Information Flow in the Digital Factory
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
Only a holistic automation approach including the whole value add chain will yield sustainable competitiveness.
The way to increase productivity – continuously optimize and extend the production

Customer requirements

- Consistent data management
- Global standards
- Uniform interfaces for hardware and software
The scalable and open SCADA system for maximum plant transparency and productivity

- SIMATIC WinCC V7.3
- Efficient operation and analysis
- Up-to-date using innovative solutions
- Openness for individual solutions
- WinCC SCADA Strategy
Efficient operation and analysis
Market requirements

From „BIG Data“ to „Smart Data“ using „Smart Reports“
→ continuous growth of data volume requires improved reporting capabilities
→ reliable (long-term) archiving is required for traceability
→ growing demand for information

Exponentially developing new technologies
→ Functionality from consumer market is increasing influence in industries
  (Multi touch-Gestures, Tablets and Smart Phones)

Globalization & Mobility
→ Being informed at any time – at any place using mobile devices
SCADA System SIMATIC WinCC
A standard, that fits …

Scalability
Grows EASILY with the requirements

Efficiency
from engineering to operation

Openness
as a basis for individual solutions

Partner & Support
worldwide support and partners certified according to highest quality standards

An eye on everything
Everything using innovative technologies

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2014-08-12
AC1

Is this correct? Everything twice?

Cone, Alan, 3/18/2016
SCADA System SIMATIC WinCC V7.3
... with efficient tools ...scalable as required... ...

Efficient tools for engineering, diagnosis, production analysis

- Integrated, powerful database
- Short Time-to-Market due to efficient engineering
- Reduced downtime due to integrated diagnostic functionality
- Localization of weak points by flexible production analysis
- Energy data management to increase energy efficiency

... higher productivity and less production costs

Extension/ Modernization of plants made easy

- From single user system to plant-wide multi user solutions
- High availability due to redundancy concepts
- Central plant information (Long-term archive, analysis & reporting)
- Extensions for industry-specific requirements
- Compliant to IT security requirements

... easily scalable to meet your requirements
SCADA System SIMATIC WinCC V7.3
... plus innovative solutions... and openness for special requests!

Required information is available at any time

- Essential information for users – fast, flexible and secure
- Secure remote monitoring and operation of production plants
- Web-based plant reports – also via email
- Using modern multi-touch gestures in industrial environment

... reach your goal safely using innovative solutions

Realizing customized SCADA extensions on your own

- Scripting languages: VBA, VBS, ANSI C, C API with „OpenDeveloperKit“
- Cross-vendor communication (OPC, OPC UA, ODBC)
- Native driver for SIMATIC and various third-party controllers
- Connectivity to IT / database systems

... possible due to open interfaces and international standards
SCADA System SIMATIC WinCC V7.3
… with partners for complex projects… and never left alone!

Worldwide active in all industries

- Audited and certified partners support you around the world when realizing complex SCADA projects
- Combine product-Know-How with the needs of the industries and regional standards
- Convince through references

… realize your individual SCADA solution!

Service & Support – at anytime from everywhere

- reachable by phone round the clock
- Extensive online service including technical documents, application examples, FAQs, forum, …
- Also available as an app for mobile devices

we provide service for our customers at anytime!
SIMATIC Process Historian
Added value for WinCC SCADA solutions

**Efficient long-term archiving**
- Real-time archiving of process data and messages
- Central archive for company-wide applications
- Transparency in production as a basis for more productivity along with the best possible quality

**Scalable**
- Adaption of the database to a growing data volume
- Simple integration of additional data sources
- Maximum of security using a RAID system, redundancy, Store&Forward and disaster recovery

**Openness**
- Access to archived data with the OPC UA Server
## SIMATIC Process Historian 2014
### The central long-term archive

<table>
<thead>
<tr>
<th>Customer Needs and Wants</th>
<th>WinCC Answers</th>
</tr>
</thead>
<tbody>
<tr>
<td>- Ability to collect and store all the data and messages from field devices and interface into corporate managements level</td>
<td>• Multiple data sources – ONE long-term archive: WinCC (starting WinCC 7.0.3), WinCC/PerformanceMonitor PCS7 (ab V8.0), SIMATIC BATCH</td>
</tr>
<tr>
<td>- Integrated, scalable solution that will grow as their plant needs grow</td>
<td>• Integrated into WinCC and high performance of the archiving - in real-time</td>
</tr>
<tr>
<td>- Ability to bring existing data into the system</td>
<td>• Support of migration tools: - WinCC/Storage plus and CAS storage plus - WinCC segments</td>
</tr>
<tr>
<td>• Transparent access to all archive data.</td>
<td>• Web-based reports and analyses in combination with the SIMATIC Information Server (Add-In for MS Excel, Word and PowerPoint) • WinCC (Web-) clients • Web-based reports and analyses also on mobile devices</td>
</tr>
<tr>
<td>• Data Security</td>
<td>• Support of: backup mechanisms, RAID systems, disaster recovery, Store&amp;Forward</td>
</tr>
</tbody>
</table>
The SIMATIC Process Historian as central long-term archive of the entire plant. Archive tags are licensed on the WinCC server.
# The portfolio for the Digital Enterprise with efficient interoperability of all automation components

