

SAP Leonardo Innovation Portfolio

SAP Leonardo 

Introduction to the SAP Leonardo Innovation Portfolio

SAP Leonardo connects things with people and processes

Business and IT leaders across industries are constantly searching for new and innovative ways to service and delight customers like no other competitor. With emerging smart assets that can be always-on, industries see a tremendous possibility to transform operational scenarios and reimagine their business models.

The massive numbers of connected things and the explosion of data generated by connected devices (“Things”) will change the way we do business forever. The journey a company takes to get from “Things to Outcomes” is becoming the catalyst for digitization. IoT is not necessarily new to most companies. However, most are collecting and storing the data and may also have the ability to visualize it. With SAP Leonardo, our endeavor is to provide an innovative solution portfolio that enables companies to not only realize digital transformation of existing end-to-end business processes, but also enable them to evolve new business models to run digitally.

SAP provides a highly innovative IoT portfolio which extends the digital core with adaptive applications, big data applications and connectivity to enable:

- **New business processes**
- **New business models**
- **New work environments**

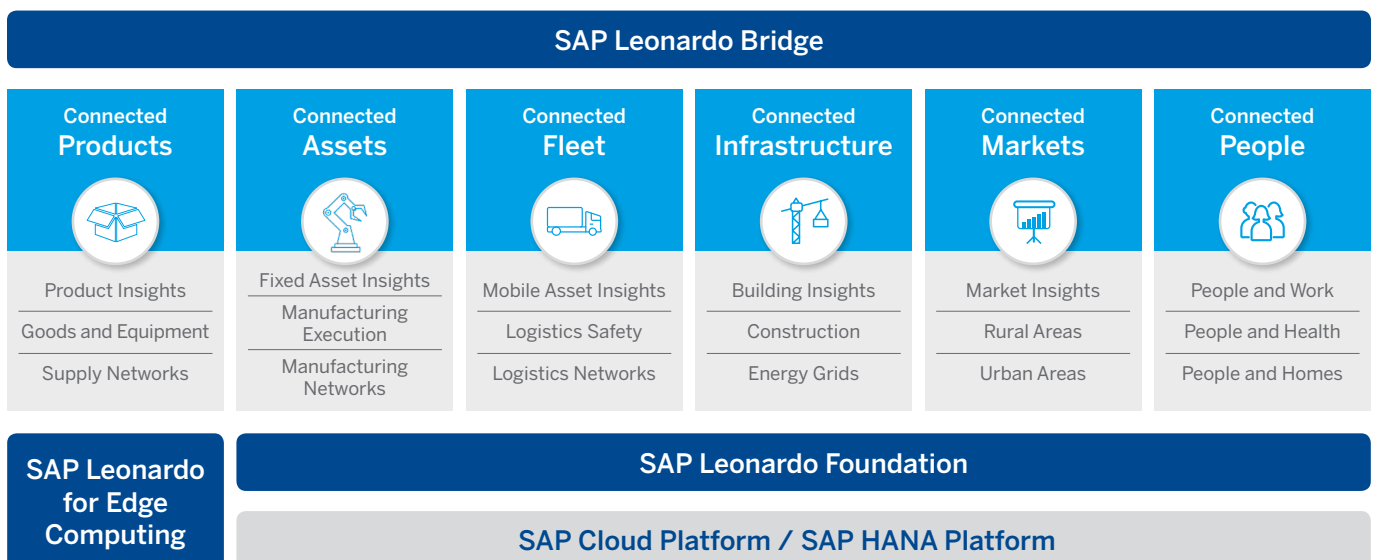
[This brochure provides a view and the unique value of SAP Leonardo innovation portfolio.](#)



SAP Leonardo Innovation Portfolio

The Internet of Things is on top of the agenda for most companies. While technology has existed for several decades, it was limited to operational use. The evolution of connectivity, Big Data management, analytics, and cloud technology is enabling us to converge these operational and information technologies to make machines smarter and drive end-to-end digital transformation.

