



The open locating standard

Real End-to-End Transparency in Logistics

Dr. Matthias Joest – committee leader



Who I am

Dr.
Matthias Jöst

Fascinated about
finding things ever since.

Build the first **smart city**
in Europe in 2004.

FLOWCATE

Founder and CEO
ISV for indoor
location-based services



PROFIBUS & PROFINET
International - PI
Committee Leader. omlox
the open locating standard

What is PROFIBUS and PROFINET -PI



Known non-profit organisation
for industrial standardization

30 years
Industrial communication

Strong community


More than 1.700 members

Global footprint

More than 27 regional associations
60 test and training centers

Multiple Technology Groups

- PROFINET
- IO-LINK
- **omlox**
- Robot Command Interface
- Modul Type Package



In today's
world
everything
moves.



Knowing
where
things are.

Location-data

Enabler for
operational
efficiency and
sustainability



Location-data

Key enabler for
automation

Use-Cases



Locating technologies

	GNSS	WIFI	BLE	RFID	UWB	5G	Vision
Pro	Coverage Devices	Coverage Devices	Device Energy	Bulk-Locating Energy	Precision Robustness	Devices	(GDPR) Non-RF
Cons	Indoor Energy Precision	Precision Robustness	Precision Robustness	Infrastructure Precision	Infrastructure Price Standardization	Availability Precision Costs	Training

How location-data is acquired today



Devices

Wireless
Technologies

Locating
Technologies

Applications

Core elements

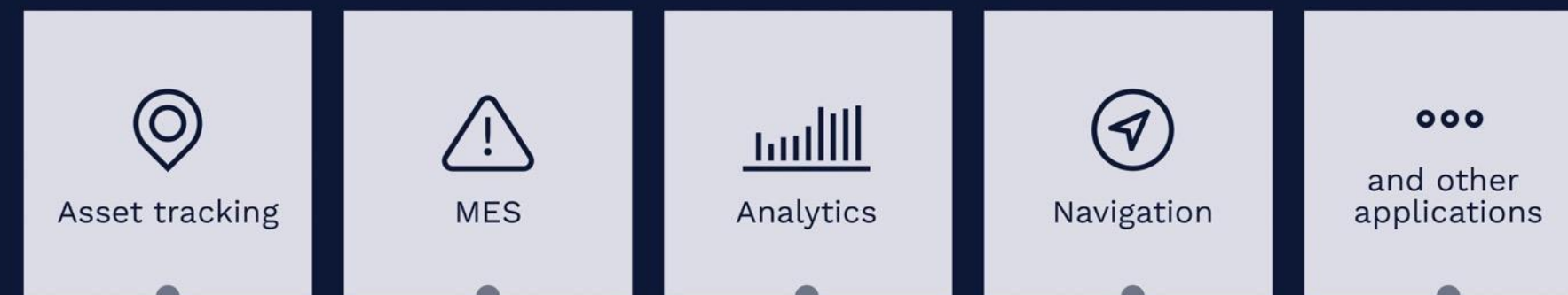
Applications for Industry and Logistics – SCM, ERP, WMS, MES, ...

