

MANUFACTURING IN AMERICA 19

SCADA Trends: Storing and Analyzing Data in Your "Private" Cloud FA-3

Presented by Alan Cone

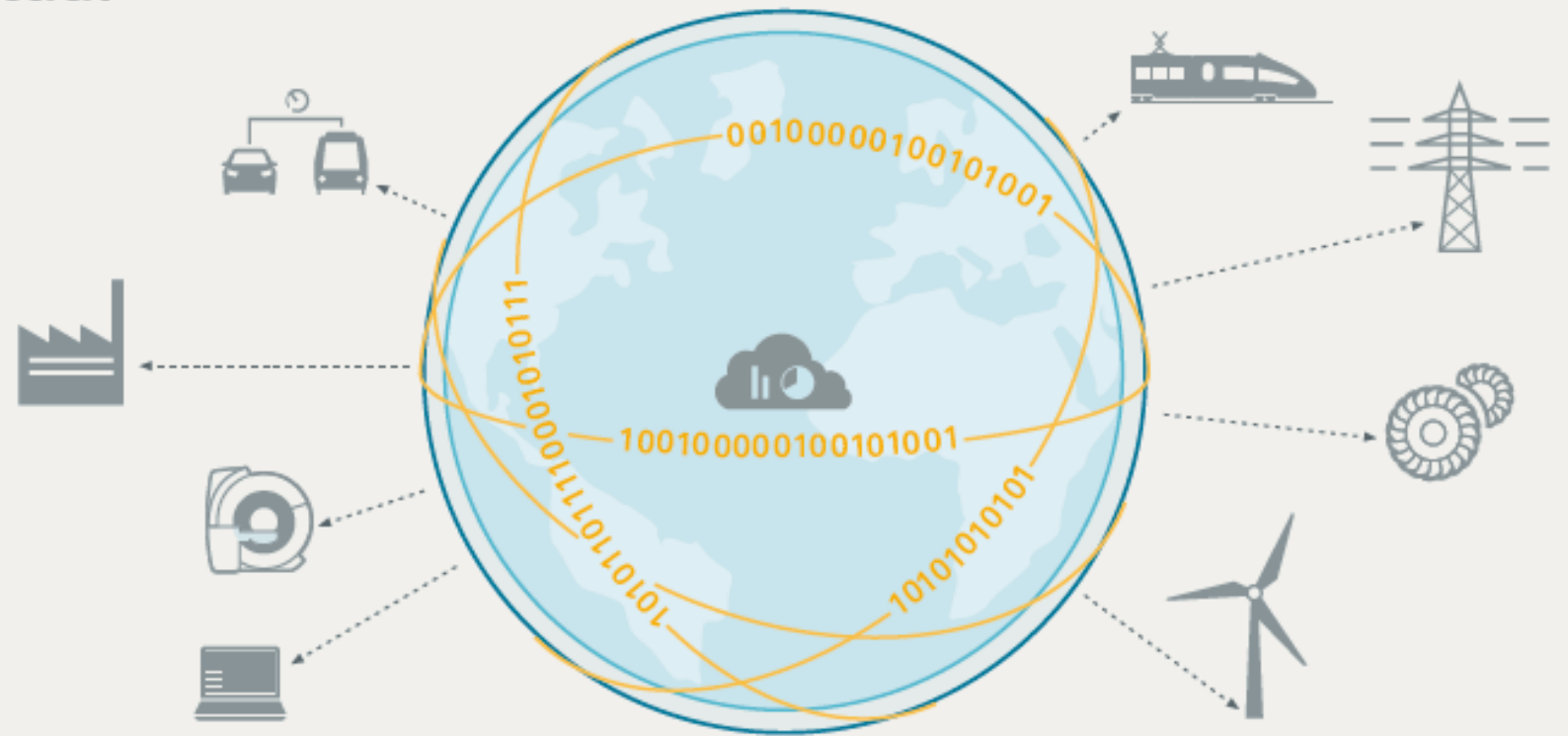
Manufacturing in America | March 20-21, 2019

SCADA Trends: Storing and Analyzing Data in Your "Private" Cloud

The digital leap – greater efficiency by merging the real and virtual worlds.

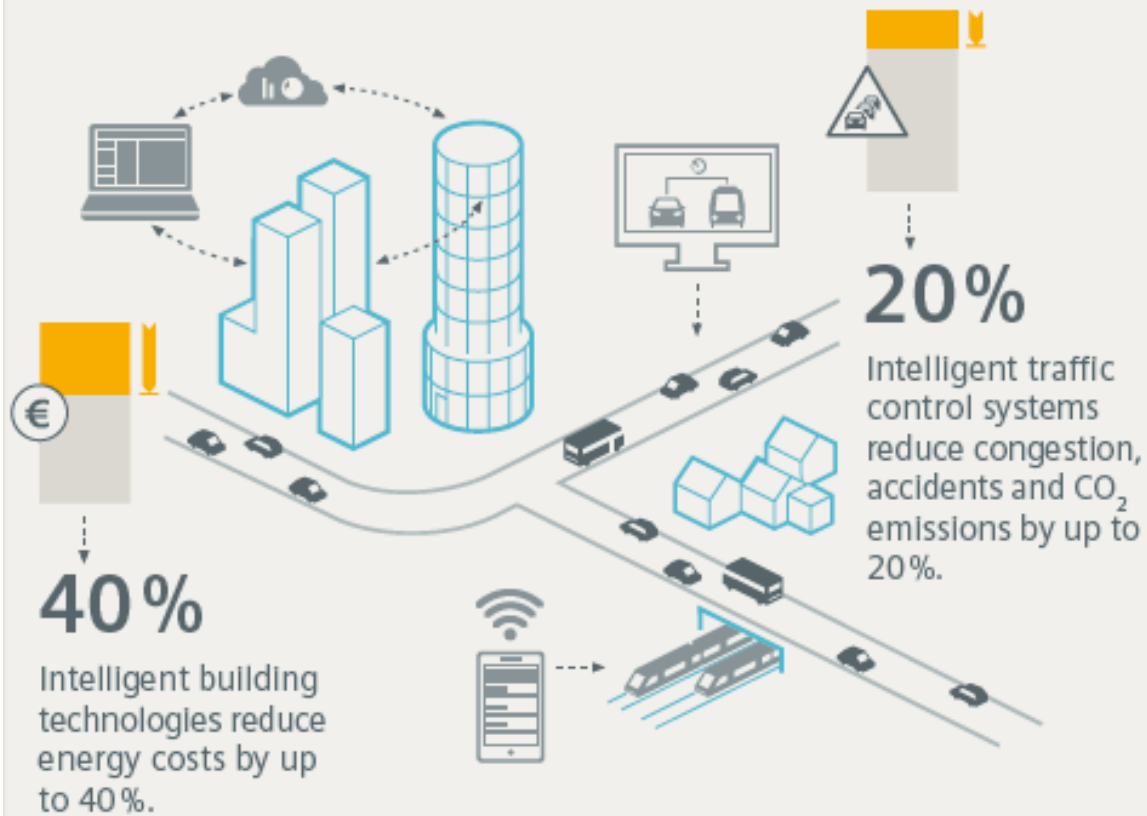
The world has never been as connected. From gas turbines to trains, to manufacturing and medical imaging equipment, our physical world is taking on a digital dimension.

The increasing convergence of the physical and virtual worlds offers boundless opportunities – in almost all areas of society.