Initially, IoT applications were limited for operational activities on shop floor and data was not leveraged for enterprise use. With the evolution of Industry 4.0 and industrial Internet, customers are looking to leverage this Big Data and develop responsive and intelligent applications for line-of-business and industry-specific end-to-end processes.



- **SAP Leonardo Bridge** combines real-time information from connected things with business processes to turn extended supply chains into live supply chain environments
 - Range of packaged enterprise end-to-end solutions for **connected things** from products to people across line-of-business and industry use cases
 - **SAP Leonardo foundation** includes both best of breed **business services** that enable users to rapidly build IoT applications by building digital twins, reusable application services, and applying predictive algorithms; and core **technical services** to process a high velocity of data with the ability to stream analytics and run predictive scenarios
- These are delivered on new generation **SAP Cloud Platform** coming from millions of devices
- **SAP Leonardo for Edge computing** ingests data irrespective of connectivity, latency, device protocols concerns, and (at the same time) delivers intelligent edge applications



Connected Products

Enable end-to-end visibility to product-centric operations and ability to optimize compliance visibility and service availability

As the demand for information and insight increases, we are seeing a significant increase in the design, manufacturing, and delivery of smart, connected products across all industries. R&D can utilize data from sensors, connected products, and other Big Data sources, to support the development of more reliable and desirable products that meet target requirements. This leads to increased demand and opportunities for you in the market, and increased access to information for both you and your customers.

Goods and Equipment

Connect, monitor, and control a large number of customer facing products

Connect smart devices and products with core business processes and back-end systems. SAP Leonardo enables you to easily collect and analyze data from IoT devices from smart products e.g., coolers, coffee machines. At the same time, you can bring back-end business context and processes in real time by converging it with digital twins of physical product within IoT smart applications to improve efficiency, automatic replenishment – and create new product-as-a-service business models.

SOLUTION SPOTLIGHT

- Connected Goods
- IBP for Response & Supply
- SAP Hybris Billing

Product Insights

Design, manufacture, and distribute smart products to leveraging sensor data by manufacturers and consumers

Streamline and orchestrate your design networks with intuitive design and collaboration tools to enhance product and project delivery. Manage internal and external development teams, capture their ideas, and reuse your product and project data throughout the enterprise.

Increase efficiency in engineering and manufacturing with a single platform for design tool integration to provide a 360-degree product view (with total transparency across engineering disciplines) through a harmonized and intuitive user experience. And master product cost potential and transparency – at a time when it counts.

SOLUTION SPOTLIGHT

- Innovation Management
- Product & Project Network*
- Engineering Control Center
- Product Lifecycle Costing
- SAP Ariba Sourcing

Supply Networks

Manage, control, and respond to changing conditions with a digital operations center for response

Reduce planning cycle times and inventory levels and increase service quality by extending the supply chain to the business network. Connect more easily with suppliers, customers, and outsourced manufacturers for enhanced collaboration across demand, supply, and inventory.

Optimize service and cost through collaborative planning of inventory, supply, and demand, while establishing a collaborative network with B2B connectivity for proficient supply chain collaboration.

SOLUTION SPOTLIGHT

- Supply Chain Control Tower
- Track & Trace
- SAP Ariba Supply Chain Collaboration



Connected Assets

Track, monitor, analyze, and maintain all fixed assets across the network

Connect production systems and assets with manufacturing and maintenance business processes to reduce operational and maintenance cost and increase uptime of assets.

Fixed Asset Insights

Optimize asset performance throughout their entire lifecycle and build an asset network collaboration for better service and maintenance process

As companies move from a reactive to a proactive approach to maintenance, fixed asset insights provides an end-to-end solution for predictive maintenance and service from identification of emerging issues to procuring spare parts, scheduling and executing maintenance. These capabilities can serve assets that are both owned and operated by companies as well as assets that are installed at a customer site and are covered by service contracts. This can be achieved through an integrated asset network to collaborate between manufacturers, service providers and end customers.

