

abat

sustain

Free space for strategic sustainability tasks.

WHITEpaper

# Sustainability Reporting - digital

Capture sensor data with SAP S/4HANA

CSOs (Chief Sustainability Officers) or CSR-Managers (Corporate Social Responsibility) spend a great deal of their working time preparing and implementing sustainability reports. To prepare these reports, diverse data sources of information must be identified from various departments of the company. Once the data is identified and the source known, the data is gathered and collected manually or extracted from information systems and databases.

The complexity of the data collection process presents those responsible for sustainability reports with major challenges. Different quality and granularity of data or the lack of availability and access to data from third parties increases the overall effort enormously. Additionally there are formal requirements for the reports, through existing or future standards which must be adhered to and guidelines which must be followed.

Generally, sustainability reports are relevant for addressing environmental concerns, employee concerns, social and societal concerns. Respect for human rights and the fight against corruption and bribery should also be proven by means of a sustainability report, and must be displayed using non-financial indicators.

#### **CSR Directive Implementation Act**

Large capital market-oriented companies have been required to report non-financial information since 2017.

Affected companies must make statements on environmental issues, employee concerns, social concerns, respect for human rights and the fight against corruption and bribery.

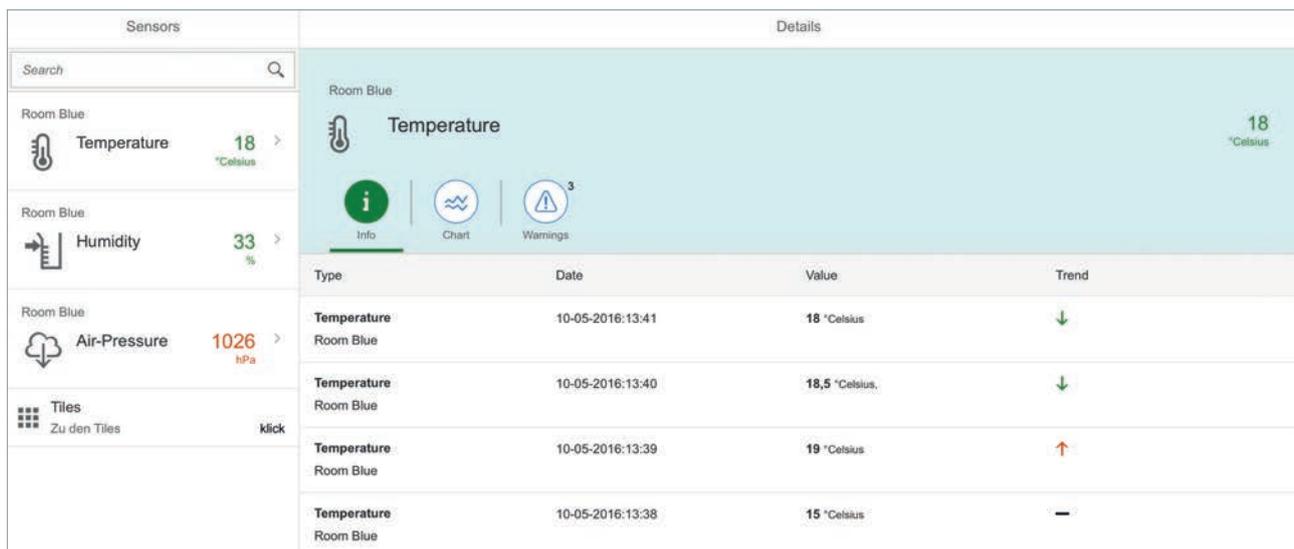
The compilation of the non-financial statement may be based on national, European or international frameworks.



## Data collection of non-financial key figures

This Whitepaper presents possibilities to support the necessary preparation work and data collection of non-financial key figures with a modern business suite such as SAP S/4HANA. In particular, the addition of non-financial key figures as well as information from sensor systems can provide significant improvement to the reporting process. The collected and identified data can easily be processed further, with other specialized software for the publication or controlling of non-financial aspects.

A modern standard software system like SAP S/4HANA supports a multitude of different databases, source systems and processes in the company. This represents rich advantages and opportunities to harvest and use non-financial key figures in sustainability reports.

