ACCUPREDICT

MACHINES RUN FOREVER

STEP INTO THE **FUTURE!**
YOUR MACHINES **RUN FOREVER!**

WHY DOES EQUIPMENT FAIL?

Rotating and reciprocating components in any machine are subject to continuous stress. This causes progressive wear and tear leading to eventual component failure. This process is hastened by several factors and some of them include incorrect installations, poor lubrication practices, mechanical and electrical unbalance, misalignment as well as manufacturing defects in the components such as gears.

EVOLUTION OF PLANT MAINTENANCE STRATEGIES

Equipment maintenance has evolved with the times. The goal has always been to maximize equipment throughput without letting costs spiral out of control.

REACTIVE MAINTENANCE:

Equipment was unreliable and failure data had not been compiled. Under pressure to maximize output, manufacturers ran machines till breakdown (i.e. Run to Failure). This led to missed production schedules, higher cost of spares, lower equipment life and of course, poor bottom line.

PREVENTIVE MAINTENANCE:

As better data on component failure became available, operators acted to replace components based on anticipated failure. This led to costs spiralling out of control due to components being replaced before the end of operating life. Today, this remains a strategy appropriate only for mission critical equipment like aircraft engines.

PREDICTIVE MAINTENANCE:

Technology improvement enables accurate understanding of the deterioration of key components, its cause and the MTBF. We can also monitor various rotating and reciprocating components 24X7 from a remote location, ensuring machines run forever within operating conditions.

HOW DOES PREDICTIVE MAINTENANCE WORK?

Predictive Maintenance has been enabled by technology's progress in several fields like:

ELECTRONICS:

Progress in electronics means we now have miniaturized sensors (accelerometers) that can capture vibration signals with a wide frequency range and high fidelity.

COMMUNICATIONS:

Wi-Fi capabilities have improved, and transmitters can be incorporated into sensors to convey measurements to a remote location. Ample high speed bandwidth at low cost is available these days in most parts of the world.

INFORMATION PROCESSING:

With the advent of Cloud, ample storage and processing capacity is available from a number of providers.

ARTIFICIAL INTELLIGENCE/MACHINE LEARNING:

Progress in mathematics/computers enables the creation of powerful algorithms that can quickly analyse patterns and project trends into the future

BUILDING ON THESE DEVELOPMENTS, TODAY, WE HAVE TWO APPROACHES TO PREDICTING UPCOMING FAILURE OF EQUIPMENT:

PATTERN MATCHING:

Algorithms combine vibration signals from numerous sensors on equipment, to create a vibration pattern that characterizes the initial state. As components deteriorate and approach failures, the signals change. The algorithms are able to pick up this change and highlight an emerging failure. This methodology does not demand deep understanding of component behavior. However, that also means that it lacks the ability to pinpoint exactly which component is failing and what corrective action is needed.

INDIVIDUAL COMPONENT TRENDING:

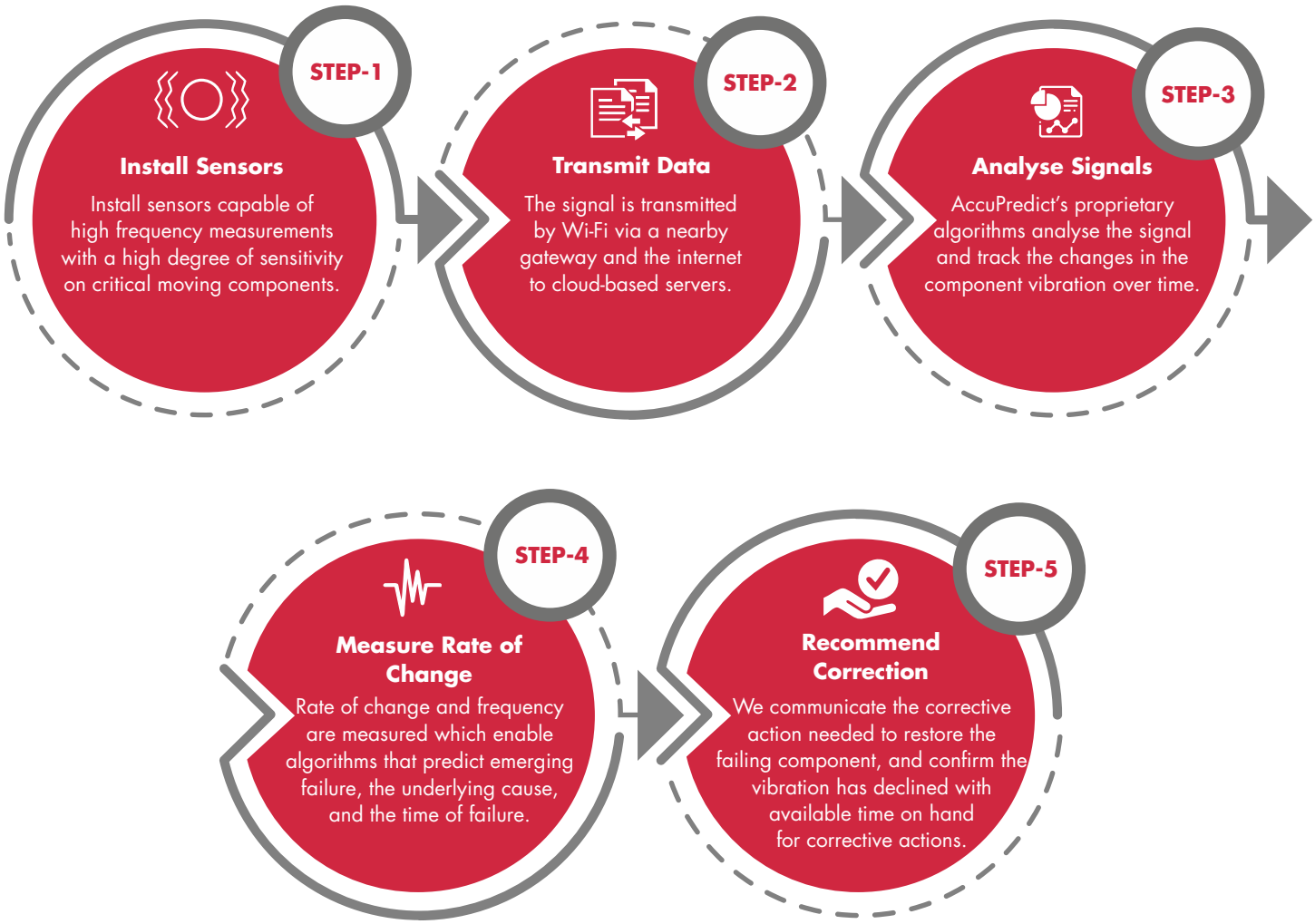
This method looks at the individual components and the trends in their vibrations. Machine fundamentals define how a component approaches failure - the vibration pattern and the frequency at which this vibration occurs. It is therefore possible to predict not just the time of failure, but identify the failing component and cause of the failure. By picking up these emerging patterns early, it is possible to anticipate failure much ahead of its occurrence and with a high degree of reliability. The biggest challenge in adopting this method is the deep technical expertise needed by the engineering team.

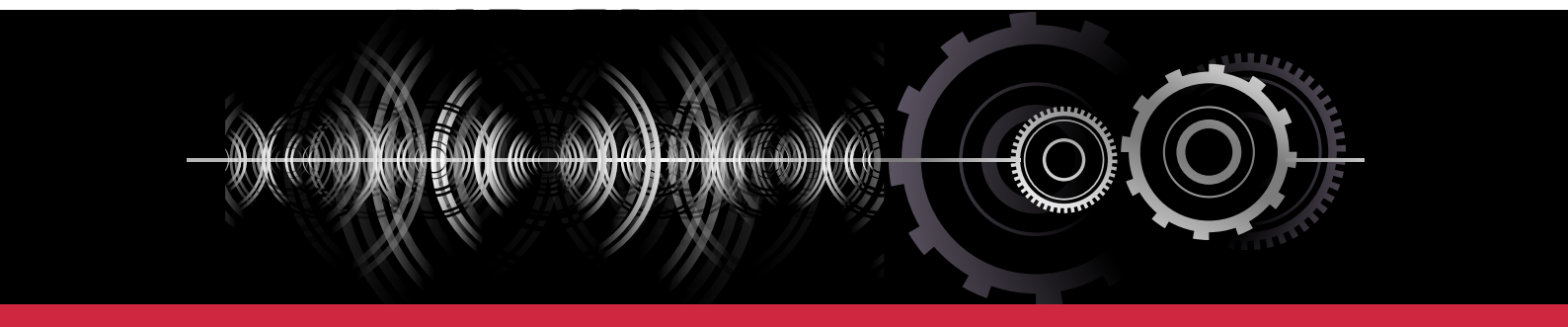
ACCUPREDICT'S DIFFERENTIATED APPROACH & ITS ADVANTAGES

AccuPredict's technical team have been successfully using the Individual Component Trending method for over three decades. Our customers benefit in two major ways:

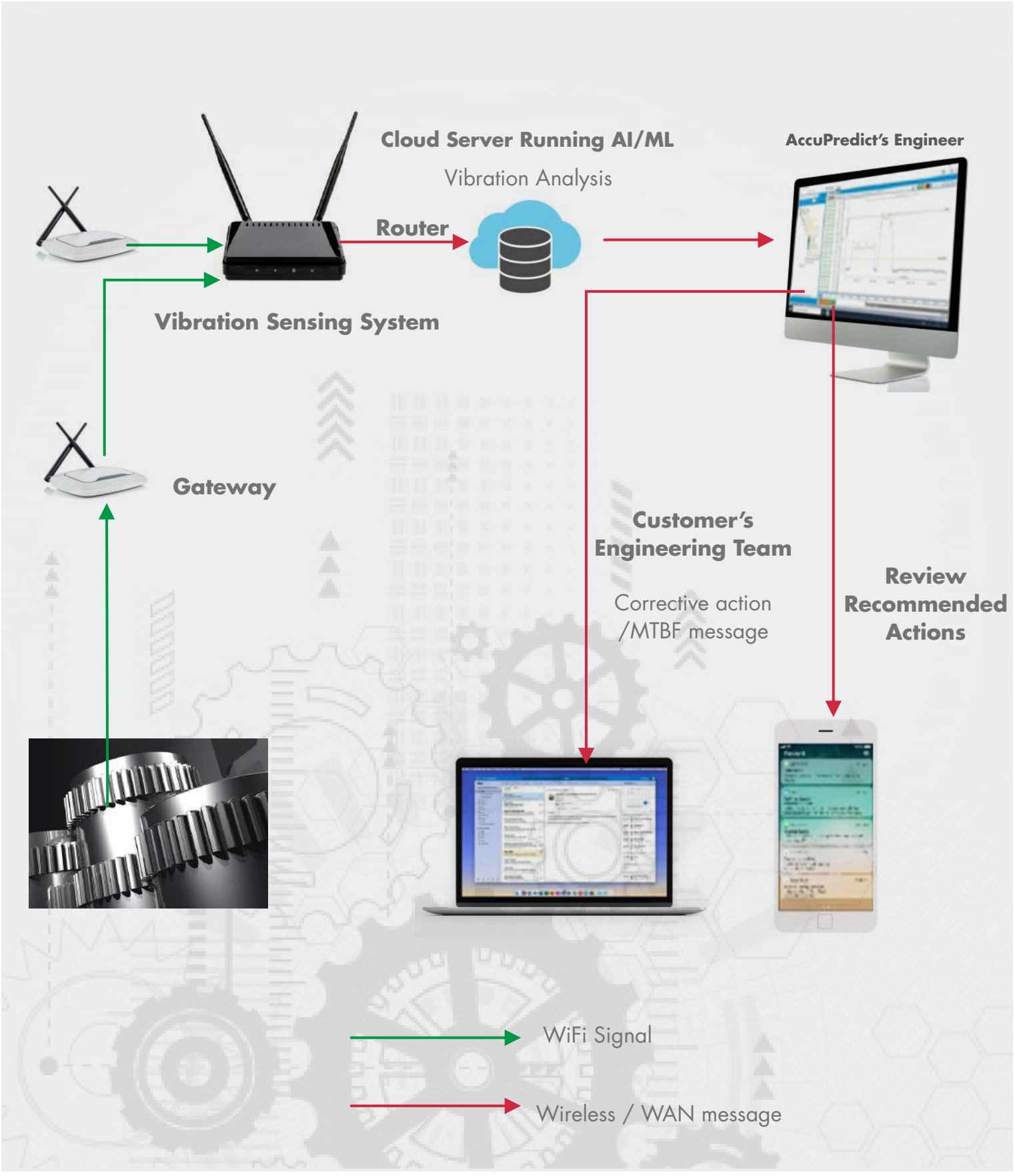
- Predictions are highly accurate about both - the component experiencing failure and the MTBF (Mean Time Before/Between Failure).
- Picking up emerging failures early enables customers to take corrective actions in a planned manner without disrupting the planned production schedules. This, also reduces the need to maintain high levels of spares inventory at all times to cater to unforeseen scenarios.

WE FOLLOW A FIVE-STEP PROCESS TO PREDICT FAILURE.





Schematic Diagram of Information Flow:



GET STARTED TODAY!
DARE TO BREAK AWAY FROM THE PAST!
PARTNER WITH ACCUPREDICT!!!

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