



Connect Digitally to Perfect Reality for **Asset Management:**

How to get started with SAP's New Intelligent Asset Management Suite Session ID 82757

Patrick Crampton-Thomas, Head of Digital Products and Asset Management

Agenda

Dynamics

- Trends in Asset Operations
- New technologies
- Changing Business Models

How We Connect Digitally to Perfect Reality for Your Asset Management?

- Digital Framework
- The role of Digital Twin

Solutions

- SAP Portfolio for Intelligent Asset Management
- Solution Summary

Why SAP?

- Where to get started
- Reference Examples



FAST, FORWARD

Strong Momentum for Intelligent Asset Management

Digital readiness surveys show that companies clearly see the need to leverage the digital capabilities to optimize their asset management:



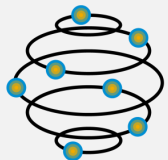
76%

of organizations consider it important to **predict potential failures** by leveraging data models



21%

Only 21% of organizations employ **predictive and preventive maintenance** effectively



83%

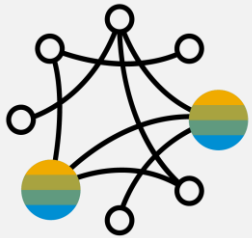
of organizations consider it important to have asset management processes and related metrics standardized across facilities and regularly tracked



13%

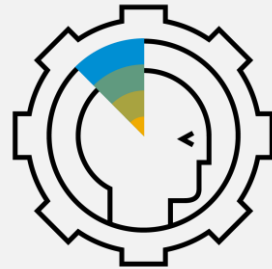
Only 13% of organizations are able to drive asset performance based on analysis of real-time sensor data, along with historical maintenance data

Main Technology Enablers for Intelligent Asset Management



The Internet of Things (IoT)

Provides sensor-enabled condition monitoring for real time insights and new value-added services



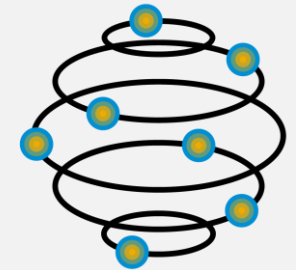
Artificial intelligence and machine learning

Bring unprecedented insights and automation of knowledge work across the enterprise



Real-time engineering simulation

Use physics-based digital twins for predictive engineering analysis in product development and operations



3D visualization and augmented reality

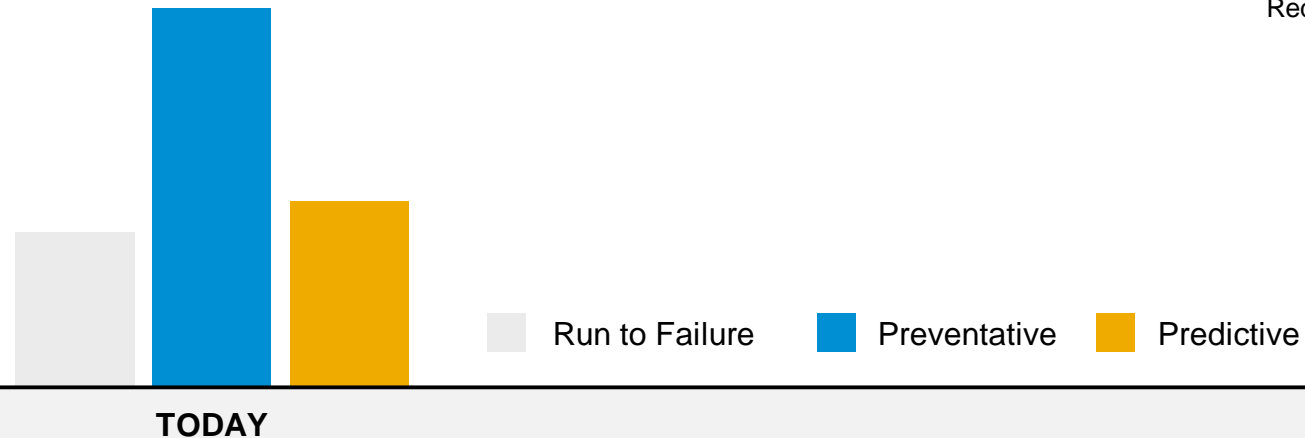
Provides unmatched situational awareness and enhanced perception for better decision making

From Preventive, Predictive to Prescriptive Maintenance

Connect Digitally to Perfect Reality for Your **Asset Management**

Today

Use of Maintenance Strategy*



TODAY

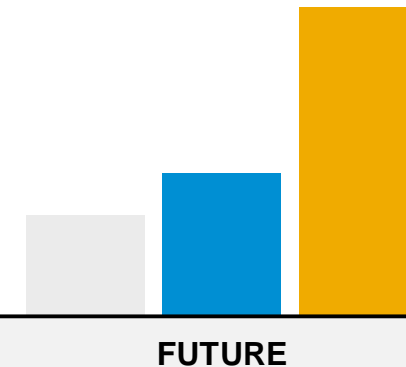
The Internet of Things is leading to increased use of **predictive** maintenance

Although still relevant, **preventative** maintenance typically results in over-maintaining assets and high cost

Future

Use of Maintenance Strategy*

Reduced Costs and Risk; Increased OEE and Service



FUTURE

The goal is to enable more **IT/OT driven** approaches for **prescriptive** maintenance with machine learning and IoT-enabled engineering simulations to reduce unplanned failures and the number of maintenance actions

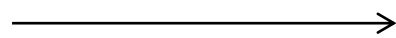
New Business Models – Collaborative Best Practices

The new ecosystems and business network enables new business models to buy and sell **digital services** such as content packages, premium services, firmware updates and specialized asset-specific applications on top.



From...

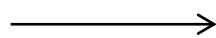
Selling equipment



To...

