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DIGITAL SOLUTIONS AND USE CASES

The B.One Solution World of the Minol-ZENNER Group

The B.One solution world provides digital infrastructure, smart devices, data services and applications for:

- Municipal utilities and energy suppliers
- The housing and real estate sectors
- Cities and municipalities working towards becoming smart cities
- Industry and commercial businesses

Measuring devices and sensors from different manufacturers can be integrated into the B.One solution world, giving users the flexibility to work with products from multiple providers. B.One meets all requirements for interoperability and data security.



B.One Smart Building

Solutions for intelligent buildings



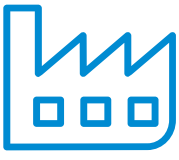
B.One Smart City

Solutions for smart cities



B.One Utility

Solutions for municipal utilities and energy suppliers



B.One Industry

Solutions for commercial businesses and industry

In safe hands from start to finish: IPMA® Level C & Level D-certified project management

Every IoT project is unique and involves a wide range of complex requirements. We understand that every project phase needs dedicated support, from planning and implementation to proactive assistance during ongoing operations. ZENNER is your trusted partner in digitalisation, committed to providing comprehensive support at every stage.

We draw on our experience from more than 450 successfully implemented IoT projects in Germany and work with you to develop new business models across all areas of the smart city. It does not matter which use case you want to start with. Whether you have an initial idea for digitalisation and need comprehensive support with implementation, or already have sensors that need to be integrated into our IoT ecosystem, for example via LoRaWAN®, we have the expertise to support you.

Experienced, certified project managers (IPMA® Level C and Level D) guide you through the implementation of digital infrastructure and complete IoT solutions. Our experienced DevOps team ensures scalable operations and maximum availability. Depending on your requirements, we can also tailor our services on a modular basis. This flexible, comprehensive approach sets us apart in the market.

Our services at a glance:

- Project management: Certified to IPMA® Level C and Level D, using agile methods and proven concepts
- Process and operational support: We can take on selected tasks involved in operating your IoT solutions
- Support: Our support teams remain available after project completion
- Managed services: We offer a managed service for the remote operation of on-premises installations
- Development and integration: We develop customised solutions, apps and interfaces on request

B.One element suite: The foundation for digitalisation in the energy sector and smart cities

Based on best practices and proven experience, ZENNER achieves a high level of process efficiency with the B.One element suite. Standardised data models and automated onboarding processes are key to making IoT rollouts economically viable.

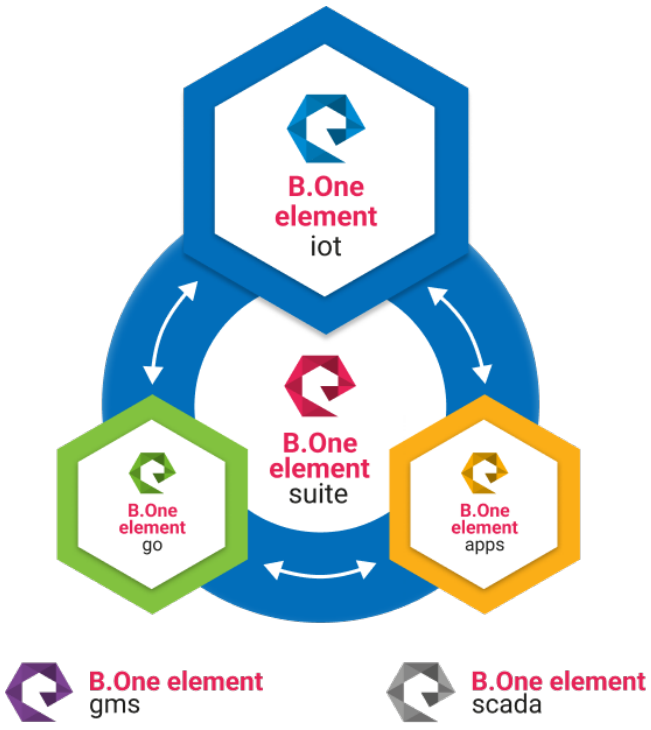
The B.One element suite combines three established modules: B.One element go, B.One element iot and B.One element apps. Together, they enable a fully digital end-to-end data flow, from device commissioning to the application, without media discontinuities.

B.One element go is a smart, flexible field service management solution that digitalises installation and service processes. It supports every stage of a sensor's lifecycle, including initial installation, battery replacement, device replacement and other field service tasks. The solution consists of a dispatch management backend and a smartphone app for iOS and Android.

B.One element iot is ZENNER's IoT platform. It provides the key functions required to operate IoT solutions, including manufacturer-independent gateway management, device and asset management, process automation and numerous interfaces for connecting external systems. It is available as Software as a Service (SaaS), on-premises or as a managed service.

B.One element apps addresses the needs of end users. Its application builder allows users to create their own visualisations and applications quickly and easily, without extensive programming skills. Ready-to-use apps such as B.One BuildingLink are also available.

All three modules are interconnected and exchange data automatically. The B.One element suite provides the foundation for a wide range of IoT solutions, from smart metering to smart city applications.





B.One element scada

B.One element scada: The Professional Solution for Grid Transparency

The need for greater grid transparency is increasing. Grid operators require more accurate real-time or near-real-time data on the condition of low-voltage networks. Additional metering and sensor technology is needed, particularly at local distribution substations and in selected network sections.

The solution: Metering and control infrastructure must be expanded to achieve detailed, near-real-time monitoring. With B.One element scada, ZENNER offers a solution that provides data at one-minute intervals.

B.One element scada is a complete hardware and software solution. Data is collected using power-flow measurement technology installed at transformer substations or cable distribution cabinets. A dedicated Grid Connector transfers high-frequency data to the B.One element iot platform.

Benefits of B.One element scada:

- Extensive ZENNER expertise in connecting grid control centres since 2017
- Compatibility with all grid control systems
- Support available even after project completion
- Various options for feedback from the grid control centre to the B.One element suite
- Maximum flexibility through technology openness and hardware independence

B.One Metering as a Service:
The First Step Towards Digital Water Management

B.One Metering as a Service (MaaS) meets all your requirements for a sustainable, future-proof water supply and further advances the Smart Water Rollout in Germany. The solution enables remote reading of radio-equipped water meters, regardless of fixed schedules or physical access to the meters. Automated processes ensure reliable and straightforward meter data collection, reducing staffing requirements and allowing resources to be used more efficiently.

Installation: ZENNER provides a complete installation and onboarding service for meters, sensors and software, all from a single source.

Meter Reading: By combining the two radio technologies LoRaWAN® and Wireless M-Bus (parallel radio functionality), MaaS achieves very high meter reading rates.

Data Transmission and Integration: With MaaS, all your data, including meter readings required for billing, is available centrally on one platform.

Visualisation: ZENNER's specially developed MaaS app displays key information about your meter fleet, including alarms and consumption data.

Through our subsidiary ZENNER Connect, which operates one of Europe's largest LoRaWAN® networks, we create synergies and help maximise cost-effectiveness.

Additional value-added solutions, such as water network monitoring and pump station monitoring, can also be implemented with B.One Metering as a Service.

With B.One Metering as a Service, ZENNER reaffirms its commitment to sustainability, innovation and customer service, providing solutions that combine advanced technology with economic benefits.



Benefits

- Reduced water losses through accurate metering and greater network transparency
- Less effort involved in annual billing
- Shorter meter reading intervals that could enable variable water tariffs in the future
- Greater convenience for citizens, with no need for meter reading appointments or reading cards
- Contribution to environmental protection and water conservation



B.One BuildingLink:
Smart Control of Radiator Thermostats via LoRaWAN®

Initial Situation:

Energy losses due to inefficient heating

Now more than ever, it is important to implement energy-saving measures in public non-residential buildings. It is often unclear which radiators are currently switched on and what the room temperature is. If a heating system remains on unnoticed for a long time or if a radiator is not switched off during ventilation, this consumes a lot of superfluous energy and causes avoidable costs.