SOLUTION SPOTLIGHT

- Predictive Maintenance and Service
- Asset Intelligence Network
- Work Manager
- SAP Ariba Supply Chain Collaboration

Manufacturing Execution

Connect, monitor, and tightly control manufacturing processes and operations by integrating business and manufacturing systems to enable lean, high-quality production on the shop floor

Leverage manufacturing execution and Industrial IoT to optimize manufacturing processes and provide real-time visibility and transparency across multiple plants, vendors and machine types. You can then tie this information back to the business context of the order, quality and performance. Connect supply chain networks to manufacturing processes and operations while lowering total manufacturing costs in scalable, flexible, cost-effective deployment options.

SOLUTION SPOTLIGHT

- Manufacturing Execution
- Manufacturing Integration and Intelligence
- Plant Connectivity
- Extended Warehouse Management

Manufacturing Networks

Efficiently address customer demands by connecting supply chain solutions with the 3D printing/IoT capabilities, machine learning and real-time operations insights through a global manufacturing network

Identify and resolve any issues across the extended supply chain to increase fulfillment of delivery commitments, manage changes to existing and new product introductions, and share process improvement ideas across your enterprise. Establish a collaborative network with B2B connectivity for proficient supply chain collaboration. Find hidden production capacity in your existing resources for greater success and rapidly scale production up or down based on market demand in a cost-effective way.

SOLUTION SPOTLIGHT

- Supply Network Collaboration
- Global Batch Traceability
- Ariba Advanced Supply Chain Automation
- Distributed Manufacturing*
- Digital Manufacturing Insights*



Connected Fleet

Track, monitor, analyze and maintain all moving assets, wherever they are in the network

Connected fleet enables businesses and public service organizations owning fleets of moving assets e.g., vehicles, robots, and fork lifts to collect live telemetry and sensor data and integrate with your core business processes to improve services and safety for operators, improve visibility to logistics and finally provide better services for the end customers. At the same time, it enables organizations to create new business models and opportunities to reduce cost leveraging the Internet of Things.

Mobile Asset Insights

Collect, map, store, and analyze fleet/vehicle sensor data in real time

Improve operational efficiencies by collecting, mapping, storing and analyzing vehicle and sensor data in real time. The integration of telematics, enterprise and customer data enables you to improve services and execution of ordering process, collection of goods and delivery process. It creates the opportunity to optimize processes and create value through new business opportunities.

SOLUTION SPOTLIGHT

- Vehicle Insights
- Predictive Maintenance and Service
- Asset Intelligence Network

Logistics Safety

Perform comprehensive safety analysis of people and assets to reduce accidents and improve safety records

Improve your end-to-end logistics safety record covering safety analysis of vehicle conditions, environmental aspects, drivers biophysical health, and driving behavior. You can also manage the handling of hazardous goods through the integration to environment, health, and safety solutions.

SOLUTION SPOTLIGHT

- Transportation Safety*
- Connected Parking
- EHS Dangerous Goods

Logistics Networks

Maximize supply chain logistics strategy and comply with regulations across the global network

Easily track inventory end to end with enhanced supply chain logistics. Increase visibility into logistics to streamline goods flow in real time and also boost visibility into supply chain logistics in yards and hubs through real-time management. Enables the right foundation for regulatory compliance and manage by exception in-transit inventory and assets with item traceability.

SOLUTION SPOTLIGHT

- Track & Trace
- Yard Logistics
- Warehouse Management
- Networked Logistics Hub
- Vehicle Networks



Connected Infrastructure

Delivers new forms of digital operational intelligence to transform physical-infrastructure systems

Improve service, drive economic growth, and allow for more efficient and cost-effective operations, infrastructure compliance and risk mitigation, as well as provide opportunities for job growth. Drive transformation by bridging sensors and control technologies embedded throughout physical infrastructure assets with information systems and business applications. These sensors are connected to SAP Leonardo and allow real time data ingestion and analytics along with integration into business processes to predict, plan, and respond to real-time conditions. Customers reap bottom-line results in global productivity and operational efficiency by utilizing this real-time information and integrating it business data to drive business results and create new infrastructure models.