## The Integrated Portfolio of Siemens for the Digital Enterprise

### 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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2014-08-12
The way to increase productivity – continuously optimize and extend the production

Customer requirements

- Consistent data management
- Global standards
- Uniform interfaces for hardware and software
Increasing need of contemporary, web based reports for the quality insurance of production processes

*Higher productivity and maintaining of the quality standards are becoming more and more essential*

The increasing demands to analyze processes using the Internet or the Intranet allow a more flexible way of manufacturing control.

The worldwide evaluation of equipment data meets the challenge of the increasing globalization. Globally active companies wish to monitor the production in real-time from anywhere in the world. If there are significant problems in individual location they want to be informed in real-time.

A web based reporting system with dashboard functionality and automated, event driven e-mail distribution helps to control production plants even more perfect by doing this

*fast  efficient  and  goal-oriented*
SIMATIC Information Server 2014
Transparency from the production process up to the management level

- **Scalable**
  continuously for more plants (WinCC/PCS 7) and any number of users

- **Efficient and easily applicable**
  per ready-made report templates

- **Secure**
  Using the integrated user administration

- **Innovative**
  Access to web – based reports at any time from anywhere

- **Open**
  By using the MS standards
Flexible and open reporting tool

- Industry independent use
- Central, web-based reporting system used as an interface to all departments through to the management level.
- Transparency in the production as a basis for more productivity together with the highest achievable quality

Scalability

- Analysis of the following data sources: WinCC, WinCC/PerformanceMonitor, PCS7, SIMATIC Process Historian
- Flexible adjustment to the actual number of users using 'Floating Licenses'

Transparency

- Fast creation of reports by the use of the included report templates
- Individual creation of reporting sheets
- Worldwide web-based allocation of generated reports
Efficient operation and analysis
Web-based reports and analysis

SIMATIC Information Server 2014

Home  Administration  Reports  Dashboard  Add-Ins

Web host  Reporting Framework  Data host

WinCC V7  Performance Monitor  SIMATIC Process Historian  PCS7  PCS7 Batch
SIMATIC Process Historian 2014 and SIMATIC Information Server 2014

Systematic archiving and reporting

**Benefit**
- Efficient Creation of reports using MS Excel or report templates which are supplied
- Transparency of the process up to the management level - at any time from anywhere
- Displaying and analysis of process data using MS Excel
- High security using a consistent user administration

**Applications at the end user**
- Automated sending of KPIs
- Displaying important quality information clearly structured
- Event driven distribution of error reports via Intra-/resp. Internet

**Applications at the OEM**
- Creation of a consistent system solution (multiple data sources and version levels)
- Web-based administration of the plant reports
- Coherent reports and analyses (also using MS Excel, Word and PowerPoint)
The way to increase productivity – continuously optimize and extend the production

Customer requirements

- Consistent data management
- Global standards
- Uniform interfaces for hardware and software
WinCC/PerformanceMonitor
Vision and Motivation

Trends / Challenges

- Transparency in production
- Maximize productivity and quality
- Cost-effective and protection of investment

Siemens Answers

- WinCC V7.3 and Option WinCC/PerformanceMonitor
- Calculation of plant specific key performance indicators (KPIs)
- Powerful and flexible analysis of indicators in combination with the option SIMATIC Information Server
WinCC/PerformanceMonitor
Calculation and analysis of key performance indicators

KPI = quality rate = \frac{\text{Good Parts}}{\text{Total Parts}}

\text{quality rate} = \frac{(\text{total number of produce parts} - \text{number of parts to redo} - \text{number of bad parts})}{\text{total number of produced parts}}

quality rate “A” = 83%
quality rate “B” = 92%

Finding:
supplier B

Shop floor context:
Carton type A
Carton type B

Total parts

Calculation of the quality factor in combination with a production context.
Increased productivity due to consolidated findings.
WinCC/PerformanceMonitor
Customer benefits

Transparency in production
- Calculation of key performance indicators (KPI) e.g.: OEE, MTBF,…
- Comparison of plant components (Equipment)
- Indication of correlations e.g. between indicator and provider
- Analysis of indicators within in WinCC – and also via Internet

Maximize productivity and quality
- Weak-point analysis
- Flexible web-based analyzing reports with the option SIMATIC Information Server (*)

