ACTEMIUM

WHITEPAPER

The added value of data analytics

Solutions & Services for Industry

VINCI ENERGIES

Whitepaper content

The added value of data analytics	3
Where are you on the digital ladder	4
What is HISTORIANDERS?	5
Entrance at all levels!	5
A proven approach	7
Start now with HISTORIANDERS!	7

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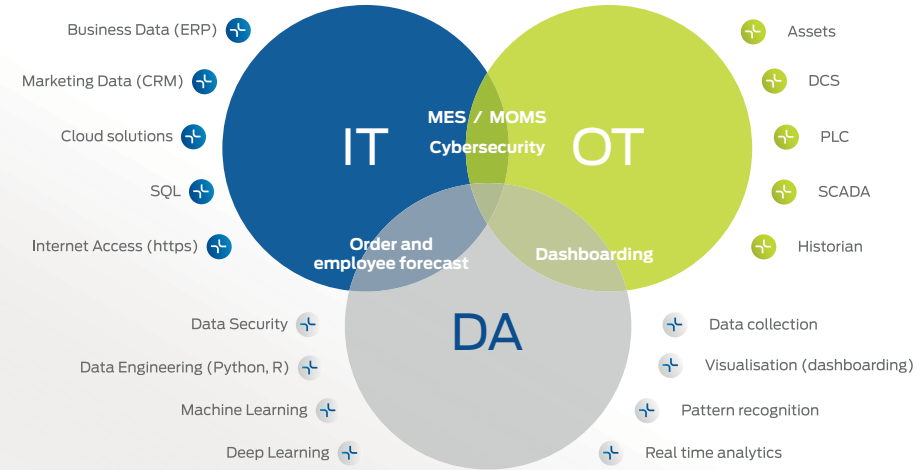


The added value of data analytics

Information Technology (IT) supports the general mainly administrative and financial business processes, while Operational Technology (OT) does this for the production processes. For years they belonged to separate worlds, but are increasingly converging. In highly digitized production companies, they are connected to each other via a MOMS solution. This allows orders to flow directly from the ERP environment to the production floor.

Optimizations and cost savings

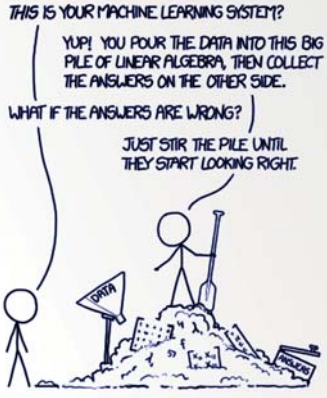
Integrating IT and OT opens new possibilities for production companies to improve their processes and thereby realize cost savings. In companies where IT and OT are already well integrated, further improvements can be achieved through data analytics. This in order to eventually grow into future concepts such as Cyber Physical Systems (CPS).

Insight into processes

In office environments, data analytics is already used to predict orders and staffing levels, for example. On the shop floor, data from different systems is increasingly stored and visualized in dashboards. Yet data is hardly used to gain in-depth insight into the course of production processes. In particular, combining data from multiple data sources is not or hardly done. As a result, the causes of failures often remain unknown and recurrence of failures cannot be prevented. Many other opportunities for optimization are also being underused. By bringing together the fields of IT, OT and Data Analytics, Actemium makes production optimization, sustainability and cost savings possible for its customers.