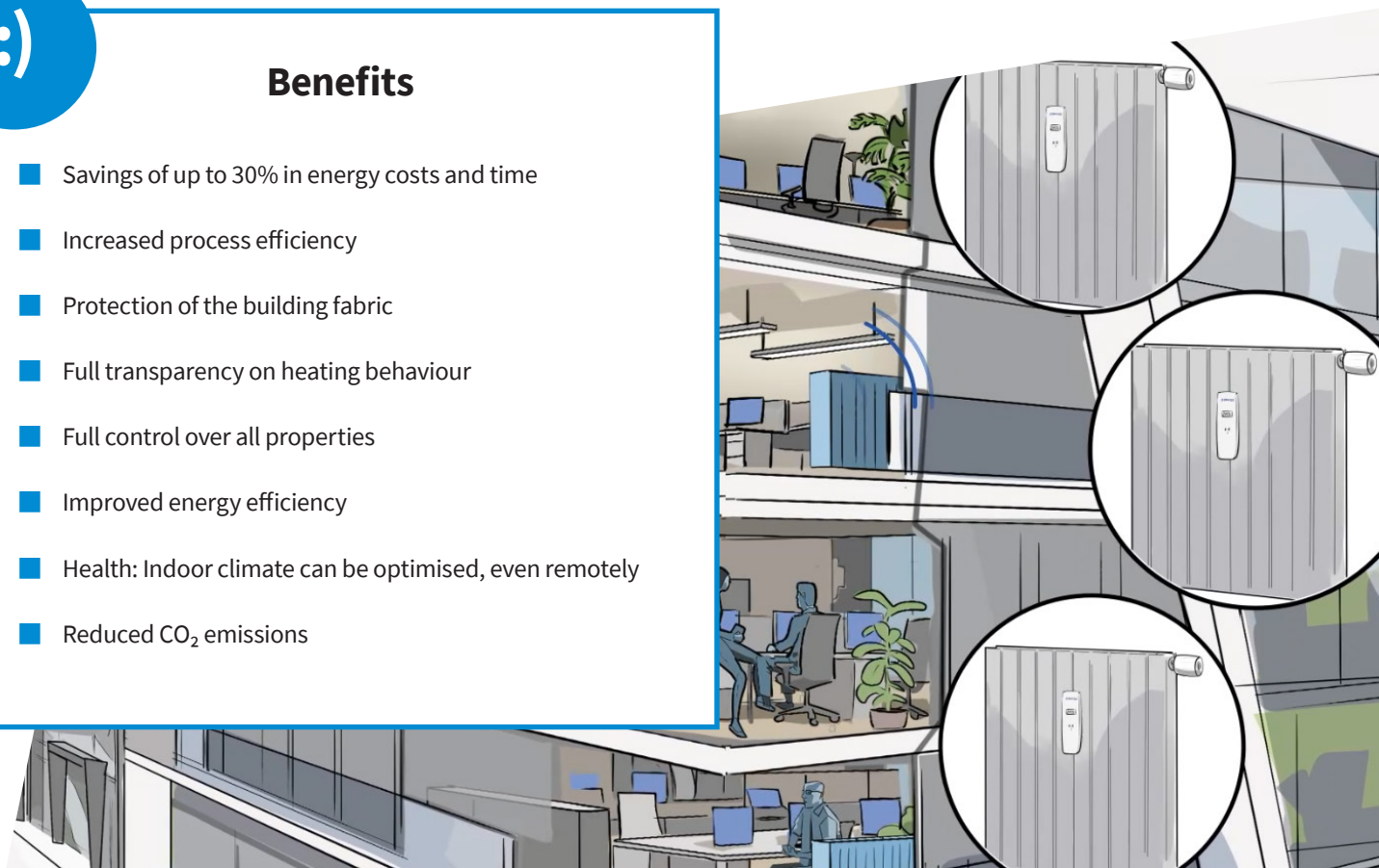
Solution:

A smart thermostat and app to regulate the room temperature

With the VICKI LoRaWAN® radiator thermostat, you can monitor and regulate the room temperature – even remotely. The smart thermostat also automatically detects when a window has been opened and then temporarily regulates the radiator.
Using B.One BuildingLink from ZENNER, facilities managers and building administrators can target specific areas of the building and adjust the temperatures according to actual use. A map view gives the user an overview of all areas fitted with the technology as well as all devices being used in that area. KPIs such as target/actual comparison and dew point calculations enable targeted energy savings and at the same time protect the building fabric, as the risk of mould, for example, is detected at an early stage.

Benefits

- Savings of up to 30% in energy costs and time
- Increased process efficiency
- Protection of the building fabric
- Full transparency on heating behaviour
- Full control over all properties
- Improved energy efficiency
- Health: Indoor climate can be optimised, even remotely
- Reduced CO_2 emissions



Smart Submetering: Remote Reading of Consumption Data and Other Smart Sensors via LoRaWAN®

Initial Situation:

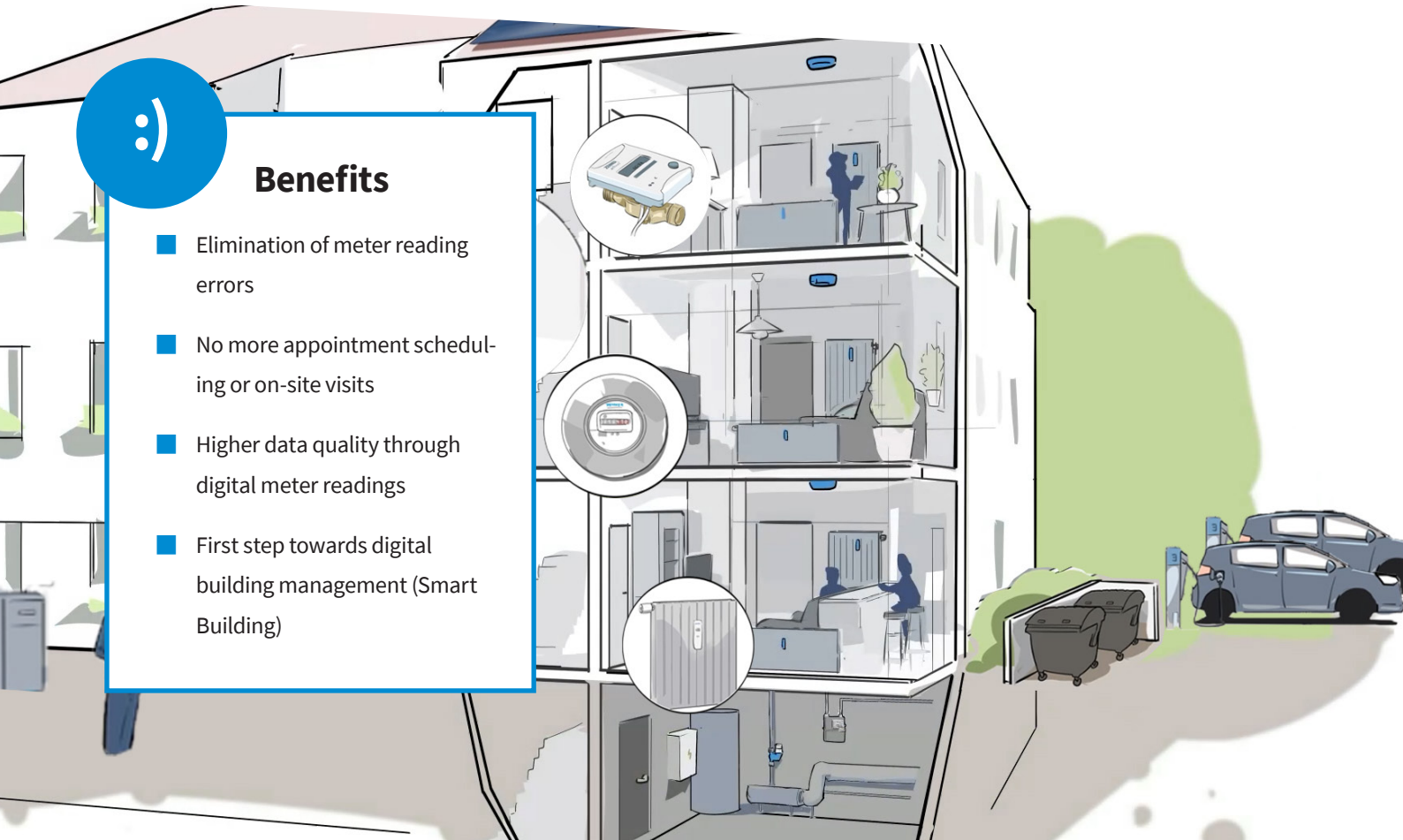
The building sector is Germany's largest source of CO2 emissions

Currently, only around 25% of buildings in Germany are considered sustainable. The aim is to achieve a climate-neutral building stock by 2045. New laws and regulations, such as the amendment to the Heating Costs Ordinance (HKVO) and the EU Taxonomy, highlight the growing importance of consumption transparency. Sustainable digitalisation of buildings is therefore becoming increasingly necessary.

