

HCL

HCL iSAM connected asset management



Introduction

Assets today are increasingly able to provide key data about themselves, their environment, other assets around them, or the process they are performing. As sensors, connectivity, mobile applications and cloud platforms become more ubiquitous and affordable, asset managers can start to utilize the potential wealth of structured and unstructured data coming from their asset portfolios as a tool to solve business problems.

HCL works closely with our customers to help them capture and consume key asset information such as asset health, real-time location services, current ownership and asset utilization, as well as asset manufacturing output, availability and quality to improve Operational Equipment Effectiveness (OEE).

The new world of Connected Asset Management

Operational technology (OT) processes operational information, and you are likely familiar with legacy examples such as SCADA, Distributed control systems and PLCs.

These legacy solutions are now being supplanted by the convergence of Asset-based Operation Technology with Information Technology (IT). IT is usually represented by Enterprise Business Systems like SAP, and harnessing the power of both together is what HCL calls Connected Asset Management.

Connected Asset Management is designed to improve the operational efficiency of physical assets by collecting real-time operational data via sensors and integrating that to a business system to drive downstream processes like maintenance, asset accounting, reliability or Production.

HCL's leadership in Connected Asset Management

HCL has both the domain knowledge and project experience to drive the success of your organization's Connected Asset Management strategy.

Our experts can help you define, implement and scale Connected Asset Management solutions - such as those we have successfully piloted for our customers, including:

- Utilization or machine cycles to drive condition-based maintenance in SAP Enterprise Asset Management (EAM).
- RFID Sensors to identify and read equipment position in real time and drive digital twin configuration in SAP
- Real time Track and Trace capabilities for inventoried assets
- Tracking occupancy and overall utilization of buildings









Additional use cases

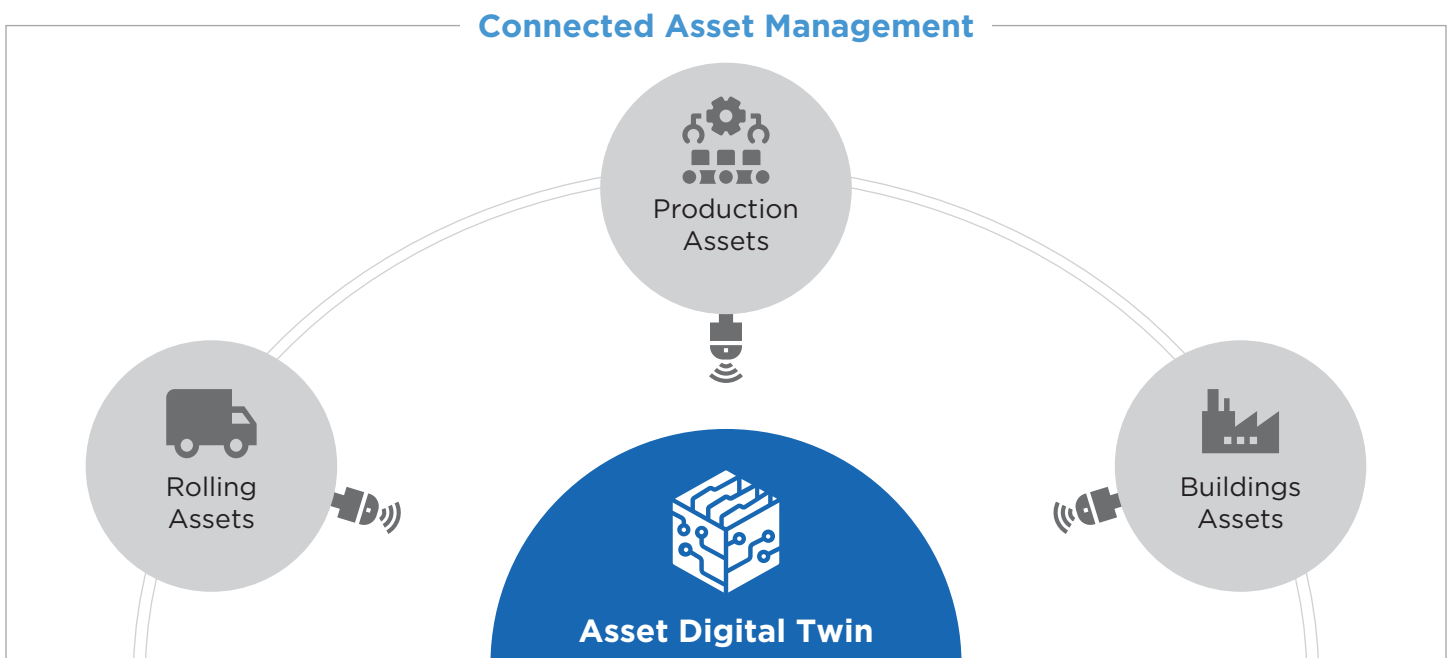
Total Productive Maintenance Program (TPM)

Total Productive Maintenance (TPM) is a system of maintaining and improving the integrity of production, safety and quality systems through the machines, equipment, processes, and employees that add business value to an organization. TPM focuses on keeping all equipment in top working condition to avoid breakdowns and delays in manufacturing processes.

