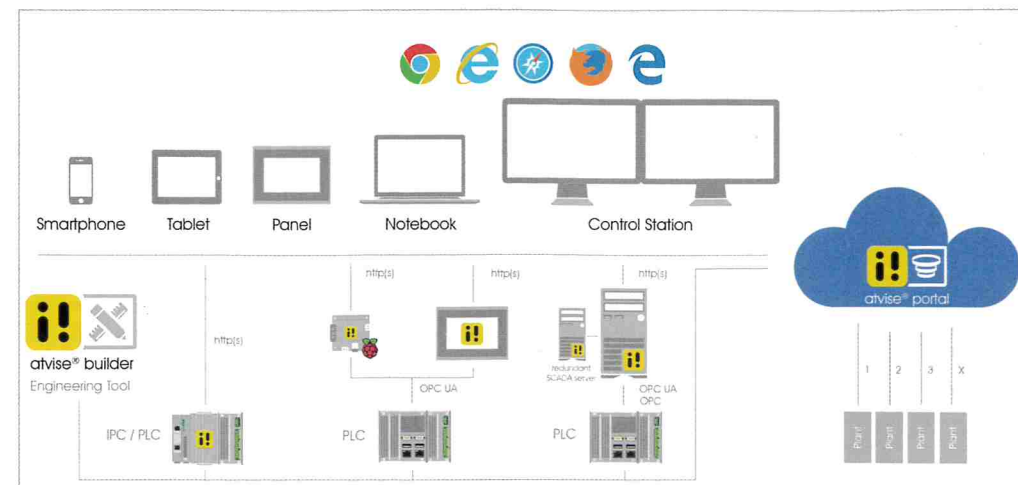


# SCADA-SYSTEM ALL-ROUNDER AND HUB



Ronald Dueker, strategic partner manager at Certec EDV, discusses the advantages of the atvise software product line in delivering HMI, SCADA and Cloud solutions

For decades SCADA systems have been languishing in the automation pyramid between the control level and MES. This traditional space had been justified because of SCADA's limited scalability and flexibility as well as the visualisations being locked in a tight corset. This rigid structure however, has been increasingly dissolving, as demonstrated by Certec's pure web technology and OPC UA-based SCADA and visualisation software.

## THEORY AND PRACTICE

Theory and practice are often worlds apart: on the one hand, experts philosophise about Industry 4.0, and on the other, factory workers are still dealing on a daily basis with decades-old tools. This discrepancy is also reflected in meetings with customers; for example, when discussing a master control system for a critical infrastructure project, customers have asked for a KVM solution

(keyboard, video and mouse) with "manual" switching to make graphics accessible to several users.

## DATA POINTS AND VISUALISATIONS

This problem is diverse and begins with the number of data points and visualisations stemming from the mechanical and plant installations or in the production area of the corresponding automation projects. Often, technicians have come to terms with implementing projects with as few data points and visualisations as possible. Although it may seem impossible to connect several million data points to a SCADA system, it is quite feasible and even a necessity for today's amount of sensors and data – just think of IIoT. Furthermore, it should not be necessary to use different tools when creating individual graphic representations for different automation levels.

Fig 1: atvise offers solutions for the local HMI, SCADA, prioritised cascading control stations, and a multi-tenant access to the Cloud. All products can be parameterised or programmed using the same engineering tool



Ronald Dueker, strategic partner manager at Certec EDV

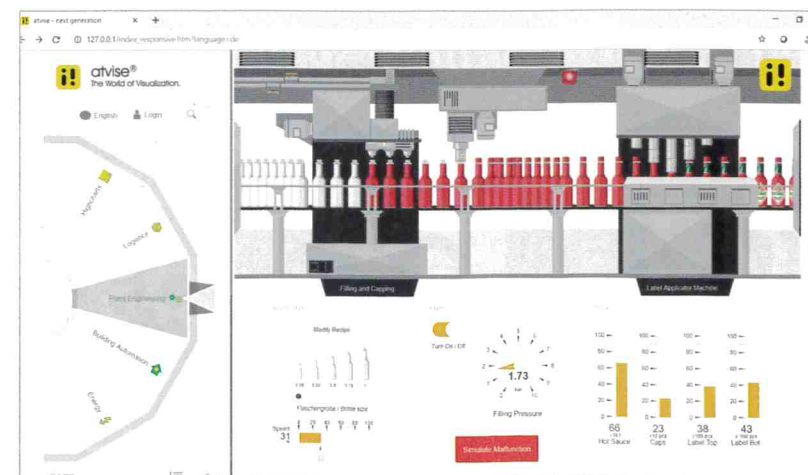


Fig 2: atvise products only require a standard browser: no installation is required, any end-device is suitable and the latest web technologies can be set-up for use

It would be good using one and the same engineering tool for parametrisation and programming of local HMIs, SCADA applications, cascaded control stations visualisations all the way up to multi-client access via the Cloud. In addition, the user device should pose no limitations to calling up the visualisation – as long as one has the rights. This simplifies the operation and serviceability of such a system. Also the use of standard web browsers (whereby no further client need be installed) should move an automation department to consider the replacement of old systems. The software installation could be done quickly and the transfer of, for example a SCADA project, should entail no more than just moving a file from one computer to the next.

## RETHINKING TOPOLOGIES

Gradually, automation architectures seem to be breaking down: more and more low-end-devices can be cascaded and used in the SCADA environment. These low-end-devices can be, for example Raspberry Pi's or Panel PC's, based on Linux and ARM processors. This keeps costs down. Referring to SCADA and visualisation systems, the claim is once again valid: everything should be done through a single engineering tool.