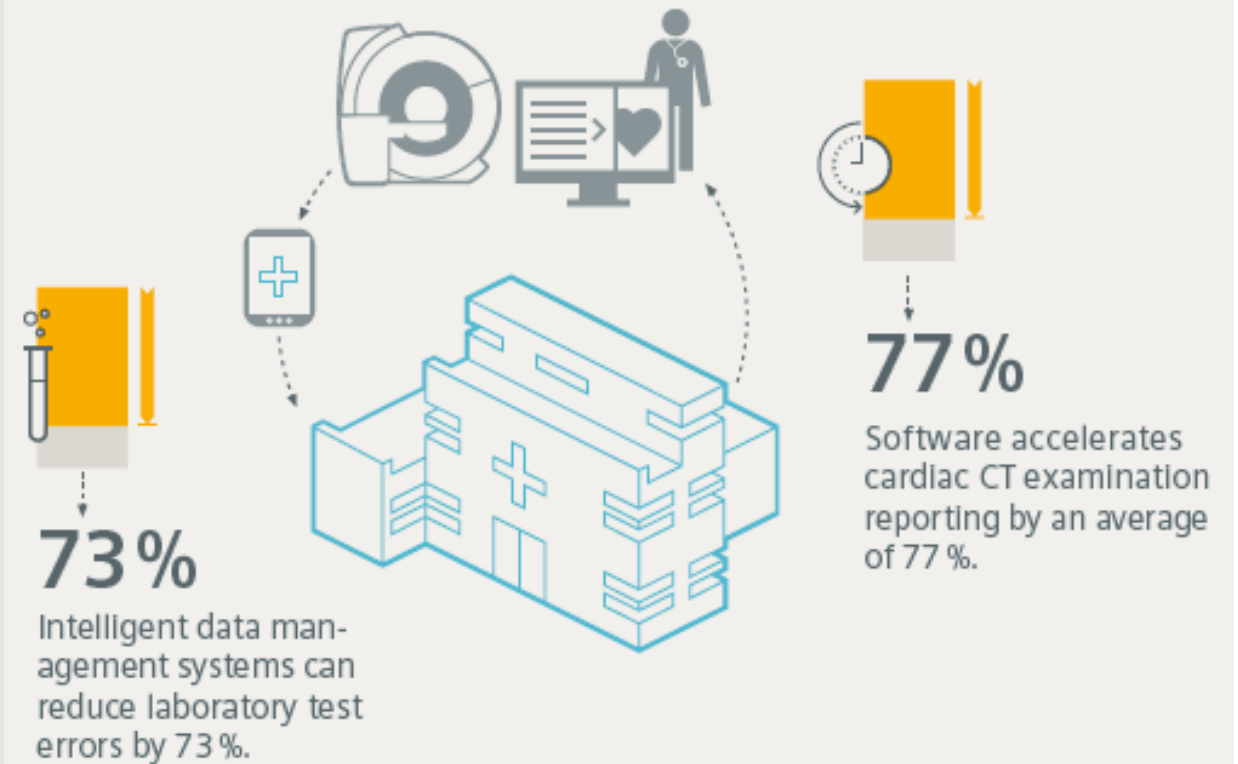


SCADA Trends: Storing and Analyzing Data in Your "Private" Cloud

Intelligent infrastructure



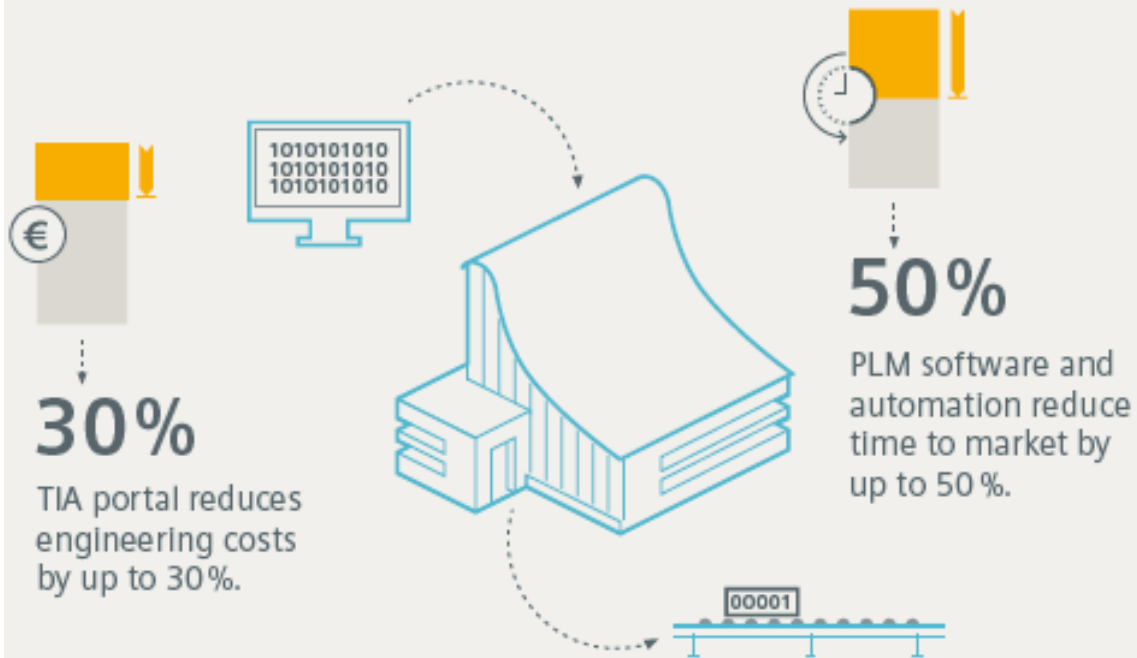
Healthcare IT



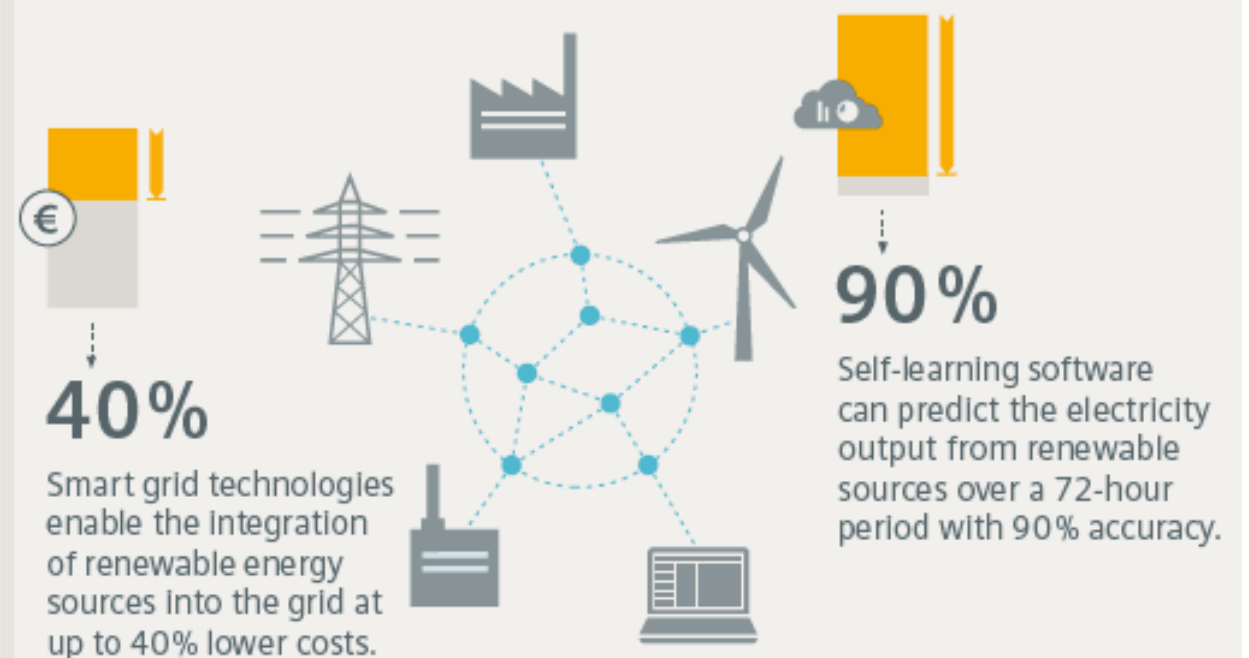
SCADA Trends: Storing and Analyzing Data in Your "Private" Cloud

Digital technologies enable many sectors to improve their performance.

Future of manufacturing



Networked energy



Challenges: Manufacturing is changing faster than ever before



Increasing competitiveness

1 Increase efficiency

- Energy and resource efficiency are decisive competitive factors

2 Shorten time-to-market

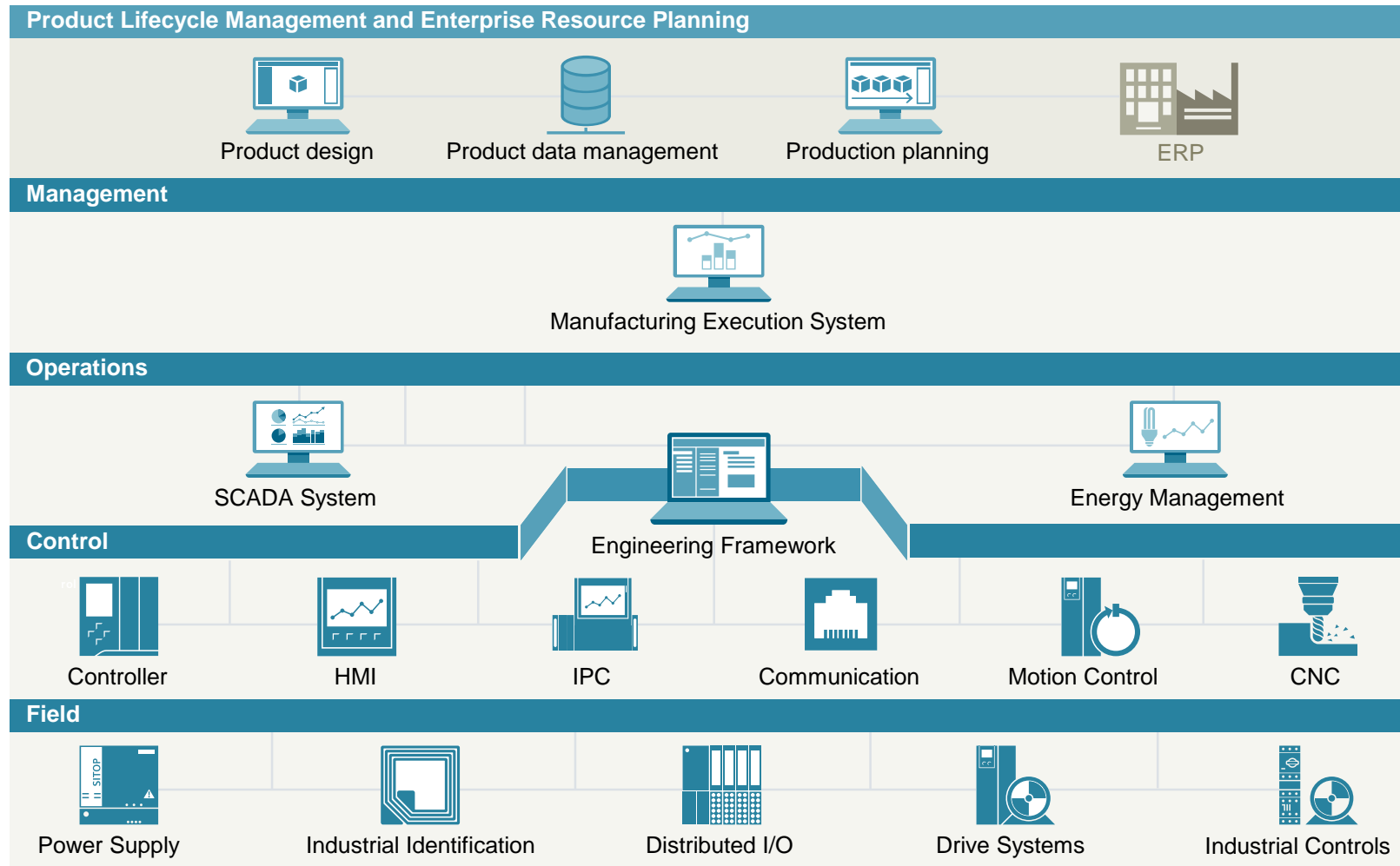
- Shorter innovation cycles
- More complex products
- Larger data volumes

3 Enhance flexibility

- Individualized mass production
- Volatile markets
- High productivity

Industry Software should help to solve manufacturing challenges

The portfolio for the Digital Enterprise with efficient interoperability of all automation components



Added value in all automation tasks



Integrated Engineering



Industrial Data Management



Industrial Communication



Industrial Security



Safety Integrated

all key figures

From field- to management level

**informed
decisions**

**made-to-measure
reporting**

energy transparency

quickly

error localization



Supervisory Control And Data Acquisition (SCADA)



