“For future development, Anglo American Platinum will be focusing on digitalisation and automation of its production processes. The Siemens Minerals Automation Standard will be key to meet these requirements and it offers an ideal basis for economical and future-proof solutions.”

Gary Humphries, Head of Process Control at Anglo American Platinum Limited
Siemens Process Automation Concept
Office and production layer to get closer connected

Yesterday:
Limited interoperability

- Limited communication between office and production layer

Arising challenges through increasing interoperability

- Challenge to handle complexity of increasing communication

Defined interface to handle complexity

- Two dedicated networks with defined managed interface
Siemens Process Automation Concept
Efficient Communication with Profinet

Key Features
• Highest availability on demand
  • Scalable Redundancy
  • Configuration in Run
• Ease of use
  • Plug-and-Produce
• Ethernet in the field
  • Higher data rate for more data
  • Seamless horizontal and vertical integration
• Flexible architectures
• Investment protection
ProfiNet
The best of both worlds

Network standard: Ethernet
- High data rate
- Digitalization
- Flexible architectures

Fieldbus standard: PROFIBUS
- Real-time communication
- High availability
- Diagnostics

PROFINET
SIMATIC PCS 7 – ProﬁNet in the Field
The ﬂexible Automation Architecture

SIMATIC PCS 7
Room for new perspectives

Simatic 4108 standard automation system
Integrated drives
Integrated power management
Ethernet, PROFIBUS PA
SCALANCE X 3000-16
FC 200P-PA
Controller 414-3PN/DP
Journalist 7, Bankserver
Integrated power management

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Page 6
ProfiNet in the Field
Connecting Instruments with SIMATIC Compact Field Unit

Automation in Mining
Automatic addressing of PROFIBUS-PA devices avoids potential address conflicts in each phase of the project → Installed field devices can have any fieldbus address
SIMATIC Compact Field Unit – PA Edition
Simplifying Planning – Installation – Maintenance

Use Case 1 – “Top-Down Engineering”
Preset Spur with given I/O (PA Profile) and TAG for easier installation

1| Check preset profile (and TAG) against device profile
2| Block device and signal error
3| Configure device acc. profile

Use Case 2 – “Bottom-Up Engineering & Plug-and-Produce”
Automatic device detection and activation

1| Automatic configuration of device acc. profile
2| Automatic address mapping to PN communication
3| Start communication; Alert ES of new device

Use Case 3 – “Device Replacement”
Guided exchange of device

1| Set Alarm
2| Check new device acc. profile
3| Configure new device and map it to existing address; Start communication

Embedded Storage of all PA Profiles allows a new way of HW independent management of fieldbus devices (PROFIBUS-PA)

Release planned 08/2017!

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Siemens – Crucial technology in own hands
The only Automation supplier with Industrial Communication

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November 2017
Minerals Community Meeting - Break Out Session Automation
Siemens Process Automation Concept
Efficient interoperability of all components

Added value in all automation tasks

Integrated Engineering

Integrated Operations

Industrial Communication

Industrial Security

Process Safety
Siemens Process Automation and Digitalization Concept
Industrial Security – Essential for secure industrial automation

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 Security
- Implement Security
- Manage Security
Siemens Process Automation Concept
Efficient interoperability of all components

Added value in all automation tasks

Integrated Engineering

Integrated Operations

Industrial Communication

Industrial Security

Process Safety
Siemens drives the Digital Enterprise for Process Industries

Integrated Engineering
- Cloud platform and operating system
- (2D/3D) & commissioning
- Data analytics
- Asset Performance Management

Digital Twin & Simulation
- Recipe, feedstock quality, ...
- Process & plant documentation
- Real Plant

Integrated Operations & Services
- Secure Connectivity
- Digitally enhanced products
- Maintenance

1. Product design
2. Process & plant design
3. Engineering & commissioning
4. Operation
5. Service
Integrated Engineering for process plants: Common data model ensures consistency for all workflows along the lifecycle

One data hub
- Integrates all disciplines into a globally consistent database

Digital Twin
- Created during engineering, even before the real plant exists
- Early 3D visualization of the plant, e.g. for training of service staff

Data exchange with DCS
- Up to 60% time saving in automation engineering
- Easy and fast integration of product data with configurators, libraries or standard interfaces

Simulation
- Simulation and testing of the automation functions before start-up
- Training of personnel
- Better startup of the real plant
- Avoid errors and reworking
- Increased safety

1. Product design
2. Process & plant design
3. Engineering & commissioning
4. Operation
5. Service
Integrated Engineering for process plants: Common data model ensures consistency for all workflows along the lifecycle

Simulation
• Simulation and testing of the automation in run
• Training of personnel
• Improving processes in a running plant
• No shut down required
• Increased safety

Data exchange with DCS
• Bi-directional interface
• As-is plant documentation
• Better maintenance management
• Time and cost savings
• Optimized availability

Maintenance Manager
• Direct communication between operator and service
• Asset location and necessary documentation available everywhere and up to date
• Direct feedback about maintenance execution

Digital Brownfield Approach
• COMOS/COMOS Walkinside 3D Visualization and Bentley Context Capture (3D)
• Develop a Digital twin from existing legacy information and sources

1 Product design
2 Process & plant design
3 Engineering & commissioning
4 Operation
5 Service
Siemens Process Automation Concept
Efficient interoperability of all components

Added value in all automation tasks

- Integrated Engineering
- Integrated Operations
- Industrial Communication
- Industrial Security
- Process Safety
Thank You

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