

OPC Foundation

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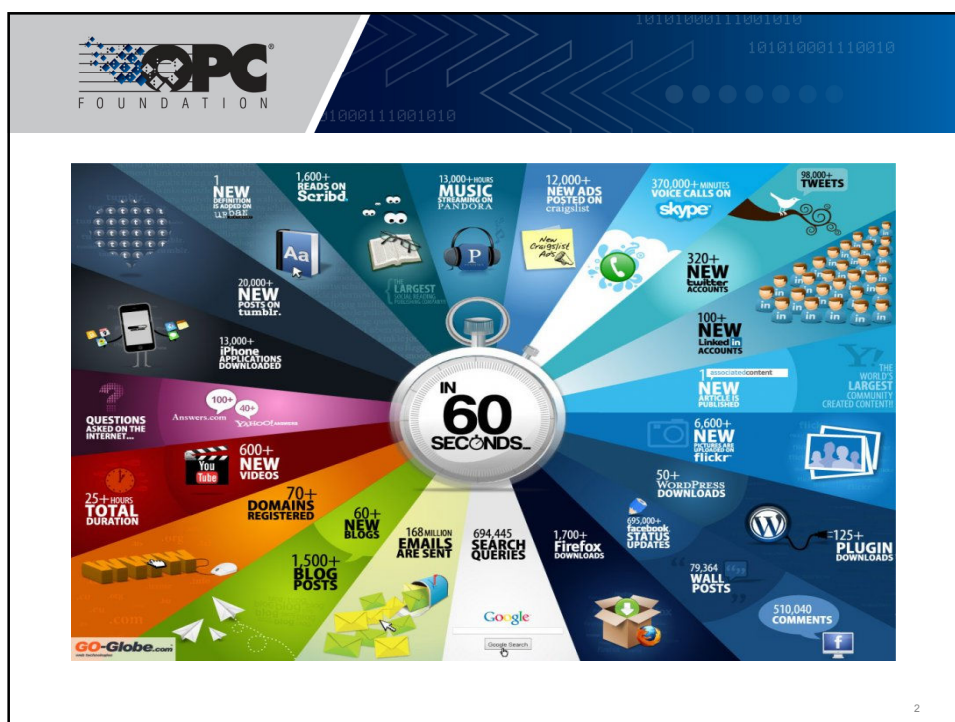
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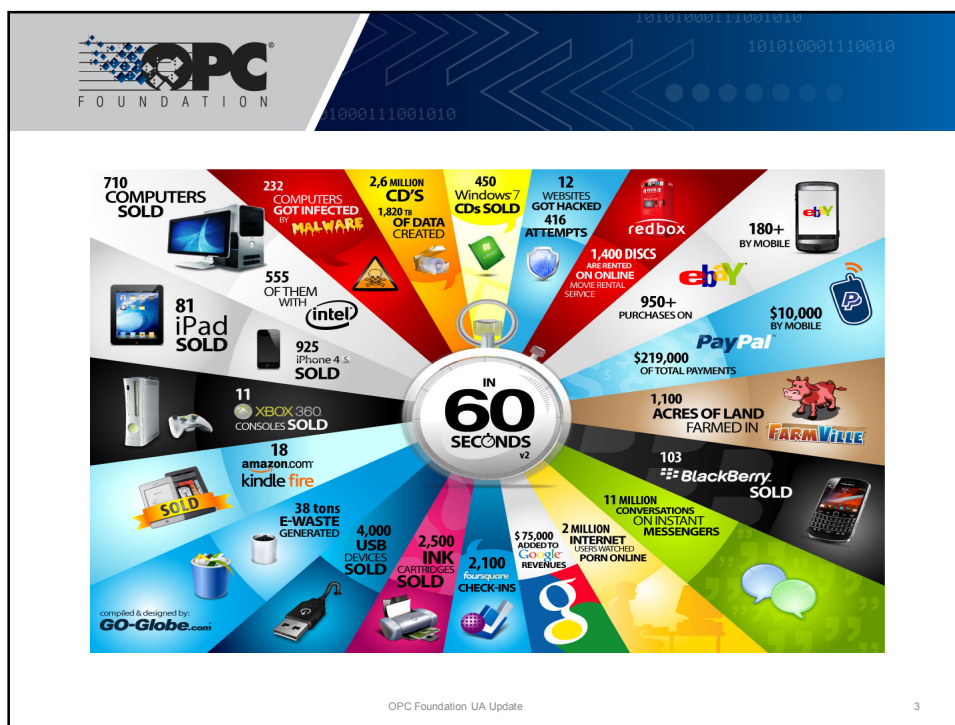
OPC Use Cases and Benefits