Pay per use / equipment as a Service

Untrusted asset information



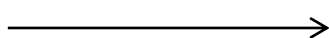
Collaborative Single source of truth

Silos and de-centralized operations



ISO Standards and **Collaborative Shared Services**

Reactive maintenance



Prescriptive maintenance

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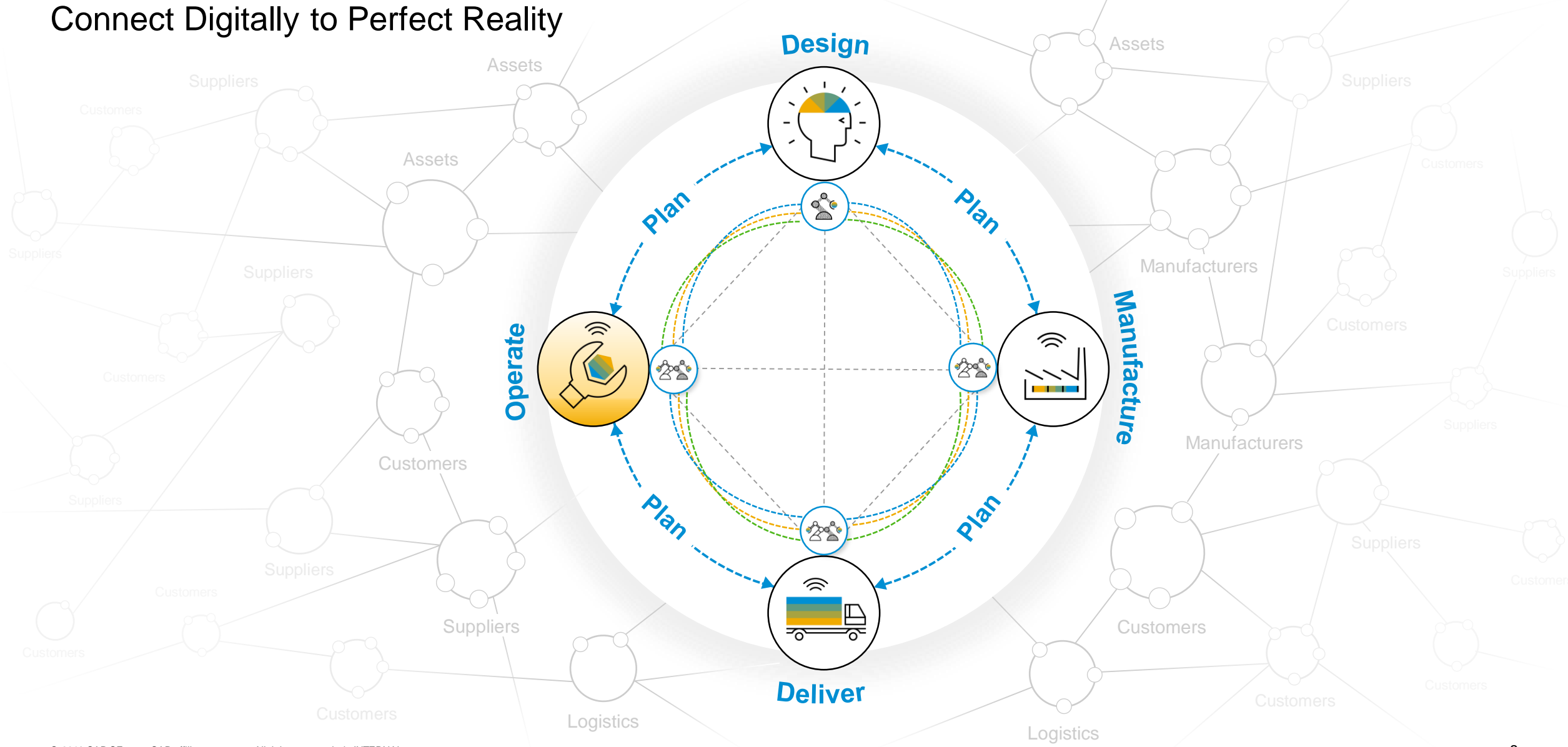
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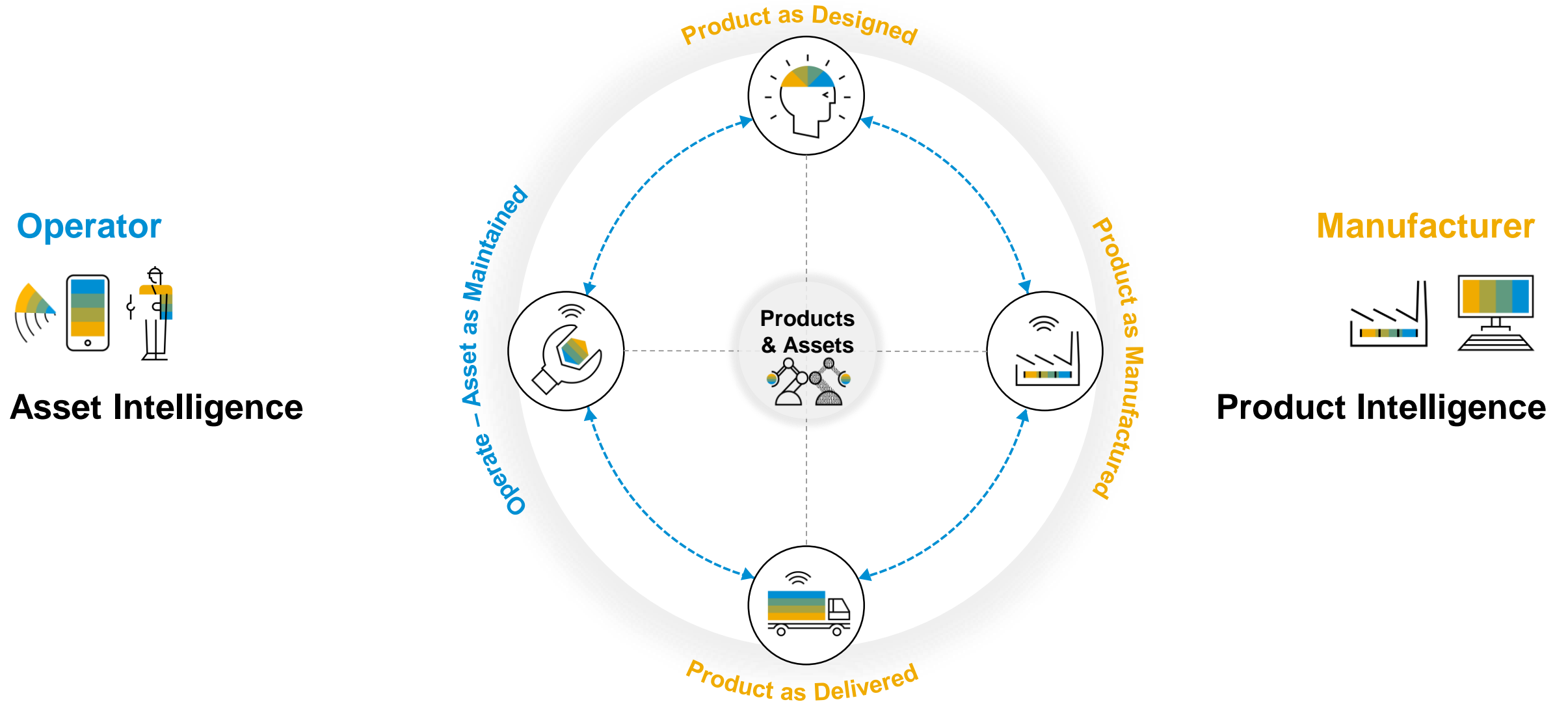
Digital Supply Chain – Design to Operate