Solution:

Smart submetering as the basis for new digital business models

ZENNER's digital solutions enable metering data to be transmitted securely and reliably via the LoRaWAN® wireless network. Smart submetering provides transparency on energy consumption and costs, helping to reduce energy use. It also supports compliance with the requirements of the German Heating Costs Ordinance (HKVO) for remote reading of consumption data, as well as the integration of additional smart sensors in buildings.
For many municipal utilities and energy suppliers, smart submetering with LoRaWAN® is an ideal entry point into digital building management and a more sustainable future.



Intelligent Indoor Air Quality Monitoring with LoRaWAN®







Initial Situation:

No overview of the exact CO2 concentration in the room

Room temperature and humidity influence, among other things, the ability to concentrate. Likewise, in times of infectious diseases such as COVID-19, it has become increasingly important to keep the risk of infection as low as possible. However, it is often unclear how high the CO2 concentration in the room really is and when and, at best, for how long a room should be ventilated for. Recording and monitoring air quality is therefore necessary in order to be able to react efficiently.

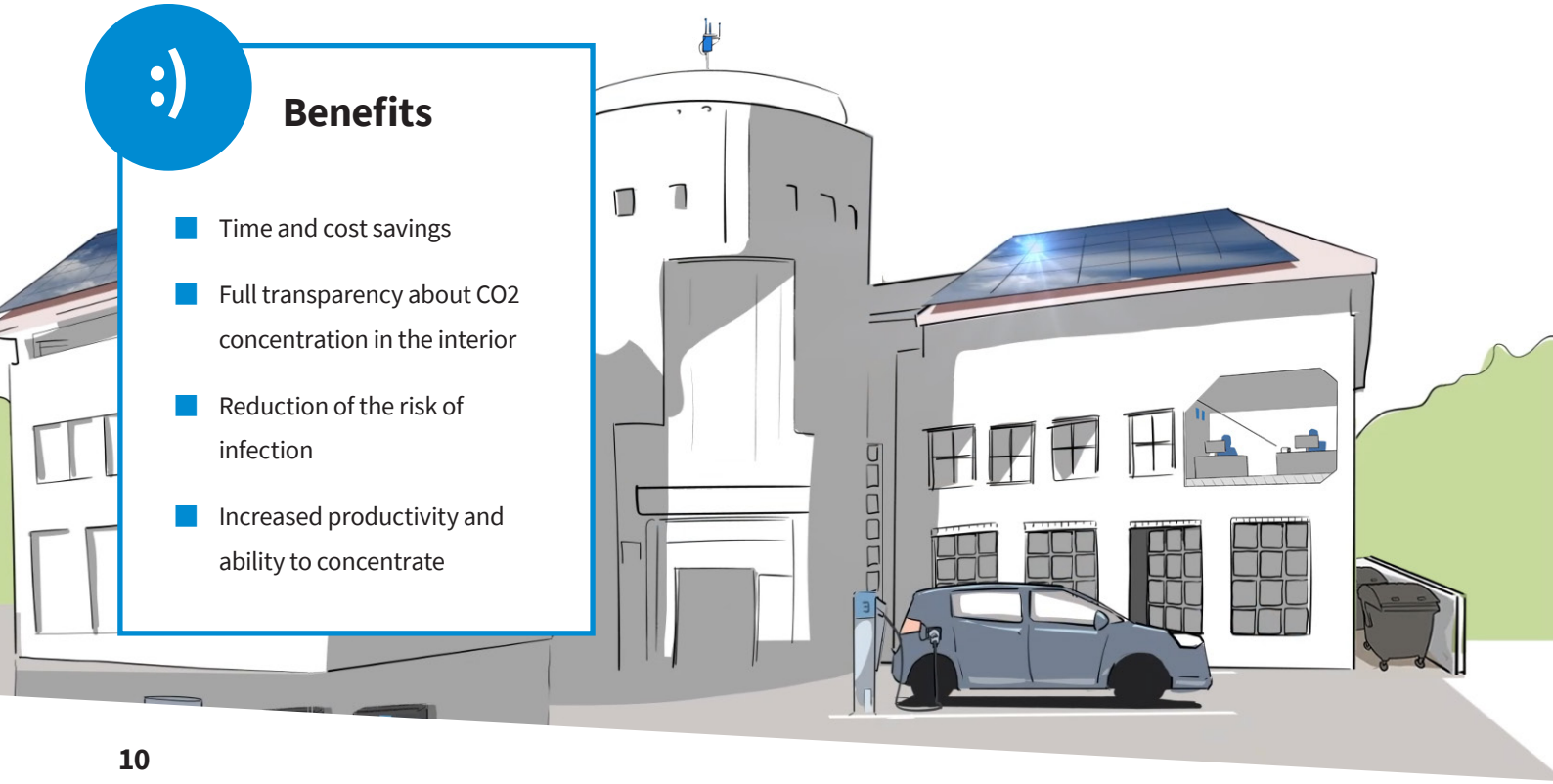
Solution:

Smart CO2 monitoring ensures fresh air

Smart sensors are needed to enable seamless monitoring of CO2 concentrations. ZENNER supports this with an IoT solution consisting of CO2 monitoring sensors and an IoT platform. The solution enables real-time monitoring of CO2 concentrations using LoRaWAN® to create a safer and healthier indoor climate, to protect building occupants and to comply with air quality regulations. Intelligent monitoring of the indoor climate forms the basis for precise adaptation of other areas, such as ventilation, heating and air conditioning. This can be implemented quickly with the help of smart LoRaWAN® sensors from ZENNER.

Benefits

- Time and cost savings
- Full transparency about CO2 concentration in the interior
- Reduction of the risk of infection
- Increased productivity and ability to concentrate



Smart monitoring of local network transformer stations with LoRaWAN®

Initial Situation:

Demands on power grids are increasing due to the energy transition

There are about 600,000 local network transformer stations in Germany. These are neuralgic points in the power supply. The energy transition with the current topics of e-mobility, heat transition or the use of renewable energies has a major influence on the stability of the power grids. Valuable real-time data on the performance or condition of certain assets such as outflows, transformers and cable distribution cabinets is often missing. In addition, local network transformer stations are often not networked, which prevents automatic reporting of incidents.