Building Insights

Leverage real time information to manage and maintain properties

Ensure visibility across your properties to optimize energy consumption, maintain facilities and equipment and ensure improved customer satisfaction.

SOLUTION SPOTLIGHT

- Real Estate Cockpit
- Plant Maintenance
- Energy Management*
- SAP Ariba Procurement

Construction

Manage construction projects to deliver on time and within budget

Leverage real-time data to manage the end-to-end project, ensuring that materials is at the right place, at the right time, and that assets and equipment is optimized throughout the process.

SOLUTION SPOTLIGHT

- Project Management
- Track & Trace
- Yard Logistics

Energy Grids

Optimize the energy utilization by integrating processes and information

Build an end-to-end energy grid that enables better transparency and better decisions. Leverage predictive maintenance and analytical process to optimize uptime and improve customer satisfaction. Ensure visibility of all assets across the grid to enable improved performance and reliability.

SOLUTION SPOTLIGHT

- Predictive Maintenance
- Asset Intelligence Network
- Manufacturing Integration and Intelligence



Connected Markets

Foster local markets, cities, urban and rural environments with new products, services, data, businesses and business models leveraging the SAP Leonardo innovation portfolio

Enable innovation, production, deployment and business formation of local relevance at the right moment in time to meet challenges of tomorrow and transform them into opportunities for today. You can actualize global competitiveness, drive enterprise, power the knowledge economy, and cultivate a culture of innovation.

Market Insights

Interact in an all knowing digital or physical marketplace to provide an excellent all around personal experience

Today's hyper connected consumers, citizens and visitors demand consistent and seamless experiences irrespective of the constraints of time, space and geography. SAP Leonardo leverages beacons, mobile connectivity, identity and security to provide hyper personalized experiences to the consumers, citizens and visitors in a particular market. The ability to interact in an all knowing digital or physical marketplace provides an excellent all around personal experience benefitting businesses able to harness this new mode of interaction to its fullest.

SOLUTION SPOTLIGHT

- Connected Goods
- Connected Marketing
- Customer Activity Repository

Rural Areas

Transform agribusiness to evolve and grow to feed the world

With a rapid increase in population and the shortage of natural resources, the agribusiness needs to transform and grow to both do more with less, and leverage the wealth of digital information now available into business value. SAP Leonardo enables you to consume data from agricultural machines and equipment to increase farming efficiency and predictability and create transparent and sustainable food supply chains while managing price volatility. Farmers and growers can connect to global value chains through IoT and mobile technology. This enables the agriculture business to incorporate precision farming competence even in the most remote rural areas globally.

SOLUTION SPOTLIGHT

- Connected Agriculture
- Predictive Maintenance and Service
- Vehicle Insights

Urban Areas

Optimize energy, vehicles and assets across the urban footprint

Urban areas stand to benefit tremendously from SAP Leonardo with the rise of automation, blending seamlessly with the physical reality of urban spaces, be it traffic flow and management, parking management or the management of physical infrastructure across buildings, lighting, open public spaces, yards, ports and other infrastructure that make up the modern day urban landscape. This can improve environment, health, and safety of urban public spaces across construction, services and other smart city and government offerings.

SOLUTION SPOTLIGHT

- Yard and Hub Logistics
- Traffic Management
- Connected Parking
- EH&S



Connected People

Strives to improve lives, work and health by connecting people and communities and providing better lifestyle experiences and opportunities for organizations to evolve into new business models

SAP's vision is to help the world run better and improve people's lives. This is our enduring cause; our higher purpose. With this in mind, SAP Leonardo enables innovative applications connecting individuals and communities of consumers with products, assets, brands and services. Companies can offer connected people new services in real time, highly tailored to the individual's activity, location, and needs to anticipate and solve issues before they even happen.