Software

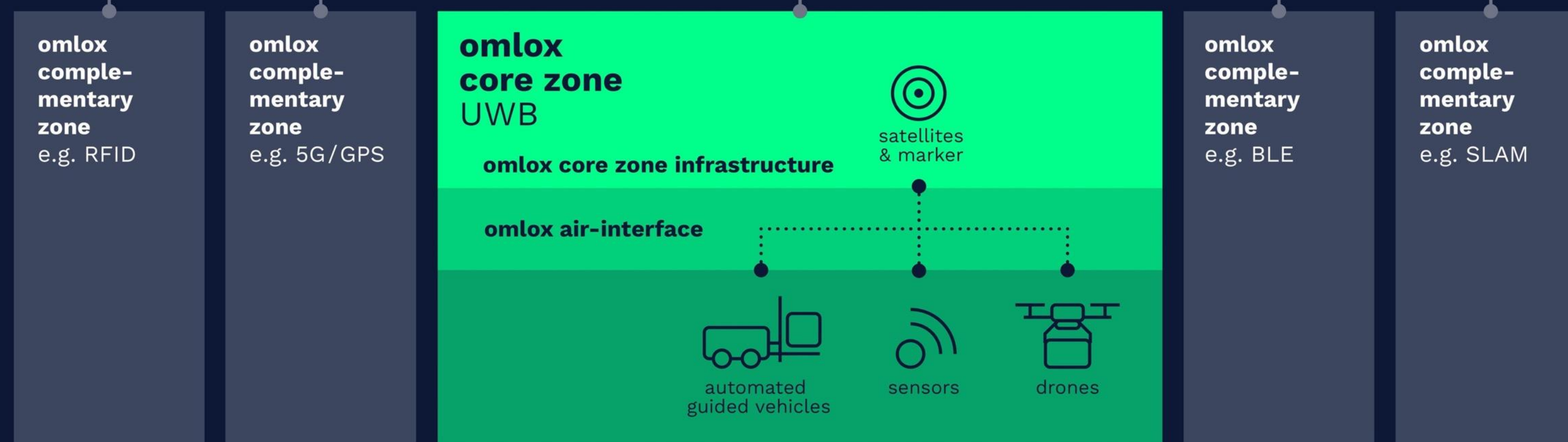


Architecture

Industrial applications



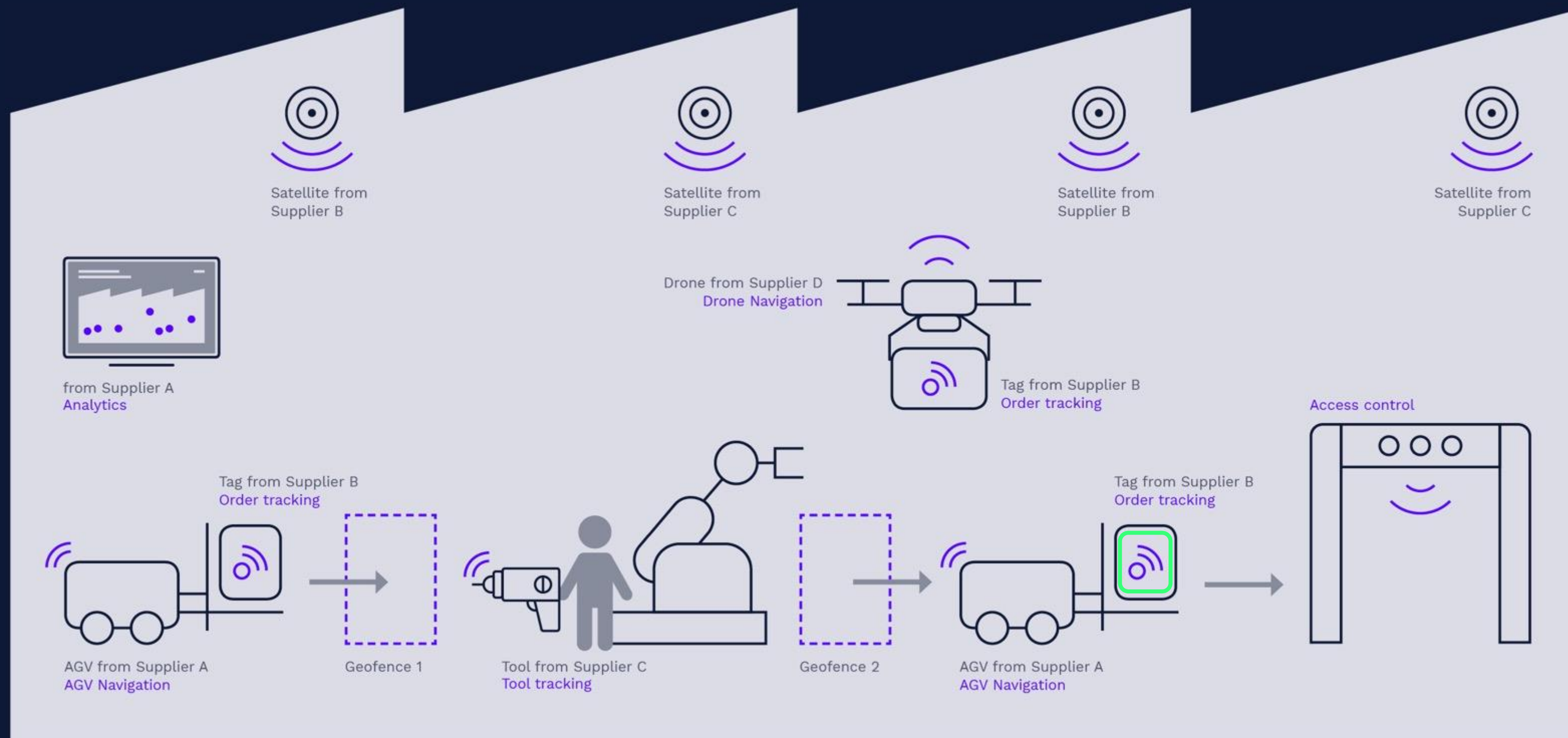
Location zones



- ◀ Competition
- ◀ Standardization
- ◀ Competition
- ◀ Standardization
- ◀ Competition
- ◀ Standardization
- ◀ Competition

