DISTRIBUTED DATA INTEGRATION USING OPC AND BLUE TOOTH TECHNOLOGY

Presented by

Shameer N
M080341EE
MTech - CCIP
OVERVIEW

- Objective
- Introduction
- OLE for process control
- Wireless Technology
- Proposed System
- Operation
- Comparison
- Conclusion
- References
OBJECTIVE

Improve strategic planning, flexibility and configurability in automated process system
INTRODUCTION

- Use of software in automation and control system
- Computer control system have changed from centralized control to distributed control.
- Need of openness, interoperability and network supporting of the software.
OPC
(OLE for process control)

- The OPC Foundation, a non-profit cooperation, has established a set of standard OLE/COM interface protocols intended to improve interoperability between automation/control applications, field system/devices and business/office applications in the process control industry.
- OPC is the name of standard interface for communication in automation engineering.
OPC define an open interface over which OPC based software components are able to exchange data.

Components are the software objects or applications that provide their functionality to other applications.

It is based on Microsoft COM and DCOM Technologies.
when a user selects the object to edit, the menu and toolbar change to the source application but the user remains within the document and can see the surrounding text or data. This kind of sharing is termed Object Linking and Embedding (OLE) in which an 'object' can be text, a chart, table, picture, equation, or any other form of information that is created and edited.
Need of standard interface.

- Each software application must include a driver for a particular software device.
- Conflicts between drivers of various manufactures
- A change in hardware’s capabilities may cause functionality failures of some drivers.
Opc benefits

- It provides a plug play software technology to process control and factory automation applications, where everyone, every system, every device, every driver can freely connect and communicate.
- Hardware manufactures only have to make one set of software components for customers to utilize in their applications.
- Software developers will not have to rewrite drivers because of feature changes or addition in new hardware release.
- Customers will have more choices to develop integrated manufacturing system.
OPC specifications

The current opc specification form a set of standard OLE/COM interface protocol based upon the fundamental requirements of Microsoft’s OLE/COM technology. such technology defines standard objects, method and properties for servers of real time information like DCS, PLCs, Smart field devices and analyzers in order to communicate the information that such servers contain to standard OLE/COM compliant technologies enabled devices (eg. servers, applications. etc)
Opc objects and interfaces

- Opc interfaces
The frame work of opc

- The frame work of opc computer system
Opc Unified Architecture

- It is the next evolution of opc.
- Opc UA is targeted for web services and SOA (service oriented architecture).
- It empowers the ability of existing opc connectivity solutions to be exposed to higher levels of the enterprise, and across a wider range of system platforms.
Bluetooth Wireless Technology

- Bluetooth was invented in 1994 by L M Ericsson.
- SIG was formed in 1998 to develop an open specification for short range wireless connectivity.
- It is a RF Technology that uses the unlicensed (world wide) 2.4 GHz ISM frequency band.
Bluetooth Specification

(a) Piconet-single slave, (b) Piconet with slaves, (c) and scatternet.
Bluetooth hardware architecture

Bluetooth Hardware

Bluetooth Host Controller

External Interface  CPU Core  Link Controller  Bluetooth Radio
Proposed Solution

- Heterogeneous computing environment using opc with Ethernet platform
Proposed System architecture

- Proposed environment using Bluetooth and opc (piconet)
Cont...

- Complete communication environment (scatternet)
Software description

- (a) Server, (b) and client architecture.
Bluetooth Wireless Communication Module

- Bluetooth – PLC connections
Comparison with Ethernet Platform

- Ethernet presents difficulty to change. Any change will result in at least some “down time”
- In Ethernet, if any device or cable section attached to the network fails, it will most likely make the entire network go down.
- In Ethernet identification of faulty node or cable section is very time consuming.
- In Ethernet cables have to be installed and reconfiguring to add new users.
Proposed system is a wireless solution that can support mobility, flexibility and scalability of manufacturing environments, without high integration cost and time.
Conclusion

- With wireless technology and OPC, manufacturing will clearly be able to reach a new level of integration heretofore impossible.
- It is now possible to develop distributed systems in manufacturing process to operate within the limitations of this technology.
REFERENCES


Thank You