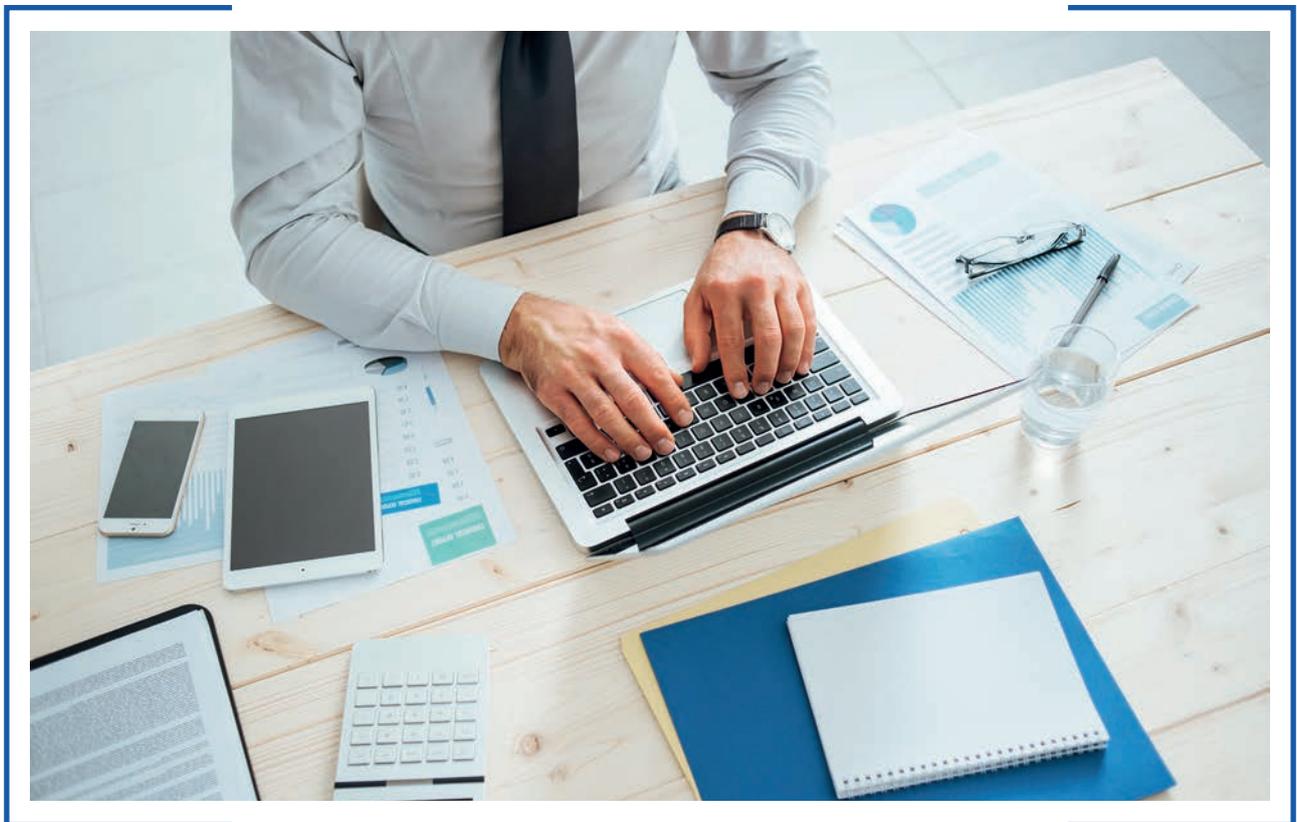


But, in addition to the technical challenges of collecting and processing non-financial key figures, there are also operational challenges in processing the data within a modern business suite such as SAP S/4HANA. The existing classic and processed key figures must be extended by social and ecological aspects. Some of this information, such as the contents of critical chemical substances or the required material and energy flows, has already been widely used. Because of this, various environmentally relevant data can be maintained in the material master, such as the label for dangerous goods or the aggregate status. For other aspects, the existing key figures must be significantly expanded. There are not necessarily technical difficulties, but at the operational level, responsibilities must be clarified and the required granularity and units, which have to be supported, defined. A strength of modern systems such as the SAP S/4HANA lies in the rapid provisioning and processing of different amounts of data as well as the ability to perform multiple transformations on this data.

## Sensor data in everyday operations

Large , fast, different - with these keywords, the data produced by sensors can be accurately described. Where data from individual sensors may seem manageable, enterprise-wide collected data can quickly exceed the capacity of conventional business application systems.

Strength of modern in-memory databases, as used within the SAP S/4HANA system, play out here: aggregation, calculations and conversion of arbitrary complex and heterogeneous amounts of data can be carried out in fractions of the time previously required, and allow completely new dimensions for the analysis and presentation of operational issues.



Another aspect, which the use of an in-memory system enables, is the processing and provision of previously „unused“ data. Where previously non-business data was not processed or collected, data, for which there was no capacity or recording capability, can now be included in the consideration or in general provided. In particular, historical considerations, year-on-year comparisons or forecasts of inventory data will be more accurate, more reliable and will allow measurement of the company's non-financial goals.

# Application examples for sensor data with SAP S/4HANA

In everyday business, there is a multitude of possible applications for transferring data into S/4HANA system via sensor technology. The following section presents a few examples that can be used in a variety of ways, whether in production environments or in general business operations.

