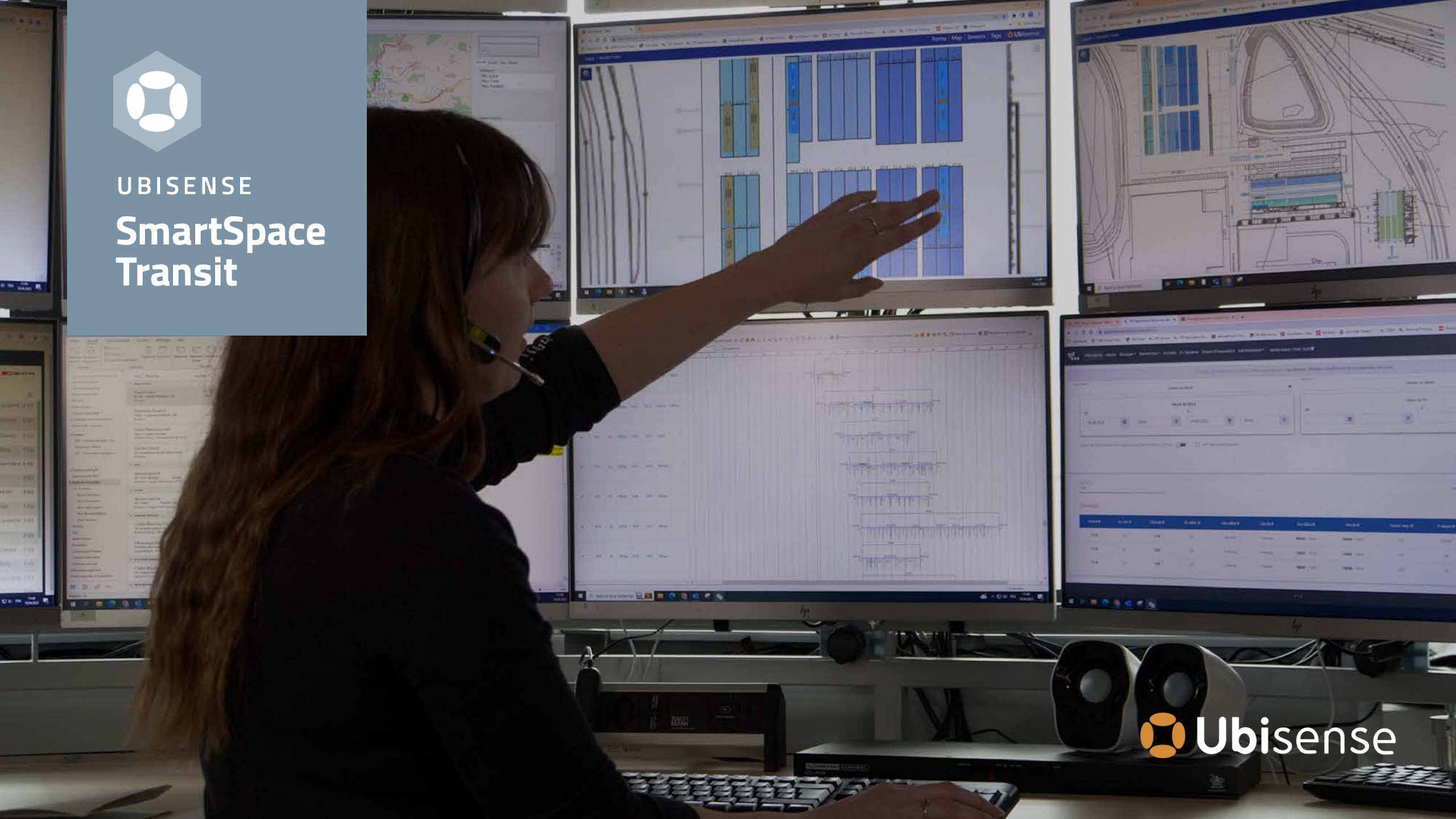UBISENSE

SmartSpace Transit

Ubisense

Transit Operation

Fleet Electrification

Introduction of electric and hybrid vehicles add complexity, making optimisation of parking, charging and routing of buses more difficult

Limited Infrastructure

Space is a premium, especially in colder climates or where cleaning, fuelling, and maintenance occurs onsite, with vehicles often tightly packed in indoor garages causing delayed pull-out

People Availability

Insufficient people available to complete all day-to-day tasks across the depot, or are occupied with low-value tasks such as manual vehicle parking mark-ups

Managing Complexity

Variability of route assignments, weather, events, and vehicle availability and types mean existing dispatch and routing applications are often out-of-date

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Opportunities for improvement

