Full transparency in the flow of goods

Thomas Altmann

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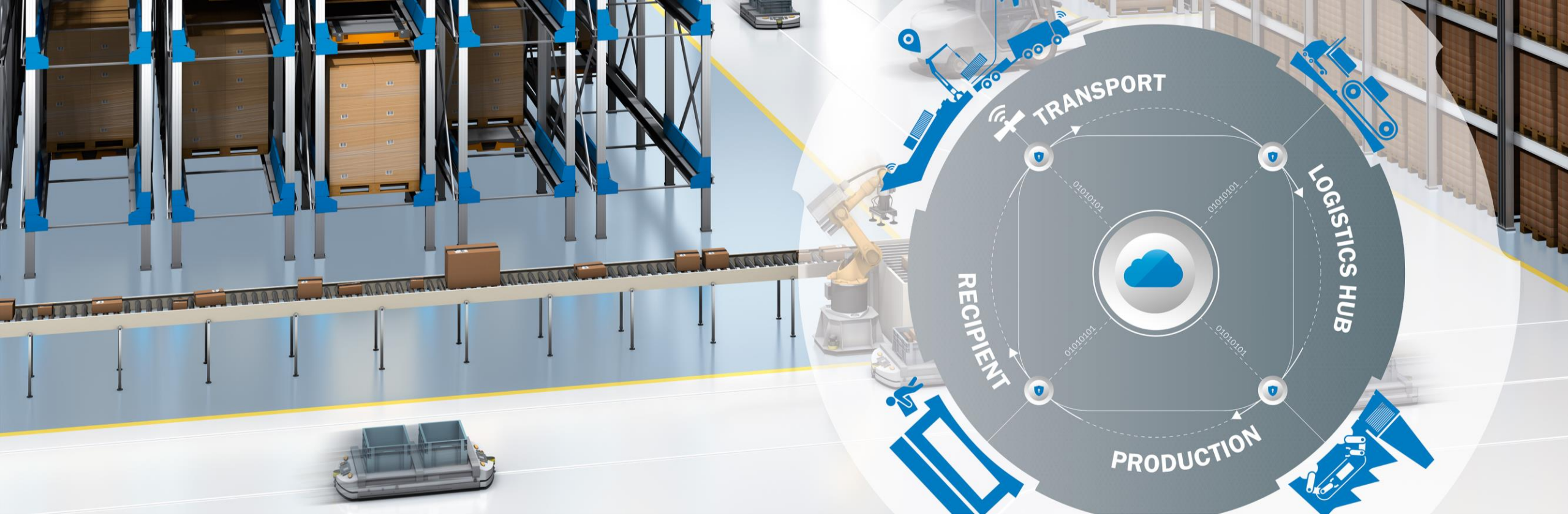

UWB-localization
Full transparency in the flow of goods

UWB-localization – full transparency in the flow of goods

Introduction

Automated areas

Partially and non-automated areas

- Consistent transparency along the entire process and value chain
- Transparent track & trace on stationary conveyor technology
- Beyond conveyor technology, in partially and non-automated areas, only little transparency in the flow of goods
- Often no identification and location on mobile transport aids such as pallet trucks, forklifts or tugger trains
- A lack of transparency leads to a loss of efficiency in the processes
- Possible consequences: loss, delay or incorrect deliveries

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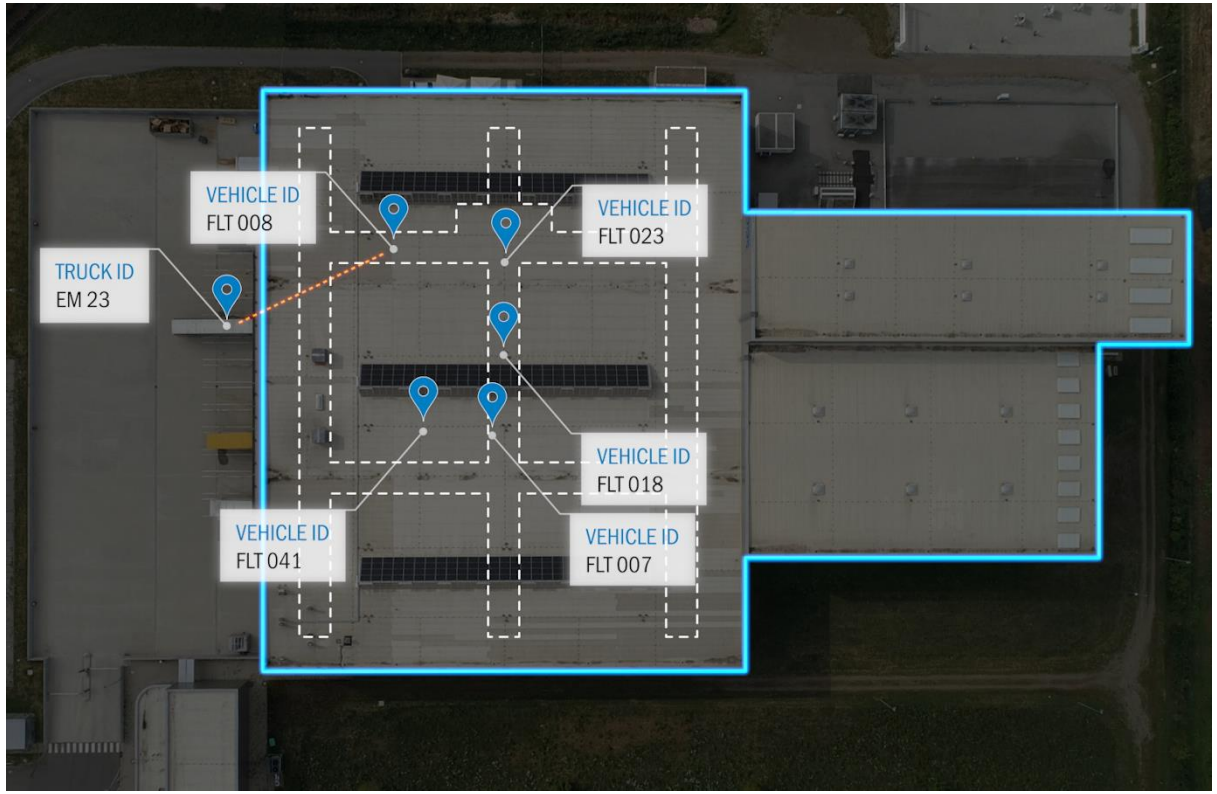
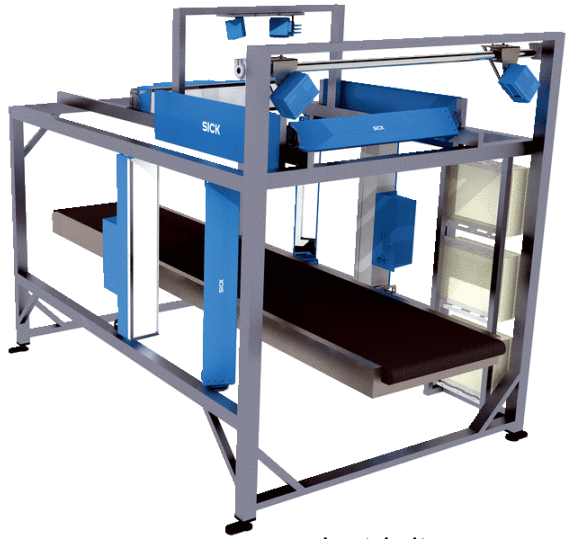
Identification