core zone

open ultrawide-band infrastructure – multiple hardware vendors



Open UWB Infrastructure
Smart Antenna for self-locating use-cases

The open locating standard

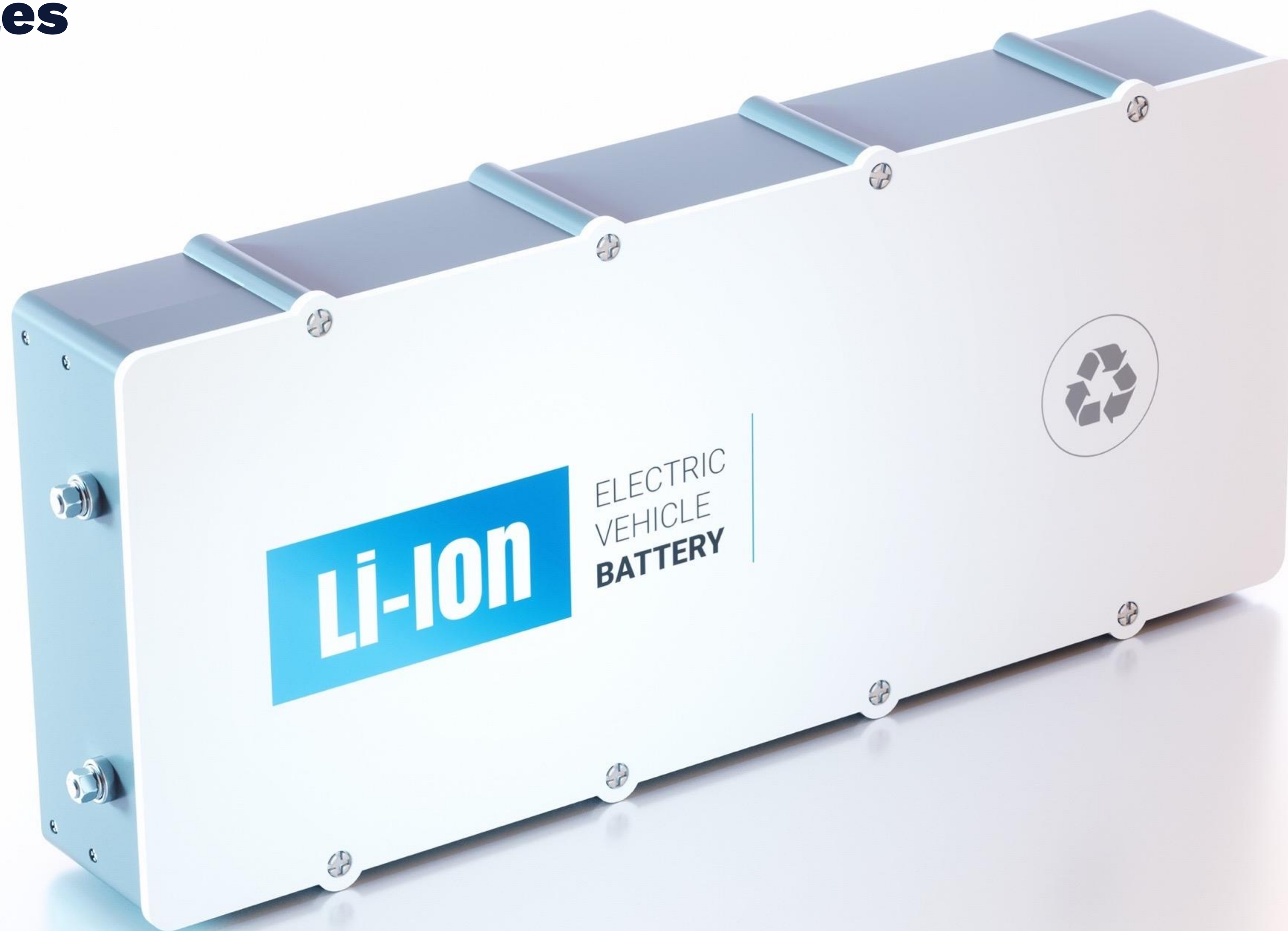
omlox hub

Central locating middleware

- One API – for all location technologies and vendors.
- Support for all locating use-cases.
- Holistic view to all moving things in logistics, intralogistics and manufacturing.
- Easy integration | Lightweight | Real-time capable.

The open locating standard

Trackables



Trackables