IT/OT/data analytics

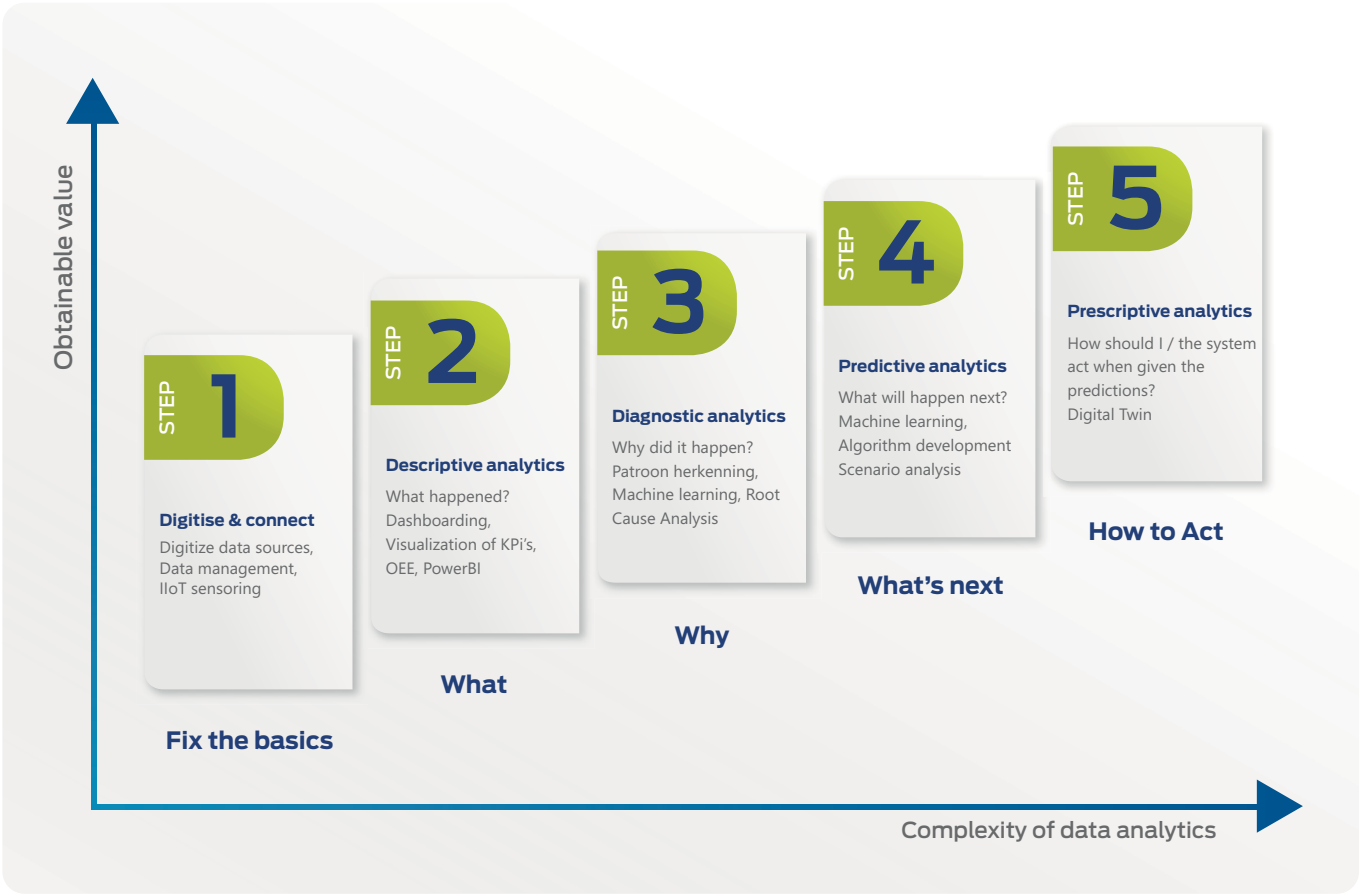
In many production companies, there is still a great distance between the shop floor and the people involved in data analytics. It is precisely the collaboration between the three disciplines that provides added value for your company.



Where are you on the digital ladder?