- Consistent transparency along the entire process and value chain
- Labeling and identification of assets form the basis
- Technologies used: code scanners, cameras, RFID ...

Handheld-Scanner



Camera tunnel with line camera

RFID-read-/write units

IDENTIFICATION

Know which object is in the flow of goods or production.

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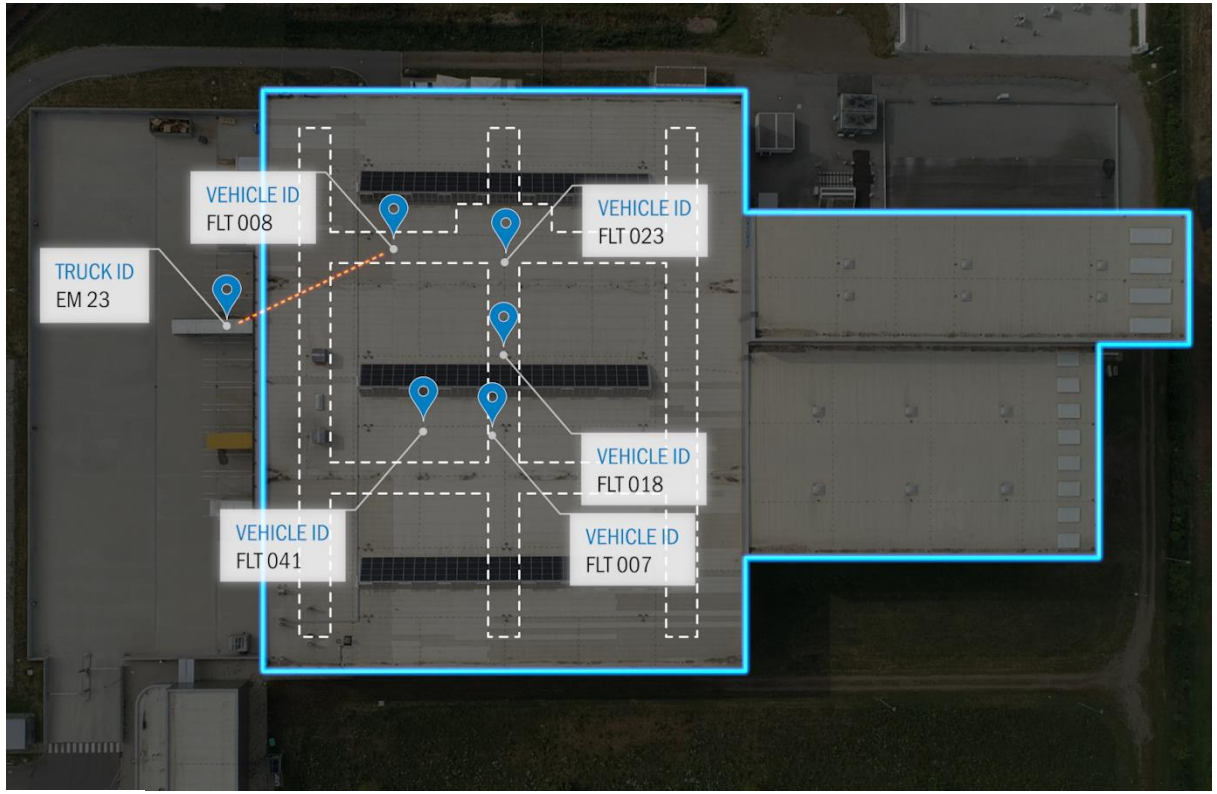
Localization



LOCALIZATION

Know where an identified object is at a specific time.

- Consistent transparency along the entire process and value chain
- Localization of all assets relevant to the flow of goods
- Technologies used: RFID, LiDAR, 3D cameras

3D-camera

LiDAR

RFID-gate

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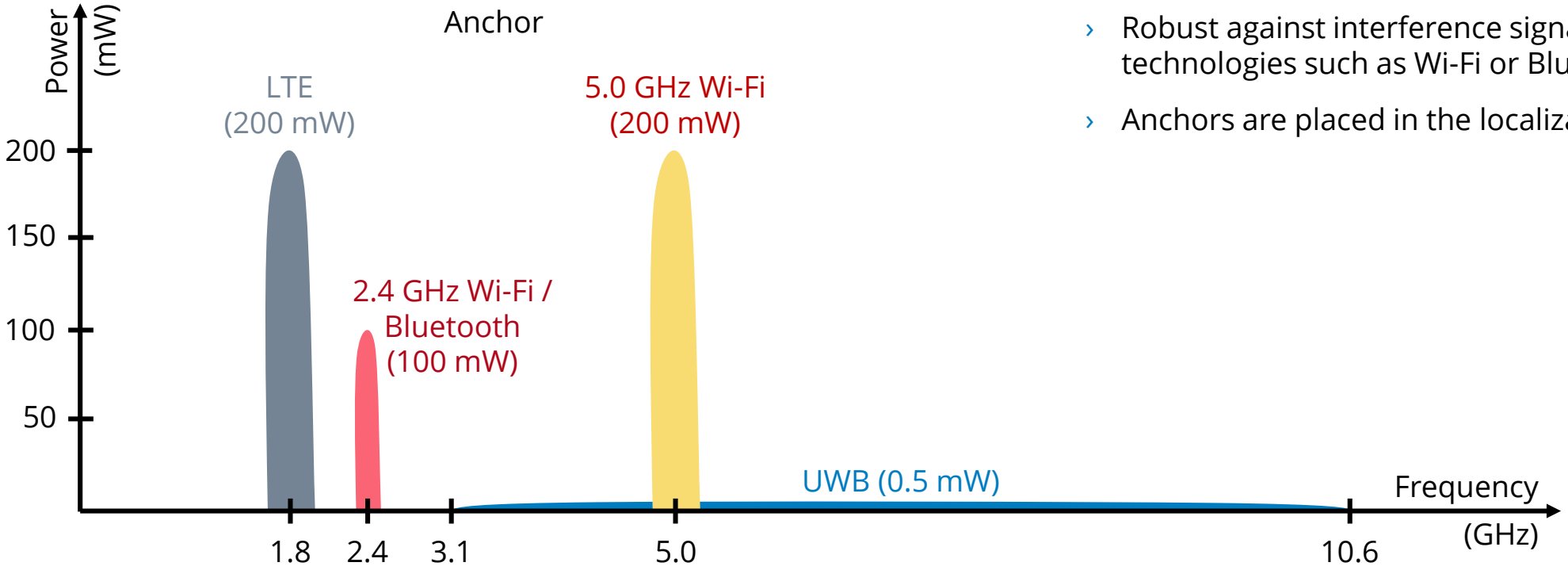
Ultra Wide Band