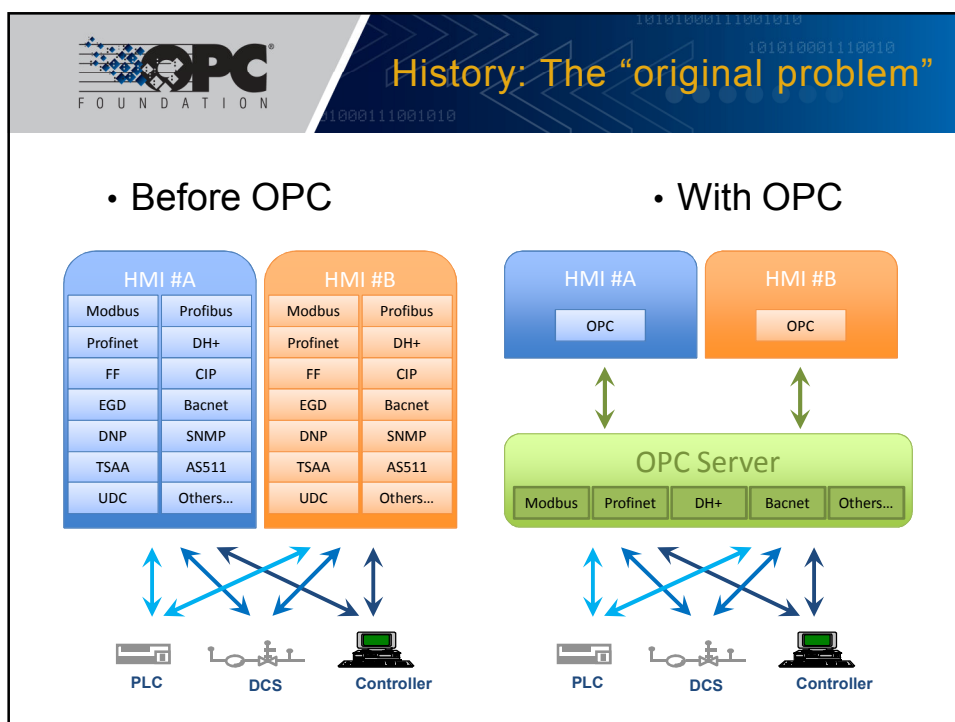
Thomas J. Burke

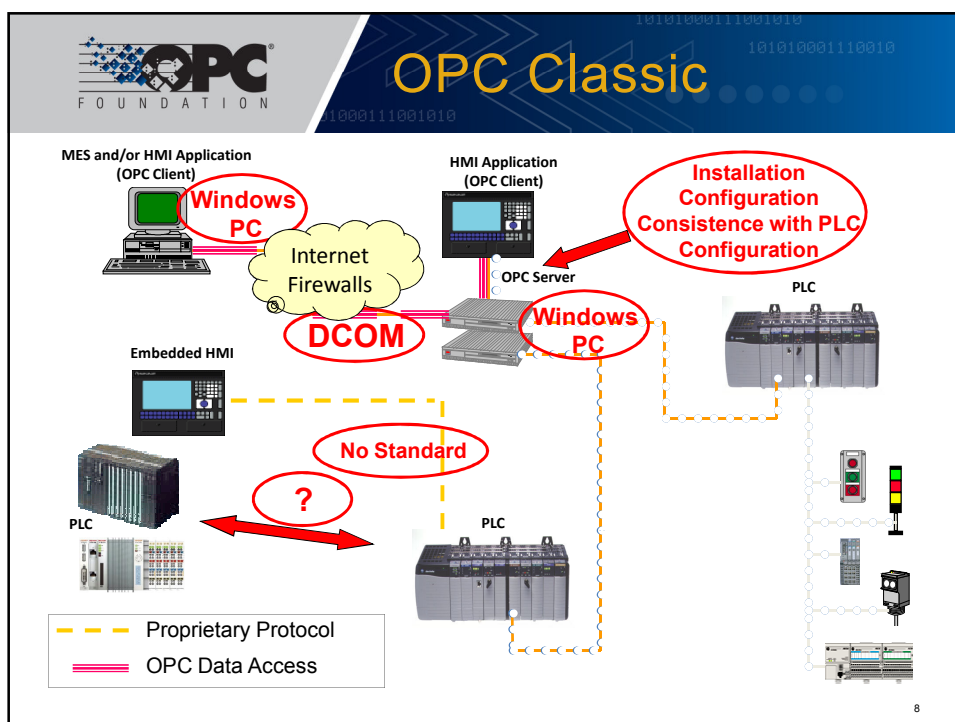
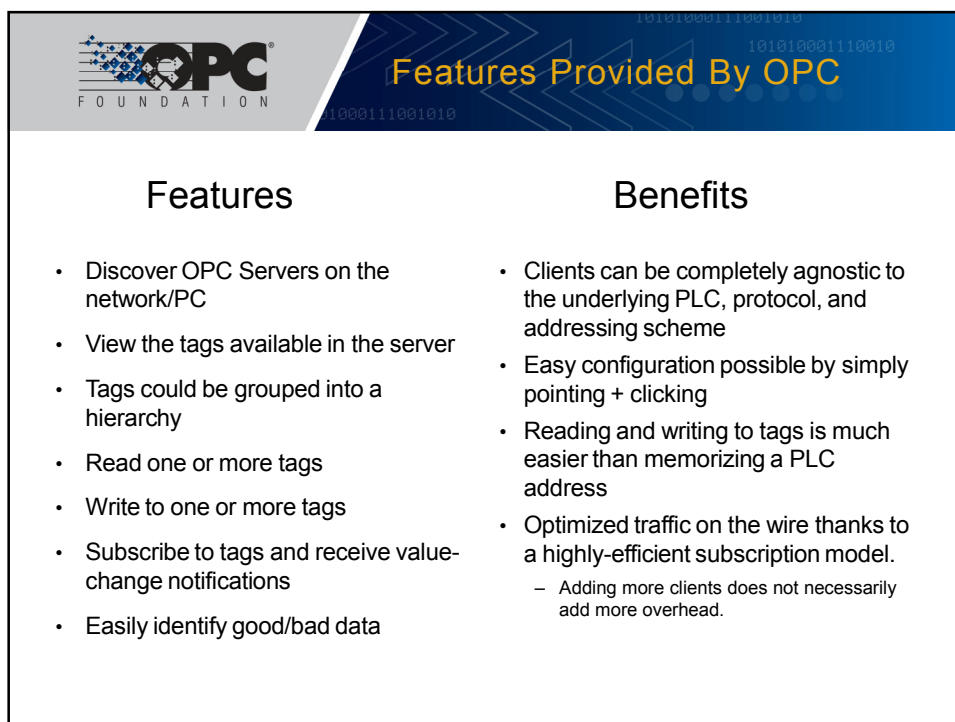
OPC Foundation President & Executive Director