Eliminate Manual Mark-Ups
Having real-time visibility of the location and movement of all vehicles in the depot removes the need to manually mark-up location and status information which is quickly out of date

Connect Existing Systems
Enable scheduling, maintenance, charging, and dispatch systems to share real-time data and improve overall visibility and control of depot operations
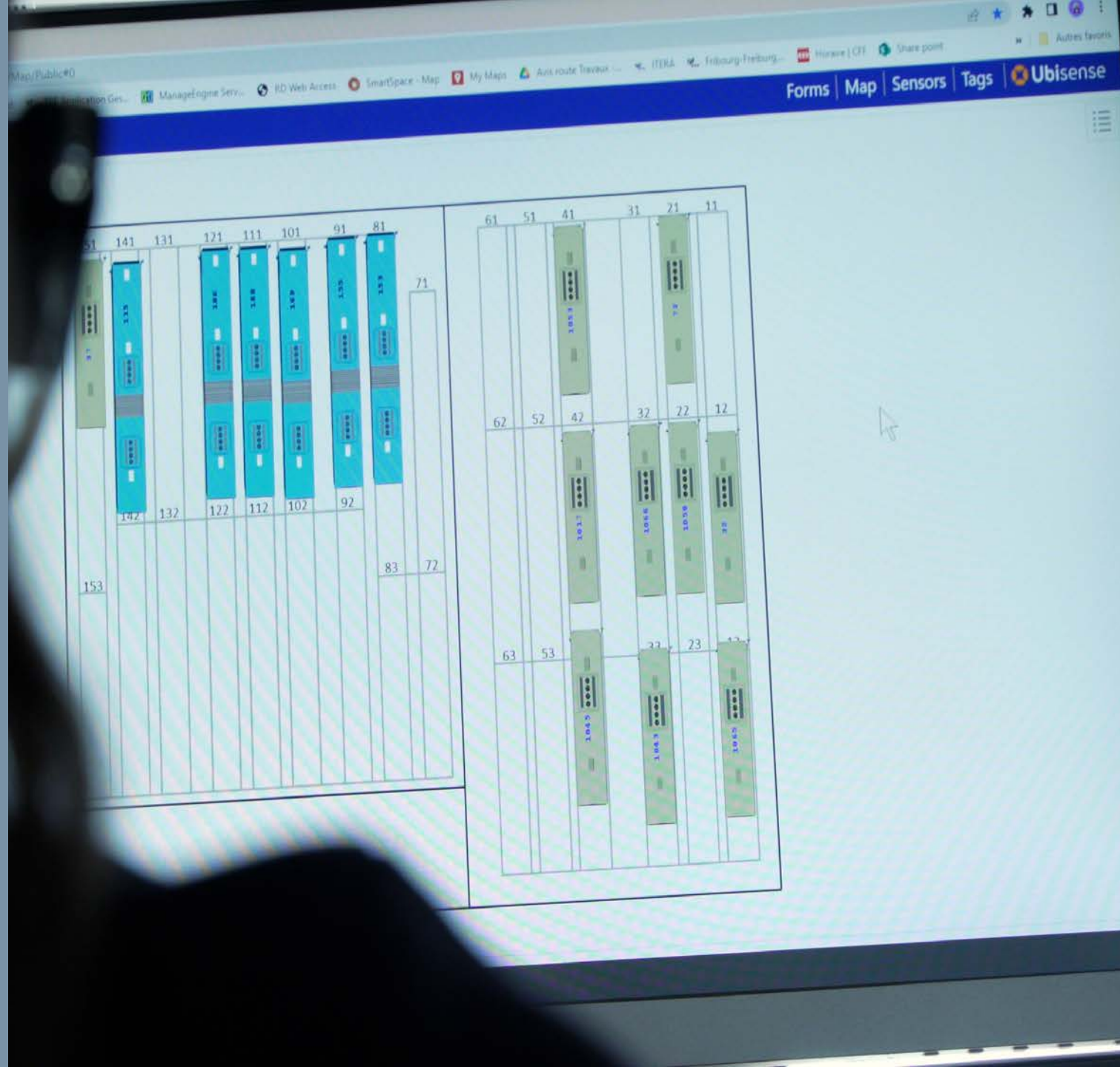
Automate Everyday Operations
Automatically capture the status of vehicles that have been charged, fuelled, cleaned, and fixed and route to the optimal parking bay for on-time dispatch.