Anchor



- Radio system for short-range communication
- Frequency band from 3.1 to 10.6 GHz
- Very low transmission power
- Signal reception through UWB antennas (anchor)
- Localization range: 20-30 meters
- Robust against interference signals from other radio technologies such as Wi-Fi or Bluetooth
- Anchors are placed in the localization zone

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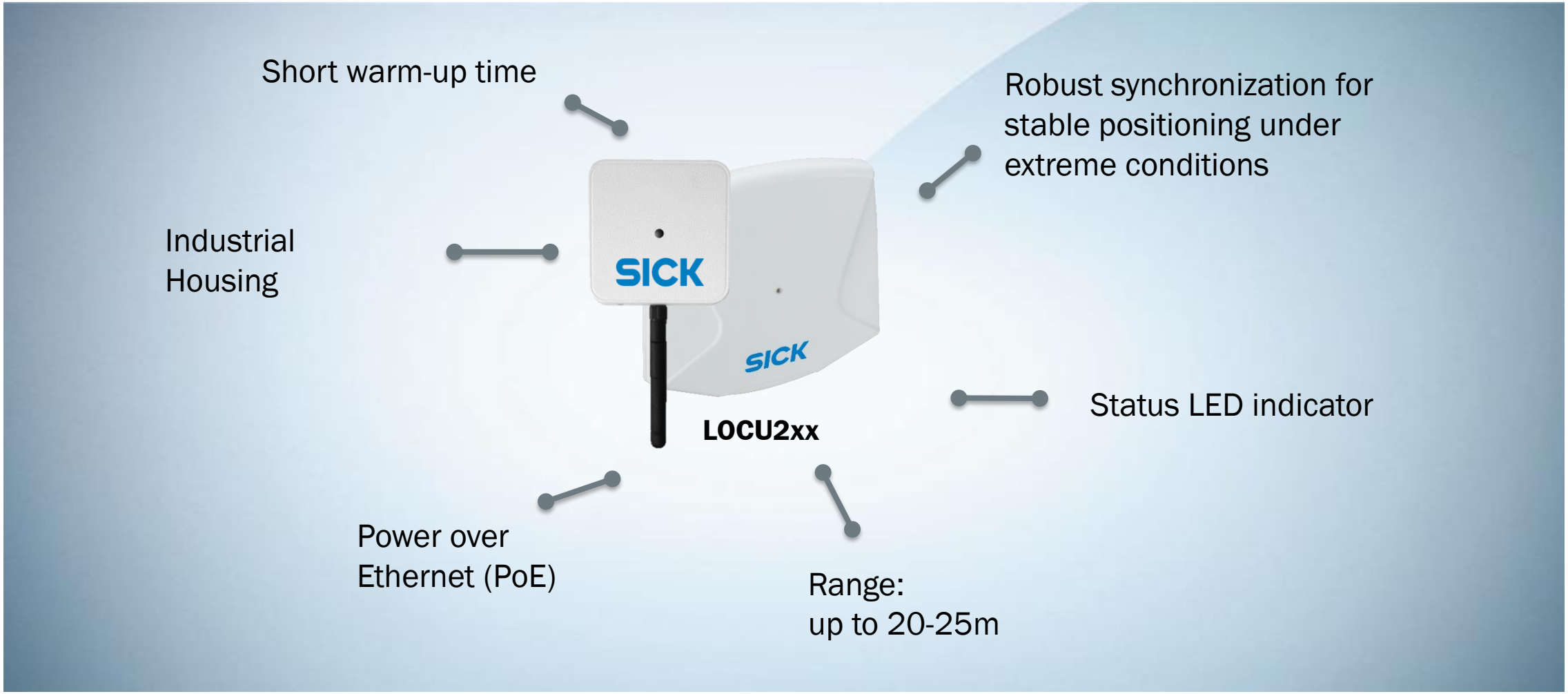
Ultra Wide Band