Work open, virtual and connected
Digital workflow with Teamcenter/NX



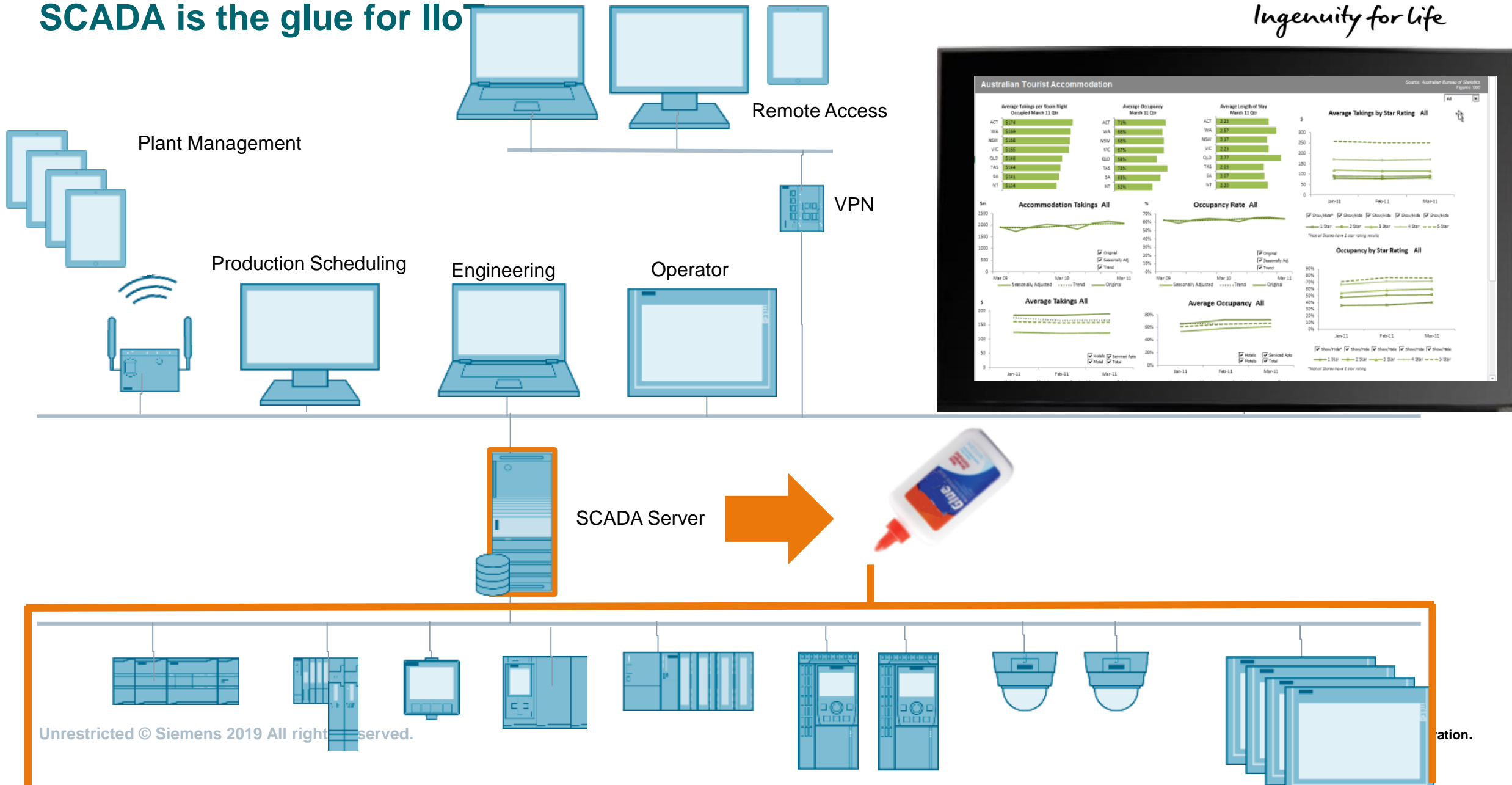
Reduce your time-to-market
Integrated engineering with TIA Portal



Increase your productivity!
Achieve Digitalization with SCADA

Your gateway to automation in the Digital Enterprise

SCADA is the glue for Ilo



Achieve Digitalization with SCADA through these five areas



**Increase your productivity!
Achieve Digitalization with SCADA**



Data management
Consistent data throughout the entire production



Information management
Transparent production for optimized processes



Diagnostics management
Increased availability of machines and production plants

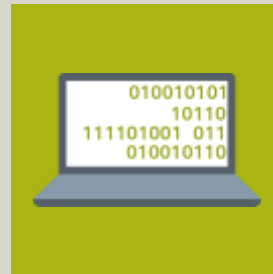


Open Communication
Merging of automation and the IT world

Achieve Digitalization with SCADA – first area of concentration



**Increase your productivity!
Achieve Digitalization with SCADA**



Information management
Transparent production for optimized processes

Diagnostics management
Increased availability of machines and production plants

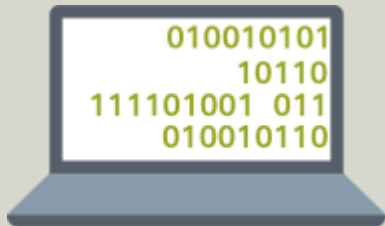
Open Communication
Merging of automation and the IT world

Data management
Consistent data throughout the entire production

Achieve Digitalization with SCADA through: Data management

Data management

Consistent data
throughout the
entire production

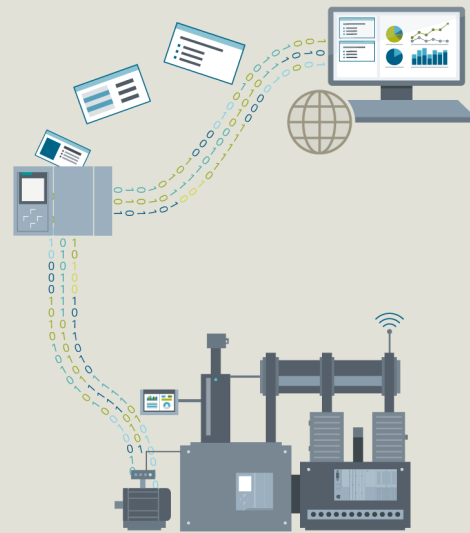


- + High-performance and reliable archiving**
... of production data and recipes directly on the controller or via Logging and Recipes in databases
- + Comprehensive archiving as interface to the IT-MES/ERP world**
... centrally accessible with a Process Historian

...is the basis for
a transparent
operation of a
plant and the
achievement of
Digitalization of
the Enterprise

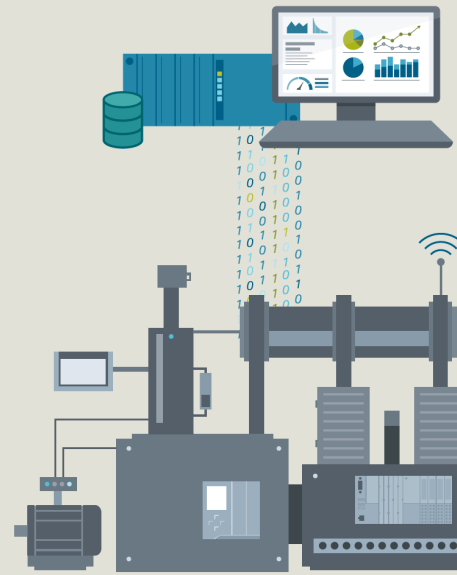
Data management Logging

PLC Logging



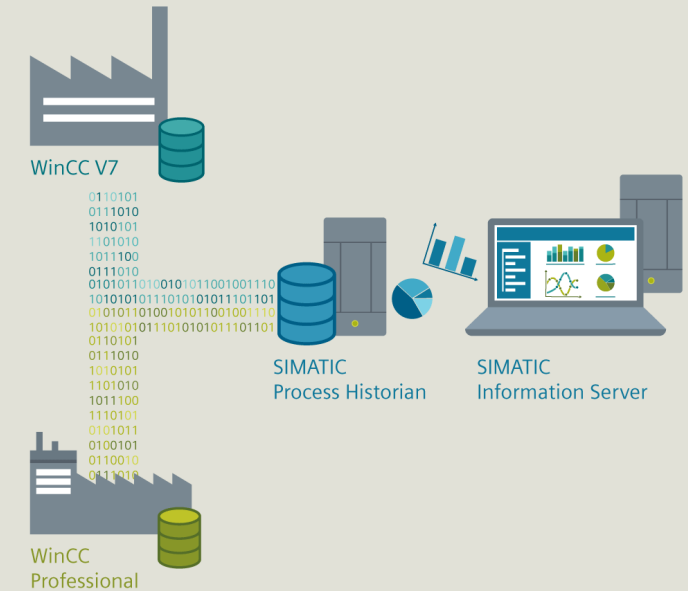
- Performant archiving
- Remote access
- Efficient administration

SCADA Logging



- Performant archiving
- Complete transparency
- Recognizing trends early

Process Historian



- Unlimited amount of data
- Efficient archiving
- Connection of external systems

