

# Future of Automation

## Company Core Technology

### Background

Automation technology has always been used as a way to boost industrial productivity, particularly when it involves repetitive tasks or manual labor.

In historic terms, the manufacturing industry acted as the pacesetter. But, step by step, other technical infrastructures and facilities were automated, including power generation and distribution, process plants (e.g. chemical operations) buildings and mobility.

The latest technology was adapted in each era, including communications technology, electronics, integrated switching mechanisms, etc.

Today (in the year of 2017), many areas are now highly automated. But challenges remain:

Before an operation can run automatically, a development and creation phase (something known as automation engineering) is conducted by experts with special tools.

Automation functions today only in machines and technical facilities whose behavior and environment are known and change little. Flexibility must always be planned into an operation in advance and realized in the engineering.

Once a plant is up and running, optimization, retrofitting or an upgrade of automation solutions must always be done by experts.

These challenges can be met if machines begin to learn, understand, interpret their environment and make decisions within defined limits.

The aim is something that could be called “automating the automation.”

### Importance for Siemens

Automation is one of the main pillars of Siemens business. Siemens ranks No. 1 in automation around the world. This position must be bolstered in the future.



**SIEMENS**

*Ingenuity for life*

### Success stories and research focus

As part of its work, Siemens links the latest technology, including artificial intelligence, the industrial Internet of Things (IoT) and digital twins with the company's deep automation know-how in all industries where it does business.

The Company Core Technology Future of Automation has a clear vision of the future automation of factories, plants, mobility, buildings, power plants and electrical grids. At the same time, it is weighing their present and future feasibility:

Autonomous functions for both the engineering and the operation of plants simplify the detail work done by engineers and the operator. They also facilitate intelligent behavior by a plant during operations and in the optimization phase.

The use of technologies already available in the world of IT makes it easily possible to add new functions to the automation system without impeding its operation or endangering its security. We are talking here about apps like those available for our open, cloud-based IoT operating system MindSphere.

The use of open, pre-fabricated (e.g., pre-engineered) modularized units with integrated and autonomous automation (e.g., manufacturing cells, process models) facilitates a "plug-and-operate" system as well as fast, flexible commissioning.

In doing this work, Siemens lays the foundation for innovation fields like Industrie 4.0 (smart production), autonomous transport systems (rail and highways), smart buildings/smart homes and smart energy grids, all of which assure the technological future of Siemens.

### Further information

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

[siemens.com/press/inno2017](https://www.siemens.com/press/inno2017)