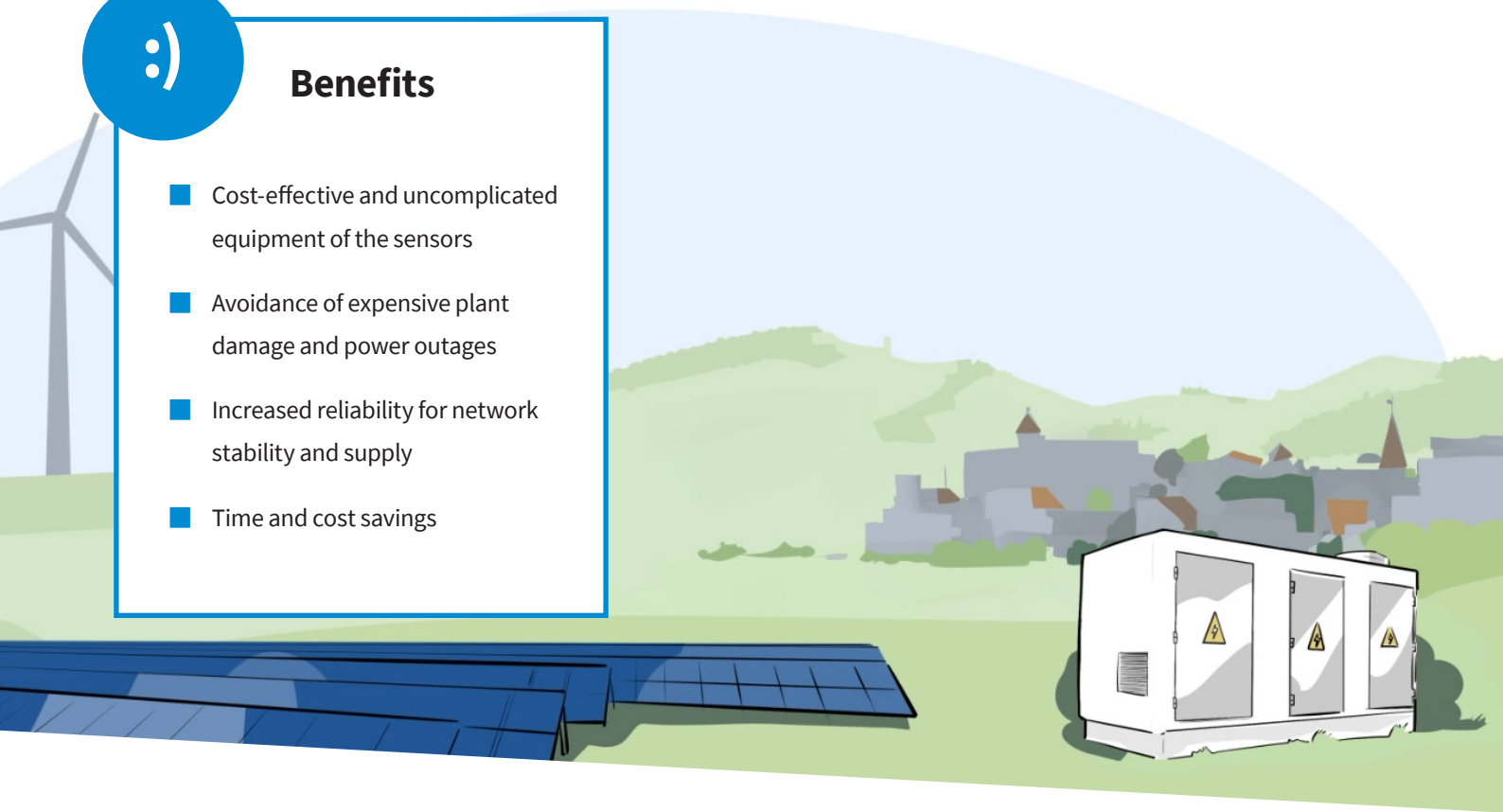
Solution:

Smart monitoring of local network transformer stations with LoRaWAN®

Via a LoRaWAN® remote network and with the corresponding sensors, this real-time data can be transmitted and forwarded to the B.One element iot platform from Zenner for monitoring, which records measured values and processes, and pre-processes them according to the specific application.
With Zenner GridLink, the collected raw data collected can then be visualised for evaluation. Monitoring enables unusual operating conditions to be detected at an early stage, allowing operators to take proactive action. This provides transparency across the entire low-voltage grid in the city.

Benefits

- Cost-effective and uncomplicated equipment of the sensors
- Avoidance of expensive plant damage and power outages
- Increased reliability for network stability and supply
- Time and cost savings



Condition monitoring: monitoring of infrastructural equipment with LoRaWAN®

Initial Situation:

Unplanned downtimes and failures of machines and systems

Infrastructural equipment, such as pumps or motors, is crucial for the smooth operation of machines and systems. However, it is often unclear what condition this equipment is currently in, whether a failure is to be expected or maintenance will be necessary in the future. This important information is lost because the machinery is usually outdated and not networked with each other. Reliable monitoring of the equipment is not possible.

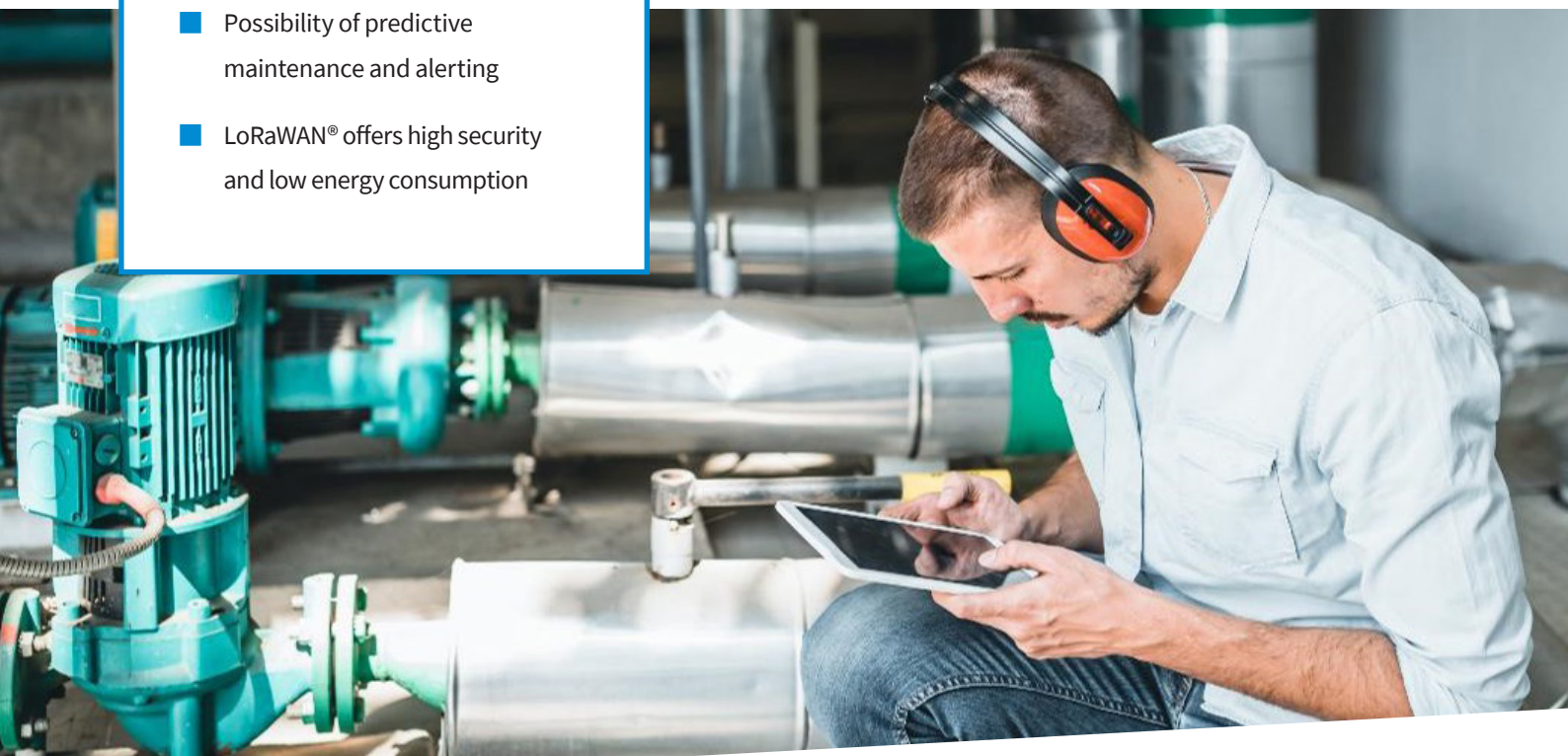
Solution:

Intelligent retrofitting with LoRaWAN® sensors

In order to monitor the condition and performance of the infrastructural equipment, it is upgraded with new sensor technology and connected to LoRaWAN®. All data now collected will be sent to B.One element iot – ZENNER's IoT platform – and can also be accessed from more distant locations.

