ARC VIEW

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The Unique "Dual DCS" Strategy of Siemens

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Central Role of the DCS Makes Updates More Difficult

The modern distributed control system (DCS) is the operational focus point of the process plant. As such, the DCS is critical for many functional areas. Besides its defined role of 24/7 process automation and control, the DCS provides local and remote human-machine interface, integration with skid-mounted systems, and with other auxiliary equipment. It also serves as focal point for collection of historical process data, monitoring and visualization of safety functionality, the interface for advanced process control and optimization, and as an interface for enterprise level applications, such as enterprise asset management and asset performance management.

To offer a fully new and modern software system to its DCS customers, Siemens has taken the unique step of simultaneously offering two distinct DCS software systems for an extended period and giving customers the choice of adopting new software or keeping the existing technology.

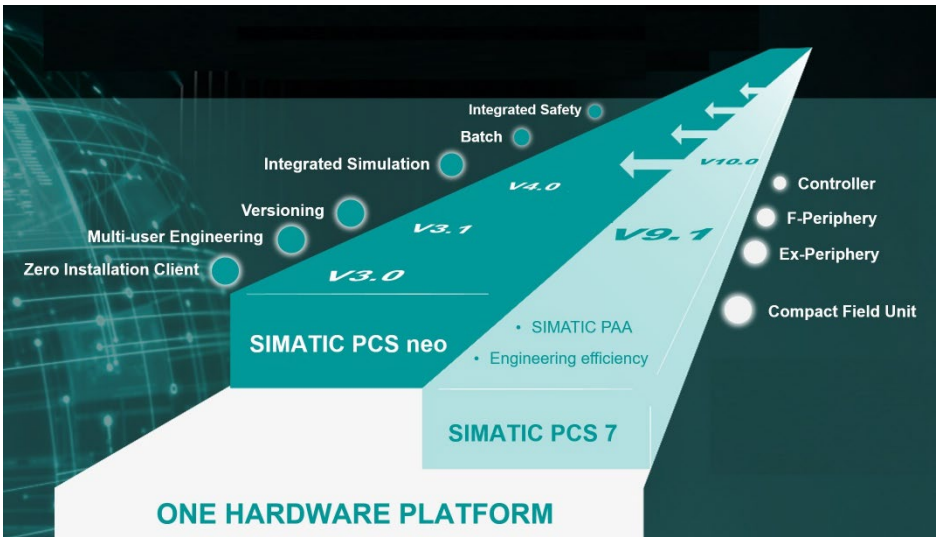
This broad range of functions gives the DCS a central and critical role in the process plant, but it also makes the DCS more difficult to maintain and (especially) update. This presents DCS suppliers with something of a dilemma. Because of the long lifecycle of a DCS, suppliers can never render large portions of a DCS obsolete without causing difficulty for their installed base.

Software Dominates DCS R&D

Today, most of the development effort for DCS centers around software rather than hardware, but the comprehensive capabilities of the DCS make a major "big bang" software update impractical as well as risky. Therefore, what one sees in the market is only incremental improvement in DCS software. It is impractical for suppliers to develop a complete rewrite of their system software. End users thus rely on multiple DCS software tools that are old, archaic, and fragmented. It is difficult or impossible to completely re-architect DCS software without forcing end users to adopt entirely new

software tooling. Because the end users have significant experience and investment with the existing (though archaic) software tools, this can become a formidable barrier to a major software upgrade.

Recognizing these difficulties, Siemens has taken a unique approach with its newest SIMATIC PCS neo. Siemens realized that the vast majority of improvement would come through adopting a modern DCS software design rather than from only updating hardware. So, Siemens adopted the strategy of retaining the state-of-the-art hardware platform from SIMATIC PCS 7, while entirely re-architecting the DCS system software to take maximum advantage of innovative software technologies.