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Benefits From OPC Adoption

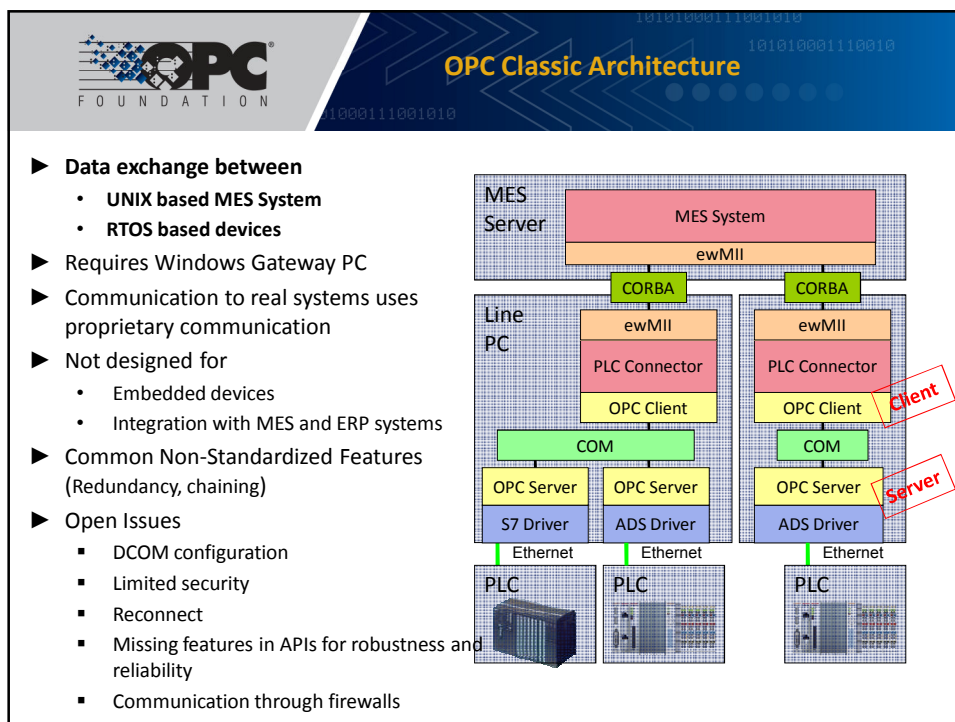
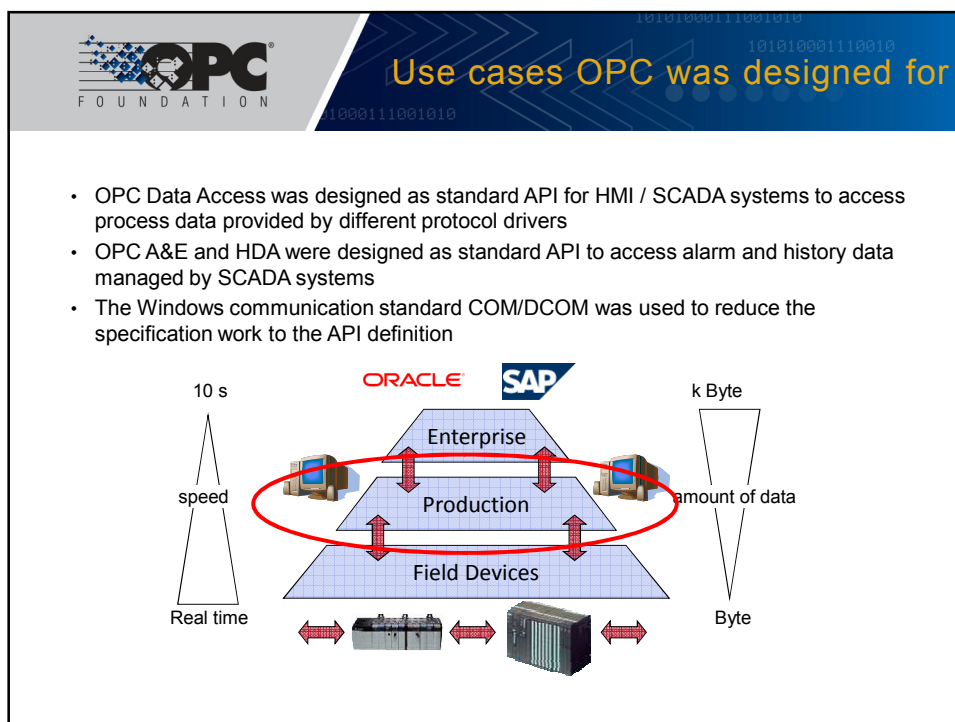
- Vendors were no longer required to maintain extensive device protocol libraries
- High-quality and affordable device-drivers (Servers) emerged
- More specialized Clients emerged
- Developer toolkits emerged for rapid development of custom applications that could also integrate with the OPC infrastructure
- End-users could mix-and-match numerous vendor products to achieve the best overall solution

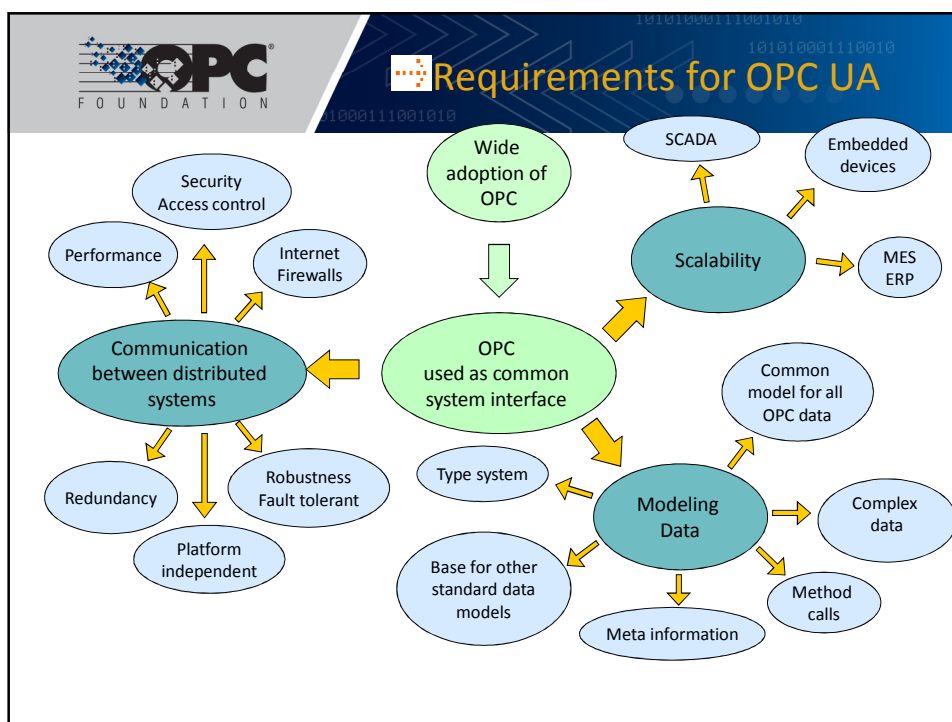
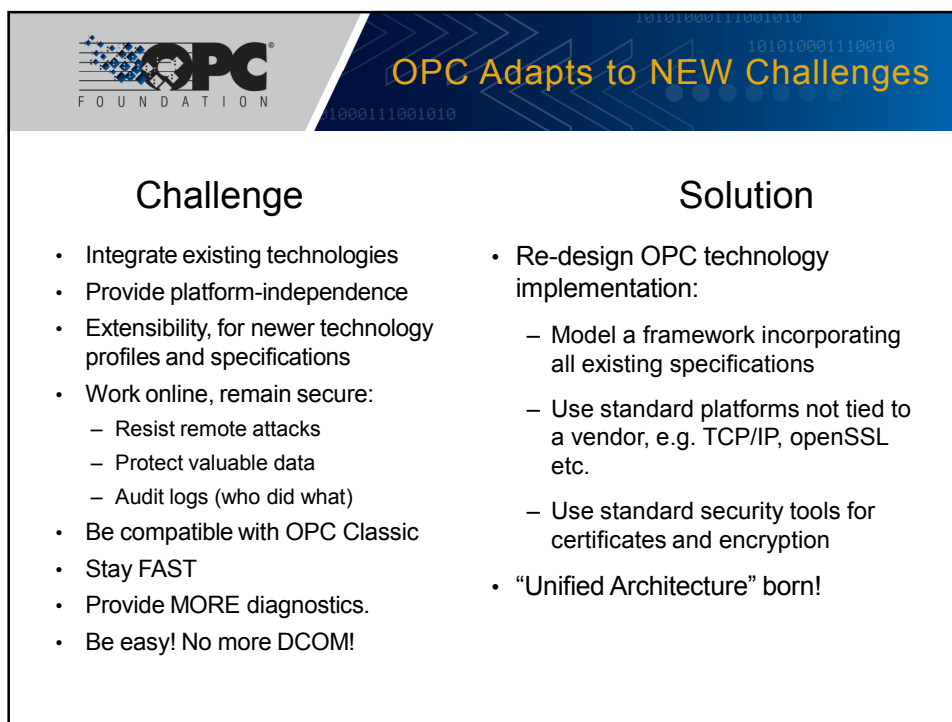