## Sensor data from hierarchically structured sources

Sensor sources that provide data in a prepared and standardized form, such as an XML file, are the easiest to use. In this case, the structured form where the sensor data resides can be read out by means of pull methods. Thus, the S/4HANA can be used for the timing and retrieval of the sensor data and it can feed them into any database.

This method is suitable for sensors that do not capture the data on a small-scale and within a fixed time frame section, for example: office equipment such as printers or copiers.

The sensors from time recording systems can also be integrated in this way. A third scenario for sensors with XML output would be the area of the PLC (Programmable Logic Controller).

### **Raspberry Pi - pocket size sensor system**

Sensors no longer need to be complex and bulky. With the Raspberry Pi - a single-board computer the size of a credit card - small sensors, which capture various environmental data, can be operated. The provision, retrieval and evaluation are carried out from a HANA application and can be scaled as required.

For already hierarchically structured data, basic logic and functionality in sensor technology is required. This means, for example, that the first processing of the data takes place outside the Business Suite SAP S/4HANA and, incorrect or incomplete data records are never brought into the SAP system at all. The further evaluation and display for corresponding sensor data can then be taken over – by existing functions in the SAP Business Suite. So, it is easy to represent the current state of resources (in the case of printers, for example, paper and toner).

Using self-designed dashboards, all important information can be viewed at a glance and any necessary action can be identified. Further activities such as central and automated purchasing or ordering processes, combined with the consideration of historical consumption data, can be implemented as well as the evaluation of smart home/building/office environments.

## Sensor data from individual distributed sensors

In addition to more complex systems, which offer their sensor data via existing interfaces, raw data from individual sensors can also be processed with an SAP S/4HANA system. Native HANA applications can display exception values and incorrect values. In contrast to the pull-controlled query with hierarchically structured data, push methods are used for these sensors in order to make the data usable.

For example, ambient sensor technology (humidity, temperature, CO2 content, seismic ...) coupled to self-contained microsystems (e.g. Raspberry Pi or Arduino) can be used for the comprehensive analysis of any environmental conditions inside and outside companies. The entire processing of the raw data from the call to the transfer to the database is carried out from the HANA application. Limits represent only the physical possibilities of the sensors (e.g. frequency of queries, accuracy of the measured values, number of sensors). For individual distributed sensors, any scalable applications can be displayed. From climate detection in office buildings to the overview of complex industrial plants (through sensor technology in pumps, valves), a variety of options can be implemented and integrated into existing processes.

## Connection and further processing with special software

Only the complete acquisition and provision of the raw data enables reliable further processing and use in external special software. The combination and processing in the SAP S/4HANA Business Suite can be used to supply the data to a large number of reporting systems or material flow balancing tools and enables effective creation of sustainability reports or material flow models.

If these systems are to be connected via generic interfaces (e.g. WSDL), the data and documents processed and created can also be transferred back into the SAP Business Suite and used. However special attention should be paid that the number of transmitted and displayed values does not exceed the capacities of the services provided.



## Outlook and other possibilities

The integration of various sensor data into a HANA database can be realized with different methods. Depending on the type of sensor, it is possible to use a push or pull drive. Other tasks, such as the graphical representation, analysis and evaluation of the measured values, can be incorporated into various business processes. In the field of sustainability reporting, reliable data on the success or implementation of individual goals can be presented.

Even large amounts of values can be processed and displayed with high performance using a HANA database. Restrictions are often in the possible scheduling periods of the sensors - a problem, which can be easily solved by scaling the sensors. The advantage of high speed in capturing and processing the HANA database can lead to errors in third-party systems or complex applications, if they cannot process the supplied data fast enough. By using internal methods, this problem can be prevented relatively easily, so that the extensive use of sensor data in sustainability reporting can lead in the future to more detailed, comprehensive and accurate statements.

In addition, the centralized collection and provision of data in one system makes it enormously easier for the sustainability officer to work more efficiently, freeing time for other tasks.





## Five benefits about sustainability reporting with SAP S/4HANA

- Central recording and processing of non-financial key figures
- Access to already recorded economic and non-economic key figures of the company
- Preparation and provision of sensor data for special software (reporting, material flow management ...)
- Extensive analysis and presentation options
- Native integration and extension of non-financial aspects into everyday business life

### Contact:

#### **abat AG**

Nils Giesen  
An der Reeperbahn 10  
28217 Bremen  
Germany

+49 421 4304-60  
nils.giesen@abat.de  
www.abat-us.com

### North America:

#### **abatUS LLC**

1500 First Avenue North  
Unit #41  
Birmingham, AL  
USA 35203

+1 205 588 81 58  
info@abatusa.com  
www.abatusa.com

### Mexico:

#### **MEXabat**

Calz. Zavaleta 3922 4to-6  
Santa Cruz Buenavista  
Puebla, Pue. CP. 72170  
México

+52 222 284 95 48  
victa.wewerinke@abat.de  
www.abat-us.com