Connect Digitally to Perfect Reality



Product and Asset Lifecycle and the Digital Twin

Connect Digitally to Perfect Reality for Your **Asset Management**





Insert / Play Video English Version

(Note, Video is available on You Tube. The Gebhardt Gallileo platform is a collaborative asset platform for Warehousing MHE, and can be used in maintenance scenarios such as sharing repair/maintenance content, and predictive maintenance. Gallileo is based on SAP Cloud Platform and SAP Asset Intelligence Network)

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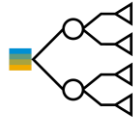
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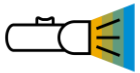
FAST, FORWARD

SAP Enterprise Asset Management Portfolio – Business Capabilities



Innovative business processes

Leverage new technologies to enable new asset management business processes anywhere and anytime



Real-time insights

End-to-end visibility on strategic, tactical and operational level



Connected assets

Bring together information from operational and business systems using IoT for scalable transparency



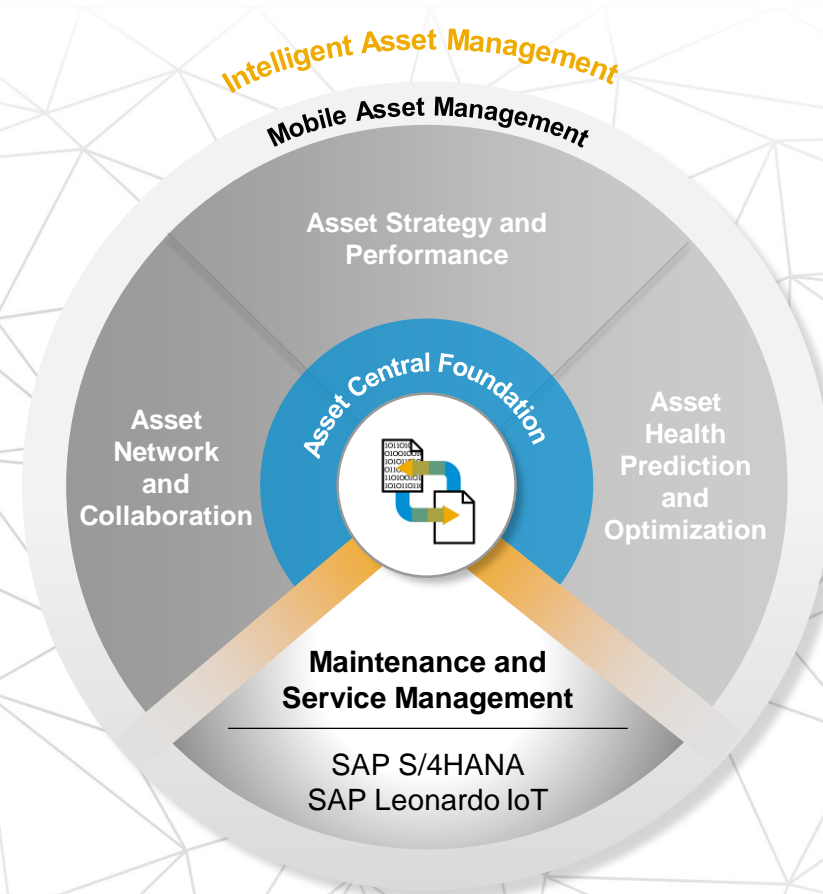
The power of prediction, optimization and simulation

Drive smarter decisions, improve reliability, and reduce outages



Collaboration throughout the asset lifecycle

Share asset information, access one version of the truth, and collaborate on a cloud-based business network with integrated processes



SAP S/4HANA Asset Management

Maintenance & Service Management – Execution & Scheduling



Execute planned and unplanned maintenance tasks to help ensure optimal operations