Benefits

- Time and cost savings
- Increase in process efficiency
- Possibility of predictive maintenance and alerting
- LoRaWAN® offers high security and low energy consumption



Smart Lighting:
Intelligent Control of Street Lighting with LoRaWAN®







Initial Situation:

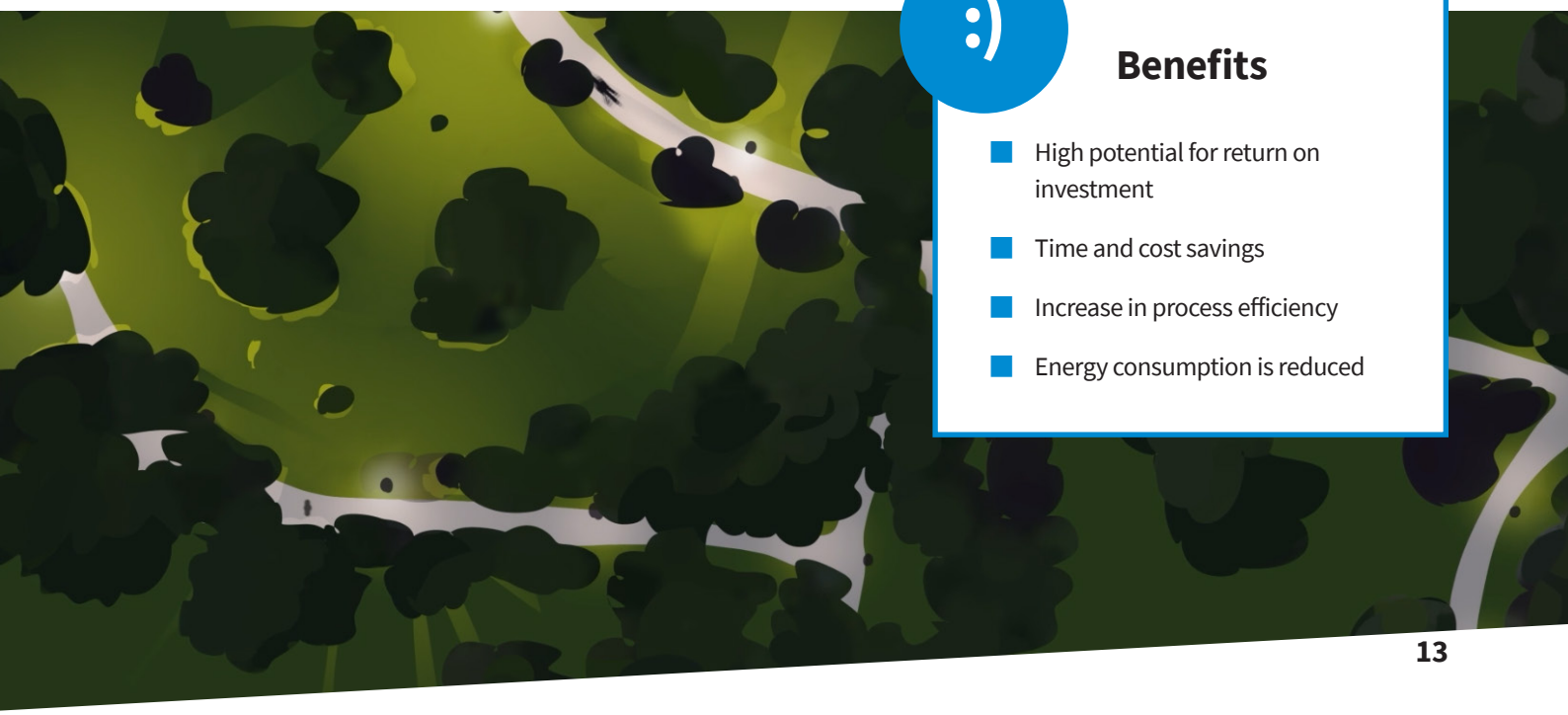
Technology for street lighting often still outdated

The costs of public lighting is one of the main expenditures in a local authority's budget. In addition, outdated technology is often used here – sound frequency ripple control receivers (TRE). Municipal utilities and municipalities need a more economical and flexible solution for controlling street lighting.

Solution:

Individual and smart control of intelligent street lighting with LoRaWAN®

With intelligent IoT solutions from ZENNER, individual light points or entire city districts can be controlled individually and remotely using LoRaWAN®. This means that existing street lighting can be modernised and controlled both cost-effectively and energy-efficiently via the Internet of Things.
Motion or brightness sensors can also be used to control lighting as needed. This gives municipal utilities and municipalities flexibility in lighting control.



Benefits

- High potential for return on investment
- Time and cost savings
- Increase in process efficiency
- Energy consumption is reduced

Intelligent remote reading of water meters with LoRaWAN®

Initial Situation:

Conventional manhole meter reading is a burden on employees and is cost-intensive

The manual reading of manhole meters regularly poses challenges for water utilities, as it is cost-intensive and very time-consuming for the employees doing it. The underground shafts are often located in places that are not directly accessible. Current health and safety guidelines state that two people must always read manhole meters together and secure the open shaft.

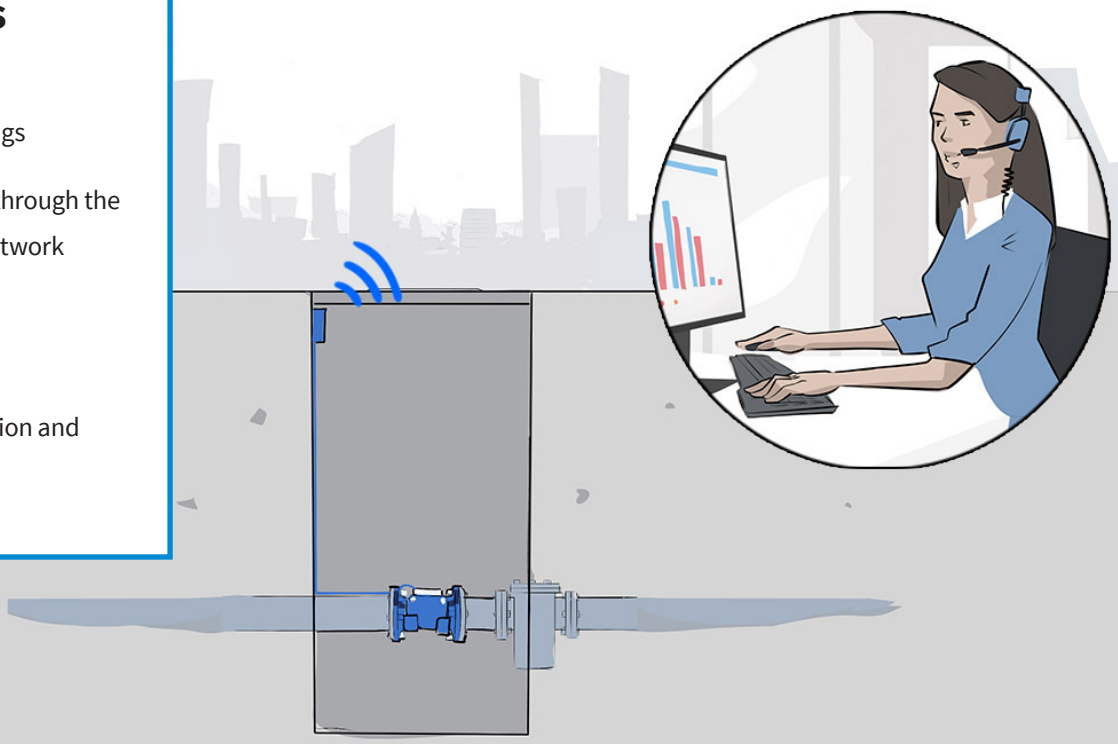
Solution:

Smart Meter Reading in Hard-to-Access Locations with LoRaWAN®

With LoRaWAN®, this cumbersome procedure is a thing of the past. With the smart solution from ZENNER, a shaft no longer has to be entered for a water meter reading.
Water meters, other measuring devices and sensors installed in inaccessible locations can be easily and reliably read wirelessly via LoRaWAN®. The meter data can be accessed at any time – even remotely – and is available online in the B.One element suite for further processing.