Seamless tracking – across technologies and vendors – indoor and outdoor



trackables

Trackables

Intelligent assets

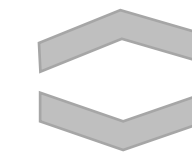
- is a digital representation of an object that can be located.
- has a unique identifier.
- can have a **spatial extent**
- can be located via multiple technologies.
- can contain additional properties | attributes.



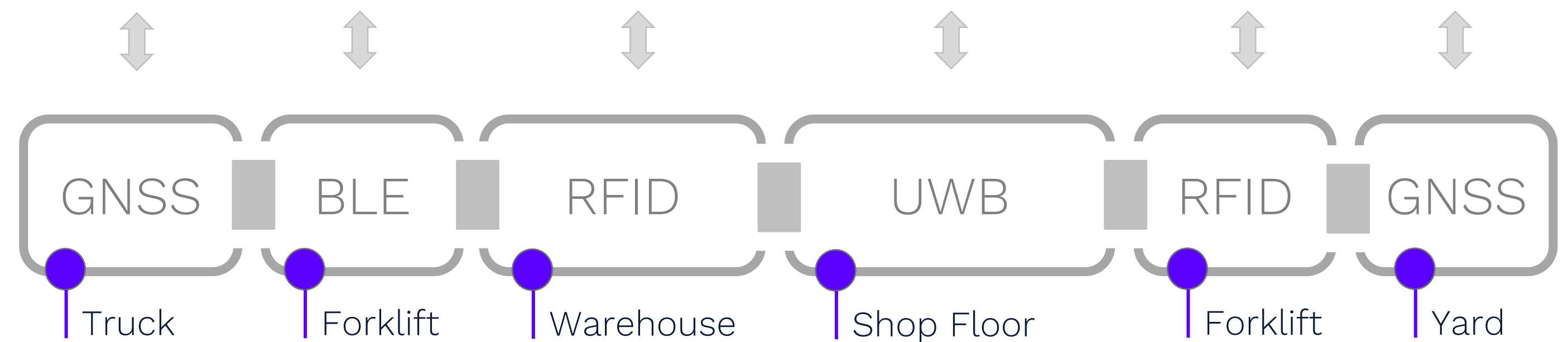
Benefits:

Seamless tracking - via a dynamic, vendor-, technology and provider-independent assignment of locating technologies to the object to be tracked.