Cost-effective and protection of investment
- Less training and configuration effort due to standard tools
- Easy integration to existing plants
- Short Time-to-Market for OEMs due to standardization of machine condition information (e.g. OMAC)

*) requires additional licenses
### WinCC/PerformanceMonitor

**Integrated functionality**

<table>
<thead>
<tr>
<th>KPI Calculation</th>
<th>Performance Monitor Controls</th>
</tr>
</thead>
<tbody>
<tr>
<td>▪ Plant specific key performance indicators (KPI)</td>
<td>▪ Ad-hoc analysis in WinCC (also via Web *)</td>
</tr>
<tr>
<td>▪ Indication of correlations (context)</td>
<td>▪ Cause analysis and „Drill-down“</td>
</tr>
<tr>
<td>▪ Easy integration to existing WinCC plants</td>
<td>▪ Chronological views</td>
</tr>
<tr>
<td>▪ Short Time to Market</td>
<td>▪ Manual correction of operators (entry values)</td>
</tr>
<tr>
<td>(Standardization of machine state information)</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Integration in SIMATIC WinCC</th>
<th>Reporting *)</th>
</tr>
</thead>
<tbody>
<tr>
<td>▪ Less required know-how and training effort due to configuration with „WinCC Configuration Studio“</td>
<td>▪ Web-based creation and administration of analysis reports with the option SIMATIC Information Server</td>
</tr>
<tr>
<td>▪ Individual calculations may be reused as templates</td>
<td>▪ Analysis reports for target user</td>
</tr>
<tr>
<td>▪ KPIs used in WinCC (Picture, Trend, Alarm)</td>
<td></td>
</tr>
</tbody>
</table>

*) requires additional license

**Integrated functionality for data analysis and maximum transparency for all kind of target users.**
WinCC/PerformanceMonitor
Gantt Control

- Visualization of time-based entry values (operands)
- Analysis of data for time periods, Shift, State,…
- Manual correction of values (if authorized):
  - Insert, Delete, Split and Merging of data sets
- Export (.csv) and printing
- Available also for WinCC/WebNavigator *) and SIMATIC Information Server *)

*) requires additional license
WinCC/PerformanceMonitor
Performance Control

- Performance Analysis (KPI) – also with correlation to context values
- Cause analysis by „Drill-down“ to operands
- Analysis of data for time periods, Shift, State,…
- Export (.csv) and printing
- Available also for WinCC/WebNavigator *) and SIMATIC Information Server *)

*) requires additional license
WinCC/PerformanceMonitor
Table Control

- Chronological List of
  - Entry values (operands)
  - Context values

- Analysis of data for time periods, Shift, State,…

- Manual correction of values (if authorized):
  - Insert, Delete, Split and Merging of data sets

- Export (.csv) and printing

- Available also for WinCC/WebNavigator *) and SIMATIC Information Server *)

*) requires additional license
Efficient operation and analysis
Performance Reports using SIMATIC Information Server 2014
Information Flow
Any Data, Any Where, Any Time
Growing request on mobile SCADA in the industrial environment

*Internet and mobile solutions become more important in the SCADA market.*

The increasing requests to monitor and control processes via Internet or Intranet enable a supplementary kind of facility management.

Flexible access to plant data extends the today common control room. Besides the pure monitoring of production key figures also remote interventions more and more support a cost efficient production in the manufacturing process. Mobile SCADA supports you by the individual access to production data:

- **fast**
- **efficient**
- **target oriented**
Innovative Web-Solutions
Global access to SCADA Information

<table>
<thead>
<tr>
<th>WinCC/WebUX (Monitoring)</th>
<th>WinCC/WebUX (Operate)</th>
<th>WinCC/WebNavigator</th>
</tr>
</thead>
<tbody>
<tr>
<td>✓ User Specific Information</td>
<td>✓ User Specific Information</td>
<td>✓ Full WinCC Functionality</td>
</tr>
<tr>
<td>✓ Low Engineering Cost</td>
<td>✓ Low Engineering Cost</td>
<td>✓ No Additional Engineering</td>
</tr>
<tr>
<td>✓ Modern Web Technology</td>
<td>✓ Modern Web Technology</td>
<td>✓ Proven Web client-Technology</td>
</tr>
</tbody>
</table>

**Client**

- ✓ Web browser – No SW Installation
- ✓ Browser and device-independent with a focus on mobile devices
- ✓ 1 Client for free with WinCC RT

- ✓ Web browser – No SW Installation
- ✓ Browser and device-independent with a focus on mobile devices

**Client**

- ✓ WinCC Web-Viewer-Application
- ✓ MS Internet Explorer
- ✓ Minimal-Installation
WinCC/WebUX

... Save time, cut costs and capture the essence

**Innovative**
for the optimal perspective anytime – anywhere

**Precise**
flexible access to plant specific information

**Efficient**
Through integration into WinCC

**Scalable**
Maintenance-free Clients for operation and monitoring

**Open and secure**
using web standards on any devices/browsers
WinCC/WebUX
Added value for WinCC SCADA solutions

Scalable web access

- WebUX Monitor Client (read only) or Operate Client (read-write)
- Full investment protection by independence from versions

 Included with the base system: 1x Monitor Client for free!