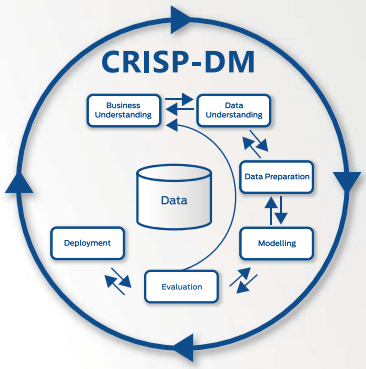
The digital transformation is a step-by-step process

Not all production companies are equally high on the digital ladder. Some do not collect data at all, others use Excel tables or more advanced systems for this. The digital transformation is a step-by-step process of which the different levels must be completed one after the other.
The higher one gets up the ladder, the more possibilities one gets. At level 3 it is already possible to recognize patterns and trends in your data automatically and quickly. From level 4 you can predict failures or other events and, for example, perform predictive maintenance with the help of monitoring and your maintenance history. At level 5 - the highest level - your machines can predict failures themselves and, just like a Tesla, intervene in the process. With its Digital Opportunity Scan, Actemium can determine where your company stands on the digital ladder and then go through the HISTORIANDERS process with you.



What is HISTORIANDERS?

In a data-historian, the history of process and production information is stored. In many manufacturing companies, historians are used by only a small part of the organization. Cross-connections between the various process variables are not investigated, thus, opportunities are missed.



Different and smarter

HISTORIANDERS is a method to use your data historians differently and intelligently and to combine them with other data sources. Modern software applications can automatically recognize deviations, trends and patterns in data and link these to data from outside the system. They quickly identify relations that cannot be found manually. In this way, the causes of a fault can be identified and you can predict and prevent the occurrence of this fault in the future.

Standardized customization

Every company has different data and data storage systems. Instead of a 'one size fits all' software tool or platform, we therefore first map out the possibilities, available data and possible solutions. The starting point is the data that the customer already has. The subsequent approach is standardized and derived from the CRISP DM-model for data analysis (Cross InduStry Platform Data Mining). It consists of 6 steps, which our data experts go through together with your plant manager, maintenance manager and production engineers.

> Even if you don't have a historian yet, we can help you

Step 1: Business Understanding

In our Act to the Max strategy-workshop we look together at your business, production strategy and objectives. How can data contribute to this? What do you want and can you achieve with data analytics? Which objectives have the highest priority? For example: increasing your production, predicting maintenance, lowering your costs.

Step 2: Data Understanding

We investigate which data sources you already have and what you can already do with your data. Examples of data sources are: a historian, MES, maintenance management systems, Excel.
In addition, we also look at which other data sources are useful and easy to access for your company. We describe the data from the various sources and assess their quality. Even if you don't have a historian yet, we can help you.

Step 3: Data Preparation

We prepare the data to make it suitable for modeling and forecasting. Different sources are combined, incorrect data is excluded and data files are cleaned up. This is an intensive phase for the rest of the process.

Step 4: Modelling

We test various algorithms and machine learning models and determine which model is most suitable for your situation to achieve the previously defined goals.