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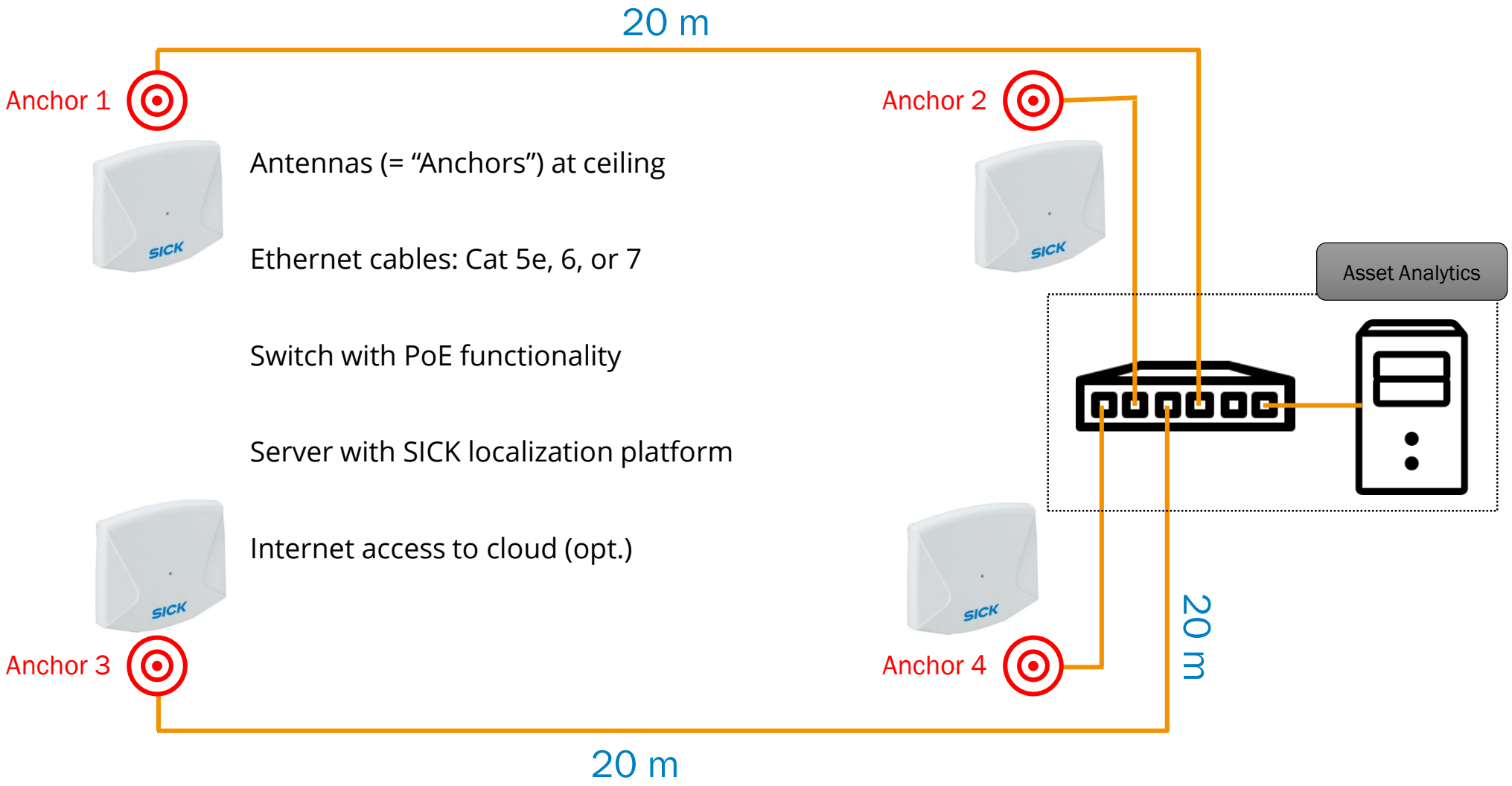
Recommended minimum requirements



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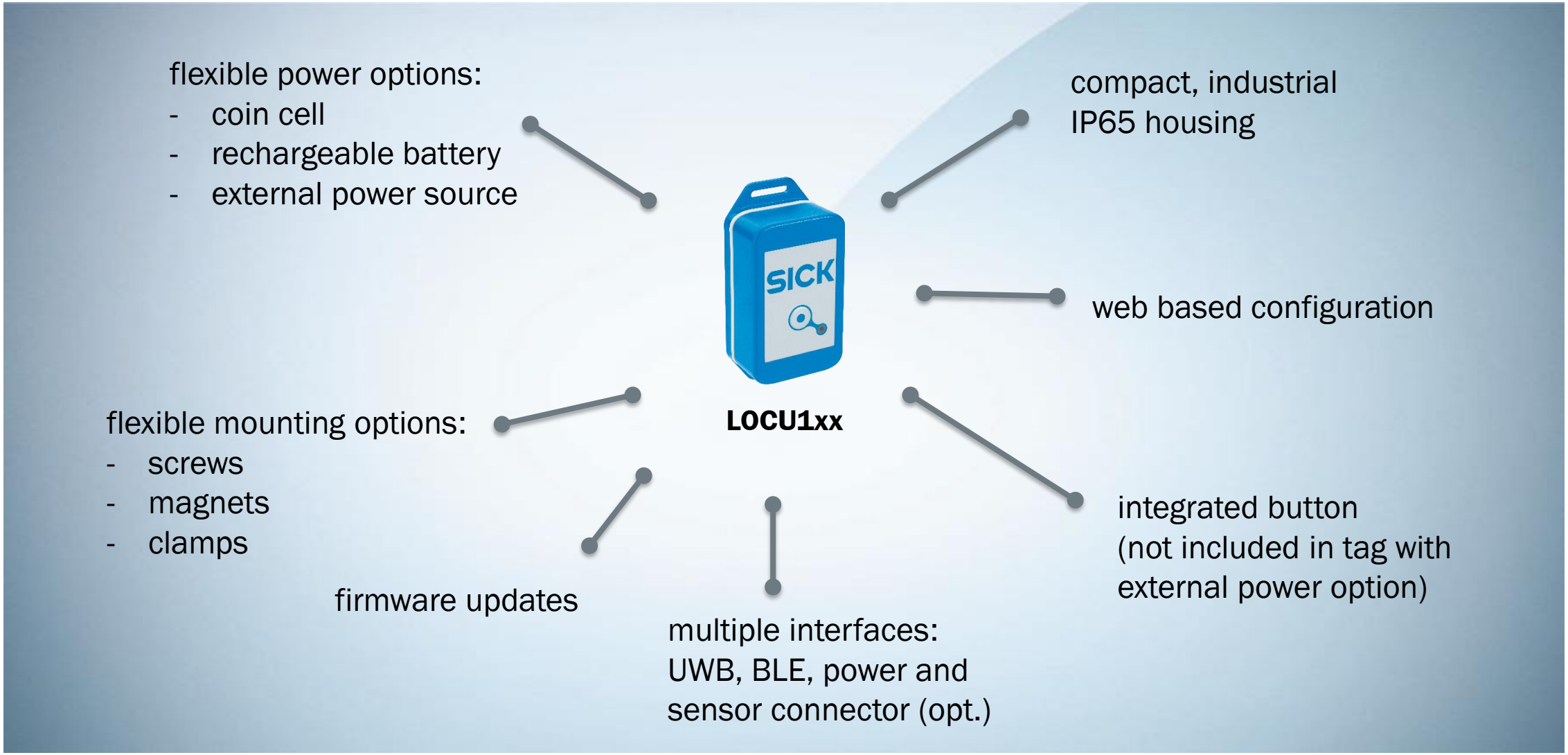

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Ultra Wide Band

The compact LOCU1xx tags enable tag-based positioning and tracking of a wide variety of vehicles and pallets as well as materials and products of all kinds in the production and logistics environment. The tags are operated by battery, rechargeable battery or an external power supply. They can be quickly and easily attached to numerous surfaces and just as easily removed without leaving any trace. The robust industrial housing also allows the tags to be used flexibly, even in harsh working environments.