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Transit Management

Micro-Positioning
The Ubisense **Dimension4™** sensor system tracks the precise, real-time location and movement of vehicles across indoor and outdoor transit yards

Open Integrations
The Ubisense **SmartSpace®** platform captures vehicle location as structured data and synchronizes status and plan information from existing dispatch, scheduling and maintenance systems

Yard Visibility
Web-based maps and dashboards give users complete real-time visibility across multiple transit yard operations

Ubisense

Real Time Location Data

Dimension4™ Sensors

Ultra-Wideband (UWB) sensing system reliably locates tagged vehicles across indoor areas with sub-meter, bay-level accuracy.

UWB Indoor / Outdoor
High-performance sensor network

Ubisense Transit Tag

The Ubisense DIMENSION4 RTK Tag is a multi-mode device designed for indoor and outdoor location of vehicles.
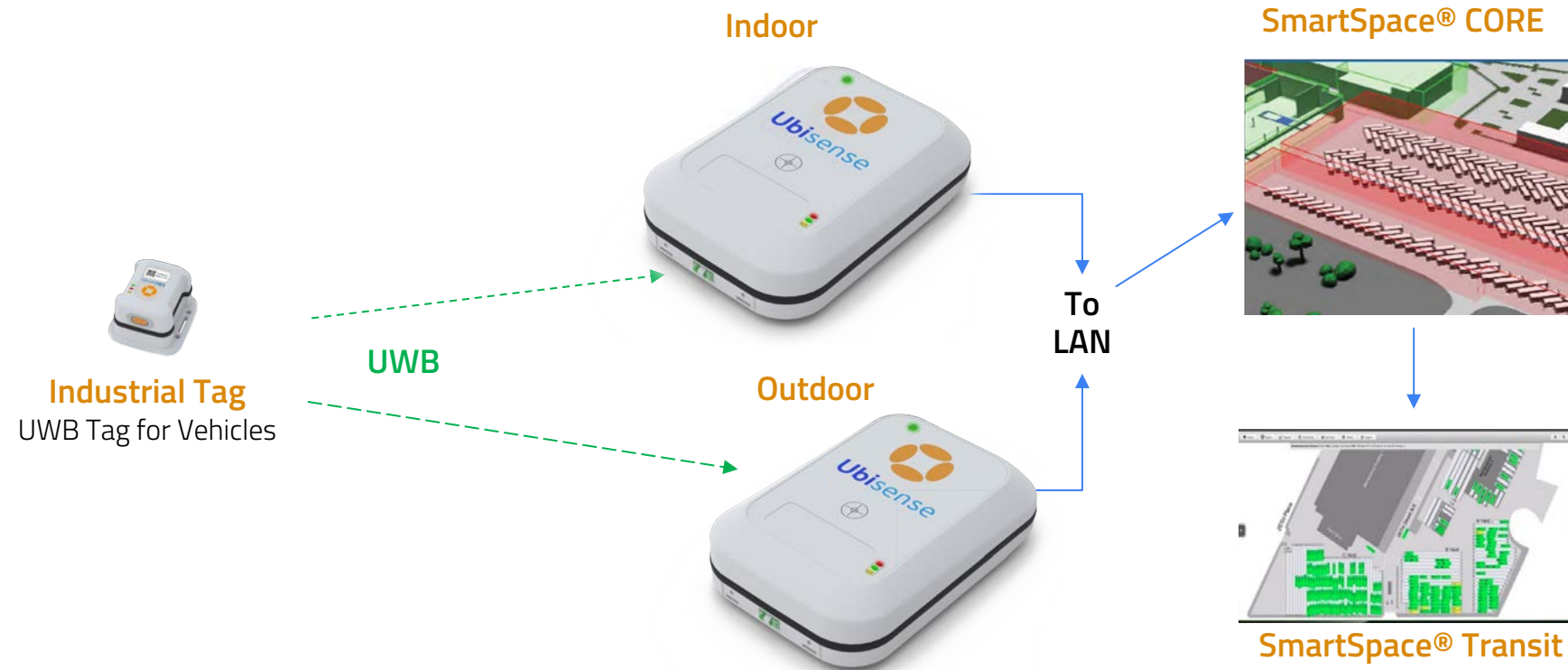