Benefits

- Time and cost savings
- Good connectivity through the LoRaWAN® radio network
- Reduced workload for employees
- Direct data integration and alerting possible



Water Level Monitoring: Smart Monitoring of Standing and Flowing Waters with LoRaWAN®

Initial Situation:

Flood hazards are detected too late

The consequences of climate change are becoming increasingly visible and require new solutions. Whether it's a flood under an underpass, a rainwater retention basin on the verge of an overflow, or the penetration of rising floodwater into commercial and residential buildings – many scenarios usually remain undetected. There is a lack of monitoring at neuralgic locations that detects and reports imminent dangers.

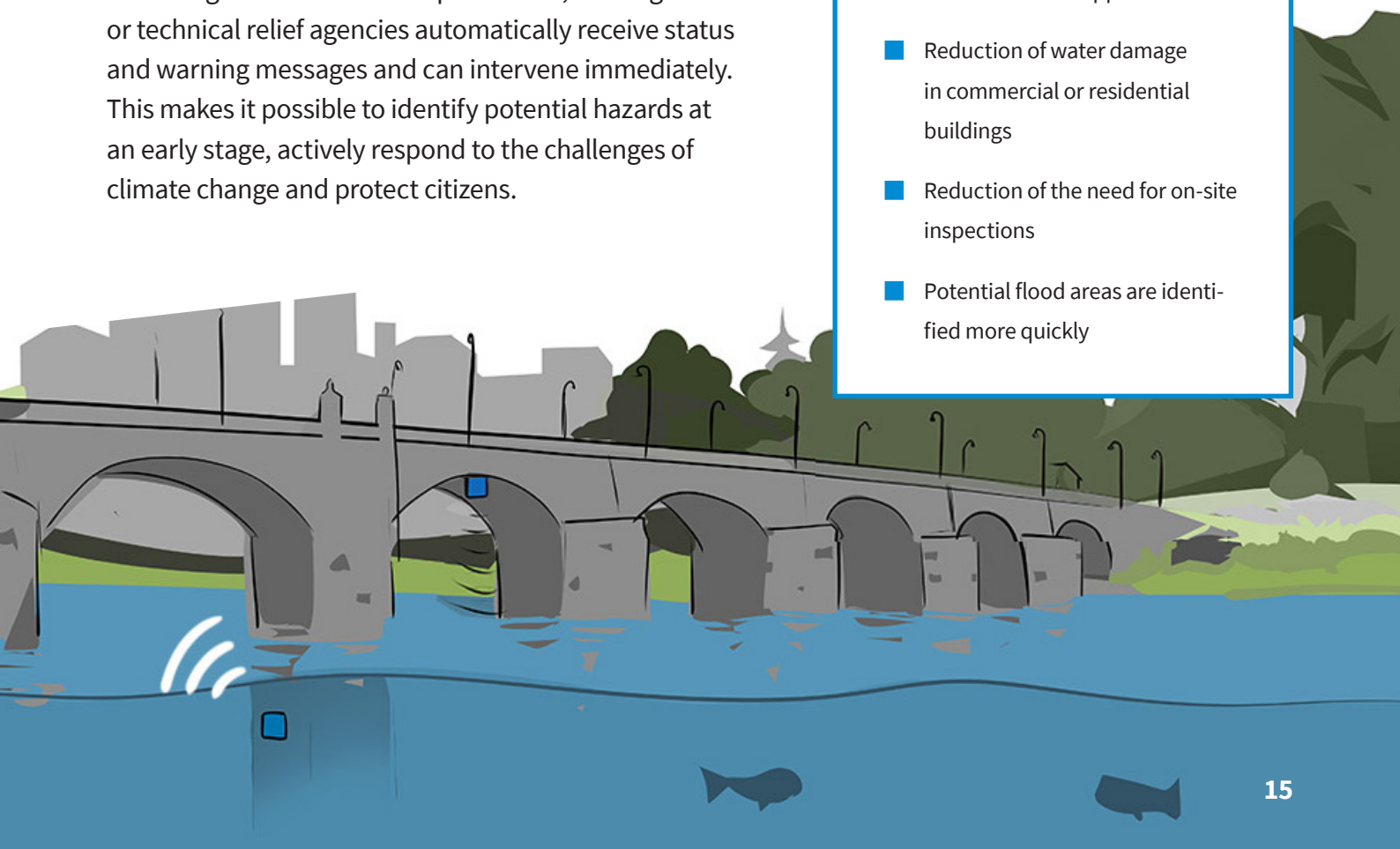
Solution:

Smart water monitoring using LoRaWAN® provides clarity

With LoRaWAN®-supported monitoring by sensors at neuralgic locations, these scenarios can be automatically recorded and forwarded to the necessary locations. With the help of an IoT platform, such as B.One element iot from ZENNER, the data is provided in real time and according to demand. Municipal utilities, fire brigades or technical relief agencies automatically receive status and warning messages and can intervene immediately. This makes it possible to identify potential hazards at an early stage, actively respond to the challenges of climate change and protect citizens.

Benefits

- Time and cost savings
- Possibility to inform the public about the current situation via various communication channels such as a citizen app
- Reduction of water damage in commercial or residential buildings
- Reduction of the need for on-site inspections
- Potential flood areas are identified more quickly



Smart pipe network monitoring with LoRaWAN®

Initial Situation:

High water losses due to undetected leaks

Leaks in distribution networks often go undetected, which can lead to high physical water losses (also known as non-revenue water). As manual meter reading cycles or reactive maintenance processes are still commonly relied upon, leak detection is made even more difficult. This not only delays the repair of damage but also leads to rising operating and energy costs due to unnecessary water pumping and treatment. At the same time, the risk of consequential damage to the infrastructure increases.

Solution:

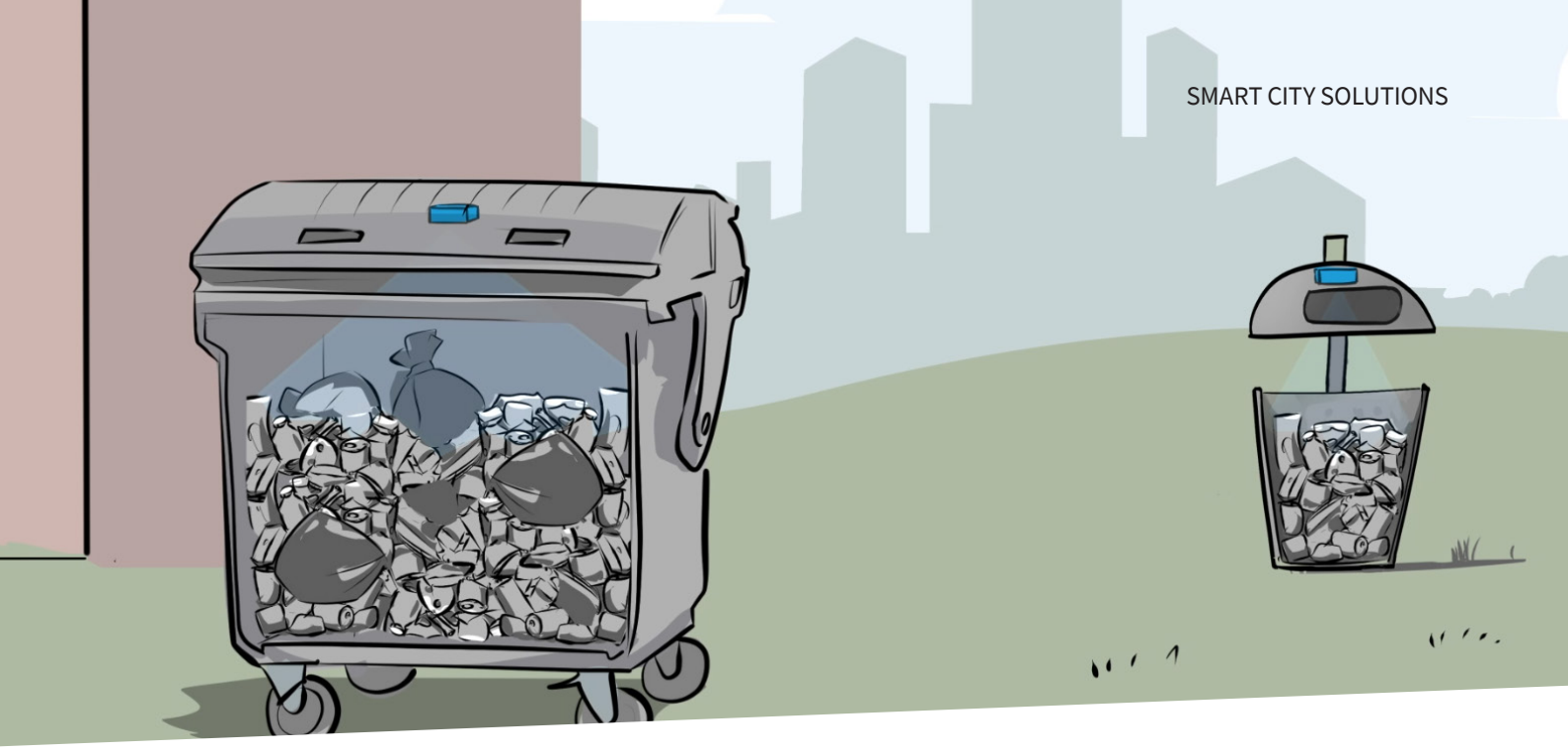
Smart pipe network monitoring detects leaks at an early stage

By using smart water meters, water suppliers can make the water network more transparent in terms of flow and consumption profiles. With the help of modular LoRaWAN® sensor technology, acoustic analysis methods can also be used to locate characteristic leak noises within the pipe network. A central IoT platform – such as B.One element iot from ZENNER – enables the correlation, analysis and prioritisation of the collected data, ensuring that critical events are detected at an early stage. Data is transmitted via LoRaWAN®, ensuring an energy-efficient and scalable connection between the distributed measurement and detection points.

Benefits

- Early and precise detection of leaks
- Significant reduction in water losses
- Increased network transparency and a sound basis for decision-making
- Sustainable reduction in operating and energy costs
- Enhanced security of supply
- Fulfilment of regulatory and sustainability-related objectives.





Smart Waste: Intelligent monitoring of waste levels with LoRaWAN®







Initial Situation:

Removal times cannot be optimally planned

Waste containers or waste glass containers are usually emptied at fixed intervals because there is no actual knowledge of the current fill level. A container can therefore be overfilled sooner than expected and, in addition to being unsightly, also pose hygiene and health risks. If containers are only slightly filled, emptying them is inefficient and causes many empty runs as well as avoidable costs and exhaust emissions.

Benefits

- Time and cost savings
- Increase in process efficiency
- Reduced workload for employees
- Savings in CO2 and other pollutant emissions
- Noise reduction in the city

Solution:

Level Sensors and LoRaWAN® provide clarity

In order to enable waste containers and waste glass containers to be emptied as needed, a fill level sensor is installed in each case. This transmits the current fill levels via the LoRaWAN® remote network to the B.One element iot platform. This means that disposal can be actively monitored, collection always takes place at the economically right moment and minimises noise and pollutant emissions in the city.

Smart Parking: Intelligent monitoring of parking spaces









Initial Situation:

30% of CO2 emissions in city centres are attributable to the search for a parking space

According to traffic experts, around 30% of the traffic volume and the associated CO2 emissions in city centres in urban areas are caused by the search for the right parking space. Finding a parking space is not only inefficient and time-consuming, but also has a long-term impact on the environment and well-being. In order to ensure optimal utilisation of parking spaces and traffic infrastructure, standard monitoring and control is necessary.

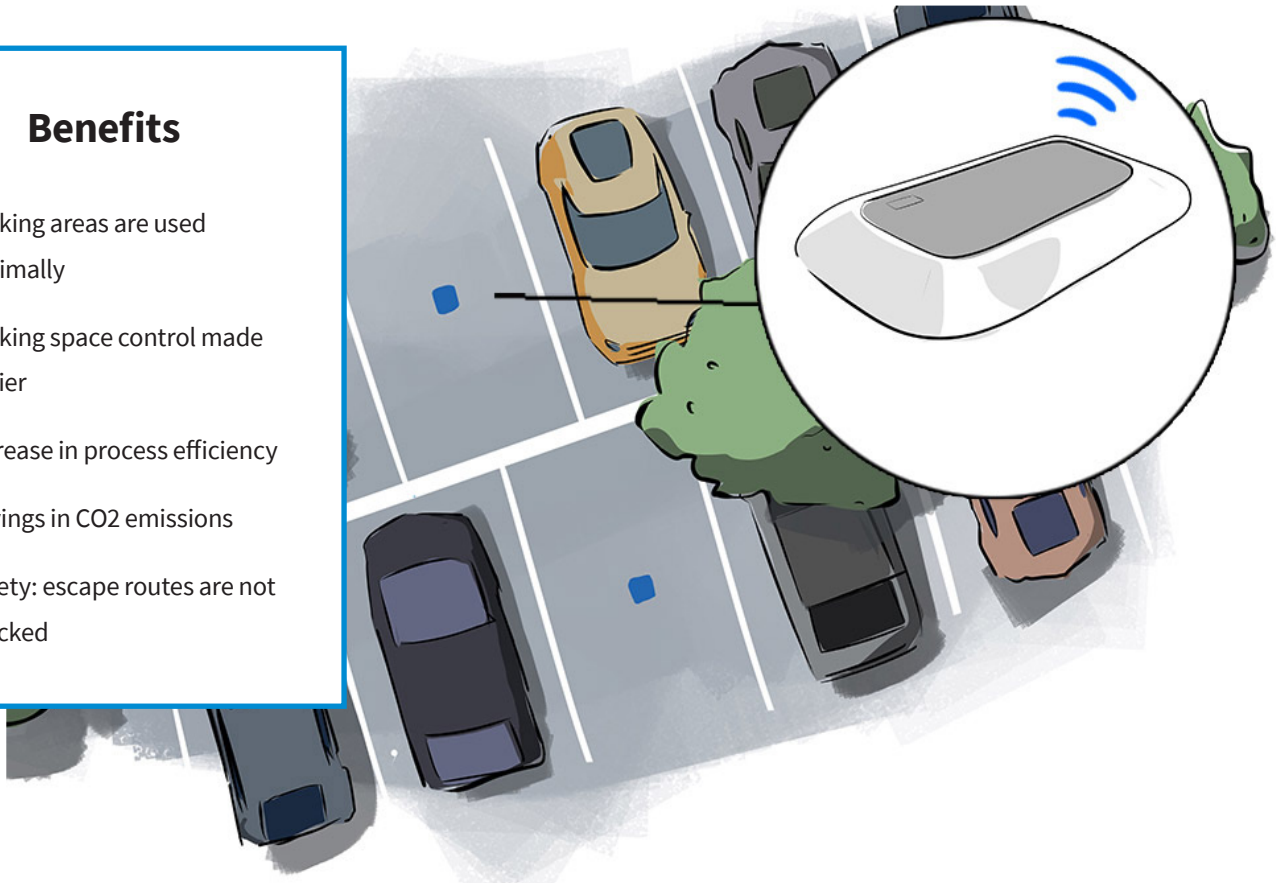
Solution:

Smart sensors detect when a parking space is occupied

Smart ground sensors use LoRaWAN® to record when a parking space has been occupied. With the help of this data, a digital twin of the entire car park is created, which can be used to view the status of parking spaces in real time.
Ground sensors can also be used to monitor e-charging stations and escape routes. In addition, an IoT connection to traffic control systems is possible.