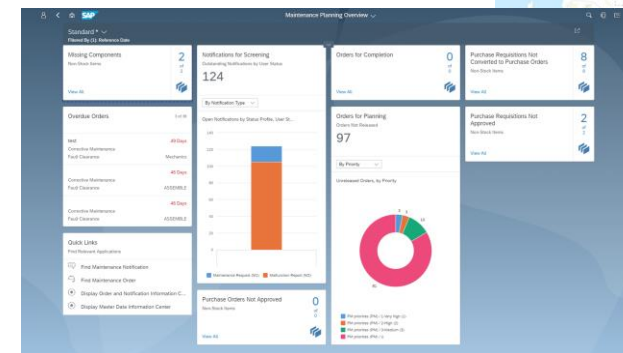
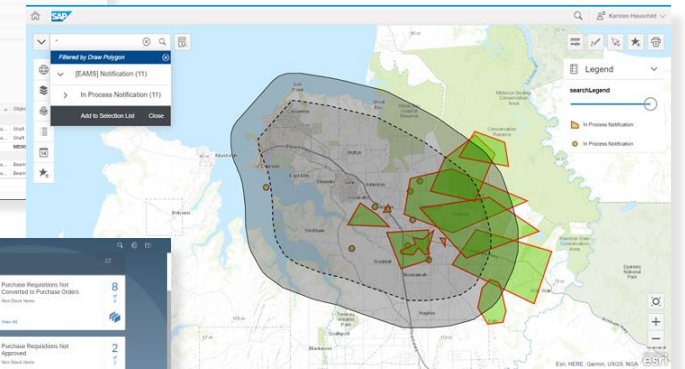
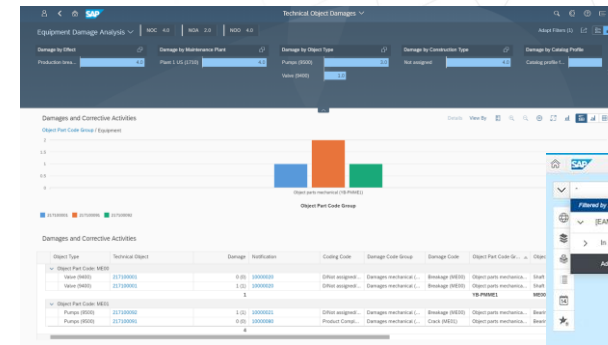
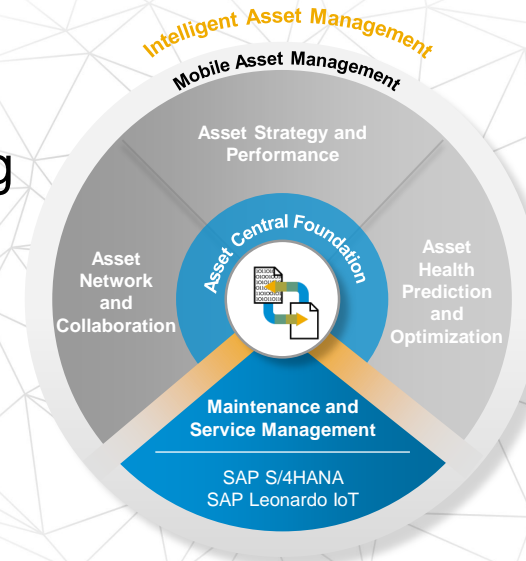
Manage preventive and condition-based maintenance proactively



Increase equipment reliability and improve asset usage as well as safer maintenance processes



Manage asset information for work orders, maintenance, measurements, inspections, metering, and inventory



SAP Intelligent Asset Management

Asset Networks and Collaboration



Create a centralized 'asset central' data repository combining asset intelligence, data and history from multiple system sources



Enable secure asset collaboration across your business network . Adopt new 'Shared Service' and standardization approaches to asset management



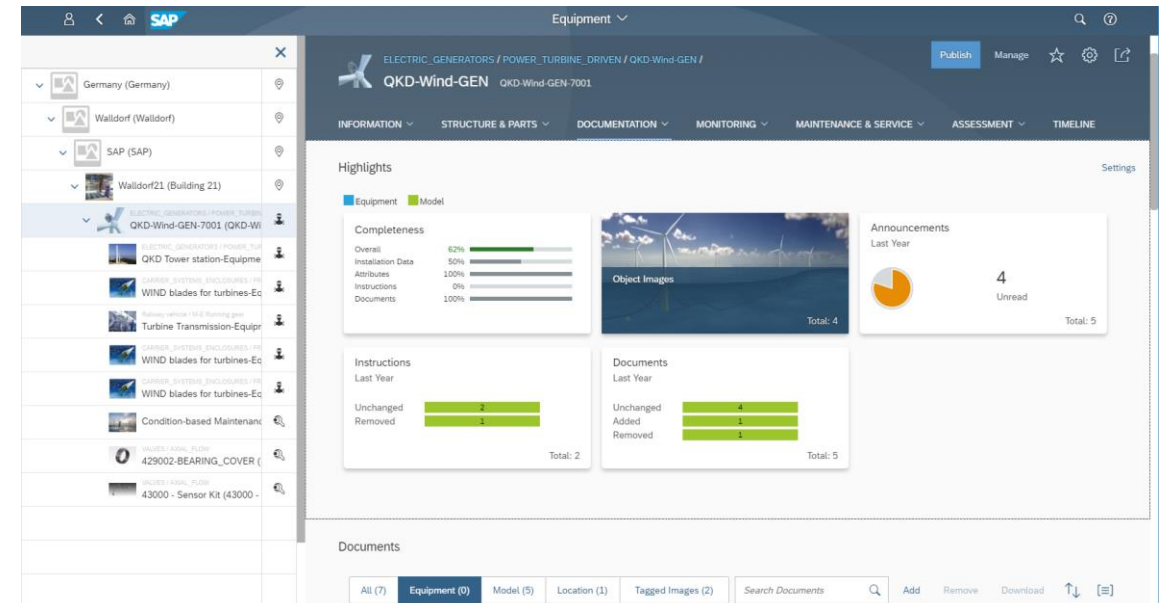
Collaborate with manufacturers, operators, service suppliers, across the network on asset information



Provide one network channel for electronic handover of technical asset and maintenance data to OEMs, service providers, and procurement vendors



Improve data reliability, reduce master data maintenance, and maintain higher asset availability



SAP Asset Intelligence Network

www.sap.com/ain

Collaboration between manufacturers, service provider, and operators

Apps

Job Instructions	Announcements	Obsolescence Management	Performance Improvement	Spare Parts	Equipment as a Service*	Work Collaboration*	Commissioning & Handover*
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Content