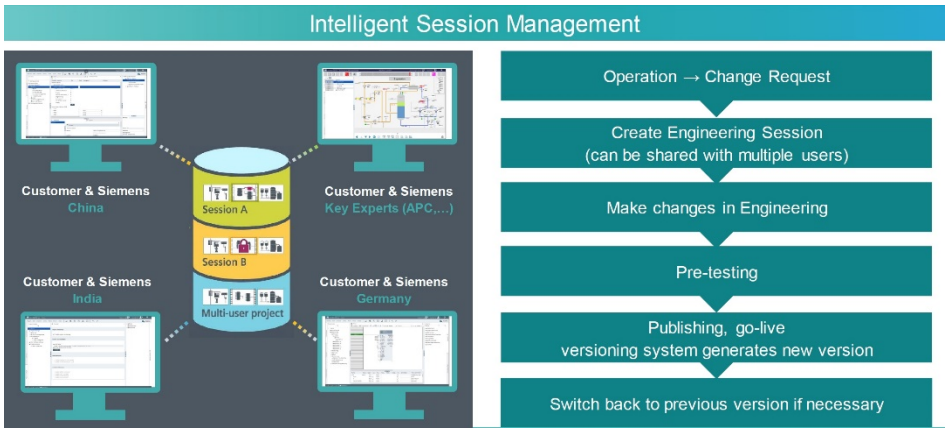
Siemens Supports Two DCS Software Lines that Share a Common Hardware Platform

As this strategy was being developed, Siemens' market approach was to inform its installed base customers well in advance and seek their feedback during the product development. Siemens could do this without disturbing the installed base because they made a firm support commitment to the existing DCS before releasing any new product. They confirmed to customers that Siemens would continue to develop and support the existing PCS 7 for an indefinite period going forward. They also committed not to force PCS 7 customers onto the new PCS neo system. This strategy enabled Siemens to gradually expand the capabilities of PCS neo while receiving feedback from customers. Thus, Siemens could develop and release entirely new DCS software gradually without causing the installed base to worry or panic about support for their existing DCS.

New Software Architecture and Capabilities

Creating PCS neo presented Siemens software engineers with a "clean sheet of paper" to work with for the new DCS – a most unusual situation. They focused on the system as a complete entity and on support for the entire DCS lifecycle (engineering, commissioning, operation, maintenance, and expansion).

To support the complete DCS as a system, the software architecture revolved around object-oriented data management and storage, which supported all aspects of the DCS configuration. All DCS configuration operations are performed via a secured web connection, which enables access to both operations and engineering functions from anywhere to those who are authenticated and authorized. Even though the DCS is entirely web-based, all aspects are designed so that the system can be engineered and operated at any time – with or without an Internet connection. Multiple parties can collaborate because tools are accessed within a session management framework that ensures data consistency, enables testing, and supports versioning. In effect, Siemens has placed the DCS system software within a complete software change management and engineering development pipeline, but one that is largely invisible to the engineers. These same session management features remain in place for the entire lifecycle of the PCS neo system, supporting all types of DCS software changes during operation, maintenance, and system expansion.



For Both Engineering and Operations, PCS neo Development Occurs Within a Session and Change Management Framework

Developing an entirely new software architecture also enabled a high degree of system hardware independence and facilitated "late binding" of the DCS configuration to a specific set of target hardware. Along with the ability to

support global engineering collaboration. These are very important features because they shorten the DCS engineering and overall project schedule.

A Decision for Greenfield Projects

Siemens DCS customers executing greenfield projects now have a choice between the PCS 7 or the PCS neo system software. How should they decide which system to use? Siemens recommends they choose on the basis of their project requirements. Given that the development and release of PCS neo is gradual, some capabilities (notably batch and integrated safety) still remain on the roadmap. Clearly, if the current release of PCS neo is not a match for the requirements of a particular project, then PCS 7 is a logical choice, even though that means the system will likely migrate to the newer platform during its operating life.

To simplify a switch from PCS 7 to PCS neo, Siemens defined a PCS 7 architecture set that can be ported directly into PCS neo.

An important aspect of Siemens' DCS strategy was to establish a means by which the PCS 7 installed base could easily switch to the new platform at a time of their own choosing. To do this, Siemens defined a PCS 7 architecture set that could be ported directly into PCS neo. By designing a PCS 7 project using the common application architecture, the risks associated with classical migration are greatly reduced.

In ARC's view, another deciding factor is the need to become familiar with any new system. Through an intuitive, consistent GUI, all types of end users - especially new - can quickly familiarize themselves with the system, resulting in a shortened learning curve.

Most global process firms have a formal qualification program for determining the operational readiness of new technologies. PCS neo software from Siemens is one technology where companies should make the effort to understand how its capabilities can improve their project outcomes. As an entirely new DCS software system, PCS neo offers the opportunity to rethink and transform project engineering practices. End users should become familiar with and evaluate the opportunities to improve their engineering practices through modern DCS software.

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