Standalone tag for mounting on/at assets (pallets, materials, tools, vehicles, carts, etc.)

Size: approx. 30 mm (h) x 100 mm (w) x 50 mm (d)

Embedded sensors:
- acc, gyro, mag, temp, baro

Power options:
- battery (3y battery lifetime)*
- rechargeable battery (1 year lifetime)*
- external power source

Mounting options:
- screws
- magnets
- clamps

Interfaces: UWB, BLE, power connector (opt.), sensor connector (opt.)

//* estimated as 8 hours of continuous transmissions per day. Can be further prolonged with the movement detection feature.

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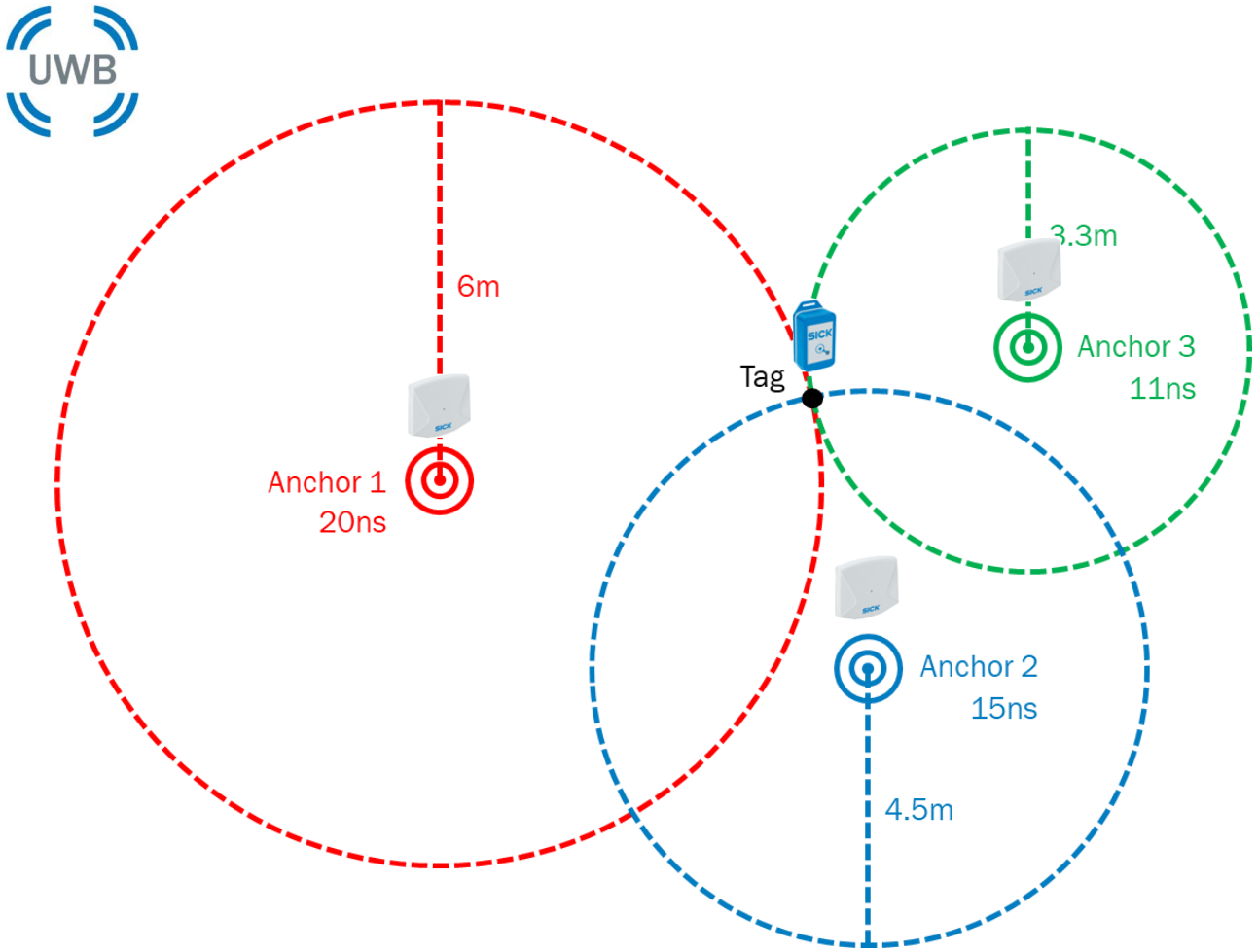
Ultra Wide Band



- Assets are provided with UWB tags for localization
- Active broadcasting tag
- Clear identification of an object by the assigned tag
- Triangulation of the position of the tag
- Accuracy: ± 20 cm

UWB-tag

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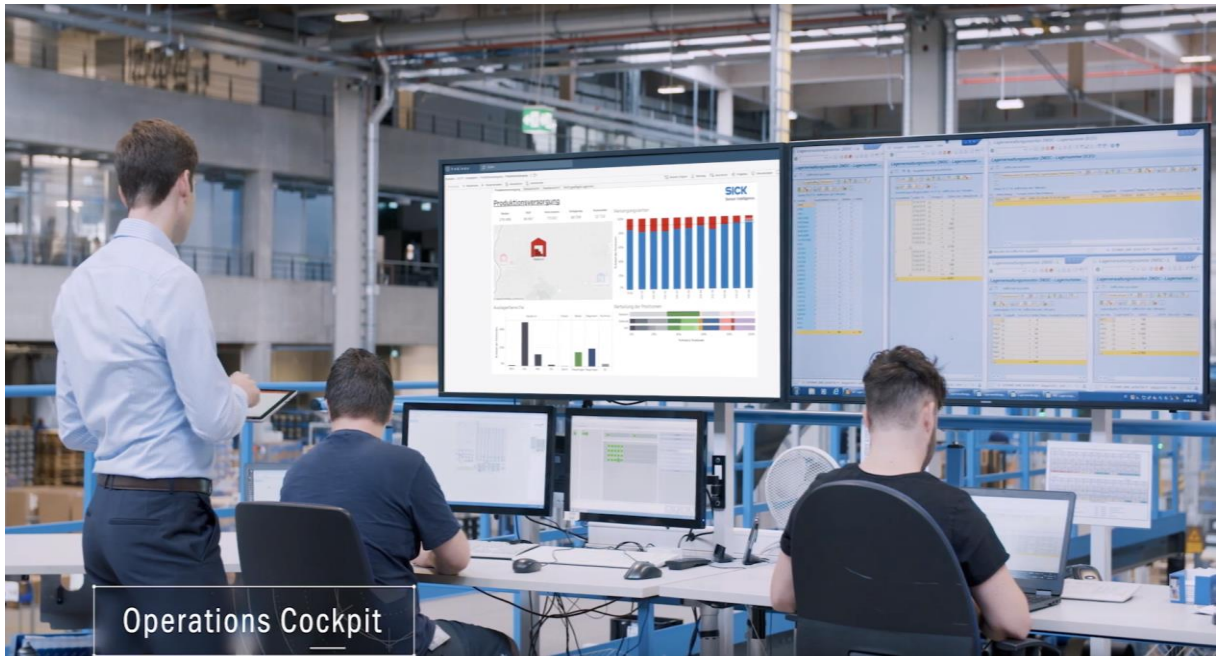
Data fusion and analysis