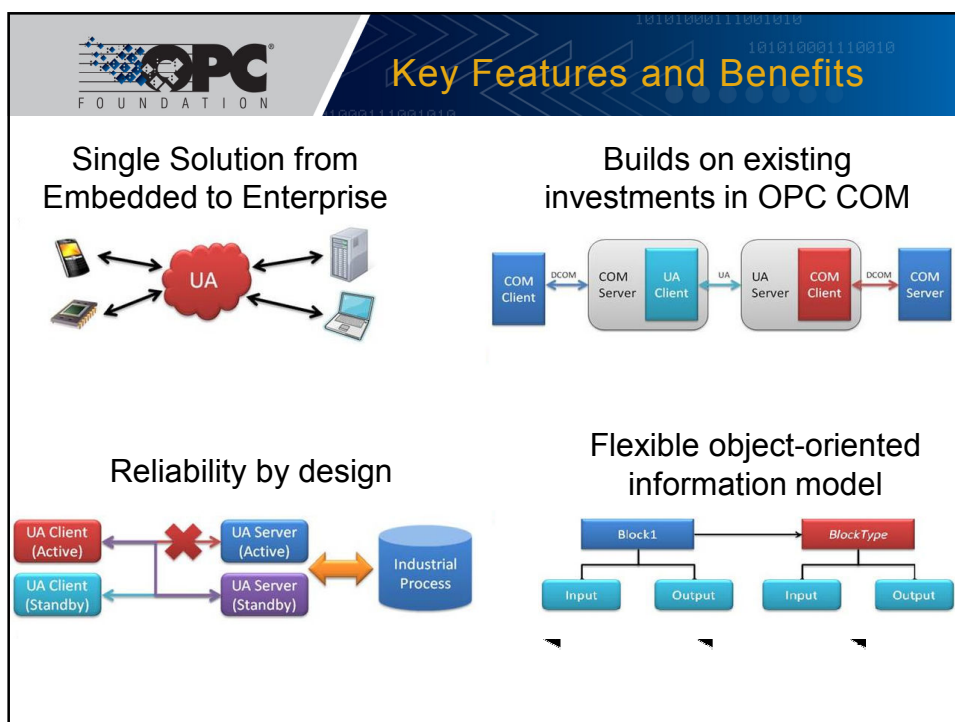
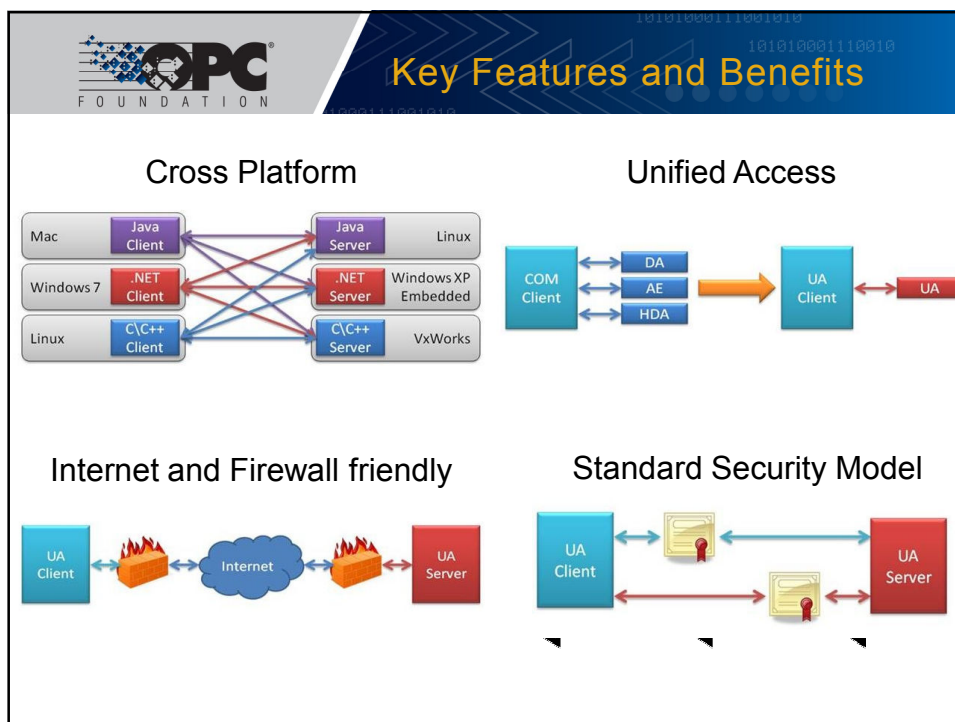
History: Technology evolved...

- Over time, other problems needed solving and new OPC technology standards emerged:

Problem	Solution
How to let OPC solve more problems	"OPC" re-branded: Data Access
More capabilities needed in Data Access	OPC Data Access 1.0, 2.05a, 3.0
Need to store real-time values	OPC Historical Data Access
Need to standardize Alarm Notifications	OPC Alarms & Conditions
Need to standardize data acquisition via internet	OPC XML-DA
Need to allow PLC-to-PLC communications	OPC Data eXchange
Need to secure access to servers/tags	OPC Security
Need to standardize batch-process operations	OPC Batch
Need to standardize a simple PLC program	OPC Program










OPC UA Products Embedded

- PLC & DCS
 - PLC & DCS integrated OPC UA servers available
- IEC 61131-3 vendors
 - Integration into runtime IEC 61131-3 runtime systems
- Embedded HMI
 - Windows CE based HMI vendors implementing OPC UA clients
- OPC Unified Architecture on a chip !
 - Opportunities to expand into other domains, such as security and building automation
- Communication Gateway
 - Wireless sensor gateways with OPC UA server
 - Field bus gateways with OPC UA server
- Building Automation
 - Partnership with BACnet to expose BACnet objects (data and all the meta data !)

