Growing markets for data-centered engineering platforms

As described in detail in a white paper published in the last issue of d1g1tal AGENDA (1), E & C firms have begun to rethink their business models under the impact of ongoing digitalization in the direction of offering their capabilities as hybrid service bundle deliveries. While the focus is currently still on the sale of physical assets, future platform economy approaches demand sharing of information based on digital twins to create business-oriented outcomes from the EPC clients' view. Questions to Aucotec Board Member UWE VOGT on the status of digitalization in engineering and new business models through openness and integration.

Mr Vogt, what are the prerequisites for comprehensive and effective digitalization of engineering and what a corresponding engineering tool infrastructure has to look like?

First you have to ask yourself, 'Why digitalization at all?'. After all, it is not an end in itself. Here, it is important to formulate clear goals with all those involved: What benefits and added values will advance the engineering, and what do we also want to gain for the phases afterwards i.e. for commissioning and operation of the plants?

Got it. So, let's start with engineering.

Here, many disciplines usually work together. From concept to process design and automation, instrumentation, hydraulics / pneumatics to electrics. Data from other disciplines is always needed. If, as is common, individual disciplines each use their own tools to develop their area of responsibility, the data is usually not completely compatible. As a result, they have to be re-entered by the experts in the other disciplines and repeatedly reconciled manually. This takes time and has a high potential for error. Even the best tools are of little help to the overall process if they only deal with a subject-related 'silo'. Realizing this is also an important prerequisite.

The only remedy is an engineering system that offers the various disciplines a uniform data model as a basis. In it, each object exists only once, but can be edited by each department from its own point of view and is therefore always up-to-date. Document-oriented tools cannot do that, even if the documents are digital.

Our interlocutor Uwe Vogt
Picture: Aucotec

The benefits of a central data model are even greater when it comes to managing the many unavoidable changes. Today, no discipline waits until an upstream unit is finished. Work is being done in parallel, but this results in many additional changes to which other disciplines must respond. To handle this agility efficiently, the engineering system must be able to map the interdisciplinary dependencies of the data and make every change visible to everyone in an instant. This is also important when making changes to a running plant. Being able to adopt them consistently and efficiently is the prerequisite for the digital twin being reliably up to date. Obsolete twins, older sisters so to speak, are of no use to operators. Effective digitalization in engineering therefore requires complete and extensible data models.

How do you envisage the market for a data-centered engineering platform like yours?
Basically, we perceive that the market is increasingly demanding such platforms. And the increasing demand for our Engineering Base (EB) cooperation platform confirms this. Many companies are searching for and evaluating the systems available. Some even try to develop such software themselves.

However, we believe that cooperation between engineering and operation can be intensified considerably. When plants are built, thought is not usually given to the enormous value of complete data for operation. There is considerable potential here for cost and time savings from cross-discipline data models, which the operations sector does not yet seem to be fully aware of.

What feedback are you getting from your clients?
Many customers and potential customers in the field of engineering are amazed that an end-to-end platform for all core engineering disciplines actually exists. However, the major added values for the engineering process are quickly recognized. The one challenge that remains is that EPCs often think in terms of projects and want to calculate investments in their own tools and processes through individual projects. However, the introduction of such a platform requires a certain amount of work, which only pays off after several projects, but then all the more so.

On the operations side, a lot of effort is being put into the search for a way to summarize and prepare existing brownfield plant data to make it useful and efficient for operation. Since the data has so far mostly been available in very different formats and, above all, qualities, this is often a difficult undertaking. This is where Aucotec's expertise is increasingly in demand. Together with the customer, we then weigh up the costs and benefits very thoroughly.

To what extent are your clients using EB to prepare for data-driven business models?
In general, it is a clear trend that plant manufacturers are also very much offering the services and, ultimately, the operation of their plants or their components. For this 'servitization', of course, the data from engineering is just as necessary as the live data from the plant, and EB's data centricity is an important basis for this. Thanks to all this information — and the know-how of the plant manufacturers — operations can indeed become considerably more efficient. At the same time, the findings from the data can be used to improve the technologies in the plants. This can also be a business model. It was only thanks to EB that it was possible for an Aucotec customer to achieve such a service, i.e. offering plant operators always optimized technology of their own components based on continious analyzes of operating and engineering data.

If clients already have plans for or practice with data-driven business models: What is the direction of such approaches?
The example just given is indeed typical. Whether our customers have already implemented such business models or are still thinking about it, the goal is always not just to sell a plant or a subsystem, but to make operation as efficient as possible. This includes both the reduction of breakdowns and downtime and optimization during ongoing operation.

Do you see potential for other business models beyond that?
Yes, that's true for us as well. For some time now, we have been offering our software as a service (SaaS) for purchase. In parallel, there is the option of licensing the data stream in the platform (DaaS). EB is not only used as an authoring system for the various disciplines. In some cases, operators migrate data from other systems to EB and then use the combined database for operation. In this case, the data is usually transferred via web service. Our own business model has expanded here from licensing via user licenses to licensing the data.

Which Aucotec services or consulting services are particularly in demand in your clients' digitalization projects?
The described optimizations in engineering, construction, and operation through an end-to-end engineering platform affect a wide variety of topics and areas, which are generally managed largely independently. The challenge is to adapt the workflow across disciplines. Some of those involved have to accept additional expense. By the way, the fact that we communicate this so openly is very much appreciated.

Our consulting service first consists of analyzing the existing workflows or the requirements, and defining the new way of working based on our platform. That's the easy part. Then it's a matter of introducing the platform and changing the ways of working. This is the difficult part. Our service here is to support management in implementing and arguing for these changes across the board. This management consulting is significantly more important and complex than the content-related, technical engineering consulting. But both have to come together, and the fact that Aucotec has the know-how and competence for both levels is what makes our consulting department so successful.

Thank you for your statements!
Interview: Dr Bernhard D. Valnion

References
(1) "New business models driven by data integration and open platform economies", d1g1tal AGENDA 3/2022, pg. 66—73, Baden-Baden, Germany

For further background information visit
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