- The data collected by the UWB and other supporting sensor technologies offer no immediate added value
- Fusion of identification, location and time data through software algorithms
- Provision of the collected data as information

ANALYSIS

Seeing and understanding the flow of goods and deriving optimization potential.

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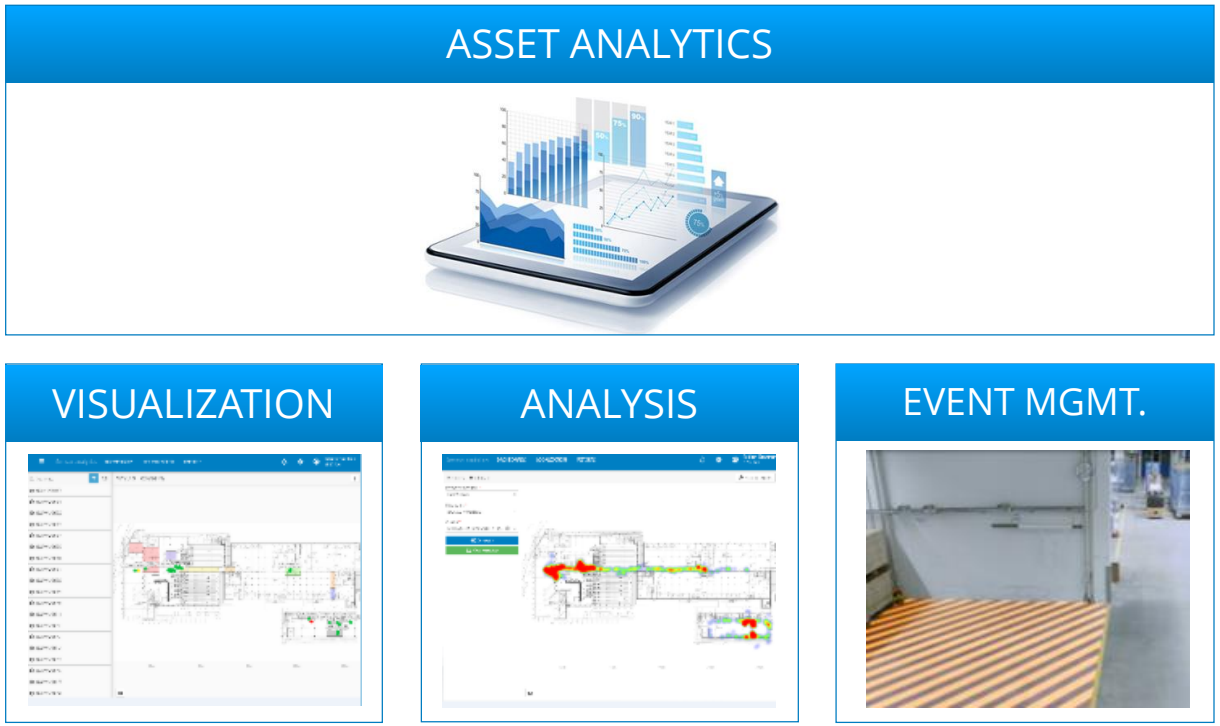
Asset Analytics



- Visualization and analysis platform **Asset Analytics**
- Representation of motion profiles
- Analysis of transport and downtimes
- Individual event management
- User-defined actions such as notifications via SMS, email, automatic triggering of further actions
- Definition of geo zones such as goods receipt areas, shipping aisles for defined actions
- Open interfaces for the use and transfer of raw and preprocessed data
- Connectivity to use localization data at ERP and MES level

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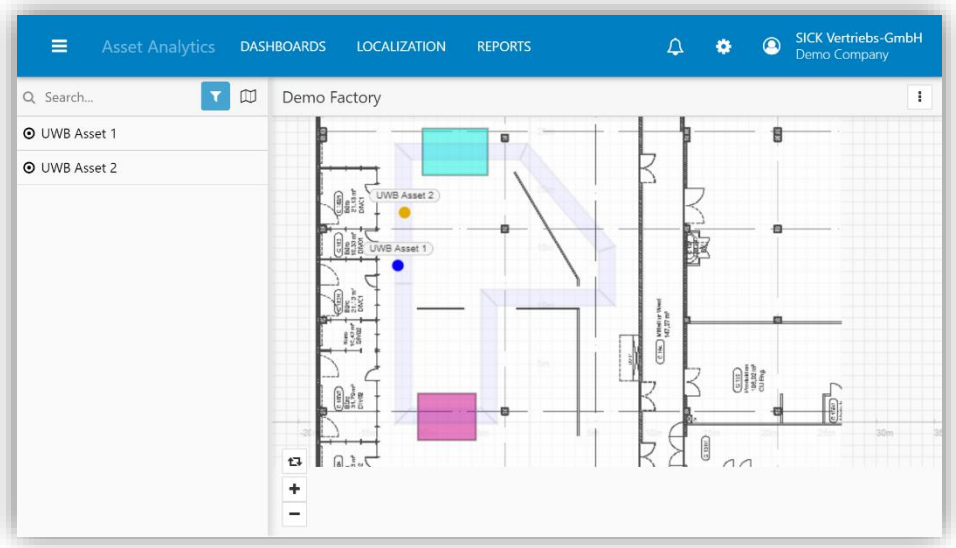
Asset Analytics Plattform