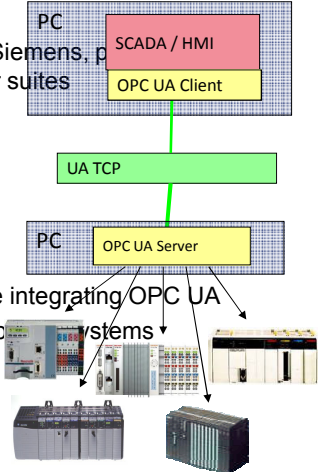
The slide lists various OPC UA products and their integration capabilities. To the right of the text, there are several images of industrial automation equipment, including PLCs, DCS units, and HMI screens.




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OPC UA Products SCADA Level

- Device OPC Server
 - Existing OPC Server migration to OPC UA
 - Many vendors, such as Kepware, Matrikon and Siemens, provide interfaces for their PC based OPC device server suites
- SCADA
 - OPC UA server and client
 - Numerous SCADA systems have integrated UA
 - JAVA based SCADA systems adopt UA
- LINUX / UNIX
 - LINUX and UNIX based automation systems are integrating OPC UA
 - Replaces external OPC interfaces on Windows based systems

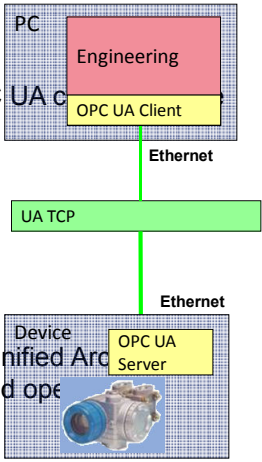




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OPC UA Products MES and Enterprise

- Enterprise
 - SAP supports OPC UA
 - SAP PCO (Plant Connectivity) provides OPC UA client
 - Different SAP research projects work on UA
- MES
 - Many Historian Systems support OPC UA
 - JAVA based MES systems adopt UA
- Engineering
 - Industrial networks and devices have OPC Unified Architecture interface for configuration, commissioning and operation





OPC UA: Feature Summary


- Incorporates ALL of the OPC Classic specifications into one cohesive standard:
DA, HDA, A&E, DX, XMLDA, Batch, Security, Program etc.
- Vendors that support one technology, e.g. DA, will be able to very quickly and easily add others, e.g. A&E, HDA, Programs etc.
- Provides backwards compatibility with OPC Classic via Proxy/Gateway components.
- Achieves other goals for security, platform-independence, performance, and growth.
- Vendor products can now quickly and easily be expanded over time to incorporate newer features and capabilities at minimal cost.
- Everything you know about OPC Classic is the same in UA!



Unified Architecture Summary

- OPC Unified Architecture
 - Enables platform independence
 - Adds reliability and robustness
 - Extensible architecture allows for future growth
 - Communicates information, not just data
 - Maintains performance with reliability
 - Security may help achieve regulatory compliance
 - Backwards compatible with “OPC Classic”
 - No more DCOM headaches
- OPC Unified Architecture & Collaboration
 - Enable enterprise interoperability
 - Better Information model integration
- Backed by an “open” Certification program







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Questions?


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OPC Collaborations

Thomas J. Burke

OPC Foundation President & Executive Director

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About the OPC Foundation

- An independent, non-profit organization founded in 1995.
- Developers of worldwide industry standards for multi-vendor interoperability and data transfer of information.
- OPC specifications are defined by volunteers from over 450 members worldwide and are also available as IEC standards.
- Extensive adoption from manufacturers and solution-providers in factory and process automation.
- Future-thinking technology that provides platform-independent connectivity of devices, systems, networks, and enterprise computing solutions.



OPC Foundation: Who We Are

- **Community:** The OPC Foundation is the world's leading community for interoperability solutions based on OPC specifications that deliver universal connectivity.
- **Collaboration:** The mission of this community is to advance the development, adoption and certification of OPC based products through global collaborations.
- **Compliance:** The Foundation is the official source for the OPC Certification Program, ensuring that OPC products plug-and-play in real-world application.

