Press Release

logi.cals makes Engineering cloud-enabled

"Cloud-Based Engineering for tomorrow's Automation Platforms"

How the cloud helps to meet the increasing demands on machine and plant flexibility

More and more parts of our lifes are moving into the cloud. Looking at automation solutions, though, the world looks different at the moment. logi.cals offers Open Web Automation (OWA by logi.cals), a complete cloud-engineering solution that can be integrated into a huge variety of client- or cloud-based automation platforms thanks to its open architecture. In addition to supporting a multi-language development environment (in IEC 61131-3 languages, in C, C++ or Python), the focus is on the development of cyberphysical microservices (CPµS) and domain-specific languages to meet the future requirements of efficient engineering and the orchestration of distributed controls at field level. This cloud architecture is ideal for control and component manufacturers (OEMs) in automation technology when it comes to offering their customers a full-blown cloud solution from a standing start. Heinrich Steininger, CTO and co-founder of logi.cals, explains why the future belongs to engineering in the cloud and how OWA by logi.cals helps to consider future requirements.

Engineering processes today are characterized by many inconsistencies, which users have to overcome themselves with their own and usually high effort. "A lot of efficiency and development time is lost here", explains Heinrich Steininger, CTO at logi.cals, "because you have to take care of the interaction of many individual systems, components and tools instead of being able to simply develop them". Open Web Automation (OWA) wants to eliminate exactly these unproductive work parts and create more space for the creative development part – along the life cycle of a plant or machine. OWA will provide the user with a complete engineering ecosystem of infrastructure and interfaces in which different tools can be integrated. These tools can be taken from the engineering toolchain of the OWA-OEM or the OWA-user. Standard tools can also be integrated if they are equipped with standardized interfaces (REST, Websockets, GRPC, …). In addition to data communication, this also includes the exchange of model-based information in AutomationML and/or OPC UA. By integrating the existing solution logi.CAD 3 into the OWA architecture, logi.cals offers users a development environment that can be used seamlessly across disciplines and manufacturers, from the client to the cloud.

Heinrich Steininger describes it as follows: "Through cloud-based engineering, as we want to offer it with OWA, the user is enabled to use the best hardware and software

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components for his automation projects. For this, he uses the tools and programming languages of his choice and a management environment that enables him to design his engineering task as efficiently as possible."

Comprehensive from the beginning

OWA by logi.cals offers a comprehensive engineering environment for PLC programs (in the IEC 61131-3 languages, in C, C++ or Python) up to the verification of the results by the integrated test framework for the creation and monitoring of automated tests. This test suite allows not only the control of some building blocks and libraries, but also the quality assurance of third-party solutions. Following the reusability of software, this can be made available to users in cloud-based market stores in future. The combination of AutomationML and OPC UA offers the integrated modeling of engineering domains as well as the semantic enrichment of runtime data for effective evaluation in data analysis and machine learning applications. In addition, in the coming years a focus will be placed on domain-specific languages that continuously reduce the complexity of developing automation solutions and enable users to implement efficient industry-specific solutions. New editors for the development of cyberphysical Microservices (CPμS) form the basis for future dynamically distributed controls and their simulation required in the course of engineering.

This allows the user to concentrate on his actual task and make the development process more efficient, faster and more team-oriented. OWA's expansion options on the part of OEM customers are also important because they create a customized solution that is based on a future-oriented basis.

Open on principle

The difference to previous engineering systems lies not only in the use of the cloud, but also in the scope of the functions covered, the orientation towards the life cycle of an application and the possibility of using the system in teams across disciplines. Taken together, this opens up many advantages for users. Heinrich Steininger continues: "Due to the open architecture of OWA, users can design their system very individually. The basic function is to provide backend services for tool integration which the user can access via frontend services, for example for control programming, HMI or I/O configuration. This flexibility is achieved through the consistent use of standardized interface technologies (REST, GRPC or Websockets), which enable simple integration into existing automation platforms.

Soothingly integrated

Hectic and confusion are not good environmental conditions for the development of automation projects. "Too often, developers today still have to worry about side issues - tasks where it's easy to get bogged down," reports Steininger. "OWA brings calm and order into engineering because it pools the development components in a central system. From the user's point of view, OWA is anything but a monolithic system, because one can access one's project from any computer in the world and from any location with Internet access - provided, of course, the appropriate rights are given. As soon as there is access, the user or developer has the necessary toolchain at his

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disposal to retrieve data, change configurations, solve problems or further develop the application."