Another aspect: standards, such as OPC UA, are replacing the rigid hierarchies of the automation pyramid and, among other things, enable the access and processing of alarms as well as historical data anywhere in the infrastructure. It does not matter where the historical data is located within the topology or if it is available for graphic display because fortunately it can be easily moved through a modern, standards-based SCADA system. Furthermore, it is also possible to partially or completely synchronise the data to, for example, aggregate it and ultimately present it as trends and charts.

Additionally, OPC UA reduces engineering costs. A reduction of project planning work results from, among other things, an object-type concept that not only can be applied horizontally but can also claim to be viable vertically through the automation pyramid. This not only creates savings, but also makes multiple inputs obsolete thus reducing errors. Therefore, for example, alarm configurations, the parameters for archiving data, or graphic views of an object such as a power drive at the field level, are managed centrally. In addition, thousands of cases based on object-type can be created simultaneously and

## KiSoft SCADA



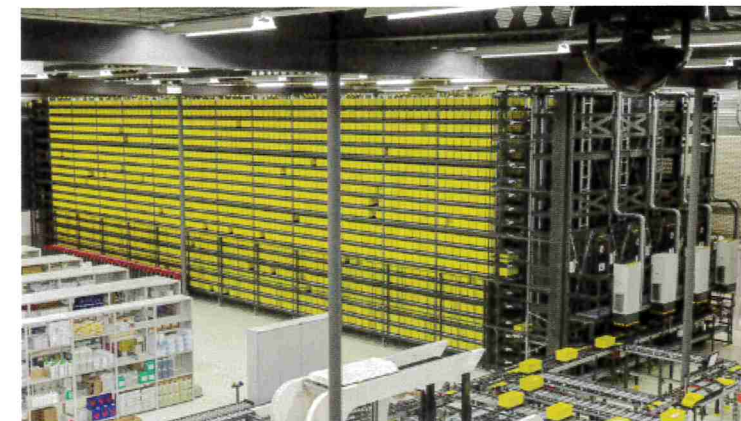
changes to the object-type are synchronised to all cases at the same time. This eliminates the need to manually transfer changes, even across all hierarchical levels, as is common for many outdated solutions.

## "COMPANION SPECIFICATION" – COLLABORATION REDEFINED

If one also considers the Industry 4.0 goals, the ability to depict object-oriented data models becomes a must – not only for SCADA systems, but also for the entire automation pyramid (which in the future will continue to dissolve). This is also relevant when establishing the "Companion Specifications" which the OPC Foundation, in cooperation with the German VDMA and others, is pushing. Here, machines and systems from different manufacturers working together in the same industry segment are, with the help of the OPC UA, object-oriented and linked regardless of the manufacturer. Among other things, there is already a published specification for robotics developed with the support of robot manufacturers. This describes object structures that can be used in all levels of automation, whether controller, SCADA system, or MES. If, for example, a SCADA system can read object structures with these specifications, then object types can be developed at the SCADA level that are applicable to robots from all manufacturers that support this standard. Raw data, alarms, historical

Fig. 3: "KiSoft SCADA" is based on atvise and enables Knapp AG to carry out ergonomic plant visualisation

- [1] Certec EDV GmbH, Eisenstadt/Austria: [www.certec.at](http://www.certec.at)
- [2] Knapp AG, Hart/Austria: [www.knapp.com](http://www.knapp.com)



data, and calling methods can be generically linked. Based on these standardised data models, a variety of opportunities arise because projects can be created at the touch of a button making individual manufacturer requirements for the execution of a project (and much more) very manageable, thus eliminating the high engineering expenditures of the past. Precisely this flexibility and savings potential is needed for the automation solutions of the future so that companies can continue to be successful in the market. Without a doubt, the manufacturer-dependent modelling of object structures is a thing of the past.

## INTERACTION WITHOUT RESTRICTION

Another aspect is the implementation of visualisation on all levels by using pure web technology. This makes it possible to implement much that is maybe not yet integrated or available as a product feature as an application. Server and client-side scripting and vector graphics (SVG) are supportive in many ways. And freely available libraries make it possible to expand programming boundaries. This set-up provides a good starting point for GUI experts and designers; important for companies that are increasingly conscious that graphic visualisation should be one of their most important differentiating features that can be technically implemented with

Fig. 4: The Certec portfolio includes a visualisation SDK for HMI, the SCADA system, a (private) Cloud solution atvise Portal and the SW/HW Bundle Panel-PC-SCADA



relatively little effort.

The reality however, is that there are still many SCADA and control systems on the market that do not support these features and cannot support them in the future. This is because conventional control and operating systems were developed to fulfill other requirements and were made using earlier, limiting technology which cannot be "retrofitted" through software.

## A SOMEWHAT DIFFERENT PRODUCT LINE

There are however alternatives, as proven by the software company Certec [1] with its product line atvise. For a decade, these experts have been delivering HMI, SCADA and Cloud solutions (Fig. 1 and 4) based on pure web technology (Fig. 2) and OPC UA standards. In many reference projects within various industry segments the advantages of using these standards have been proven.

Knapp AG [2] is a good example of this. With more than 1,500 active systems and an average of two new commissionings per week, Knapp is one of the leading European software providers for high-performance logistics solutions. The logistics software "KiSoft" used for this purpose enables central operation and monitoring of stock, "KiSoft Command" is used as a command centre controlling all logistical processes, and "KiSoft Scada" with the help of atvise provides ergonomic plant visualisation (Fig. 3).

"KiSoft Scada" offers a professional graphic user interface for centralised plant visualisation. It displays all available information and data on stock levels, monitoring and control functions as well as the configuration of stock components. All of these applications, including access via the Internet, make "KiSoft Scada" stand out. For preventive maintenance and easy repairs it is the ideal tool: it supports the operator in optimising uptime of the plant.

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