- Nameplate info
- Maintenance strategy
- Spare Parts
- Service bulletins
- Failure modes
- Recalls
- Bills of Materials
- Designs and drawings
- Design improvements
- Sensor definition
- Operating instructions
- Maint instructions
- Safety instructions
- Product training



- Service bulletin receipt
- Service bulletin processed
- Usage information
- Installation information
- Failure / incident data
- Design recommendations
- Risks and controls
- Measurement documents
- Telemetry

*planned

Network



SAP Intelligent Asset Management

Asset Strategy and Performance



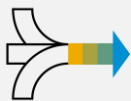
Segment assets based on risk, criticality, impact, and environmental factors to determine best maintenance strategies at lowest cost and risk



Adopt Reliability Centered Maintenance processes, considering failure modes, effect and root causes



Manage performance to optimize return on assets across lifecycles. Monitor, review, and improve maintenance plans and budgets



Reduce bottlenecks, improve decision making, and prevent incidents using a holistic view of asset types and maintenance strategies



		Operational Consequences				
		Insignificant	Minor	Moderate	Major	Extreme Risk
Likelihood	Rare	4.00	8.00	16.00	32.00	64.00
	Unlikely	8.00	16.00	32.00	64.00	128.00
	Possible	12.00	24.00	48.00	96.00	192.00
	Likely	24.00	48.00	96.00	192.00	384.00
	Almost certain	40.00	80.00	160.00	320.00	640.00

SAP Intelligent Asset Management

Asset Health Prediction and Optimization



Optimize the availability of your assets by using predictive maintenance and service capabilities and the Internet of Things to take corrective actions early



Connect and analyze sensor data to monitor asset condition and performance in real time



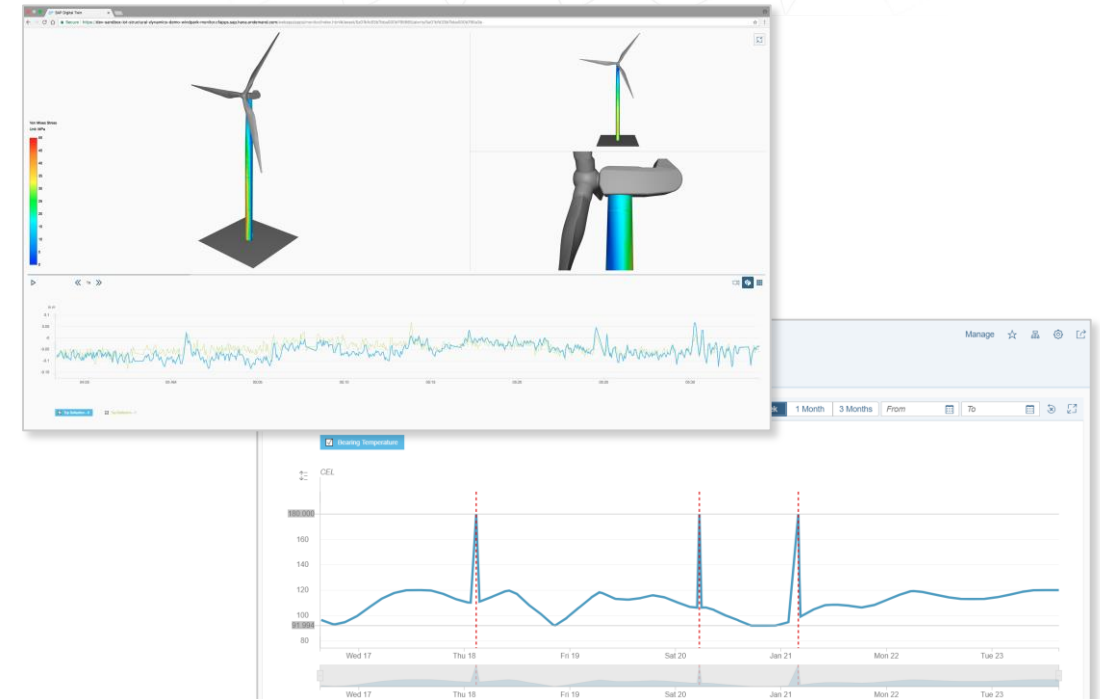
Apply advanced analytics, with predictive algorithms and machine learning



Optimize asset performance with a closed-loop maintenance and service process, triggered by real time condition monitoring

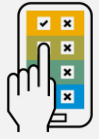


Create physics-based digital twins of industrial assets based on a real-time and predictive engineering simulation including modelling algorithms from **ANSYS**



SAP Intelligent Asset Management

Mobile Asset Management



Connect field teams and technicians to all operational data for efficient execution of activities any place and any time, with reduces resources