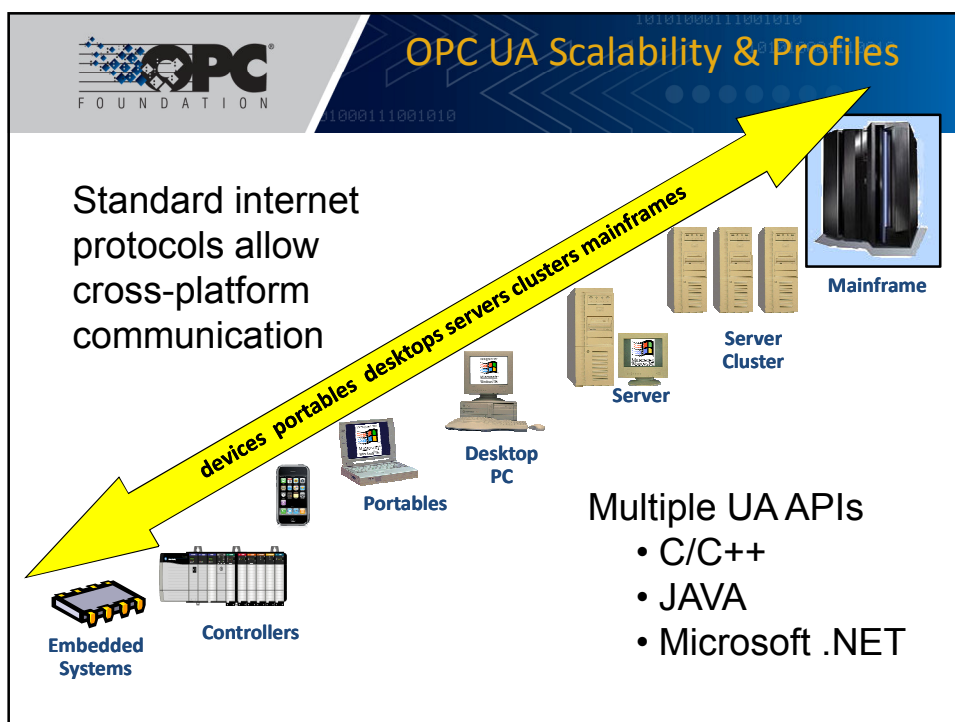


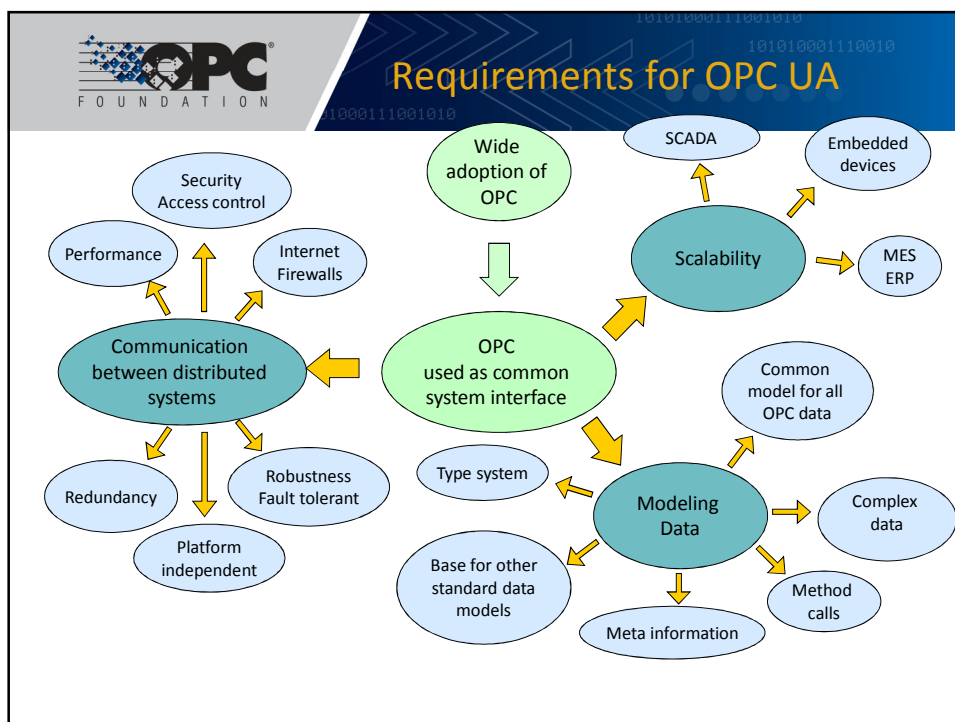
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Markets

- The key markets for OPC technology include:
Industrial Automation, Building Automation,
Embedded Devices, Energy Management (Smart
Grid), Manufacturing Enterprise Management, and
Cloud-based Computing.


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OPC Unified Architecture Information Model Paradigm

- As an Extensible Standard, OPC UA cannot address every conceivable data need on the shop floor. OPC UA provides a framework for creating and exposing vendor defined information in a standard way. More importantly all OPC UA Clients are expected to be able to discover and use vendor defined information. This means OPC UA users can benefit from the economies of scale that come with generic visualization and historian applications. This specification is an example of an OPC UA Information Model designed to meet the needs of Machine Tool developers and users.




Collaboration

- OpenO&M
- PLCopen
- FDI
- FDT
- S95
- ODVA, Sercos
- 61850
- CIM
- Cloud Based Initiative (TIA) M2M
- Building Automation (BACnet)
- MTConnect
- ProdML
- SPE (DSATS, WITSML)
- SLC
- SmartGrid (OpenADR/ESI)
- MDIS
- And the beat (list) goes on.....