Benefits

- Parking areas are used optimally
- Parking space control made easier
- Increase in process efficiency
- Savings in CO2 emissions
- Safety: escape routes are not blocked





Traffic Flow Monitoring: Intelligent Traffic Monitoring with the Internet of Things







Initial Situation:

Actual Traffic Loads Cannot Be Monitored

Traffic activity in cities should be constantly monitored in order to relieve congestion on busy roads and reduce noise and emissions. In the future, the constant monitoring of traffic flows and traffic load will be indispensable. At present, however, the relevant information and means are often still lacking to make this monitoring fully possible.

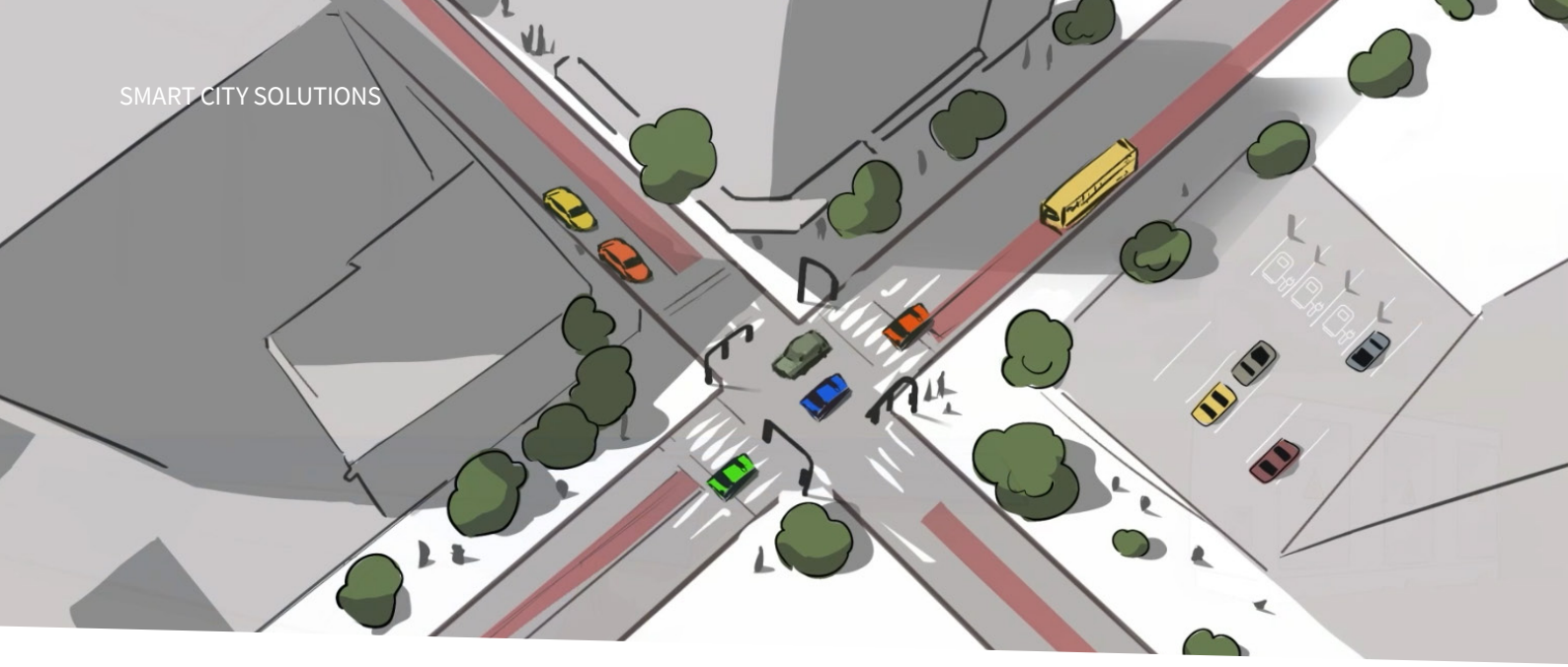
Benefits

- IoT-based detection of traffic flows with flexible sensor technology
- Integration into traffic control systems possible
- Reduction of CO2 emissions
- Less congestion and less noise

Solution:

Intelligent detection of traffic flow via the Internet of Things

With the help of IoT sensors, intelligent recording of traffic flows via LoRaWAN® is possible. Traffic flows including the respective classified individual vehicles, such as bicycles, cars and delivery vans, are measured.
This information can be conveniently displayed via a dashboard on the B.One element suite and prepared for further analyses or integrated directly into traffic control systems.



Weather Data: Intelligent Environmental Monitoring with LoRaWAN®



Initial Situation:

Weather data of the city is not fully recorded

Sustainability and digitisation are also becoming increasingly important topics for both cities and municipalities. In order to proactively address these issues, future-proof and modern solutions are needed to record and analyse relevant environmental parameters. In most cases, however, this data, which is relevant for a sustainable city, is not fully recorded or made publicly available to residents.

Solution:

Weather data in real time shows CO2 content in the air

With the help of intelligent IoT sensors or weather stations, weather conditions can be monitored.
Various environmental data such as air quality (e.g. humidity, CO2 content) and temperature can be recorded using LoRaWAN® and transmitted to a platform where the data can be visualised and publicly accessed.
Building on smart environmental monitoring, cities can provide their citizens with helpful services that increase the quality of life.

Benefits

- Works and services within the city can be planned according to weather data
- Positive contribution to health
- Transparency about air quality
- Increase in process efficiency
- Alerts about specific weather events
- Targeted notifications for vulnerable groups (older people, children) during severe weather conditions



Monitoring of infrastructural equipment with LoRaWAN®







Initial Situation:

Outdated machinery and equipment that is largely not interconnected

Reliable monitoring of machinery and equipment is essential in any manufacturing operation. This is particularly important for existing equipment that is not connected, as energy consumption is often not transparent. In addition, machine failures cannot be predicted, making maintenance planning inflexible. This can result in prolonged unplanned downtime, high costs and lost time.

Solution:

Retrofitting existing equipment with smart sensors

IoT sensors and LoRaWAN® enable the flexible retrofitting of existing equipment, allowing comprehensive energy consumption monitoring. Plug-and-play sensors make this upgrade simple and non-invasive. All relevant data, such as temperature and operating hours, is collected centrally and transmitted via LoRaWAN® to the B.One element IoT platform for further processing. This data also provides the basis for predictive maintenance, helping operators anticipate potential machine failures and plan maintenance more effectively.



Benefits

- Time and cost savings
- Prevention of unplanned downtime
- Transparent, data-driven decision-making
- Increased process efficiency



Benefits

- Save food waste
- Savings in CO2 and other pollutant emissions in transport and production
- Savings of resources such as water and fertilizers
- Detailed reporting for legal requirements

Smart waste:
Reduce food waste with LoRaWAN®

Initial Situation:

By 2030, food waste in retail and at the consumer level must be halved

Up to 30 percent of all environmental impacts in Germany can be traced back to the production and consumption of food. The aim is therefore to reduce food waste in particular in order to protect the environment and human health. This requires continuous monitoring of food waste. However, the existing structures usually barely allow this necessary data to be collected.

Solution:

LoRaWAN® and smart sensors for meaningful weight data

With specially configured LoRaWAN® sensors, the weight data is recorded in real time and sent to the B.One element IoT platform. Here they are supplemented with additional meta-information, such as waste type or container type, and are available in an app for evaluations and alarm functions.

ZENNER

ZENNER International GmbH & Co. KG
Heinrich-Barth-Str. 29
D-66115 Saarbrücken
T: +49 681 99 676-30
info@zenner.com

www.zenner.com