Totally Integrated Automation in the Digital Enterprise
On the way to Industrie 4.0

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Only a holistic automation approach including the whole value add chain will yield sustainable competitiveness.
Digital Enterprise Software Suite –
The Siemens answer to Industrie 4.0 requirements
Totally Integrated Automation – the basis for future industrial concepts

Customer requirements

- Consistent data management
- Global standards
- Uniform interfaces for hardware and software
The portfolio for the Digital Enterprise with efficient interoperability of all automation components

Product Lifecycle Management and Enterprise Resource Planning
- Product design
- Product data management
- Production planning
- ERP

Management
- Manufacturing Execution System

Operations
- Totally Integrated Automation Portal
- SCADA System
- Energy Management

Control
- Controller
- HMI
- IPC
- Communication
- Motion Control
- CNC

Field
- Power Supply
- Industrial Identification
- Distributed I/O
- Drive Systems
- Industrial Controls

Added value in all automation tasks
- Integrated Engineering
- Industrial Data Management
- Industrial Communication
- Industrial Security
- Safety Integrated

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Digitalization with TIA-Portal
Horizontal and vertical supply chain integration – scenarios to take off for Industrie 4.0

1. Automatic generation of PLC code and HMI screens
2. Intelligent data management with common database
3. Efficient cloud based engineering
4. Reliable verification through virtual commissioning
5. Easy acquiring and visualizing energy consumption data
6. Individual mass production
7. Preventive maintenance with Cloud Services
Automatic generation of PLC code and HMI screens

User scenario

• Easily generate automation programs for serial machine builder by using information from upstream processes

• Exchange data with upstream engineering processes in TIA Portal

• More **efficiency** by a faster execution of the task

• **Less errors** by automation of constant processes
Intelligent data management with common database

Shared database for mechanics, electrical systems and automation

- Central storage of data from all supplied machines
- Versioning and release of work status
- Worldwide collaboration among distributed team members
Efficient cloud based engineering

Access to TIA Portal in a local cloud

- Reduced maintenance outlay for software installations
- Changes performed directly on site on the machine, even without programming device
- Secure access to the machines automation components
Test scenario

- Function of single production facilities
- Procedure of the complete machine
- Behavior in case of error
- Performance

- "Commissioning in the office" instead of at customers plant
- Safe testing of control concepts using the model
- Prevention of damage to the real plant
Integrated energy management …
… from planning to plant operation

TIA Portal with Energy Suite

- Intelligent linking of energy and production data
- Automatic generation of energy management program
- Seamless connection to the energy management system
User scenario

- Access of production relevant data from upstream systems (e.g. web shop) direct into the production
- Connection of order data with part lists of the production up to warehouse logistics

- Connection of databases to the controller
- Simple engineering of database access
- Seamless transition to IT communication
User scenario

• Global Access to assets
• Performance monitoring of globally distributed machines
• Data analytics
• Specific planning of services

• Secure data connection between controller and MindSphere – Siemens Cloud for Industry
• Easy configuring of connection
From data ... Secure storage and data transfer  
Data analytics and simulation  
Visualization and recommendations  
MindSphere  
Data collection  
Optimize energy performance  
Enhance industrial cybersecurity  
Maximize process efficiency  
Master asset uptime  
... to value
Usage of existing or easy to collect data

From simply displaying data to specific recommendations

From simple to complex

A single plant or plants worldwide

Available across all industries
The gateway for industrial IoT solutions
Compact platform for the reliable connection of production data to the Cloud

SIMATIC IOT2000

<table>
<thead>
<tr>
<th>Feature / Function</th>
<th>Benefit</th>
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<tbody>
<tr>
<td>• Compact, fanless platform with energy-saving Intel Quark processor and diverse interfaces</td>
<td>• Ideal for the reliable acquisition of production data and the secure transfer to company-server or the connection to the cloud</td>
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<tr>
<td>• Various possibilities to program in high-level languages</td>
<td>• Enables implementing stepwise solutions to gather, analyze and use production data – especially for existing plants</td>
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<td>• SIMATIC quality with high ruggedness and reliability</td>
<td>• Long-lasting industrial quality for the maintenance-free operation in the production environment</td>
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<td>• Easy expansion with Arduino Shields and miniPCIe cards</td>
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The Siemens security concept – “Defense in Depth”

Siemens products and systems offer integrated security

- Know how and copy protection
- Authentication and user management
- Firewall and VPN (Virtual Private Network)
- System “hardening”

Siemens Plant Security Services

Assess → Implement → Manage
Digitalization with TIA Portal enables …

Decrease of:
- Administration
- Complexity
- Energy consumption
- Downtime

Increase of:
- Engineering efficiency
- Data transparency
- Planning security
- Cyber security

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