Competitive advantage included
Open Web Automation is the basis of an engineering architecture that is designed, assembled and optimized for the development of automation applications. The architecture is so universal that it represents an ideal solution, especially for providers of automation components, to be able to offer the customer a corresponding cloud offer. "One thing is for sure," explains Heinrich Steininger: "Engineering is currently moving into the cloud. We took up this trend early, and with OWA we have created a time advantage over our competitors. Our solution offers manufacturers who rely on our cloud architecture a fast time-to-market, and this is one of the essential requirements that also exist in today's international competition. Cloud-based offerings and functions are currently emerging in countless companies. However, developing such a cloud is expensive and time-consuming, both in terms of development and maintenance," explains the CTO of logi.cals GmbH. "OWA enables manufacturers to significantly reduce development costs for cloud transformation and at the same time help shape the development direction for outstanding parts of the OWA platform. With the integrated Language Server concept, everyone has their preferred programming language at their disposal. The concept of a Domain-Specific-Language (DSL) is available in order to meet superordinate requirements in the area of orchestration. Last but not least, OPC UA is the preferred automation model, which is comprehensively supported with OWA".

Automatically to the digital twin
"Using an AutomationML integration platform that we have developed in recent years, we are creating the possibilities for the tools of the various engineering disciplines to store cross-domain concepts in a common AutomationML model," explains Heinrich Steininger. This clearly helps in the engineering phases - but also during commissioning and operation (life cycle engineering). The common - i.e. cross-domain - plant model enables the connection between the tools for control programming, visualization or electrical and mechanical planning. This provides the entire development team with a authoritative model that allows very early testing and validation. Simulations and virtual commissioning can be carried out with considerably less effort. This results in the digital twin of the real application.

Milestones and conclusion
"Already this year the basic structure of OWA is to be finished, which will make a browser-based engineering possible for controls over the languages of the IEC 61131-3," the co-founder of logi.cals describes the next steps. "The Cloud Test Center will also follow this year. However, the benefits of OWA do not only emerge when the system is completely expanded, but increase with every component that is added. Following this evolutionary process, we showed at the SPS 2019 in Nuremberg how browser-based control engineering for standard and even safety applications directly increases the efficiency of the user. As the first browser-based engineering tool, the graphical configuration and parameterization tool logi.SAFE, which is certified up to SIL 3, is already available today. In order to be able to use this cloud-based technology also in

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the field of "grey" control technology, logi.WEB is available, which revolutionizes the use of controller solutions and impresses with the simplicity of the adaptation effort. We believe that users will accept the existing vendor lock-in less and less. The future belongs to open automation solutions that support the dynamic further development of an application, and OWA is the suitable platform architecture to meet these requirements efficiently over the entire lifecycle".
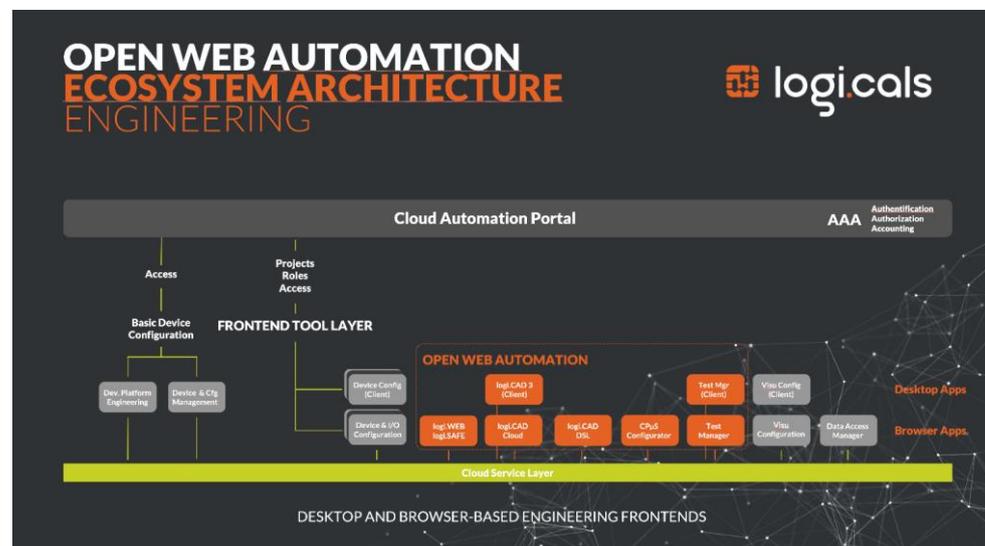
(PICTURE) OWA by logi.cals is designed as a cloud architecture and provides basic functions for the development of automation solutions. Functionally, everything can be integrated that is required for the common automation of modern solutions. Heinrich Steininger summarizes the range of functions as follows: "This naturally includes control programming and visualization functions as well as virtual PLCs, for example in building management. Furthermore, there is a test manager, simulation tools, orchestration managers, I/O and device configurators or future functions, for example based on AI algorithms".

Further information can be found at www.logicals.com

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