PLC Logging

... data archiving directly onto the controller



Performant archiving

...cyclical & event-driven recording of operating data and notifications



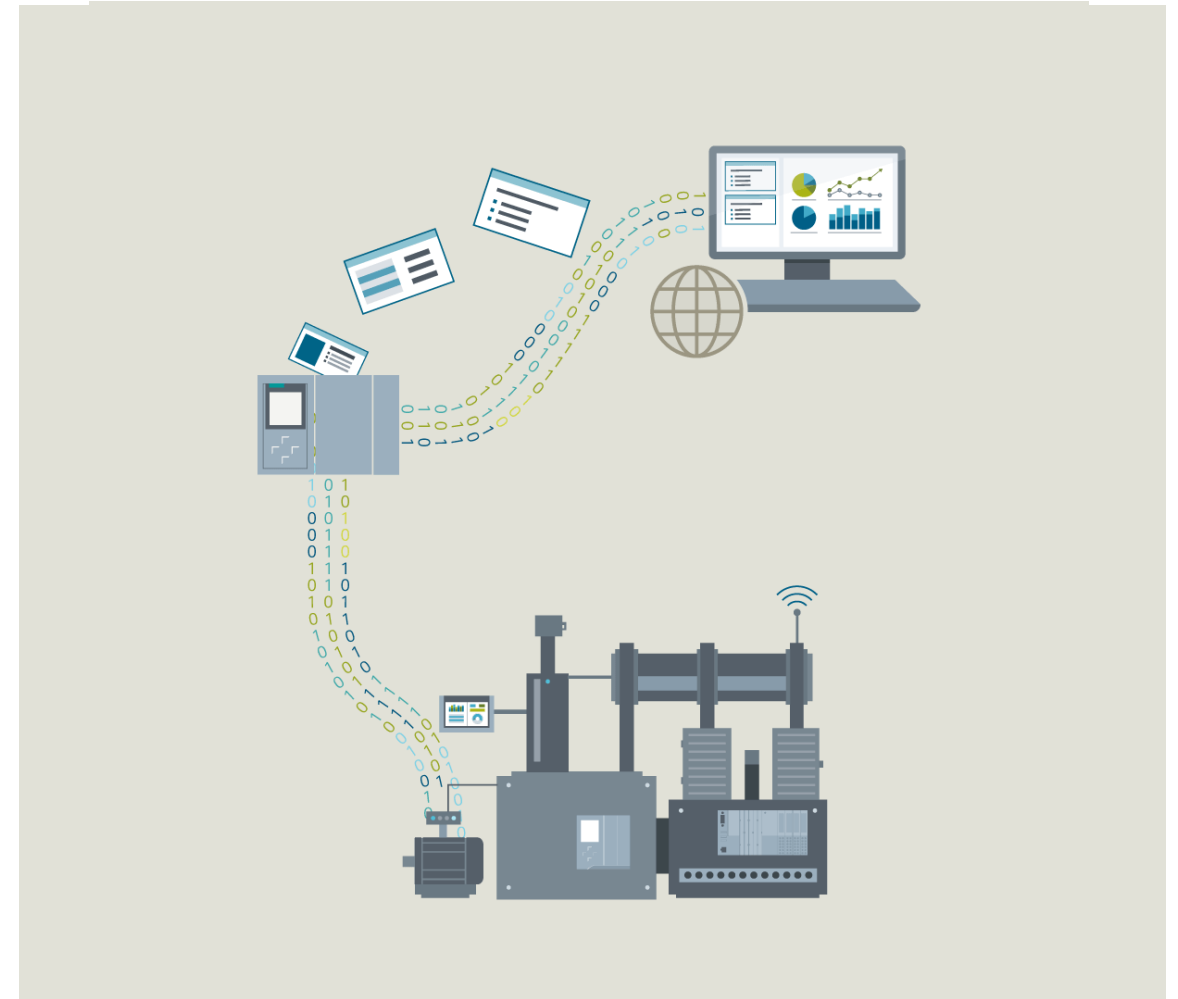
Remote access

...into archived data via the web server



Efficient data administration

...by storing data on the memory card of the CPU (CSV-format)



SCADA Logging

... local archiving of production data



Performant archiving

... of the entire process information within the integrated SQL (relational) database



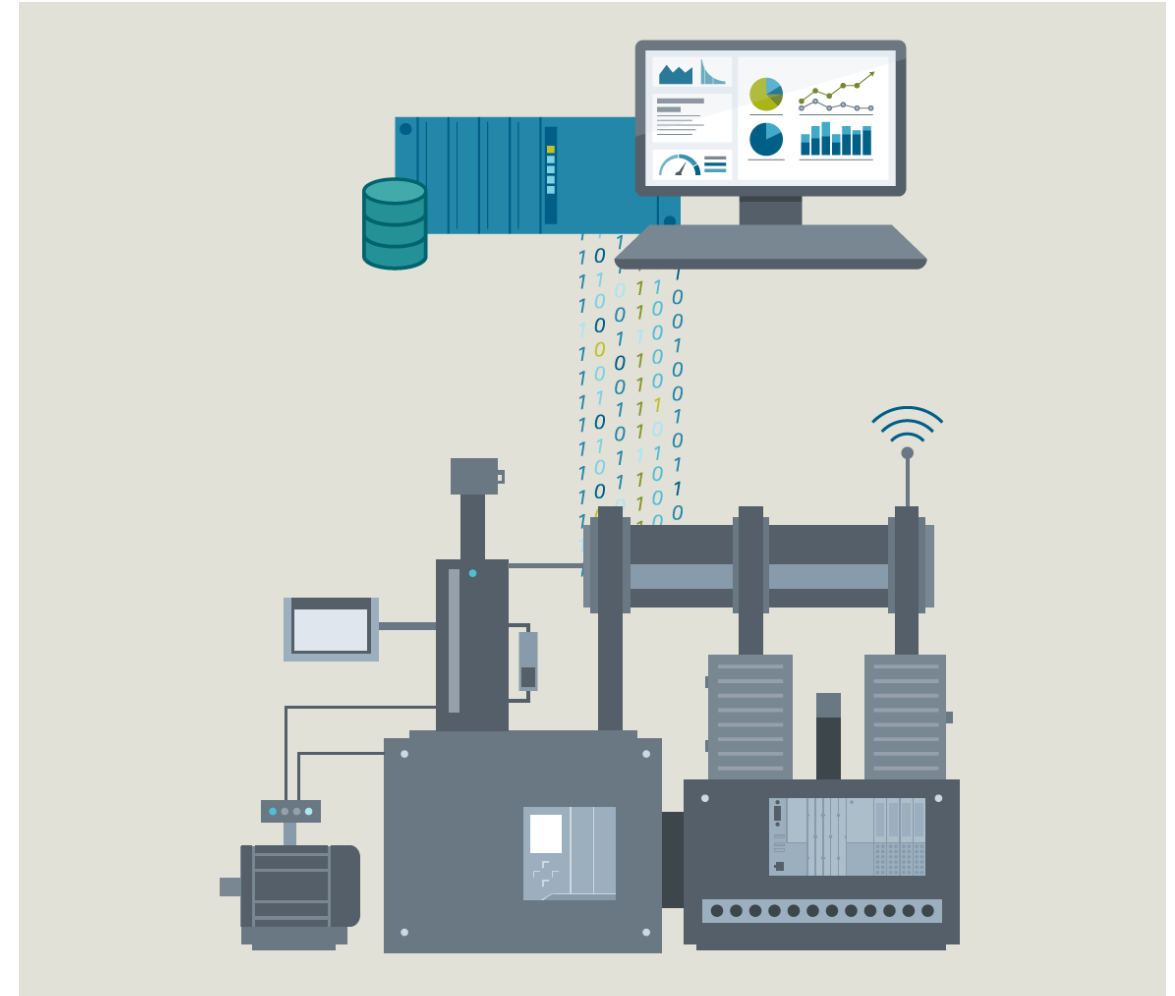
Complete transparency

... trend indicator and notification – anytime, anyplace, practically anywhere



Recognizing trends early

... thanks to integrated statistical analyses



Process Historian

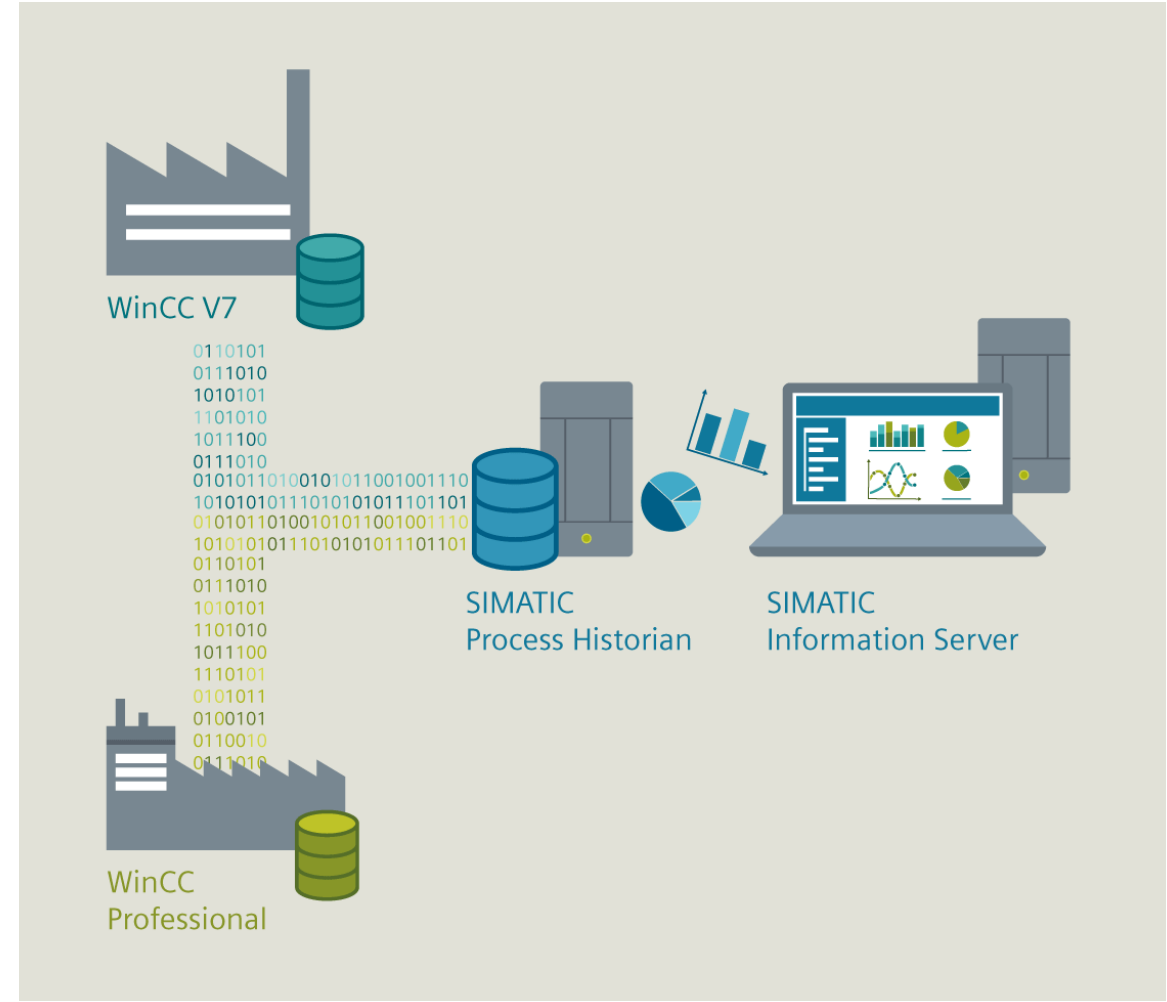
... comprehensive archiving as interface to the IT- and MES/ERP world



+ **Unlimited amount of data**
... archiving from various sources regardless of the version in use

+ **Efficient archiving**
... long-term and real time with minimal memory requirement