LIVE DEMO – ASSET ANALYTICS PLATTFORM



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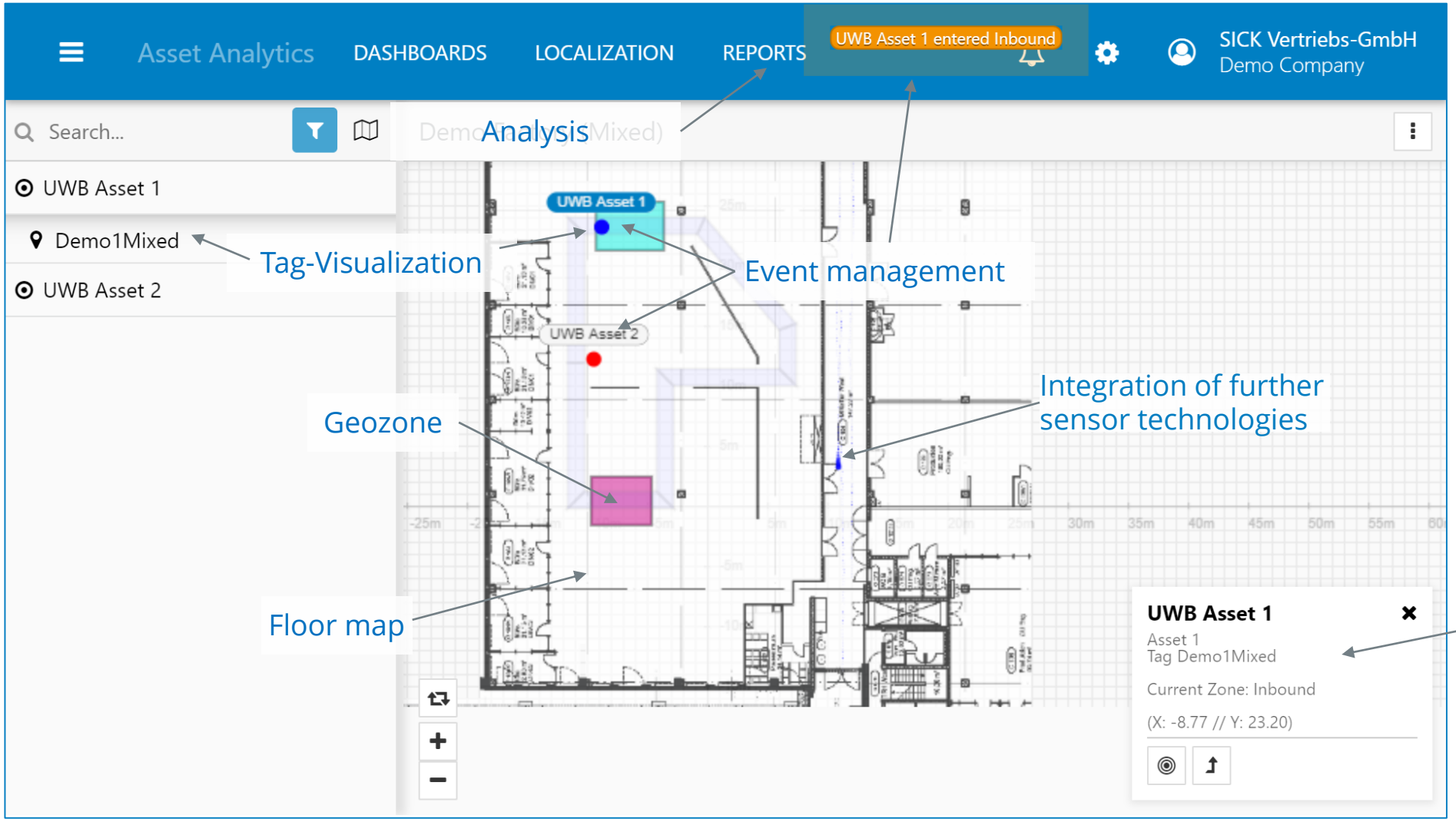
Asset Analytics Plattform



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Networked logistics

SICK
Sensor Intelligence.

UWB

SENSOR TECHN.

LiDAR

ASSET ANALYTICS

- A platform for the integration, visualization, analysis and transmission of sensor data
- Integration of various sensor technologies, depending on the application
- UWB as the latest sensor technology in the portfolio

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Outdoor & Indoor localization

- Position detection of mobile transport units
- Localization in the indoor area via UWB

UWB-tag

TDC-E

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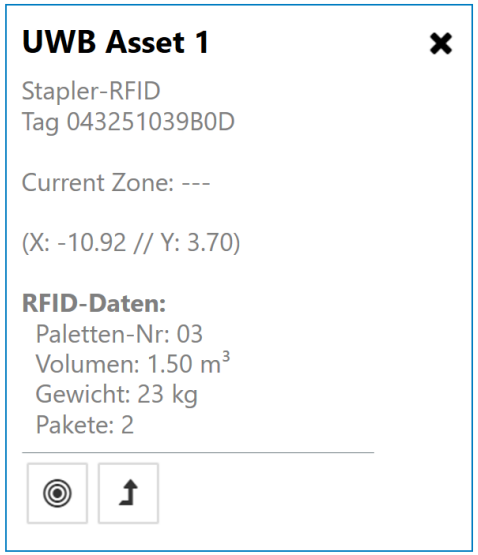
Decentralized localization and identification

UWB-tag

TDC-E



Position and goods data

RFID-reader

RFID-tag

- Position detection of mobile transport units
- Localization in the indoor area via UWB
- Localization in the outdoor area via GPS
- Outdoor localization, for example via the gateway TDC-E
- Communication via WLAN or cellular network
- Reading of the RFID tag and transmission of the read data via the TDC-E to Asset Analytics
- Merger of goods data (ident data) with the recorded position
- Transparency about the position of the goods to be tracked

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Networked logistics

SICK
Sensor Intelligence.

UWB

Additional sensor technologies

LiDAR GPS RFID Codeleser ...