Step 5: Evaluation

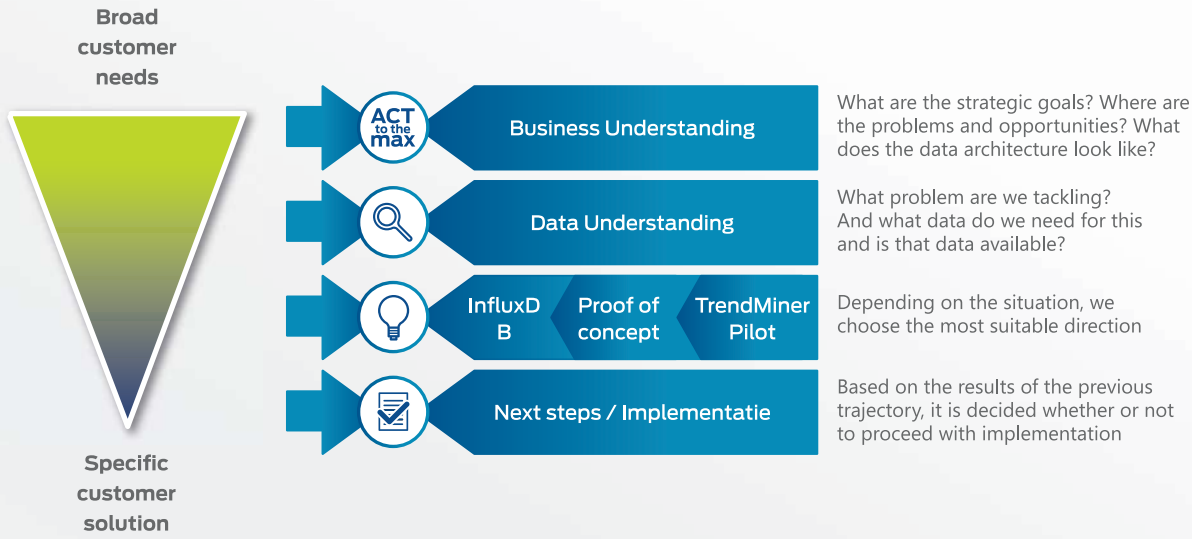
We evaluate the outcomes of the model together with the experts in your company. We check whether the results are explainable and correct. Does the model meet expectations, does the model provide the correct result? If not, we go back to previous steps to improve the model. If the model satisfies, we move on to the last step.

Step 6: Deployment

Deploying and maintaining the model usually requires a lot of knowledge about OT and IT (eg cloud computing). Where, in which system in the production process are the results made visible and for whom? We help you with this.

Entrance at all levels!

**Together, we determine how high your company already is on the digital ladder.
Subsequently, you can then enter HISTORIANDERS at the correct level.
We offer 3 variants.**



Variant 1: Basic Startup

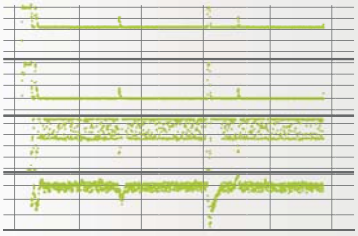
You save little or no historical process parameters from your PLCs. Then we will first make this possible.

Variant 2: Proof of Concept

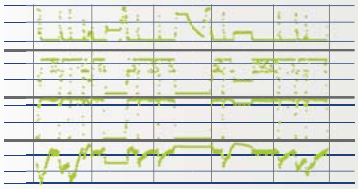
You already store process parameters. Then we can immediately start exploring the amount of stored data and their quality. Together we determine what the business case is, after which we link offline datasets within a Proof of Concept to support this business case.

Variant 3: Advanced

You have already saved process parameters and also have maintenance data or OEE data to link downtime. Together we determine what the business case is, after which we link your datasets - whether or not in the cloud - to software from partner companies that specialize in data analytics. You can choose between a pilot or direct implementation.



Period after shaft replacement



Period just before the shaft replacement

A proven approach

For a customer in the manufacturing industry, we predicted the breakage of the shaft of an extruder with HISTORIANDERS. This is a huge cost item, as production stops for days in the event of a shaft break and an external company has to be called in for the repair. We also predicted other faults in the extruder based on process data.

We looked at the available data sources, cleaned up the data and only kept the relevant parameters. The idea was that the torque behavior of the extruder could predict a shaft break. We compared the process parameters just before the shaft break and just after the shaft replacement.

The HISTORIANDER trajectory also provided additional valuable insights. The extruder turned out not to be the biggest bottleneck in the process (which was thought initially) and, moreover, significant energy savings could be achieved. Following these successful findings, we are now going to map out the real bottleneck based on the same approach, using advanced data analytics software.

Start now with HISTORIANDERS!

Wondering what process improvements and cost savings HISTORIANDERS can bring you? Then contact our experts.

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Manage Movement

Without movement, everything stands still. Agility is key, also in the consultancy, engineering, realization, commissioning and maintenance of industrial installations. Committing and managing the appropriate expertise at the right time, all over the world. Responding flexibly to changes. Constantly seeking innovative Solutions & Services that will improve your processes.
We call it Manage Movement..