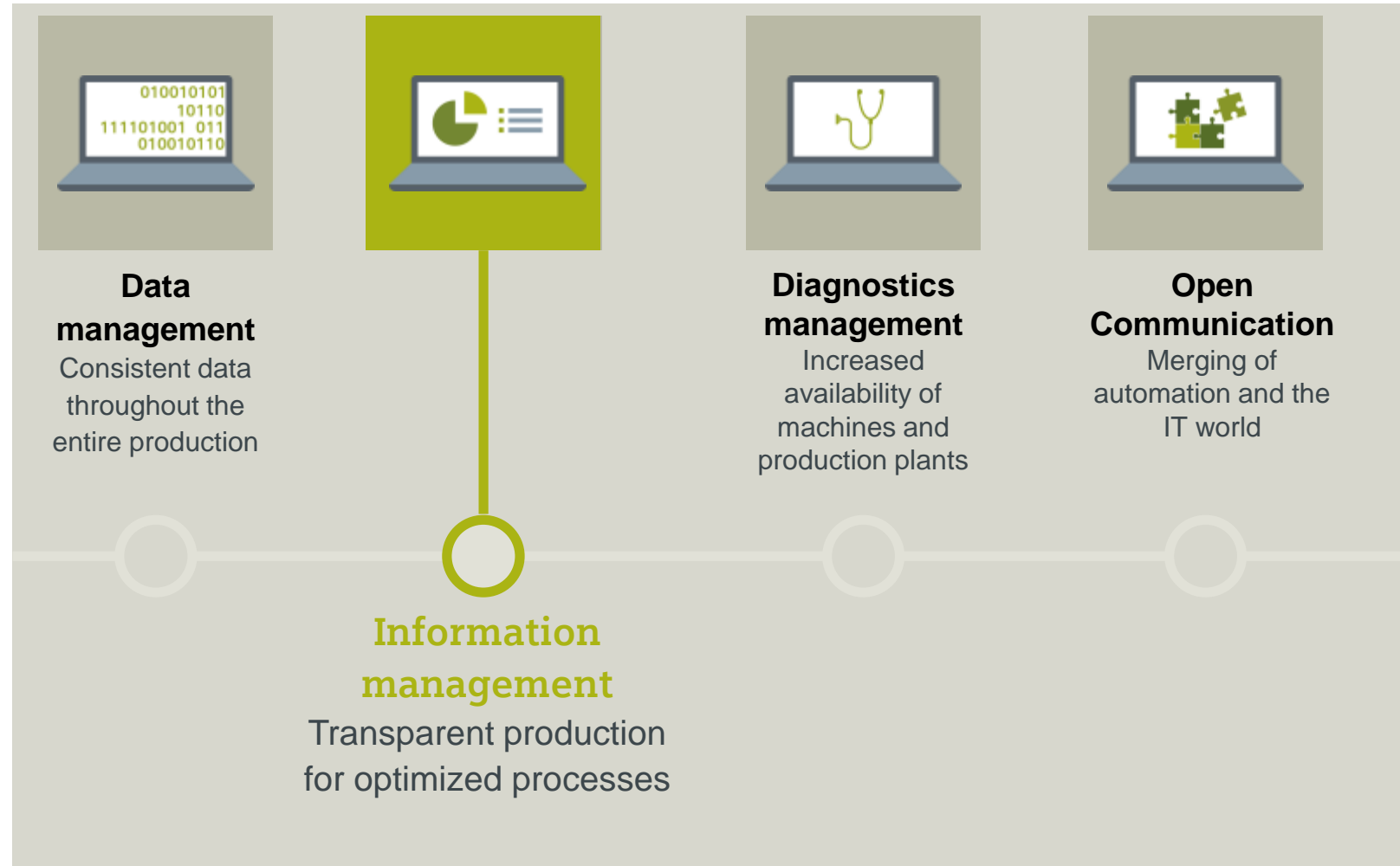
+ **Connection of external systems**
... secure and reliable via standardized (aka: open) interfaces



Achieve Digitalization with SCADA – second area of concentration



**Increase your productivity!
Achieve Digitalization with SCADA**



Achieve Digitalization with SCADA through: Information management

Information management

Transparent production for optimized processes



Web-based reporting

... target group-specific analysis of production data with an Information Server



Web-based operator control and monitoring

...flexible on diverse devices/browsers with HTML V5 or comprehensive remote access with modern web browsers

...making the right decisions instantly

Information Server

... target-group-specific analysis of production data



Complete transparency

... thanks to consistent analysis of data from various sources



Efficient web-based analysis

... thanks to structured, electronic dashboards and automated reports



Easy analysis with MS Office

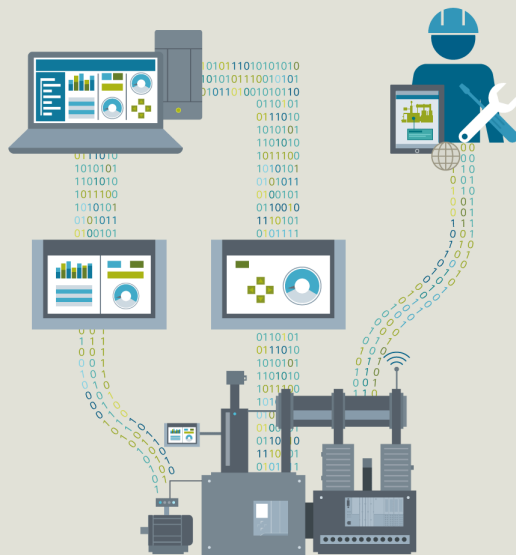
... thanks to integration in Microsoft Excel, Word and Powerpoint



Information management

Web-based operator control and monitoring

Std. Web Browser



- Remote control
- Coordinated operation of operating stations

Std. Web Browser



- Comprehensive and secure remote access
- Efficient remote maintenance

Std. Web Browser



- Optimally informed
- Secure information
- „Ready to use“

Standard, modern web browser

... for remote access to machinery



Remote control of operating station

... for maintenance and service via the internet / intranet



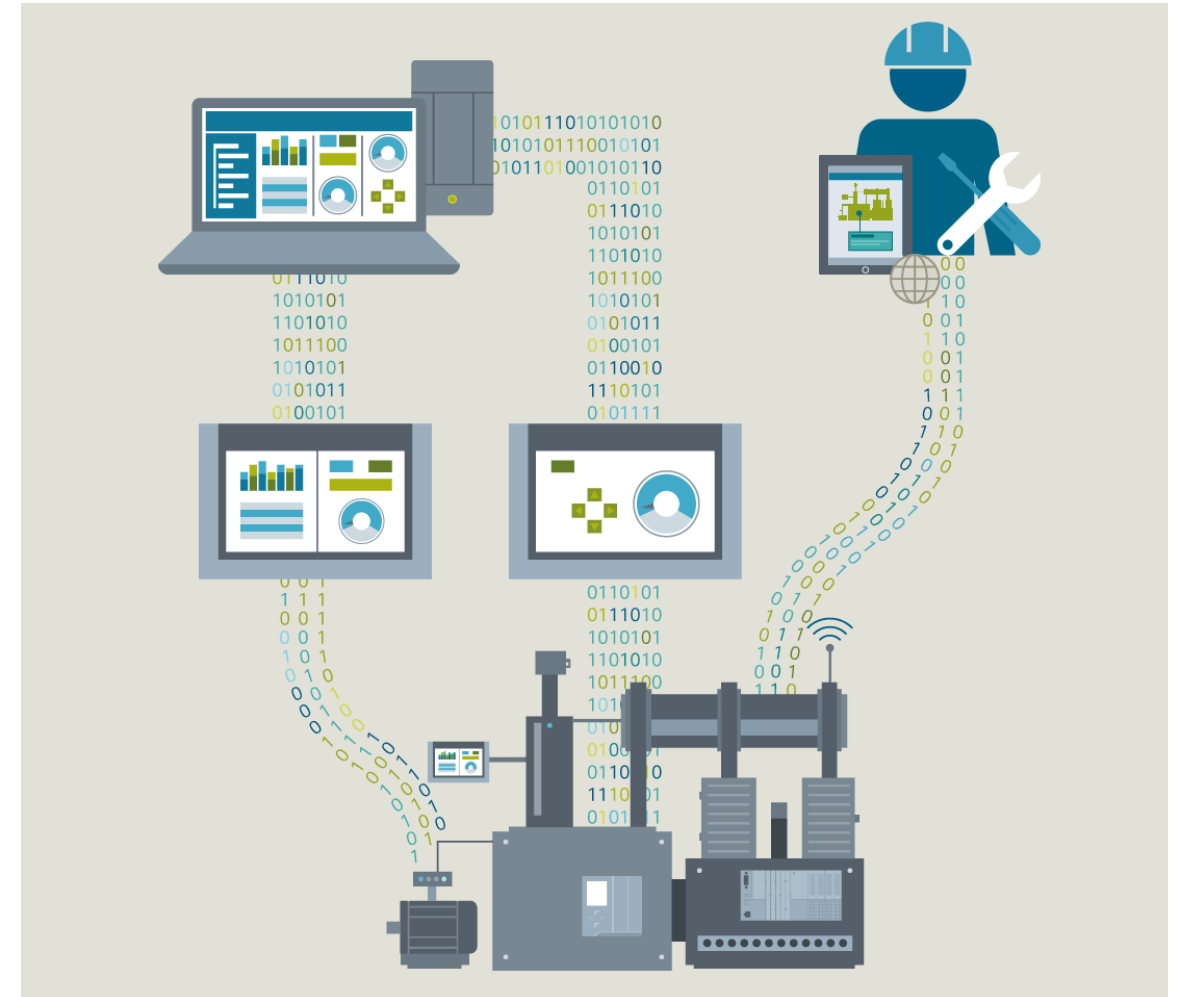
Coordinated operation / several operating stations