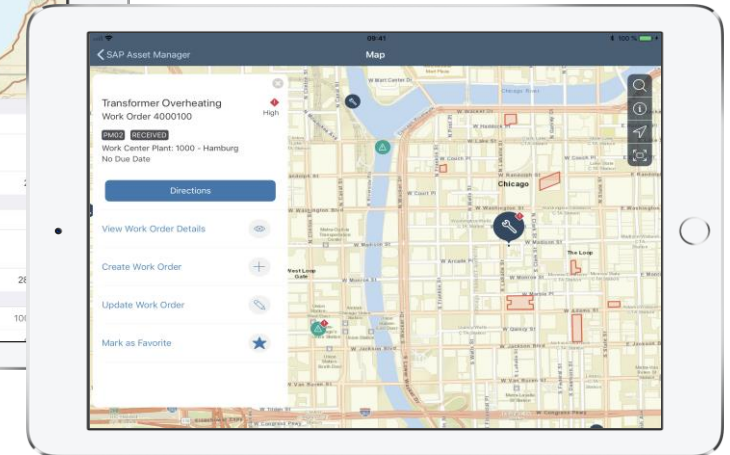
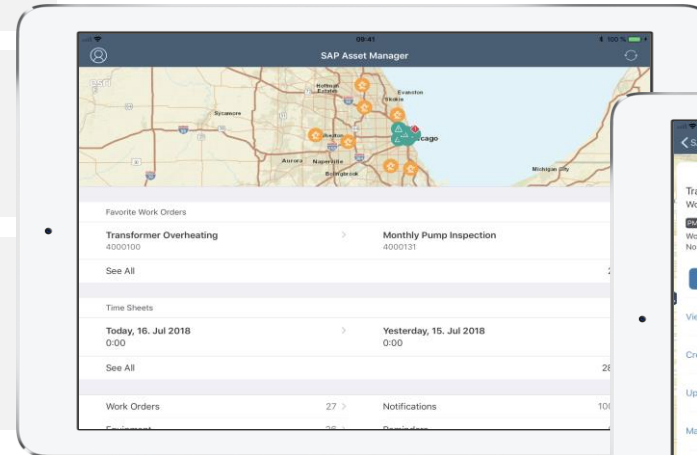
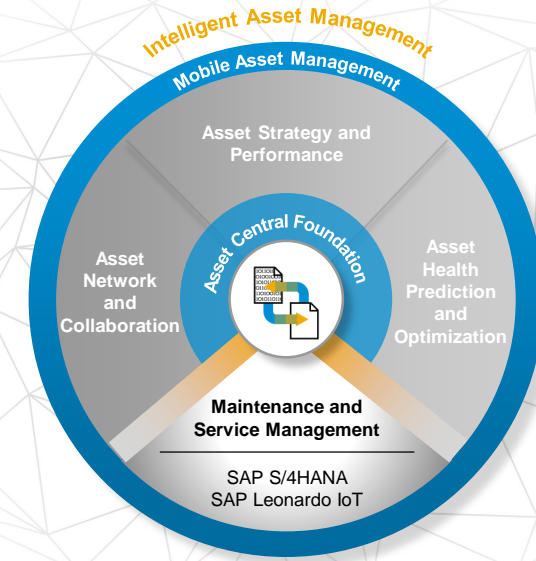
Extend and improve asset life and reliability by accelerating task assignment, feedback and shortening work cycles



Enable simple connectivity on a range of devices, cloud deployment with automated data management and synchronization, with on-line and off-line access

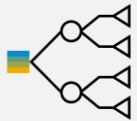
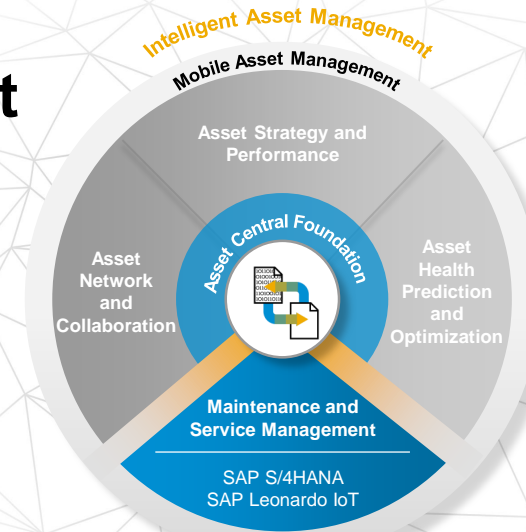


Provide both execution tasks via mobile workflow, as well as supporting asset intelligence information, instructions and EH&S content



SAP S/4 HANA Portfolio and Project Management

Plan, execute and monitor capital investment projects



Estimate financial and capacity demand for project investments and prioritize in-line with corporate strategy



Schedule project work-packages and track execution through task confirmation and milestones



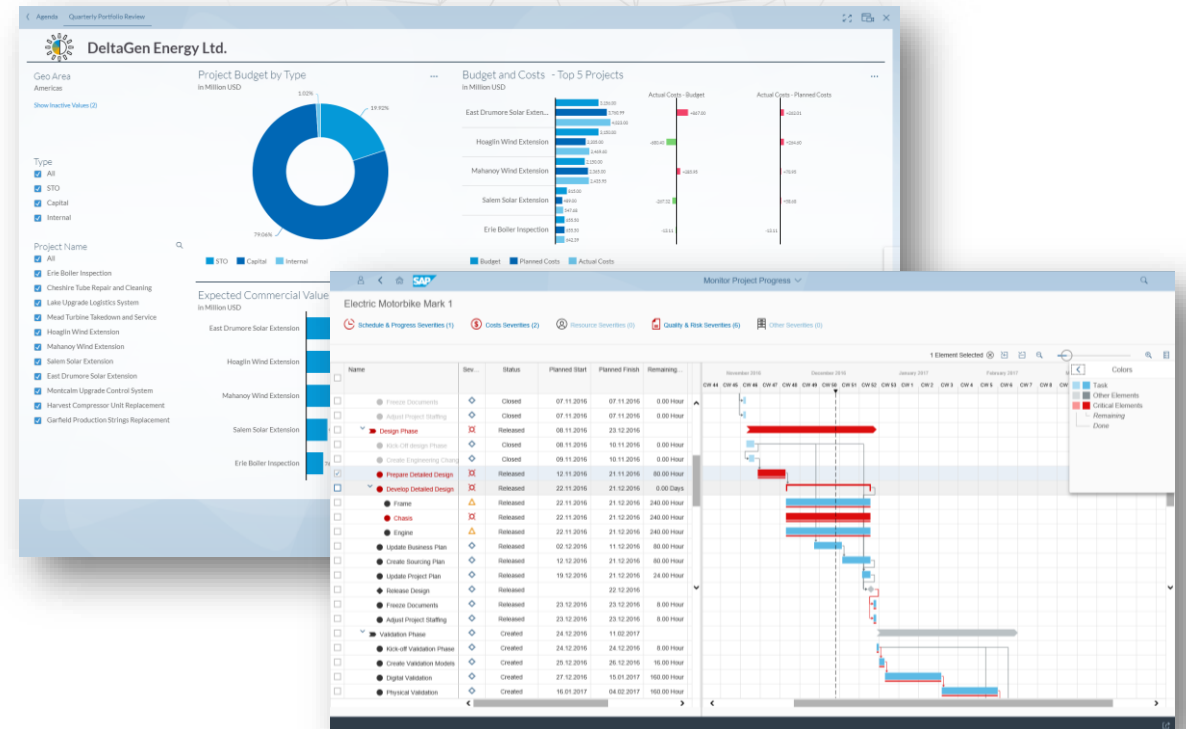
Gain insights into resource demand and match with availability of critical resources, tools and materials



