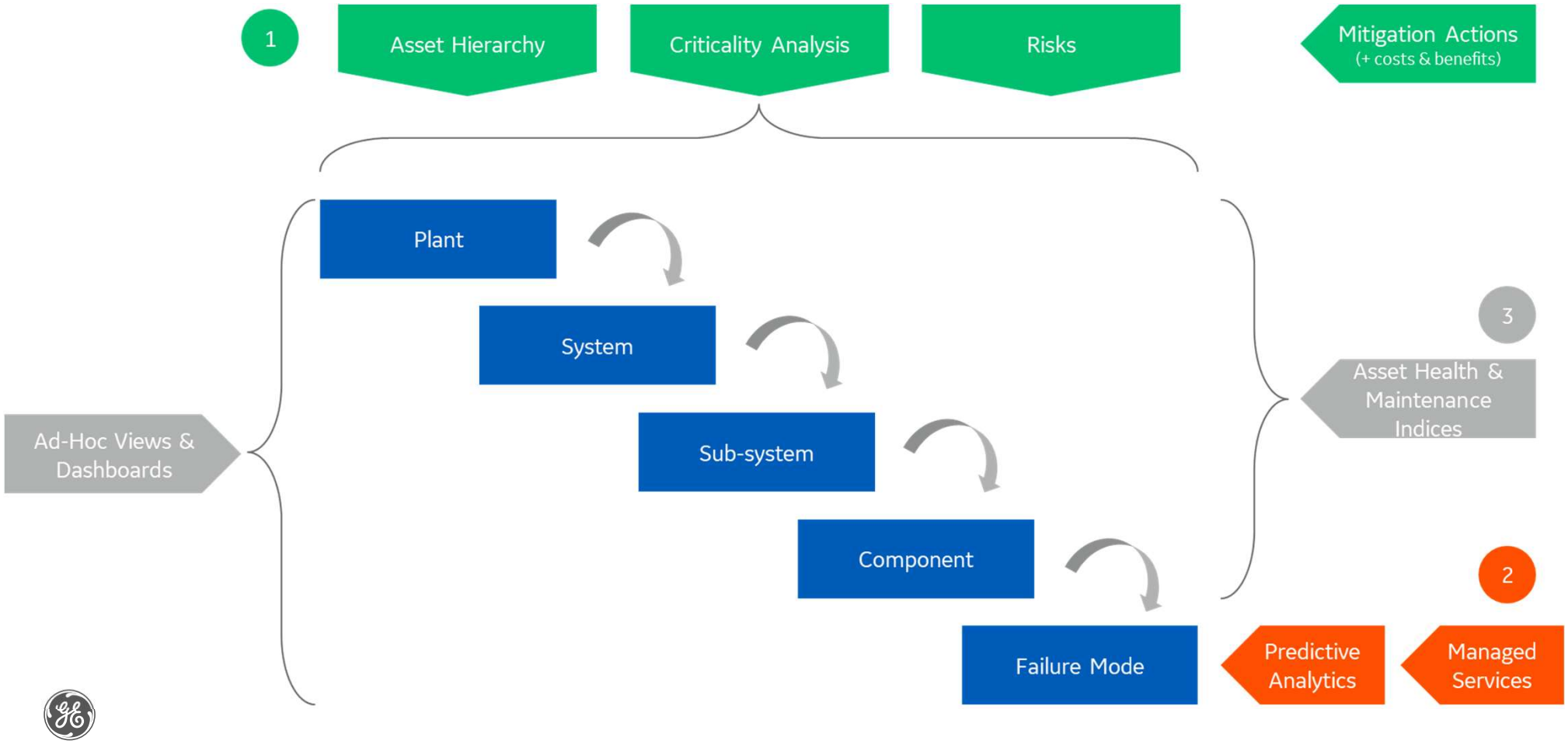
TECHNOLOGY VS . O UTCOMES: Finding the Right Balance



Accelerating Time to Value with GE's Deep Domain Knowledge



Principle


FLEET
Monitor and prioritize actions across your entire fleet
PLANT
Synthesized view or your plant's assets health, alerts and operating mode
ASSET
Asset centric dashboards and KPI with deep insights on your assets behavior

Hydro Predictive Analytics Generating Value for Ronesans Sanliurfa

Ronesans Customer avoided 149k€* in costs thanks to predictive monitoring system and early notice of drifting temperature on the bearings

Lube Oil Cooling System issue detected by Hydro rM&D Team *(use of Software Machine Learning + Expert rules)*

What did our service find?

We have identified and reported a lube oil cooling system problem, given the gradual temperature increase on the bearings.

Since the parameters to directly monitor the filter condition are not available online, we proposed to the customer to investigate a potential filter clogging locally.

What was the underlying cause

Customer confirmed a filter clogging condition impacting the water flow. Cleaned filters at site and the temperatures are now running significantly lower preventing damages to the bearings.

What was the value to the customer

With this predictive maintenance action, the Customer avoided a potential Unit trip and a thrust bearing damage. This early catch have a global saving estimation of approximately €149,000. (1 week production loss and thrust bearing repair works)

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TURBINE AIR ADMISSION VALVE STUCK IN CLOSED POSITION WHILE UNIT IN SERVICE

What did GE's software find?

End of April, GE's SmartSignal posted advisories for a step increase in synchronous turbine guide bearing vibrations. Plant initially believes advisories are related to pre-existing sole plate sticking issue. Customer's SmartSignal analyst identified vibration behavior as unique.

What was the underlying cause?

The plant personal conducted further investigation and found that a turbine air admission valve was stuck in closed position while unit was in service. The lack of air injection caused runner cavitation resulting in:

- Significant step increase in sync turbine guide bearing vibrations
- Minor shifts in turbine bearing temps (+1°C/-1°C)

Note: Blue line represents the actual value and green line represent the predicted value

What was the value to the client?

The sole plate sticking issue compounded with cavitation from valve issue increased risk of failure. All the symptoms were below plant alarm settings so that cavitation could have gone on for a long time without being noticed by plant staff. The customer estimated the "catch value" between $65,000 and $130,000 based on a failure probability of 1/15 to 1/30 years (wiped bearing). Additional, there was a medium risk of cascading shear pin failures.