Applications



Trackable (e.g., devices, assets)



Spatial functionalities

Geo-Referencing

Geo-Fencing

Collision Detection

geo-referencing

Geo-Referencing

Harmonized data

- location data is always geo-referenced.
- support for geographic [e.g., lat/lon] and projected [e.g., metric] spatial reference systems.
- Seamless tracking [Outdoor | Indoor]
- “Translation” between different locating systems



spatial events

Fencing

Dynamic events

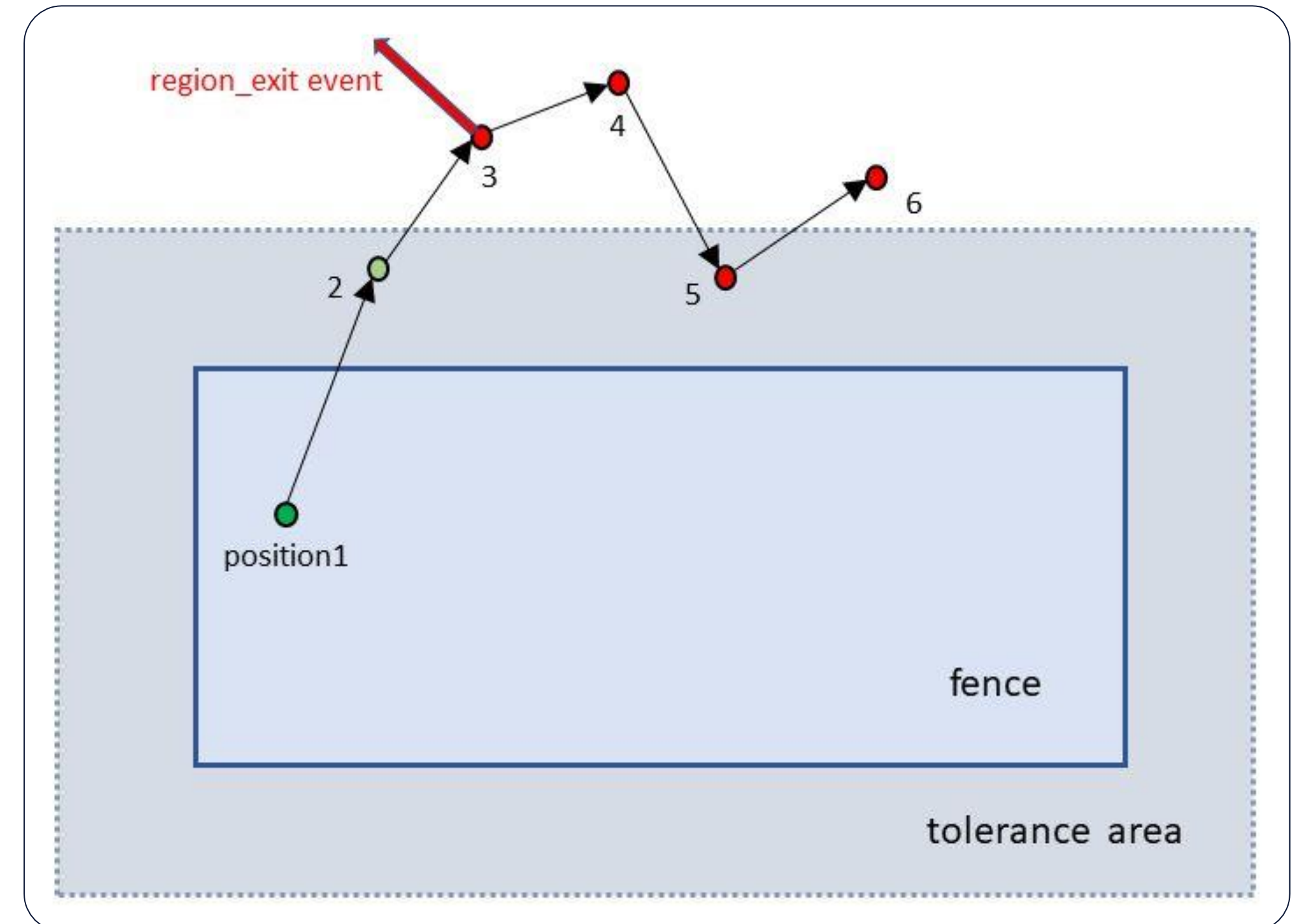
- computation of entry and exit events.
- location-technology independent.