Plan project costs and track budget against actual costs in real time



Integrate Supply chain, procurement, logistics and production activities and synchronized with project plans



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SAP S/4HANA & SAP Intelligent Asset Management

Connecting digitally to perfect **Asset Management**

Adopt **risk and reliability** based decision support and maintenance processes including

- **FMEA**
- **RCM** (Reliability Centered Maintenance)
- **Risk and Criticality** Management

Move from preventative to **predictive** sensor based condition monitoring & maintenance

Adopt **'Shared Service'** for asset management with centralized visibility, collaboration & data management

Adopting **new business processes** with partners

- Content Collaboration
- Maintenance services
- Products as a service

Digital Twin lifecycle & Asset Data Governance

Adopting standard processes and **ISO standards**

Improving **efficiency of maintenance** teams

- Mobile applications for field teams
- Scheduling to optimize maintenance resources



Maximize
asset productivity



Drive
safe operations



Reduce
costs





SAP® Portfolio and Project Management



Wien Energie GmbH

www.wienenergie.at/eportal3

Industry
Utilities

Products and Services

Supplier of electricity, natural gas, and district heating to the greater Vienna metropolitan area

Employees
2,653

Revenue
€2.06 billion

SAP® Solutions

SAP® Portfolio and Project Management application

Wien Energie faces changing market conditions driven by developments such as digitalization, decentralization, and decarbonization, all of which require it to review existing business models while also evaluating new business opportunities. To help it invest in projects aligned with corporate strategy, it implemented SAP Portfolio and Project Management with support from Phoron Consulting GmbH – and gained a holistic view of its project portfolio as a result.

Before: Challenges and Opportunities

- Lack of visibility of entire project portfolio and lack of strategic alignment
- High manual effort required to consolidate project information managed partly in legacy and spreadsheet-based systems
- Slow manual and paper-based decision-making processes
- Outdated, unintegrated legacy system

Why SAP and Phoron Consulting

- Complete solution thanks to integration with core processes spanning financials, controlling, and resource management
- Single, scalable application covering all project types, from investment to IT, that grows with the business
- Phoron Consulting for in-depth solution know-how combined with broad process and best-practice expertise gained from dozens of customer implementations

After: Value-Driven Results

- Reduced lead time for investment decisions
- Increased visibility into alignment of projects with corporate strategic goals
- Higher quality of forecasts leading to more-efficient budget control
- Improved transparency and accountability thanks to a single source of truth on project financials and progress

We knew we needed to focus on results, and do it with the right partner. All stakeholders benefit from this integrated solution based on SAP Portfolio and Project Management.”

Marcus Paulus, Head of PMO, Wien Energie GmbH

Featured Partner



75%

Of business requirements met without customizing the application

30%

Shorter lead time for investment decisions

650

Users, with rollout to over 500 more in progress, and 200 projects of all sizes and all categories covered

[Link to Customer BTS Story](#)

Metropolitan Utilities District:

The next level of field enablement for utilities

Company

Metropolitan Utilities District (M.U.D.)

Headquarters

Omaha, Nebraska

Industry

Utilities

Products and Services

Public natural gas and water utility

Employees

840

Revenue

US\$336,000,000

Web Site

www.mudomaha.com

Objectives

- Achieve synchronization of asset data between SAP® solutions and Esri geographic information software
- Develop a mapping interface for work order management and service locations with modern and geospatial visualization
- Reduce errors and data quality issues

Why SAP

- Ability to leverage existing investments in SAP and Esri software
- Minimal learning curve for users of both the geographical enablement engineered service provided by SAP Consulting and Esri system

Resolution

- Achieved better data quality and fewer duplications
- Simplified data access and analysis
- Improved productivity

Future plans

Expand geospatial features into more equipment and extend map to the SAP Work Manager mobile app

100%

Of errors now captured due to synchronization between SAP and Esri systems

40%

Decrease in work order processing time

6 months

To implement, from design to launch

Improved

Cross-departmental communications and employee engagement



“We are proud to be the first utility to extend our SAP for Utilities solution portfolio with the geographical enablement engineered service. This allows us to fundamentally change how work orders are generated using geospatial data, which has resulted in a significant gain in productivity.”

Raied Stanley, Vice President of Information Technology, Metropolitan Utilities District



GEBHARDT Fördertechnik: Introducing **Next-Generation Intralogistics**



SAP Leonardo

GEBHARDT Fördertechnik GmbH

Sinsheim, Germany
www.gebhardt-foerdertechnik.de

Industry

Industrial machinery and components

Products and Services

Systems and solutions for intralogistics

Employees

550

Revenue

€90M

SAP® Solutions

SAP Asset Intelligence Network
SAP Cloud Platform
SAP IoT Application Enablement

GEBHARDT Fördertechnik implemented applications powered by SAP® Leonardo and now benefits from a smart factory. Since doing this, the company has enabled itself and its customers to enter the next generation of intralogistics. Systems are equipped with sensors, and customers have full control over their machinery – and a better service than ever before.

Before: Challenges and Opportunities

- Improve customer service
- Set new standards in the industry
- Become a driver of innovation

Why SAP?

- Future-proof solutions portfolio
- Satisfied customer of SAP solutions, including SAP ERP, SAP Jam™, and SAP SuccessFactors® Learning.