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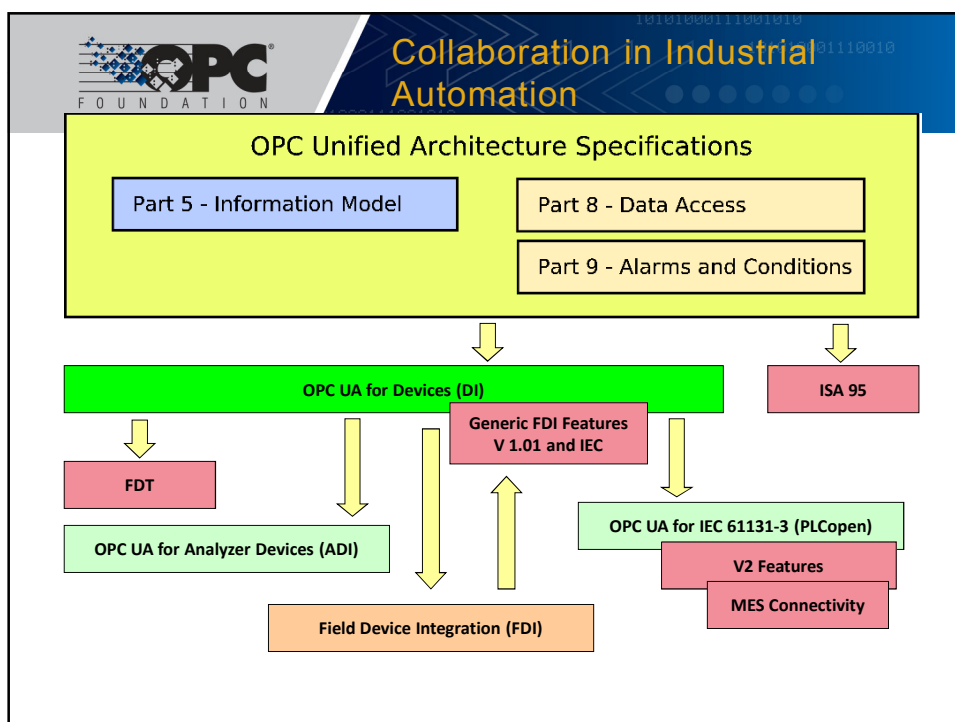
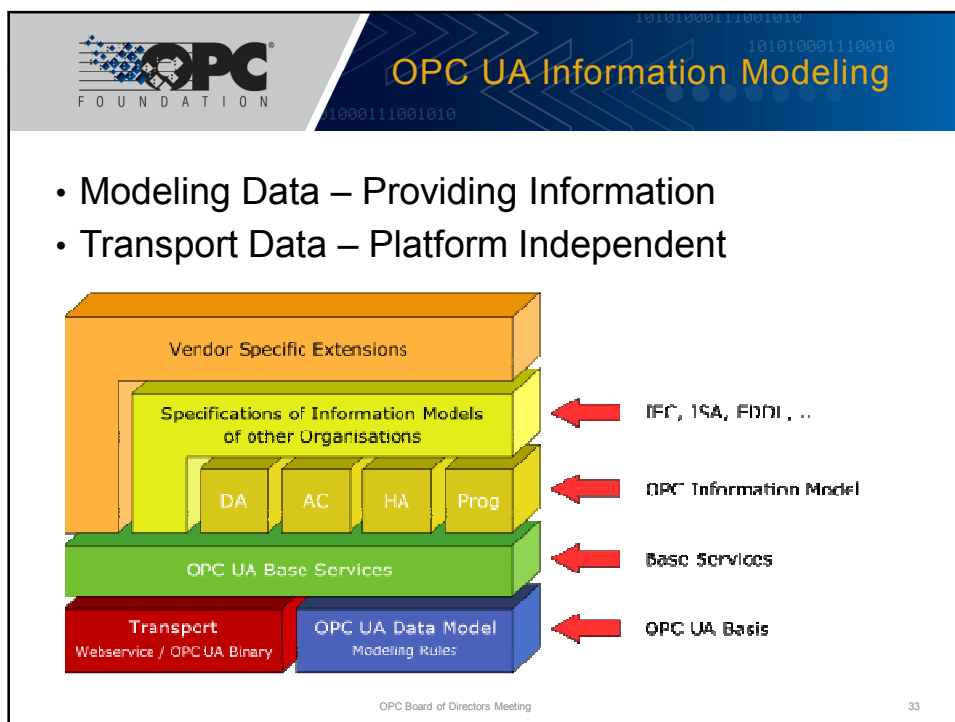
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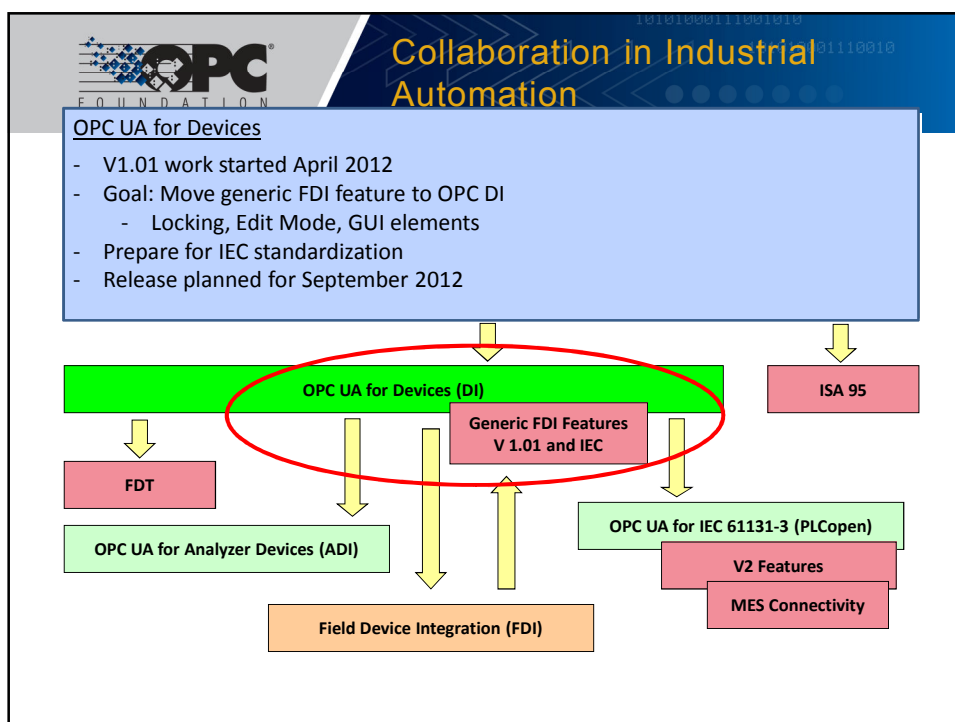
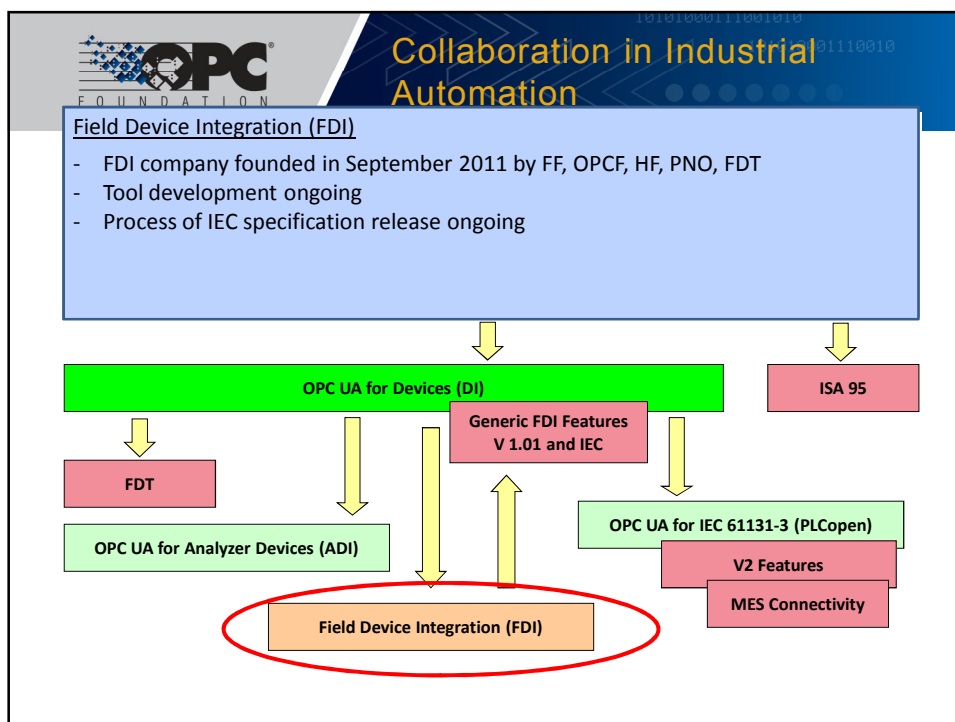