The main objective of TPM is to increase the Overall Equipment Effectiveness (OEE) of plant equipment. TPM addresses the causes for accelerated deterioration while creating the correct environment between operators and equipment to create ownership.

The eight pillars of TPM are mostly focused on proactive and preventive techniques for improving equipment reliability:

-  ▶ Autonomous Maintenance
-  ▶ Focused Improvement
-  ▶ Planned Maintenance
-  ▶ Quality management
-  ▶ Early/equipment management
-  ▶ Education and Training
-  ▶ Administrative & office TPM
-  ▶ Safety Health Environmental conditions



Autonomous maintenance is defined as a maintenance strategy where machine operators continuously monitor their equipment, make adjustments and perform minor maintenance tasks on their machines. This operator maintenance is in-lieu of assigning a dedicated maintenance technician to perform maintenance and regularly scheduled upkeep. This is one of the key pillars of a Total Productive Maintenance Program – which SAP can be setup to support and facilitate.

Overall Equipment Effectiveness (OEE)

OEE (Overall Equipment Effectiveness) is a metric that identifies the percentage of planned production time that is truly productive & is a measure of TPM.

It has 3 components which map to the goals of TPM:

1. Availability takes into account availability loss, which includes all events that stop planned production for an appreciable length of time (typically several minutes or longer). Examples include Unplanned Stops (such as breakdowns and other down events) and Planned Stops (such as changeovers)
2. Performance takes into account Performance Loss, which includes all factors that cause production to operate at less than the maximum possible speed when running. Examples include both Slow Cycles, and Small Stops
3. Quality takes into account Quality Loss, which factors out manufactured pieces that do not meet quality standards, including pieces that require rework. Examples include Production Rejects and Reduced Yield on startup.

Overall Equipment Effectiveness is used by operators of production and manufacturing systems to help to measure and evaluate the availability and performance of technical facilities, as well as the quality rates achieved.


OEE is a key performance indicator (KPI) that provides an insight into the efficiency of your manufacturing processes. It is a product of other manufacturing KPIs.

OEE = Availability X Performance X Quality, where:







- **Availability:** The ratio of amount of time a resource was actually productive to the amount of time the resource was available to be productive. The Availability KPI is derived from the granular elements such as Loading Time, Unscheduled Downtime, and Net Production Time.
- **Performance:** The ratio of the actual speed with the designed speed. The Performance KPI is derived from granular elements such as Net Production Time, Speed Loss, and Net Operating Time.
- **Quality:** The ratio of good product produced to the amount of total product produced. The Quality KPI is derived from the granular elements such as Net Operating Time, Quality Loss, and Value Operating Time.

Other Examples

Examples of Physical Assets which can be tied to use cases:

-  ▶ Plant Production Assets
-  ▶ Fleet (Indoors and Outdoors)
-  ▶ Inventoried Materials and Equipment
-  ▶ Buildings / Floors / Rooms

Examples of Sensors:

-  ▶ Temperature
-  ▶ Proximity
-  ▶ Occupancy
-  ▶ Location
-  ▶ Accelerometer
-  ▶ Motion

There are many additional use cases for asset real time or near real time location services, depending on the use case and the information criticality / Overall equipment effectiveness (OEE), including:

- Integration to Maps for On the Road assets and building schematics for in plant assets
- Asset real time utilization to drive condition-based maintenance or to decisions around right size the asset portfolio
- Office Occupancy and Building Performance / Utilization
- Real time Track and Trace capabilities
- On-Board Diagnostics (OBDII) from vehicles to show the following for example:
 - Ignition On/Off
 - Hard Brake / Acceleration
 - Speed of Vehicle vs Posted Speed Limit
 - Total Engine Hours / Engine Idle Hours

Engagement Models

Packages	2 weeks Free*	6 weeks \$150k	16 week \$400k
Attribute	Assessment	Proof of Concept	Pathfinder to Production
Determination of Asset Connectivity Use Case <ul style="list-style-type: none"> Assessment of current State Capture of Pain Points High level Solution 	✓	✓	✓
Rapid Proof of Concept Development		✓	✓
Pathfinder to Production Development			✓
Connected Asset Roadmap Development		✓	✓
Case for Change /Benefit Case	Case for Change	Benefit Case	Benefit Case

About HCL's SAP Practice

HCL's global SAP practice has been leading benefits-driven business transformation globally for the last 25+ years. Building on our strong legacy of SAP innovation, our 9,000+ SAP consulting strength - combined with HCL's leading in-house Engineering Services, IoT Works and Digital and Analytics practices - mean that HCL is positioned to lead digital transformation across the complete portfolio of new SAP Digital technologies.

If you want to find out more, please contact us at the following email address: SAP@hcl.com

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