



Technical article

# Hidden data potential increases operational efficiency

## Industrial IoT is the key

A large number of manufacturing companies worldwide were plunged into a difficult economic situation almost overnight – opening the eyes of industry stakeholders. The major conclusion: digitalization is essential in order to be flexible (adaptive) and resistant (resilient) in times of crisis. That is why many industrial companies are investing in the digital transformation and the Internet of Things.

### The unimagined OPEX potential of untapped data

When it comes to home office solutions, digital communication tools, or virtual trade fairs, the advantages of digitalization are clear to see. However, the significance of untapped data is still largely underestimated. Precious data often remains unnoticed – and thus unused.

Digital businesses have already played a major role in the consumer area for quite a while, whereas the industry still has to make up ground in digitalization. For a long time, many entrepreneurs didn't have a tangible idea of what digital transformation really means because its benefits weren't always apparent. Due to the challenges posed by the Covid-19 pandemic, the topic is now picking up speed.

This is somehow in the nature of things: a plant's productivity and efficiency are what really count in today's production world. At the end of the day, output, throughput times, along with fast product changeovers are what matter. Here, conventional automation technology has reached a high degree of perfection over the course of many years. Making full use of the process data available has enabled production workflows to become ever more efficient, secure, and reliable.

But the plant is by far not everything. The untapped savings potential in the immediate production environment is often of great significance – i.e., unused information and data in the field. In addition to the optimum utilization of available resources, potential benefits include improved plant availability, optimized energy consumption, and maintenance efficiency, as well as the fundamental optimization of supply chains. These operating costs (OPEX) are the focus of the company's CFO, CEO, and, more and more, also of the Chief Digitalization Officer (CDO).

No company in the world can afford to leave such savings potential untapped.

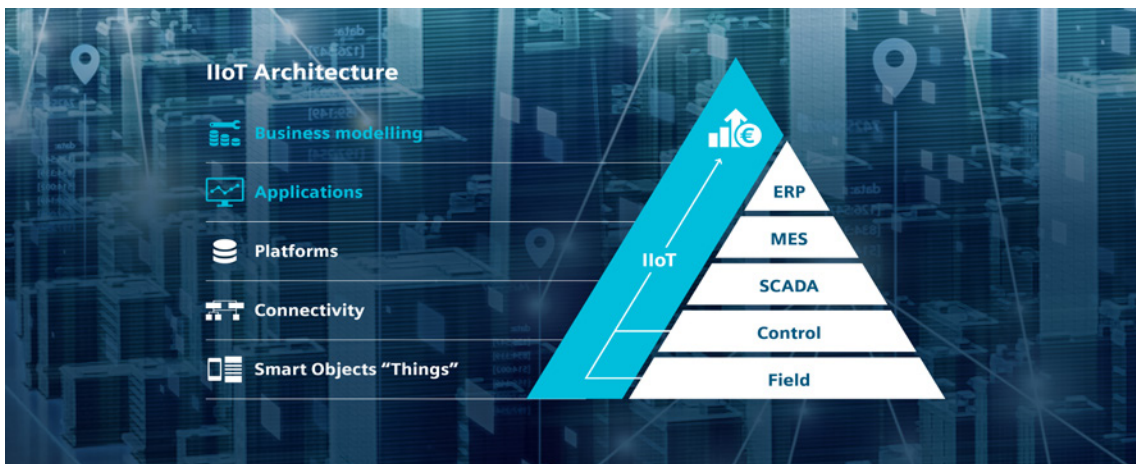
### **Making full use of all the data – enjoying all the benefits**

The Industrial Internet of Things (IIoT) opens the door towards optimal data utilization. And the consistent connection between physical objects from the world of production and intelligent

algorithms and functions in the virtual software world set the foundation to make this happen. Data and information can thus be collected, made available, and securely forwarded to downstream intelligence. The market nowadays offers consistent, standard-based solutions for implementing this so-called digital connectivity.

Smart devices such as controllers, PCs, or Edge Devices can thus be connected and data, which already exists anyway, can be made available for further use. However, not only high-tech devices, but also simple objects without inherent intelligence – such as boxes, workpieces, as well as operating and production equipment and their characteristics – can provide valuable digital information thanks to being equipped with IIoT sensors or sensor systems. So the name "IIoT" – Industrial Internet of Things – says it all.

Intelligent software solutions in the form of computer applications and mobile apps transform the data provided into productive recommendations for actions to be taken by the user. The focus should always be on the user's desired goal. The purpose also defines which data and information is made available from the field via connectivity. This means that the amount of knowledge which flows into the software is increasing more and more. Therefore, close cooperation between the software manufacturer and the user (co-creation) is key to combining plant, process, and customer knowledge and meeting the defined goal.



The IIoT untaps field data unused so far in order to unlock additional business potential.



The increase in operational efficiency through IIoT significantly exceeds that of production efficiency.

Thanks to the use of Artificial Intelligence (AI), the software provides unique data-based insights into corporate workflows and makes a real-time-capable knowledge base available for operational decisions wherever you are.