Innovative web solutions

- Maintenance free - „Zero Client“ installation
- Platform and browser independent

Efficient, open, secure

- Flexible remote access to plant specific information
- Secure using Web standards (https with SSL) and integrated user administration
### Feature / Function
- Flexible access to precise information
- Mobile SCADA
  - Device independent
  - Zero Client installation
- Usage of web standards (SSL, HTML5, SVG)
- Monitoring and/or operation
  - Additive licenses
    (1 MonitorClient for free)
- Fast and easily integrated in WinCC

### Benefit
- Secured plant information as a basis for decisions
- 24/7 - Online access
  - Anytime – Anywhere
  - Maintenance-free
- Free choice regarding device and browser
- Secure communication
- Hierarchical access rights
- Floating client licenses
- No start-up costs
- Implemented into the base system
- Short Time-to-Market
- Consistent Engineering
WinCC/WebUX
The solution for mobile access

### Application scenarios:

<table>
<thead>
<tr>
<th>Management</th>
<th>Quality assurance</th>
</tr>
</thead>
<tbody>
<tr>
<td>Significant production figures available at any times</td>
<td>Important production information a glance (Messages, Trends, Key figures, …)</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Service / Maintenance</th>
<th>Displayboard</th>
</tr>
</thead>
<tbody>
<tr>
<td>Online access to fault messages, plant status and so on. Secure remote operation (e.g. acknowledgement, set points)</td>
<td>Production figures online visible for the staff</td>
</tr>
</tbody>
</table>
Up-to-date using innovative solutions - at any time wherever you are
Save time, cut costs and capture the essence!

Remote access to control and to monitor...

WinCC/WebUX – Web User Experience
… user specific WinCC screens without Script’s and exactly coordinated information
– without further hard- or software

WinCC/WebNavigator
… WinCC screens using PCs with MS Internet Explorer and minimal Client installation
WinCC/WebNavigator
comprehensive, web-based operation and monitoring

- Efficient
  Remote operation and monitoring from anywhere

- Scalable
  Remote access to the plant, Web-sever farms or remote diagnosis

- Innovative
  every time optimal transparency from anywhere

- Secure remote access and transparent user administration

Screenshot with ViewerRT in IE
complete transparency from anywhere
Cone, Alan, 3/18/2016

Transulate
Cone, Alan, 3/18/2016
WinCC/WebNavigator
Remote access to your WinCC SCADA solution

**Efficient Web-solutions**
- Remote access to the plant
- Low administration costs due to the use of existing configurations

**Scalable Web-access**
- Scalable remote access using the Intranet- or the Internet
- Dedicated web servers selectable from the WinCC Clients
- Powerful web server load balancers when using many web-clients
- Thin-Client solutions for different platforms

**Secure Web-access**
- Support of MS Internet Explorer 11
- Security standards (VPN, Firewall)
- Dedicated web servers
- Universal user administration with scalable privileges
- Secure WebViewerRT application
## WinCC WebNavigator
The solution for the mobile access

<table>
<thead>
<tr>
<th>Feature / Function</th>
<th>Benefit</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Remote access to WinCC sites</td>
<td>• Full access to the plants at any time</td>
</tr>
<tr>
<td>• Integration into the WinCC Application</td>
<td>• Short ,Time-to-Market‘</td>
</tr>
<tr>
<td>• Continuous user rights, dedicated web servers and IT Security (Firewalls,….)</td>
<td>• Standardized Look&amp;Feel</td>
</tr>
<tr>
<td>• Scalable up to web server farms with load balancing</td>
<td>• Maximum of security</td>
</tr>
<tr>
<td>• Web diagnosis license</td>
<td>• High performance even with many simultaneous accesses</td>
</tr>
<tr>
<td>• Transparent licensing concept suitable for all WinCC web solutions</td>
<td>• Cost-efficient remote diagnosis for system integrators</td>
</tr>
<tr>
<td></td>
<td>• Planning reliability and investment protection</td>
</tr>
</tbody>
</table>
Global standards
Offering a maximum of interoperability

Perfect interoperability across all automation levels through openness and standards
Easy scalability and efficient production analysis
Many user groups – with benefits for all

- Reduced energy costs
- Efficient operations control
- Web-based Reports
- Remote operation + monitoring
- Important information at a glance at all times
- Rapid identification of weak points
- Efficient Engineering
- Reports
Thank you for your attention!

Alan Cone
Marketing Manager SCADA

siemens.com/wincc