

OPC Interface









The Process Industry









The Process Industry



Field Management

Device data, parameters and diagnostics

- **Frocess management**
 - Distributed control systems need to monitor and control the manufacturing processes
- **E Business Management**
 - Information from the processes used to manage the financial aspects of the manufacturing process



PROFIL OPC Standardization & Process Industry



- OPC Foundation was created to provide a standard for communicating with numerous data sources
- **COPC is based on Microsoft's OLE2**
- The Automation & Drives Group of Siemens AG extended its products with the OPC interface and with the SIMATIC NET DP OPC Server, put the very first OPC server for PROFIBUS onto the market.



Problems with Current Applications



- **Current Applications**
- Duplication of effort

PROFI

- Inconsistencies between vendor drivers
- Hardware changes
- Access conflicts

e OPC

- "Driver" can be written once for all vendor's hardware
- Driver is developed independent of hardware features
- Hardware updates must be supported by the interface
- Two apps can access the same device simultaniously





OPC Interface & PC-Based Control



EXAMPLE 1 How do I connect to Siemens SIMATIC NET OPC?





SIMATIC OPC End User Benefits



- **Example 7** Benefits for the end-user
 - You use a protocol-independent interface.
 - You obtain simple access to the communications networks of SIMATIC NET.
 - You can connect your programmable controllers to a wide variety of automation engineering applications via a SIMATIC NET communications network.
 - Communication is also possible with office applications such as Microsoft Excel, Access etc.
 - Using the OLE mechanism "DCOM", applications installed on other computers can access the services provided by the OPC server via a local or global network (Internet).



SIMATIC OPC BUSI Developer Benefits



- Senefits for the PC-based control developer
 - The OPC interface is a heterogeneous (vendorindependent) interface.
 - The developed applications are not dependent on the communications system of one manufacturer.
 - The OPC interface provides applications with a powerful means of access to OPC servers and the underlying communications networks.
 - OPC has a high-performance interface for the C/C++ programming language and development environments such as Visual Basic (Microsoft) or Delphi (Borland).
 - The developer no longer needs to be involved with protocol and vendor-specific interfaces.







- E Design Goals
- **EXAMPLE Architecture and Components**
 - Automation Interface
 - Custom Interface
- **COPC Group Model**





OPC Design Goals



- Efficient reading and writing between application and process control device
- E Alarm handling, security, historical data
- **COM interface**
- **Simple to implement**
- **Flexible to vendors needs**
- E High level of functionality





OPC Architecture and Components



- **E Automation Interface**
 - Component of OLE 2
 - Script languages such as VB, Power Builder or Delphi
 - Can also be used with C/C++

- Custom Interface
 - Maximum performance
 - ⑦ C/C++

















- The OPC server is registered with the Operating System
- Client application communicates through interfaces
- OPC Group objects are managed by the OPC server











- **COPC groups are organized by the client application**
- An OPC group can be activated/deactivated as a unit
- The OPC group can notify the client application when an item has changed









- Used to attach group to process variables
- Only used with the automation interface







SIMATIC NET Tools for OPC



OPC Manager

- A VB automation interface application for OPC
- Can be used with any vendor's OPC server
- Assign groups, monitor process variables







SIMATIC NET Tools for OPC



DP-OPC Starter Kit

- **Software**
 - DP5412/Win NT 4.0 and license diskette
 - DP-OPC Server and license diskette
 - Sample CD with demo applications
 - ≪ C/C++
 - 🐜 Visual Basic
 - Microsoft Excel (Visual Basic for Applications)
 - See WinCC

- **Hardware**
 - CP 5412(A2)
 - ET200B terminal block
 - ET200B electronics block
 - PROFIBUS cable
 - Power supply unit
 - Inductive proximity switch
 - Standard rail





OPC Interface



Need more information?

http://www.opcfoundation.org

http://www.ad.siemens.de/news/html_76/simrepo/3_97/html _76/foc6_1.htm#start







- Who should use SIMATIC NET DP?
 - I/O Connections based on vendor specific DLLs
 - Maximum performance for SIMATIC NET DP (Extended output function calls to multiple slaves: < 1 ms)</p>
 - Standardized PROFIBUS connection
- Who should use SIMATIC NET OPC?
 - Standard client-server communication
 - **System-wide operation between different manufacturers**
 - Process information through automation controls(ex. MS Office)
 - Standardized PROFIBUS connection





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Questions?