### **Maximum transparency of the plant**

The requirements in terms of operating costs, and also with regard to the availability, safety, and security of production plants, are continuously increasing in today's process industries. It is therefore crucial that all the plant components consistently provide real data. In fact, this is the only way to securely monitor the state of the process plant and already identify any anomaly well before a problem occurs. This allows the preventive introduction of countermeasures to avoid cost-intensive plant downtimes.

The challenge is to ensure that the data originating from all of a process plant's active components is captured as completely as possible. This is where connectivity unleashes its full power. It allows you to access existing data sources in field devices from control systems or to make use of existing HART networking via industry gateways. The data available can thus be used for another purpose via the so-called "second data channel". Components, such as pumps, compressors, and gears, transmit valuable data via special IoT sensors. This allows you to draw conclusions on their operating state. Even on mechanical devices without electronic components, the IIoT software can thus detect deviations from normal operating conditions in order to enable timely action.





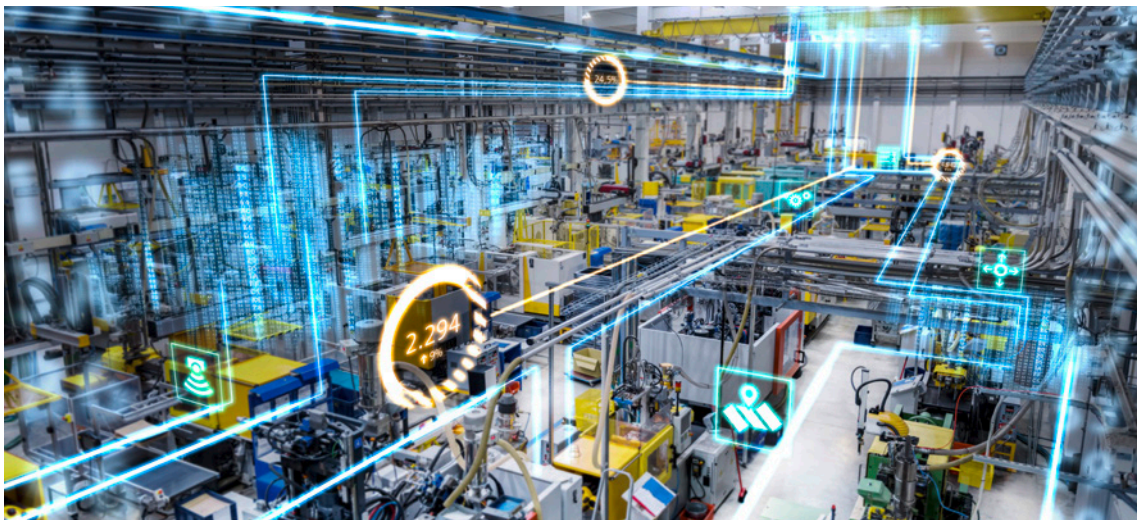
In the IIoT, not only smart devices can provide precious data, but also objects such as boxes or workpieces.

### Things become smart and devices begin to speak

The manufacturing industry is under pressure: customers want to be served faster and faster and changing product requirements must be implemented in no time at all. This requires the utmost level of flexibility and productivity. To achieve this, material flows must work smoothly and manufacturing workflows must be designed to be maximally efficient and dynamic.

IIoT solutions customized for the corresponding area can provide target-oriented support here. The digital – in many cases even wireless – connection of smart manufacturing devices to the production network is already state of the art in many companies. Furthermore, this paves the way towards accessing existing data conveniently and in real time via intelligent apps.

For example, the current availability, utilization, and condition of various manufacturing resources can thus be represented in a transparent manner and specifically optimized.



The IIoT makes production transparent and unlocks efficiency potentials never imagined.

## Security information

In order to protect plants, systems, machines and networks against cyber threats, it is necessary to implement – and continuously maintain – a holistic, state-of-the-art industrial security concept. Siemens' products and solutions constitute one element of such a concept. For additional information on industrial security measures that may be implemented, please visit <https://www.siemens.com/industrial-security>

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And the acquisition of data from means of production – such as tools, transport containers, workpieces, and materials – enables an even higher level of data consistency. Thanks to identification via unique, automatically readable tags, locating and identification systems, for example, can provide valuable logistical data. Time-consuming searches and clarifications in the production area are thus a thing of the past. Workers can call up the current storage place of materials and assets as well as the current status of orders via any digital end device at any time. This means that a consistent, real-time capable information basis is available.

## Conclusion

The creation, storage, and processing of data is gaining more and more importance in today's modern industrial world. And fortunately, the savings potential grows along with the challenges presented. To unlock this potential, specific IIoT solutions enabling the profitable use of data are the need of the hour. The clever analysis and combination of this data can increase its usability exponentially, thus enabling even higher savings than originally expected.

Being supported by an experienced digitalization partner can prove extremely helpful on the way towards the IIoT. Siemens combines in-depth digitalization and automation know-how with industry, product, and solution expertise.

Digitalization Consulting experts are specialized in addressing a company's individual needs, jointly identifying potential fields of action and developing the best implementation strategy.