How to achieve faster SCADA projects

Within the myriad of possible applications for SCADA software there is a common theme for both the end user and system integrator, and that is a need to respond to competitive pressures. The reason manufacturing, process, logistics and utility businesses all invest in new control and monitoring software is to build more efficient, cost-effective operations. Even within publicly owned utilities there is significant pressure to match the operational efficiency of commercial enterprises.

Christian Nomine, Solutions Consulting and Product Marketing EMEA, Mitsubishi Electric Europe B.V. looks at how the latest SCADA solutions can deliver significant cost savings.

To improve efficiency, whether that be project costs or operational OEE targets, a SCADA application needs to be seen as a complete process. From initial concept and development, through specification, build, test, operation, improvement, expansion and maintenance. It is by considering the complete life-cycle of SCADA projects and optimising every area that significant savings and gains in efficiency can be made.

Faster planning and project realisation
Efficiency improvements and cost savings start from the planning stage. By selecting a SCADA solution that provides the widest range of built-in functionality, system integrators can avoid a lengthy custom-code development stage. It may seem counterintuitive for an independent automation system integrator to want to reduce the cost of their work, but market competition means that lower project cost estimates win business. If projects can be delivered faster, then more business can be won. Commercial success and additional capacity then lead to profitability and growth opportunities.

These overall goals are shared with the end user, everything boils down to maximizing the return on investment. The project must deliver on its operational remit, but if it can be delivered in less time, and at a lower cost, then the returns are improved. Mitsubishi Electric's MAPS 4 SCADA solution for example provides fast initial development and project planning flexibility. It includes a large number of pre-configured Object Template models in addition to the flexibility to copy, adapt and create new objects very quickly.

A built-in library of more than 100 PLC and RTU drivers then helps with adding components to a manufacturing or process control orientated project. The advantages of fast product selection and integration are increased significantly when using Mitsubishi Electric automation components such as PLCs, drives, servo systems, HMIs and robots, as the full operational profiles are already included in MAPS 4. System integrators that tend to use Mitsubishi Electric hardware are then at an advantage. However, for applications where sensor feedback and data sources are more diffuse, including infrastructure style applications, then aspects such as communication flexibility, cloud connectivity and more specialised function modules also start to reduce development times significantly.

Maximising integration and operational efficiencies

Continuing to use MAPS 4 as an example, secure sharing of information to external applications using open standards such as OPC UA, web services, C#, C++ or VB.net provides the flexibility needed to achieve faster integration into existing systems. It allows access to a range for additional data repositories. Built-in functionality such as the Geographic Information System (GIS) plugin add intelligence to map overviews and save time in the process.

Faster development means building a system that can solve one issue right now, but can then be expanded to include other processes, new data sources, different viewing methods and changing metrics. Scalability and flexibility are the features that provide the greatest short-term and long-term benefits. Being compatible with a wide range of field devices certainly helps, but a scalable system architecture is also essential.

The ability to develop seamlessly from a stand-alone system to a larger configuration is important. Redundancy, running on multiple servers, using different physical computers connected to a network, HMIs and mobile devices is becoming increasingly common. Meeting end user demand right now is therefore as much about satisfying the immediate project functional requirements as it is provisioning for the future.

The Cloud, IIoT and Industry 4.0

As various data storage solutions, software hosting and data processing tasks are being moved into the cloud, secure cloud hosting and accessibility is becoming essential to maximise operational efficiencies. SCADA applications need to be built with cloud compatibility out-of-the-box, as managing information security, database accessibility and multiple browser platforms is a big challenge otherwise. If it can be achieved relatively quickly, with a built-in solution then not only is the project cost being optimised, but the user benefits such as plant and process optimisation can be realised sooner, improving ROI.

The MAPS 4 answer is to include a 'The Internet of Things (IoT) Agent' module that allows MAPS to connect seamlessly to third-party IoT cloud hosted environments. The software itself can also be hosted in the cloud with built-in support for Sigfox, LoRa and MQTT. One of the main reasons why a factory automation system vendor such as Mitsubishi Electric would develop an open SCADA solution such as MAPS 4 is to maximise efficiency. Accommodating as many hardware and software variables as possible allows engineers and programmers the freedom to choose other elements of a system based on individual merit. As always, being able to select the best tools for the job means the project goals are achieved more quickly, as less adaptation is required.

Compatibility with existing systems is also made far easier, which is a central theme running through various aspects of an industrial landscape moving towards Industry 4.0. While SCADA still needs to provide features such as reporting, a good user interface with high-fidelity screen graphics, a historian, OEE modules, track & trace functionality, it is the facility for wider connectivity that is enabling further user benefits. A flexible database management tool allows MAPS 4 for instance to be used as an information portal to collect live production data from several locations, plus other data sources and connect to MIS/MES and ERP systems.

Saving into the future

Providing the connection between production and a range of data processing options, plus, a live visual user interface between an operator and a physical process, is the key for both people and systems to improve efficiency and effectiveness. Setting and achieving individual KPIs and systematically improving OEE for example increases production output and efficiency. However, where advanced SCADA platform solutions now add further value is to provide a single point of engineering for realising a project, deploying changes and updating a system over time.

Note:

See how Mitsubishi Electric can respond to today's automation demands: eu3a.mitsubishielectric.com/fa/en/solutions

Image Captions:

Image 1: MAPS 4, the SCADA solution from Mitsubishi Electric provides fast initial development and project planning flexibility.
[Source: Mitsubishi Electric Europe B.V.]

Image 2: Christian Nomine, Solutions Consulting and Product Marketing EMEA, Mitsubishi Electric Europe B.V.

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Note to Editor: if you would like the text in another language please contact Philip Howe at DMA Europa – philip@dmaeuropa.com.

About Mitsubishi Electric

With nearly 100 years of experience in providing reliable, high-quality products, Mitsubishi Electric Corporation (TOKYO: 6503) is a recognised world leader in the manufacture, marketing and sales of electrical and electronic equipment used in information processing and communications, space development and satellite communications, consumer electronics, industrial technology, as well as in products for the energy sector, transportation and building equipment.

With around 145,817 employees the company recorded consolidated group sales of approximately 40.7 billion dollars* in the fiscal year that ended on March 31, 2019.

Our sales offices, research & development centres and manufacturing plants are located in over 30 countries.

Factory Automation EMEA

Mitsubishi Electric Europe B.V., Factory Automation EMEA has its European headquarters in Ratingen near Dusseldorf, Germany. It is a part of Mitsubishi Electric Europe B.V., a wholly owned subsidiary of Mitsubishi Electric Corporation, Japan.

The role of Factory Automation EMEA is to manage sales, service and support across its network of local branches and distributors throughout the EMEA region.
*Exchange rate 111 Yen = 1 US Dollars, last updated 31.03.2019 (Source: Tokyo Foreign Exchange Market)

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