After: Value-Driven Results

- Successful implementation of smart manufacturing at own company
- Real-time management of the entire production line and warehousing thanks to data networking.
- Revolutionized intralogistics for GEBHARDT customers: All new products enable predictive maintenance, condition monitoring, augmented reality, and other capabilities.
- All system components, from mechanics to control and software, are digital and connected. Dashboards provide continuous information on the condition of all components.
- Transparent material flow at every stage, and ability to integrate pallet shuttles and autonomous transport systems.
- Customers' legacy or third-party systems can be retrofitted with sophisticated technology to enable smart factory integration. GEBHARDT provides new services through use of digital twin technology.

“With our **Galileo IoT platform based on SAP, we bring our customers’ logistics equipment up to date with the **latest standard of technology.**”**

Stephan Riemensperger, Head of Sales Tools, GEBHARDT Fördertechnik GmbH

>2,000

individual parts of conveyor systems can be integrated into the smart factory.

6 weeks

implementation period

Modular

structure for manageable costs

Introducing Dynamic and Predictive Maintenance with SAP® Solutions

Trenitalia
Rome, Italy
www.trenitalia.com

Industry
Travel and transportation

Products and Services
Local, national, and international passenger transport services

Employees
28,000

Revenue
€5.5 billion

SAP® Solutions
SAP® Predictive Maintenance and Service solution, the SAP HANA® platform, and SAP IQ software

Trenitalia ensures its customers can rely on it to get them wherever they need to go with efficient and reliable services that run on time. By using the SAP Predictive Maintenance and Service solution, Trenitalia has created a dynamic asset system that allows it to make better decisions based on real-time information and error forecasting.

Before: Challenges and Opportunities

- Significantly increase maintenance efficiency and reduce operational costs by avoiding unnecessary maintenance activities
- Systematically plan in advance for any intervention, ensuring availability of spare parts, facilities, tools, and resources
- Prevent breakdowns while trains are in operation
- Avoid downtime due to unforeseen activities

Why SAP

- Innovative solutions and technology to improve maintenance processes based on the SAP HANA platform and Big Data analysis
- Implemented the SAP Predictive Maintenance and Service solution to support real-time monitoring of the train fleet
- Used algorithmic predictions and indicators for dynamic planning

After: Value-Driven Results

- Scaled large quantities of data in SAP IQ, reducing required in-memory storage
- Gained insight into real-time diagnostics to make better decisions
- Improved asset reliability and service, thanks to predictions and error forecasting
- Reduced maintenance costs

“The SAP Predictive Maintenance and Service solution based on SAP HANA helps us **cut costs and keep trains running smoothly.**”

— Danilo Gismondi, CIO, Trenitalia

8%–10%

Reduction in maintenance costs

700 TB

Of data managed per year through SAP HANA and SAP IQ

5,000

Signals sent per train every second, thanks to sensors on board



Watch how Trenitalia keeps passengers happy with SAP solutions



Optimizing Asset Management with Rich Master Data and SAP® Solution Extensions



Utopia Global Inc.
Mundelein, Illinois
www.utopiainc.com

Industries
Professional services

Products and Services
Data migration and transformation and enrichment services for SAP customers

Employees
500

Revenue
US\$33.428 million (estimated)

SAP® Solutions
SAP® Asset Intelligence Network; SAP Enterprise Asset Management (SAP EAM) solution; SAP Asset Information Workbench by Utopia application; SAP Master Data Governance application, with extensions for EAM and retail and fashion management by Utopia

A global software development and content provider for asset management solution extensions for SAP, Utopia’s services include asset data migration, transformation, and enrichment. It supports its customers – companies that need to keep tabs on all types of assets – with comprehensive master data services.

Before: Challenges and Opportunities

- Enable companies in various industries to benefit from a rich repository of asset master data
- Provide asset descriptions for brownfield facilities in industries such as oil and gas, chemicals, and utilities
- Deliver relevant asset data through SAP Asset Intelligence Network and its digital service request capability
- Offer a simple mechanism for requests for asset master data for equipment plus an asset master data library

Why SAP and Utopia

- Development partner for SAP Master Data Governance and SAP Asset Information Workbench for the enterprise management product category and SAP EAM
- Solution provider of fashion, retail, and EAM extensions for SAP Master Data Governance, and SAP Asset Information Workbench, including versions for SAP S/4HANA®
- Integrated applications with SAP Asset Intelligence Network, reliable sources for required, critical asset master data

After: Value-Driven Results

- Integration with solution extensions for SAP Master Data Governance and SAP Asset Information Workbench
- Asset master data library with more than 500,000 objects available through SAP Asset Intelligence Network
- Efficient management of brownfield asset master data, including comprehensive descriptions and other content compliant with ISO 14224
- Optimized plant and asset maintenance and increased productivity

“We believe master data is the DNA of an enterprise. Our solution extensions respond to client demand for solutions for the digital economy, the Internet of Things, Big Data, and analytics.”

— Arvind J. Singh, CEO, Utopia Global Inc.

>400

Templates for integration with SAP solutions for enterprise data management

Reduced

Project risks and costs

Maximized

Return on investment, collaboration, and competitive advantage

SAP S/4HANA & SAP Intelligent Asset Management

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- **FMEA**
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- **Risk and Criticality** Management

Move from preventative to **predictive** sensor based condition monitoring & maintenance

Adopt **'Shared Service'** for asset management with centralized visibility, collaboration & data management

Adopting **new business processes** with partners

- **Content Collaboration**
- **Maintenance services**
- **Products as a service**

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Adopting standard processes and **ISO standards**

Improving **efficiency of maintenance** teams

- **Mobile applications** for field teams
- **Scheduling** to optimize maintenance resources



Maximize
asset productivity



Drive
safe operations



Reduce
costs



Presentation Materials

Access the slides from 2019 ASUG Annual Conference here:

<http://info.asug.com/2019-ac-slides>

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#ASUG



Q&A

For questions after this session, contact me at:
patrick.crampton-thomas@sap.com