... for extended machinery



Client-/Server-Configuration

... for solutions including head-end station or control room



Standard, modern web browser

... comprehensive web-based operation and monitoring



Comprehensive remote access

... for easy operation and monitoring of plants



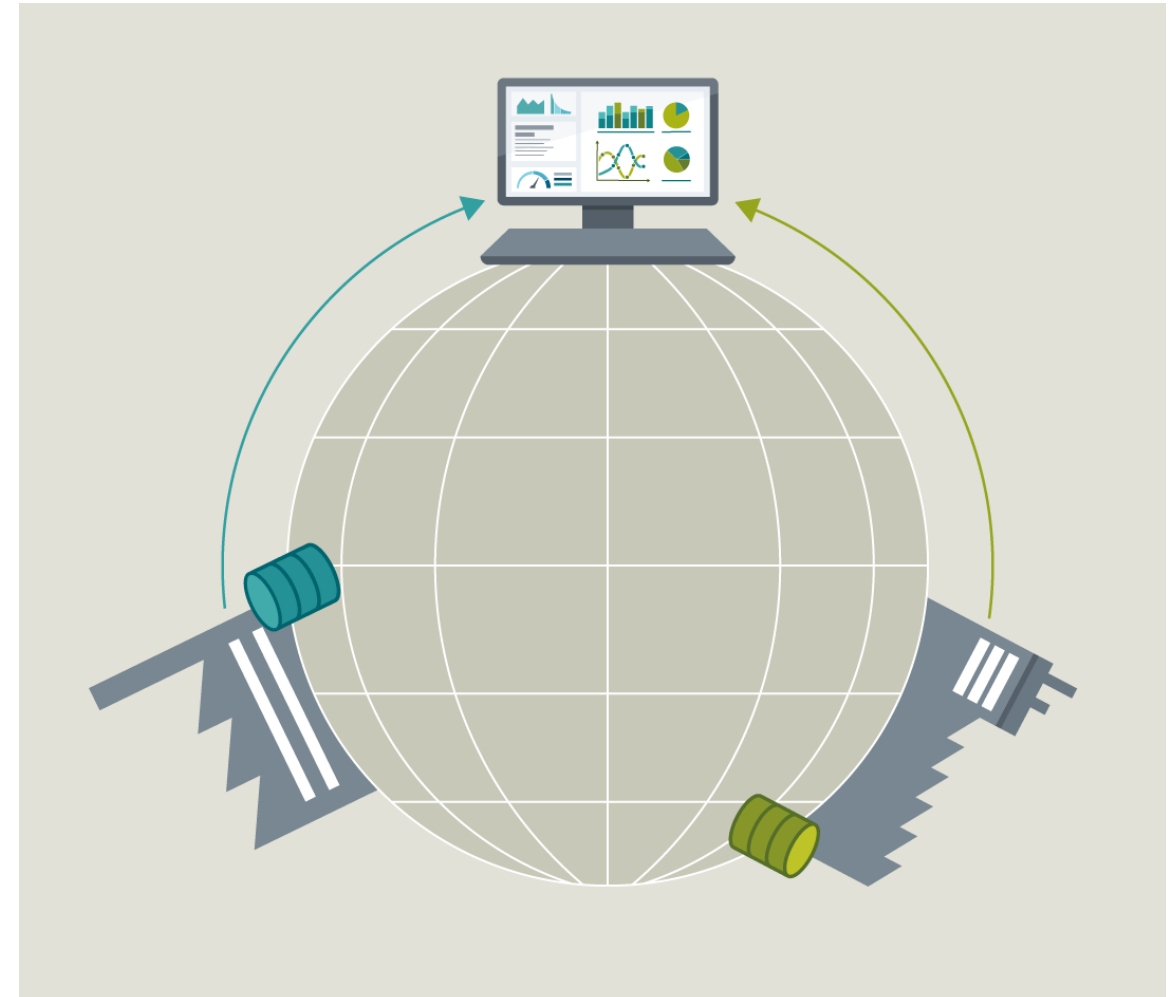
Secure remote access

... with consistent rights in accordance with IT Safety-standards



Efficient remote maintenance

... with consistent diagnosis even of physically separate plants



Standard, modern web browser

... flexible operation and monitoring – anytime, anyplace



Optimally informed

... plant information available anytime thanks to remote access



Secure information

... thanks to Web-Standards (SSL, HTML5) and consistent user administration



„Ready to use“

... thanks to various maintenance free Clients even on mobile devices



Achieve Digitalization with SCADA – fourth area of concentration



**Increase your productivity!
Achieve Digitalization with SCADA**



Data management
Consistent data throughout the entire production



Information management
Transparent production for optimized processes



Diagnostics management
Increased availability of machines and production plants



Open Communication
Merging of automation and the IT world

Achieve Digitalization with SCADA through: Diagnostics management

Diagnostics management

Increased availability of machines and production plants



Detecting errors in the automation system immediately
... through integrated system diagnostics across all system components



Efficient diagnostics of process faults
... through an integrated trace or standardized machine and plant diagnostics

...reduction of production downtimes

Integrated system diagnosis

... Analysis of system errors within the automation system



Simple review of system information

... thanks to fast access to the diagnostic status of all devices



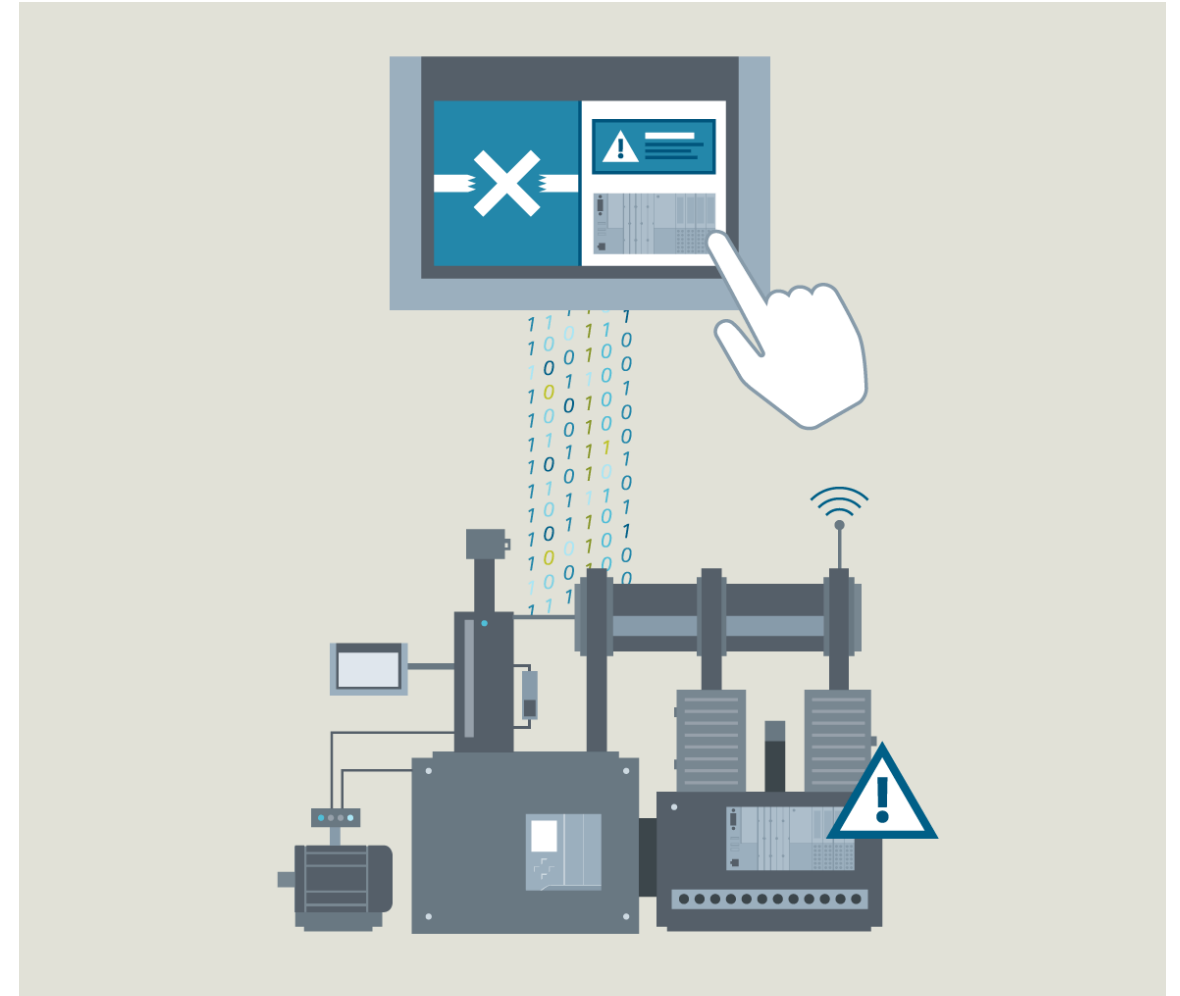
Diagnostic alarm for...

... Short circuit, wire breakage, missing voltage load, limit violation



Consistent display concept

... showing consistent clear text information on all devices (e.g. on PLC, on local HMI, SCADA and Webserver)



Machine and plant diagnostics

... analysis of errors within the production process

Fast identification of errors

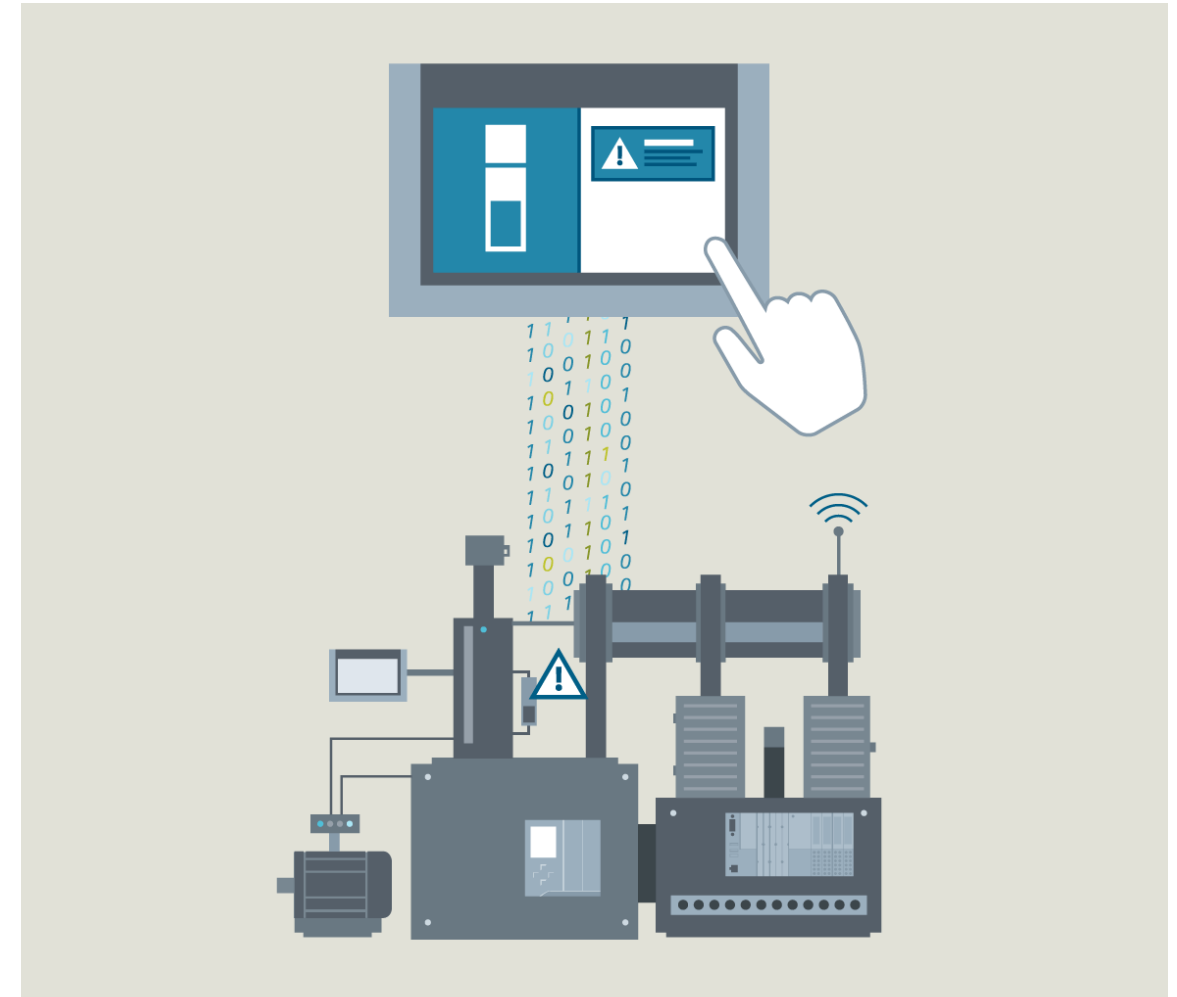
- + ... displaying the **defective operand** directly in the notification including symbols and comments