People and Work

Help workers stay safe, link them to their environment in real time, and promote safe practices and risk avoidance

SAP Leonardo enables enhanced ways to collect and process real time data to gain insight to increase safety and overall operational integrity in field execution. This insight enables you to modify processes, fix bottlenecks, reduce downtime, and collaborate with business partners to run better and safer.

People and Health

Build a connected health network that breaks down existing silos

Breaking down the existing silos across healthcare entities will enable a network with the patient in the center, improve patient outcomes, and lower healthcare costs.

Patients can get a personal health dashboard with better health outcomes. Healthcare providers could get access to a comprehensive and longitudinal patient data set with personalized decision support. Medical research could understand risk factors for diseases and drivers for better outcomes. And pharmaceutical companies could benefit by having access to real world evidence to inform their research and development efforts and allowing them to run innovative clinical trials.

People and Homes

Connected energy and security systems, along with smart appliances make home life more comfortable, efficient, and secure

The home is getting more connected, with experts saying that a typical family home could contain more than 500 smart devices by 2022. Homeowners can experience greater peace of mind, as they easily can control and manage their household systems while at home or away from their mobile devices.

Intelligence from the connected home also provides insurers with the opportunity to create other value-added services. Real-time personalized products based on detailed information about usage, behaviors, and location can be created to make customers' lives easier. And new services can be offered in combination with a network of trusted service providers and retailers to extend customer loyalty even further.

SAP Leonardo Technology Overview

SAP HANA is the strategic platform for the SAP Leonardo innovation portfolio, either in the cloud or on-premise

SAP Cloud Platform is the key strategic platform-as-a-service infrastructure that provides the framework for SAP Leonardo innovation portfolio and SAP Leonardo foundation. The latter includes SAP Leonardo business services and SAP Leonardo technical services.

Additionally, SAP Cloud Platform provides end-to-end micro services for machine learning, analytics,

Big Data connector, security, user experience, user management, and backed integration APIs.

All of these capabilities provide a unique value for customers to enable end-to-end IoT driven solutions enabling the effective convergence of IT and OT landscapes while delivering the best experience to users.

SAP Leonardo Foundation

SAP Leonardo Business Services

A reusable microservices framework to enable customers to rapidly build their IoT model and connect it with business context from back-end systems leveraging configuration-driven tools.

SAP Leonardo Technical Services

Key technical services of SAP Cloud Platform for SAP Leonardo innovation portfolio that enable customers best of breed platform capabilities to effectively:

- Manage millions of sensors and devices:
 - Scalable messaging to avoid data stream loss due to latency issues
 - Device management

These services also provide:

- Powerful and real time live streaming analytics
- Data management and big data connector
- User management and security
- Back-end integration service

SAP Leonardo for Edge Computing

A compelling bundle of technologies that run at the edge of the network or in the cloud (agentless), providing Edge processing capabilities for protocol translation.*

SAP Leonardo for Edge computing supports real time and offline data ingestion with edge filtering rules and streaming analytics. Dynamic edge processing then enables back-end transactions from Edge computing.



Get Started Today

Many companies understand the value of IoT for their businesses and want to find out where and how to get started. To provide these customers with an access point for their initiatives, SAP will introduce SAP Leonardo labs around the globe. Here, customers can collaborate with SAP development and consulting experts to start their innovation journey based on SAP Leonardo innovation portfolio, SAP Leonardo labs will open in Palo Alto (USA), Paris (France), Shanghai (China), São Leopoldo (Brazil), Johannesburg (South Africa), as well as Berlin and Munich (Germany). SAP will also introduce an SAP Leonardo jump-start program – a pre-packaged, consultative offering to help customers prioritize innovation opportunities and deliver competitive advantage with an IoT enabled digital transformation.

More information on
SAP Leonardo:
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