Standardized computation, to cope with hysteresis of locating systems

Collision | Distances

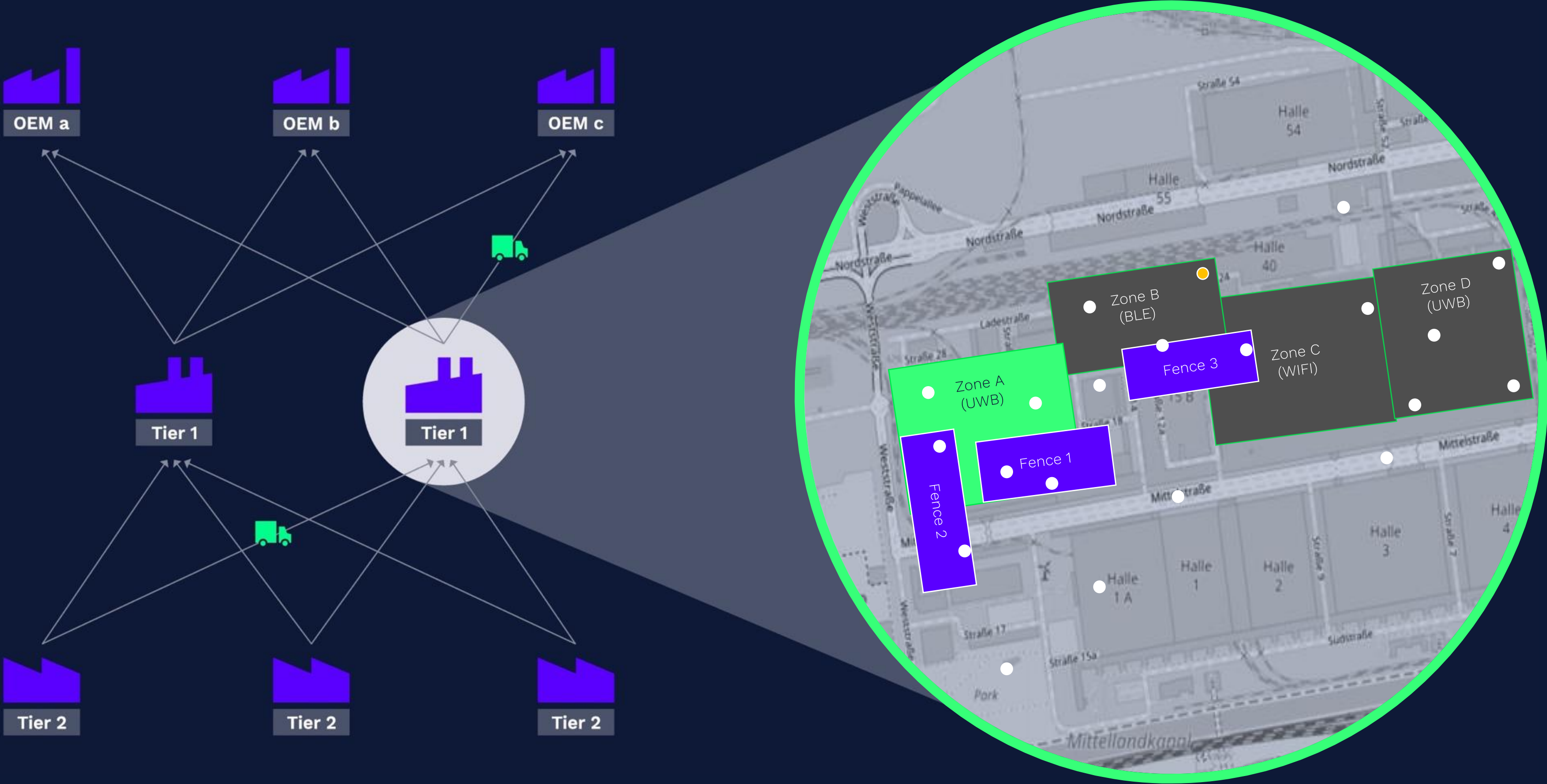
Dynamic events

- between trackables.
- considering the extend of trackables.



Holistic overview

on everything that moves at a production site



End-to-End Transparency



Track and Trace without barriers
Throughput - Material Flow- Logistics
Utilization of mobile assets
Process Automation | Quality
Space utilization
Energy consumption
Worker safety

Key take aways

The open locating standard omlox allows for a seamless and holistic access to location data – especially indoors.

Following the omlox approach ensures an End-to-End transparency in logistics.

omlox is future proof, allows a retro-fit, with no vendor lock.



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