Fixing errors quickly

- + ... thanks to **clear information** about location and cause of error, and troubleshooting

„Service without PG“

- + ... overview and detailed diagnostics **directly on the operating panel**



Machine and plant diagnosis

... fast and easily realized



„Integrated“

... **automated generation of PLC code** and visualization of the current status



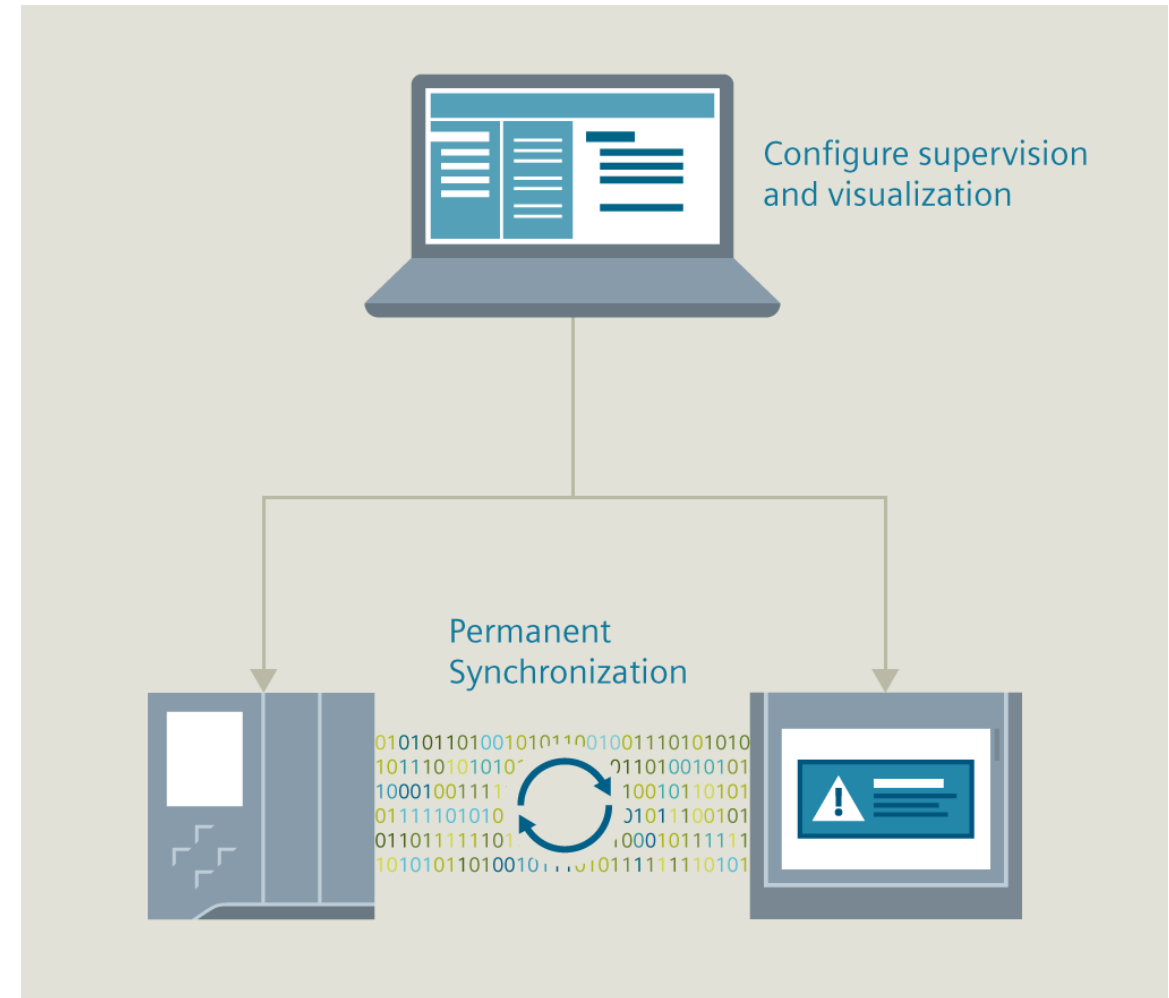
„No backlash“

... defining the supervisions **independently from the user program**



Always „up-to-date“

... **permanent synchronization** of the operating devices – even after changing the user program



Achieve Digitalization with SCADA – fifth area of concentration



**Increase your productivity!
Achieve Digitalization with SCADA**



Data management
Consistent data throughout the entire production



Information management
Transparent production for optimized processes



Diagnostics management
Increased availability of machines and production plants

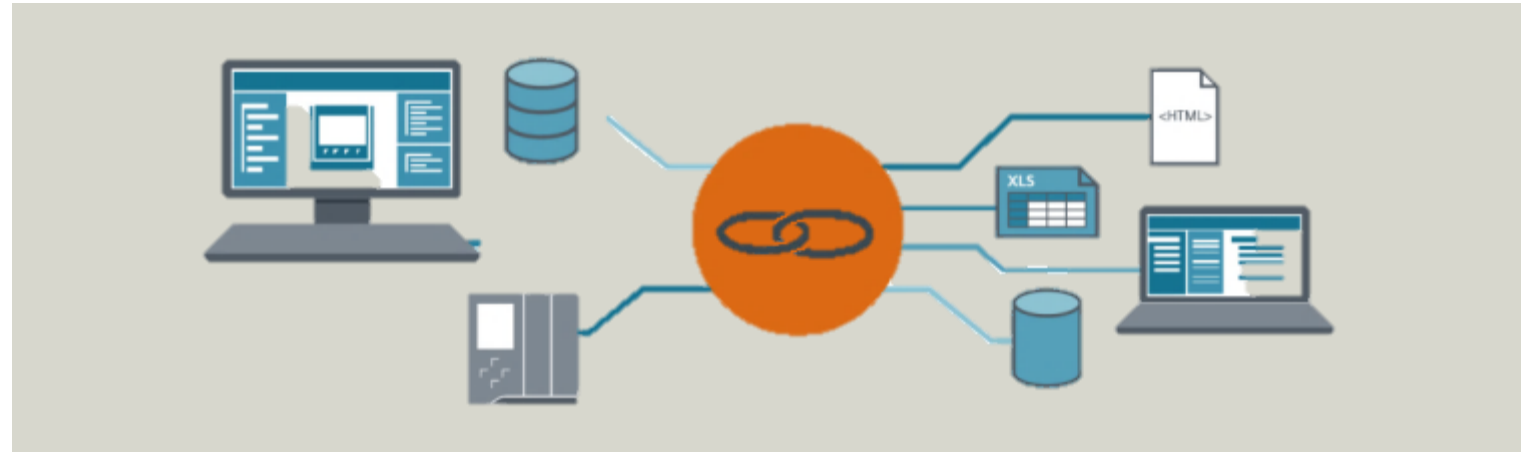


Open Communication
Merging of automation and IT world

Achieve Digitalization with SCADA through: Open Communication

Open Communication

Merging of
automation
and IT world



+ **Connection of cross-vendor systems**
...by supporting the standardized communication protocol OPC UA

+ **Cross-system data communication**
...via standard interfaces with an Industrial Data Bridge (IDB)

...easy integration
of higher-level
systems
(MES/ERP
systems)

OPC Unified Architecture (UA)

... further use of all relevant production data



Easy integration and expansion

... with OPC UA with the PROFINET-Local Area Network (LAN)