ASSET ANALYTICS

CONSULTING

SERVICE

SUPPORT

- A platform for the integration, visualization, analysis and transmission of sensor data
- Easy connection to higher-level ERP or MES systems
- Integration of sensor technology that is best suited for the application
- UWB as the latest sensor technology in the portfolio
- Localization in indoor and outdoor areas
- Merger of goods information (ident data) with the recorded position

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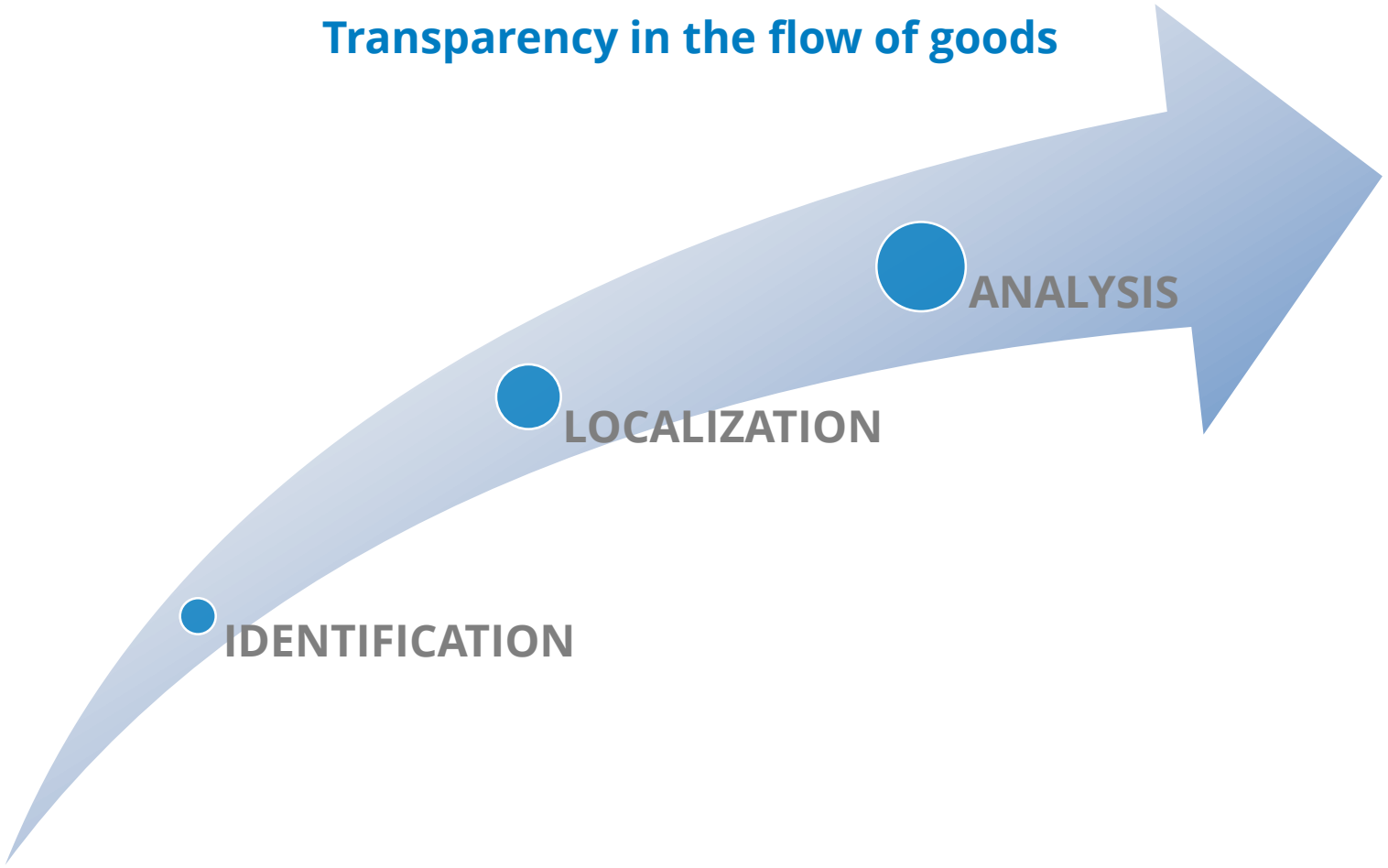
Conclusion



ANALYSIS

Seeing and understanding the flow of goods and deriving optimization potential.

LOCALIZATION

Know where an identified object is at a specific time.

IDENTIFICATION

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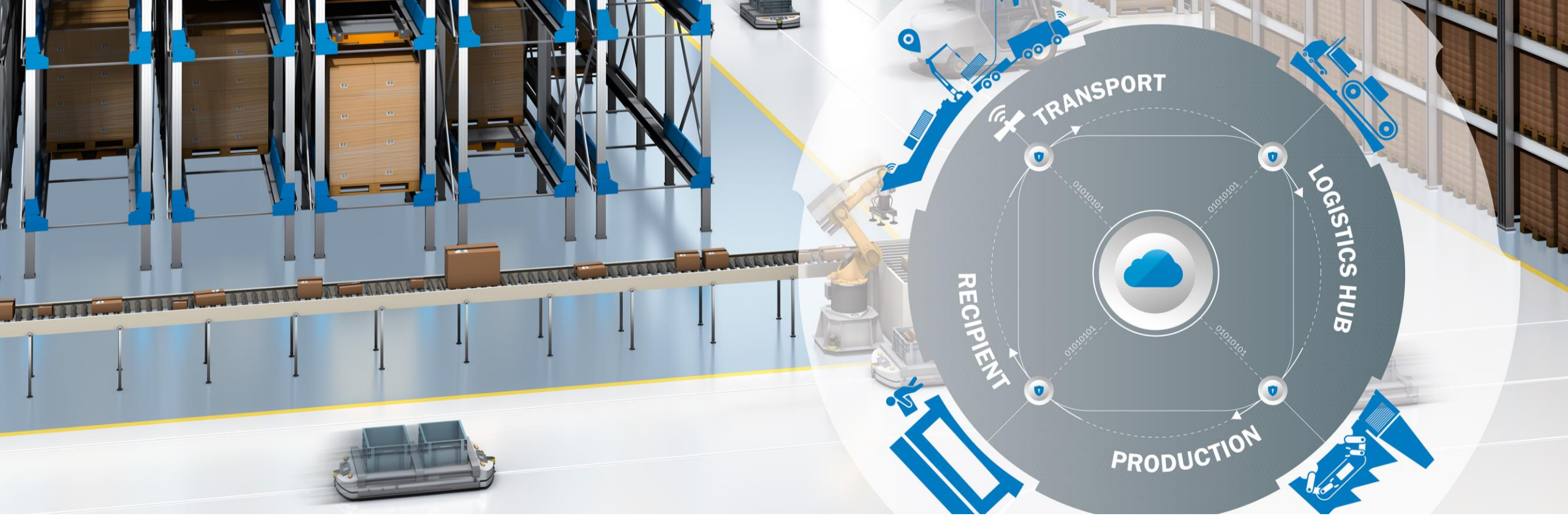
TRANSPORT
LOGISTICS HUB
PRODUCTION
RECIPIENT
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questions

Thank you for your attention!

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