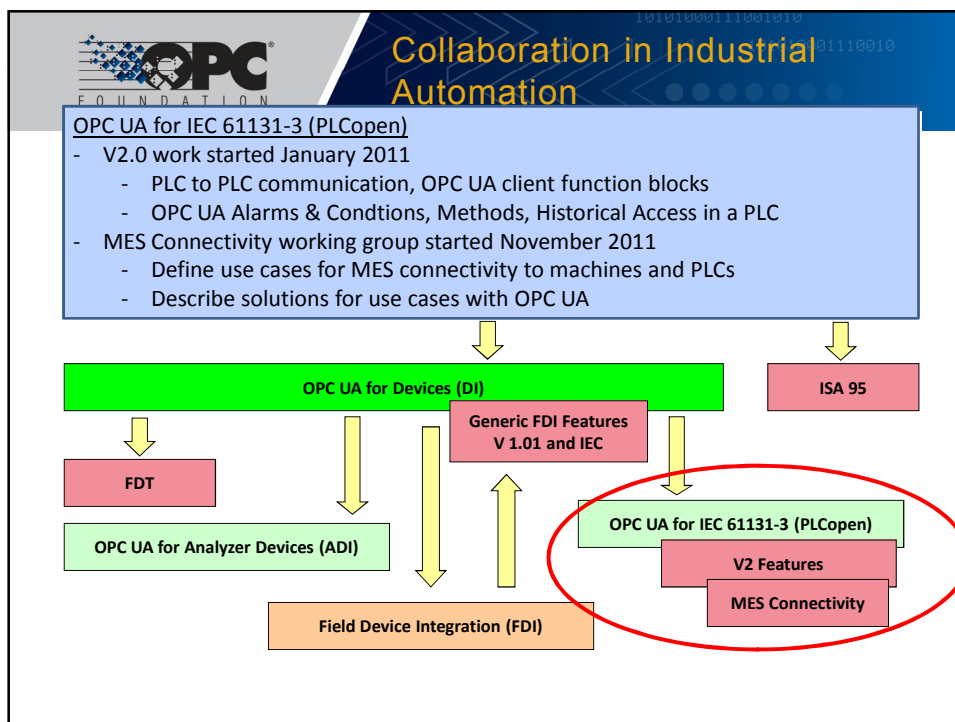
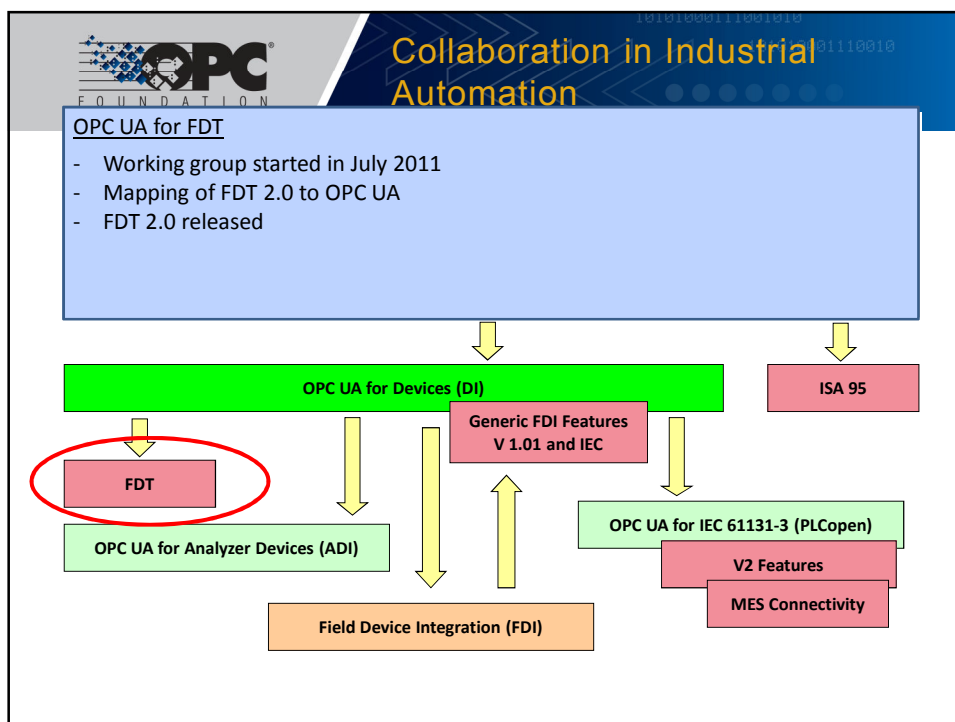
- OpenO&M (ISA S95, Oagis, MIMOSA, MESA (WBF), OPC)
- PLCopen
- FDI Cooperation LLC, (FF, Hart, PNO, OPC, FDT)
- MTConnect
- FDT
- S95
- Machinery Initiative (ODVA, Sercos, OPC)
- MDIS
- Smart Grid (OpenADR/ESI) SGIP, CSWG
- SLC (Energistics, OPC, Geospatial, PODS, MIMOSA, PIDX, PoscCeasar)
- 61850 (companion spec under developemnt0)
- Cloud Based Initiative (TIA)
- SPE (DSATS, WITSML)
- CIM
- Building Automation (BACnet)
- ProdML

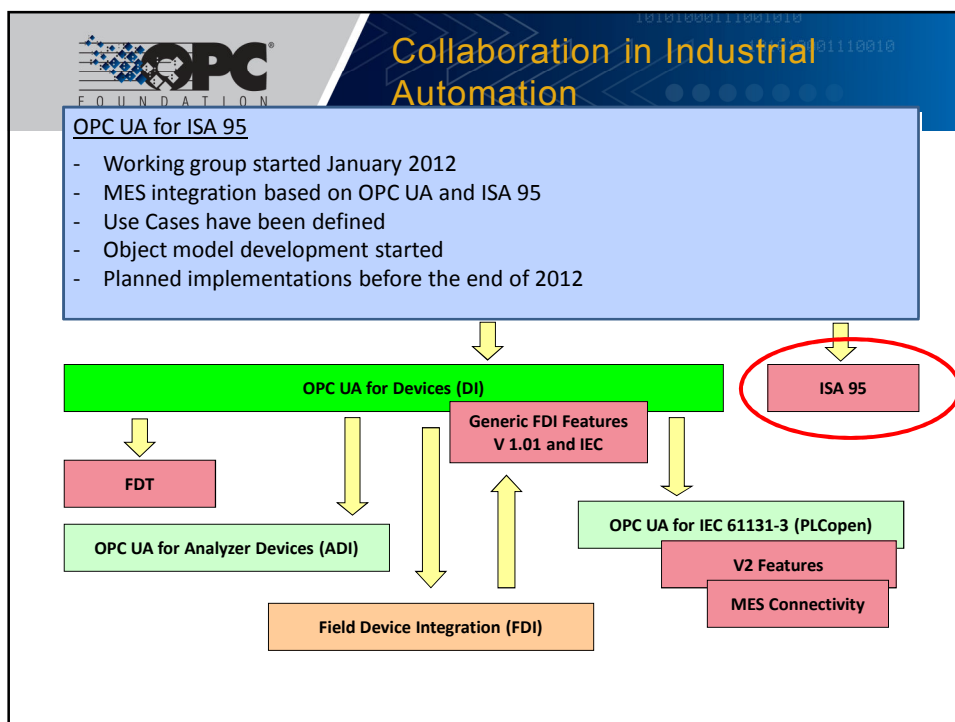
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Collaboration in Energy

- OPC UA evaluated for use in different standards
 - OPC UA evaluation is in progress and supported by OPC Foundation
 - MCS-DCS Interface Standardization (MDIS)
 - Standard for drilling
 - Smart Grid Interoperability Panel (SGIP)
 - Selection of standards used for Smart Grid in North America
 - Review by Cyber Security Working Group (CSWG)
- IEC TC 57 Power Systems
 - WG 10 – Communications & associated data models in power systems (IEC 61850)
 - WG 13 – Energy management system application program interface
 - OPC UA Experts involved in these working groups



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