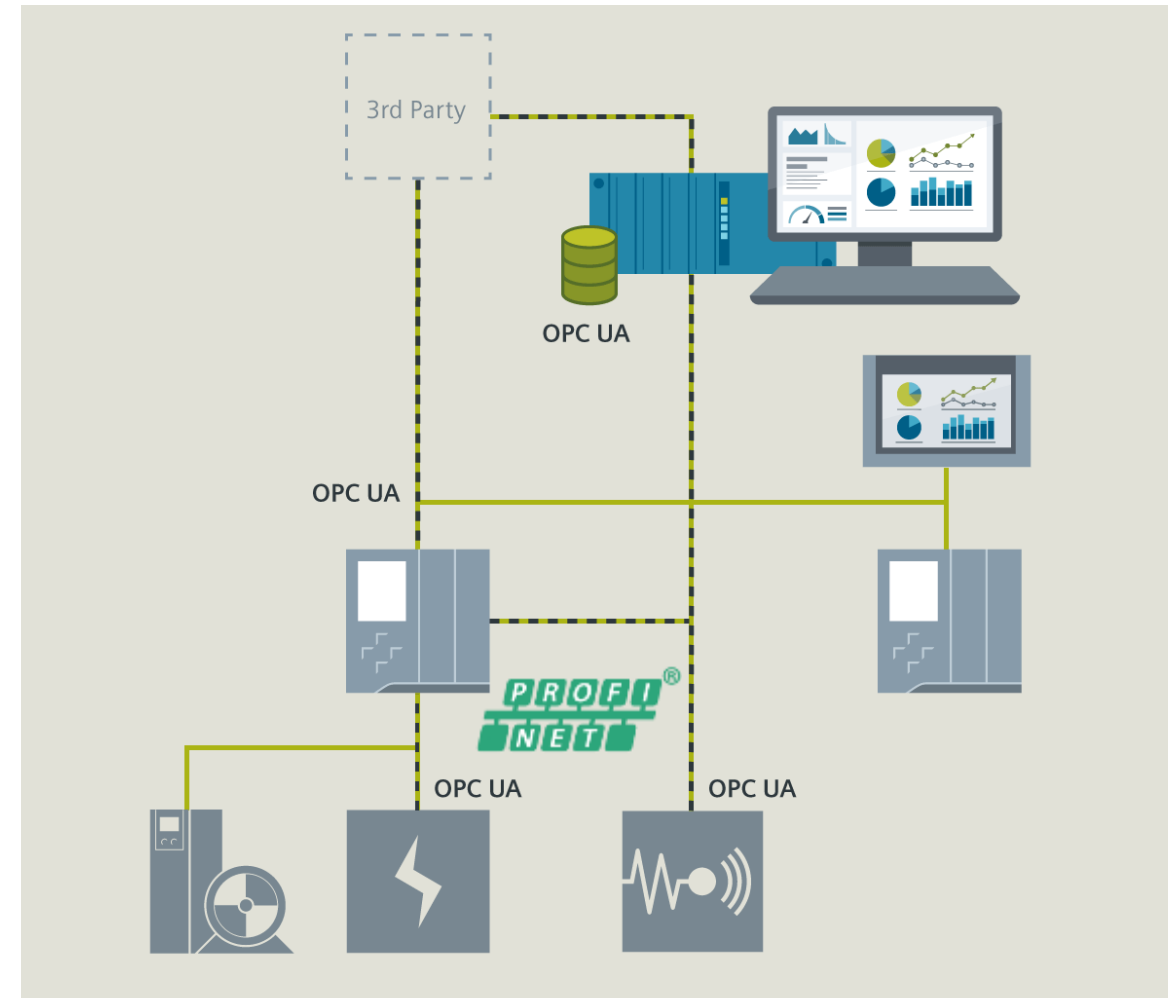
Comprehensive communication

... thanks to OPC UA in modern PLCs and in modern SCADA system software



Consistent and secure

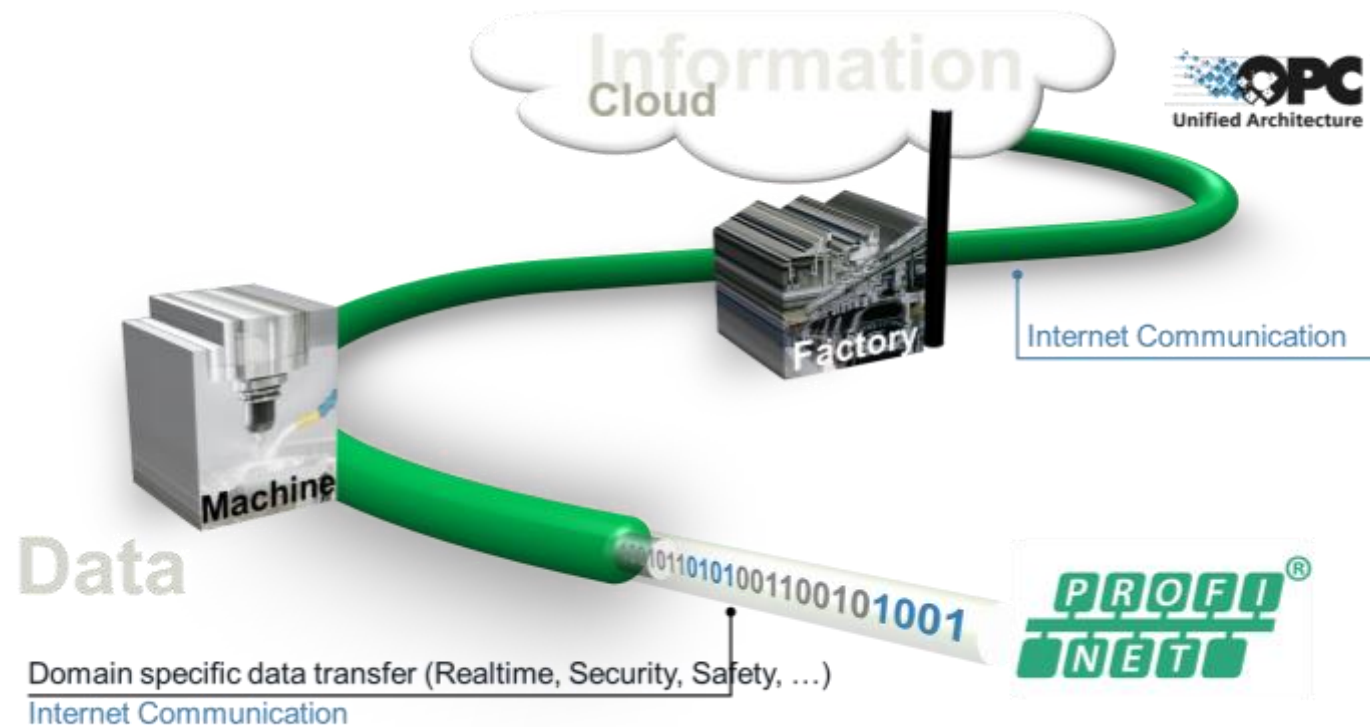
... thanks to authentication and encryption



Transparent Operation OPC UA

OPC UA & PROFI NET

Generating the maximum value through the combination



... perfect supplement to one another. Offering investor protection and future reliability for our customers

Merging automation and IT-World

Industrial Data Bridge

... comprehensive data communication via standardized interfaces



Bidirectional data transfer

... between systems via various standardized interfaces



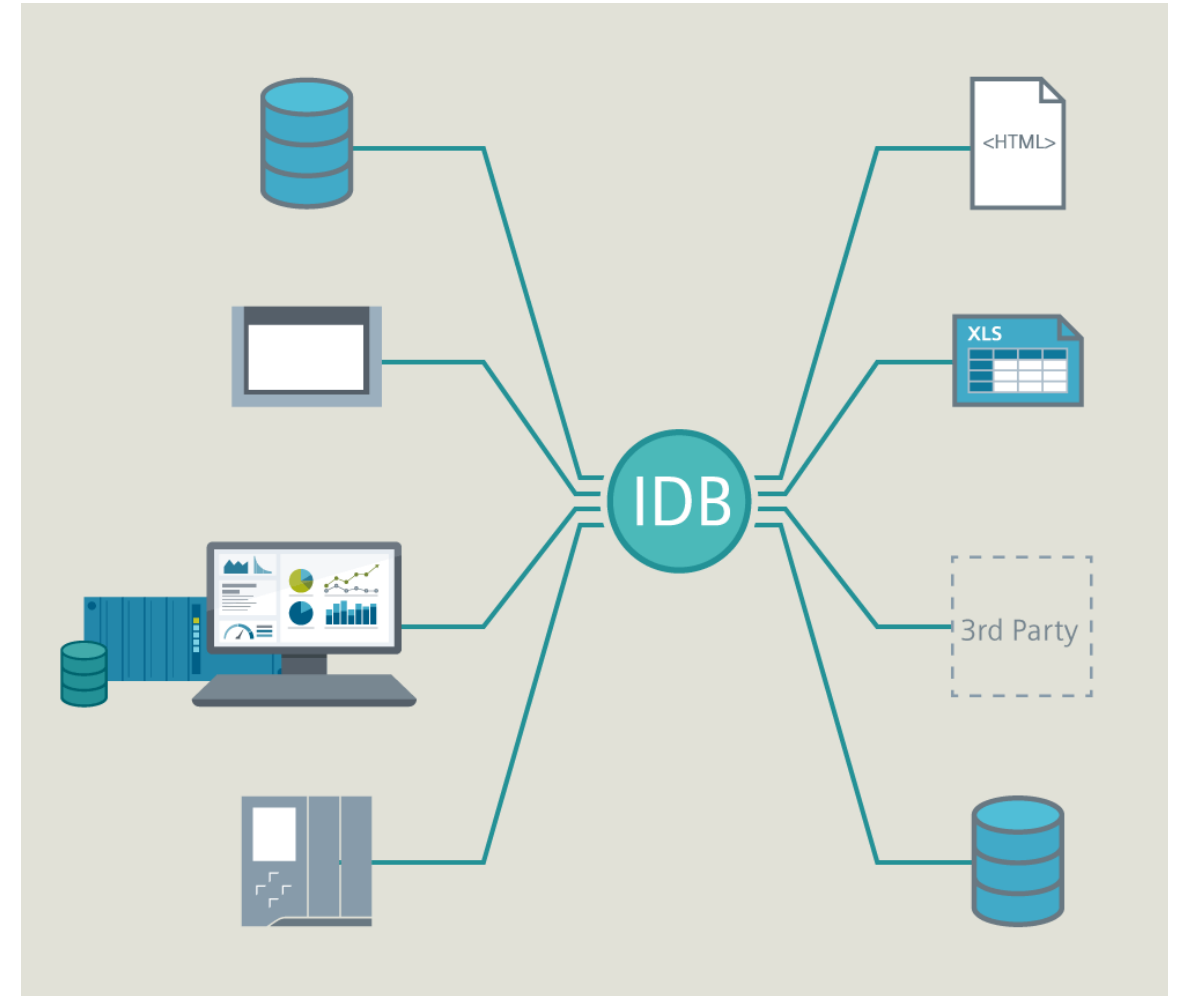
Reliable, performant and secure

... thanks to parameterizing instead of programming



Universally applicable

... as system service or as an integrated SCADA system option



SCADA Trends: Storing and Analyzing Data in Your "Private" Cloud **SIEMENS**

Ingenuity for life

Customer requirement

1

Easy integration, e.g. of higher-level MES/ERP systems

2

Making the right decisions - quickly, anytime, anywhere

3

Energy-efficient production in compliance with legal stipulations

4

Reduction of production downtimes



SCADA benefits - highlights

Open Communication

Merging of automation and IT world

Information management

Transparent production for optimized processes

Energy transparency

Transparency for energy savings according to ISO 50001

Diagnostics management

Increased availability of machines and production plants



Questions?

SIEMENS
Ingenuity for life

COMMUNITY.
COLLABORATION.
INNOVATION.

MANUFACTURING
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