



MindSphere

The cloud-based, open IoT operating system from Siemens

[siemens.com/mindsphere](https://www.siemens.com/mindsphere)

MindSphere

Transforms data into knowledge.
And knowledge into measured
business success.

MindApps open up new possibilities, allowing you to use your machine data to create added value.



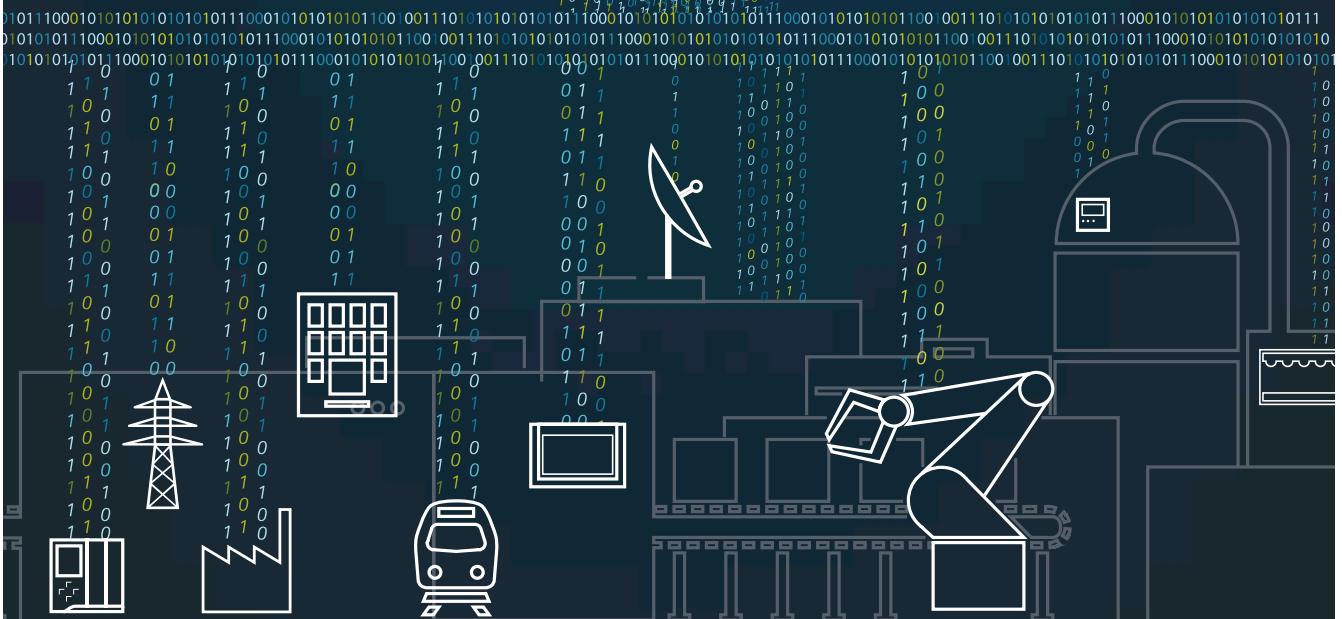
The open cloud platform from Siemens, MindSphere is a powerful IoT operating system with data analytics and connectivity capabilities, tools for developers, applications, and services. It helps to evaluate and utilize your data and to gain breakthrough insights. Drive the performance and optimization of your assets.



Siemens treats all data stored in MindSphere as confidential in accordance with the DIN ISO/IEC 27001 standard.



Connect your asset to MindSphere – directly, easily, and scalable – with MindConnect, our connectivity suite from Siemens



Open application interfaces for individual customer applications

MindSphere

The open IoT operating system from Siemens. For the digital transformation of companies regardless of industry or size. Implementable within a very short period of time.

MindSphere offers you:

- Transfer of domain know-how into vertical specific analytical apps
- Integrated operational data with the digital twin to optimize simulation and engineering (model-based analytics)
- Plug & play connectivity for quick connection of assets without coding
- Set of libraries and software solutions for connectivity of 3rd party products
- Ecosystem with broad domain expertise and horizontal IT capabilities



Connectivity

With MindConnect, Siemens offers numerous possibilities for connecting machines, systems, fleets, and products to MindSphere, regardless of the manufacturer. The MindSphere connectivity suite is available as hard- and software. MindConnect Nano for instance is a plug-and-play solution that enables you to read out data from your asset and preprocess it for transfer to MindSphere – simply and reliably. The encrypted data is then transferred securely to MindSphere, where it is then available for your analysis. In contrary the MindConnect Lib offers the possibility to self-programme embedded devices and to connect with MindSphere.

Options for connection to MindSphere:

- MindConnect Nano
- MindConnect IoT 2040
- MindConnect Software
- Integration in SIMATIC S7 and other Siemens products
- Further options already in progress



Open interfaces

MindSphere is designed as an open ecosystem, making it possible to exchange data across company boundaries and to connect a wide range of different products. Thanks to open standards and interfaces, data can be gathered from equipment of many different manufacturers and analyzed in MindSphere.

Interfaces:

- OPC UA
- Others in progress



Applications

The Siemens MindApps Fleet Manager and Visual Analyzer are already available on MindSphere. These apps help users to connect their assets to MindSphere, to configure them, to read out, and to visualize the relevant data for analysis. Further applications are already in the pipeline and will be made available to users on an ongoing basis. MindSphere also offers the option of developing dedicated applications and using them on MindSphere as well as offering them to other users. The possibilities here are practically unlimited.

Use MindApps from Siemens and applications from third party companies for:

- Predictive maintenance
- Energy Data Management Services
- Resource optimization
- Online monitoring of globally distributed machines
- and much more



Digital Services

In increasingly dynamic markets with ever more complex production requirements, data can make the difference between the success or failure of a company.

With MindSphere, Siemens is paving the way to digital services. These services offer a competitive advantage for customers through the use of data: Higher availability as well as improved productivity and efficiency for individual machines, entire plants, systems, globally distributed machine fleets within the field of industry, energy or mobility infrastructure.

MindSphere provides the technological platform for digital services from Siemens and third-party suppliers, and combines a number of established and new technologies for data analysis, reliable connectivity and cyber security.



Ecosystem

MindSphere provides partners with an unparalleled opportunity to participate in the digital transformation of companies regardless of industry or size. Its openness is a key advantage to participate on all layers – connectivity, platform, applications, and services. In addition the Siemens' installed base offers its customers the potential in instantly connecting to MindSphere. With Application Programming Interfaces (API) users can develop, deploy and distribute their own MindSphere solutions and share them among the MindSphere community. With Siemens unmatched ability to enable closed-loop innovation through product development, production, and field performance, no other IoT provider can connect customers to the complete digital twin like Siemens.



Cybersecurity

MindSphere provides state of the art security during data acquisition in the field, transmission and storage in the cloud. The security framework of MindSphere is aligned to the principles of relevant industry security standards (IEC 62443, ISO/IEC 27001) and governmental recommendations for data handling in cloud environments. MindSphere is operated in dedicated data centers at known locations according to the requirements of the collected data following IEC/ISO 27001 principles.

Reliable and value-enhancing – cloud-based services

The processing of large volumes of data plays an increasingly important role in all relevant markets. MindSphere – the cloud-based, open IoT operating system from Siemens provides a cost-efficient virtualized data management system for this purpose.

Cutting throughput times, increasing flexibility, enabling individualized mass production, and optimizing consumption of energy and resources are some of the challenges facing manufacturing companies today. They have to optimize the entire value chain, from design, production planning and engineering, to services. Increasing availability, capacity and resilience of any type of infrastructure in the area of industry, energy, mobility, healthcare systems and many others is enabled through our open cloud-based MindSphere operating system and related market specific applications and solutions. This also entails analyzing the vast amount of collected data – big data – and recognizing what is really important to enable the right decisions to be made in good time.

MindSphere connects the real with the virtual world. To do this, all data defined by the user is first of all captured, by the integrated, cybersecure, end-to-end connectivity solutions, pre-processed in our MindSphere operating system before it is stored in any kind of cloud or on-premise data center, ready to be further analyzed using embedded algorithms based on an artificial intelligence, deep learning data analytics. The data is analyzed in MindSphere and the data relevant for optimization is made available in the form of recommendations for action. With this so-called smart data the efficiency and transparency of connected assets can be enhanced and the full potential utilized.

MindSphere provides the capability for developing applications and digital services, applying them, and making them available to other users. In this way, totally new service and business models are possible.

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