Hyper-accurate Location
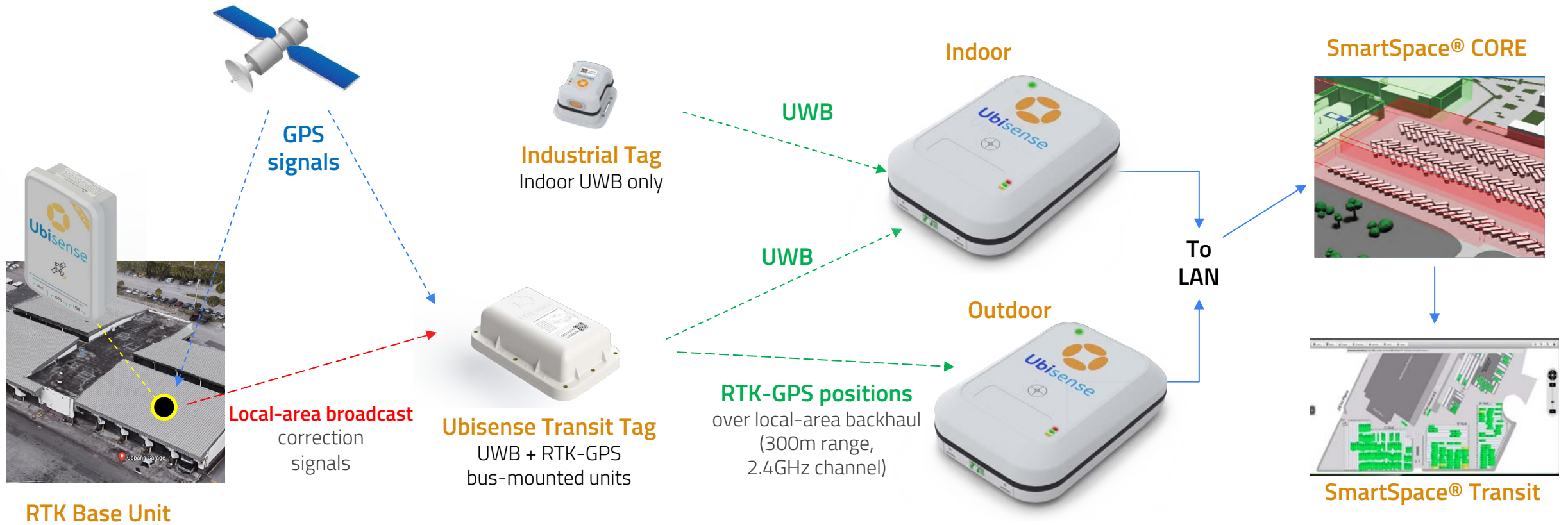capable of positioning within 3cm.

RTK Base Unit

Improves location accuracy by wirelessly sending location corrections to moving vehicles in the outdoor environment.

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Data Flow – Indoor & Outdoor

Indoor

SmartSpace® CORE

Industrial Tag
UWB Tag for Vehicles

UWB

Outdoor

To
LAN

SmartSpace® Transit

Ubisense

Data Flow - Indoor & Outdoor

GPS signals

Industrial Tag
Indoor UWB only

UWB

Indoor

UWB

SmartSpace® CORE

Local-area broadcast correction signals

Ubisense Transit Tag
UWB + RTK-GPS
bus-mounted units

RTK Base Unit

RTK-GPS positions
over local-area backhaul
(300m range,
2.4GHz channel)

Outdoor

To
LAN

SmartSpace® Transit

Ubisense

Tagged Vehicles

Robust long lifetimes

Ubisense **Dimension4™** tags are rated IP69K for ingress protection, operate to -40°C and come with 15+ year battery lifetime
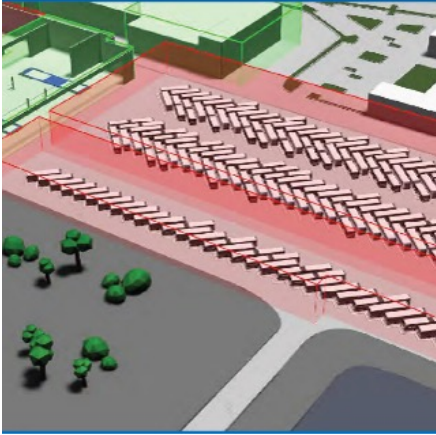
Indoor / Outdoor

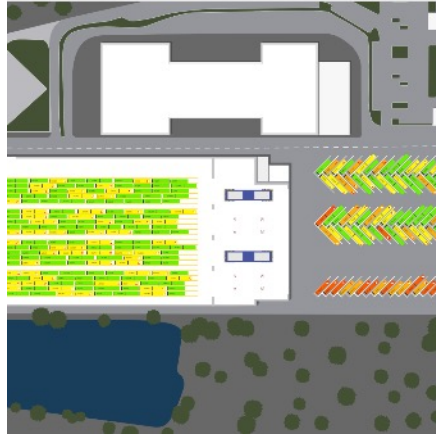Tags can provide simultaneous UWB and GPS for seamless tracking across indoor and outdoor spaces where required

Ubisense

SmartSpace® For Transit Management

3D Spatial Model
An accurate three dimensional model of the entire depot is created in SmartSpace® software

Digital-Twin
Real-time vehicle location and movements accurately represented on an interactive, searchable map
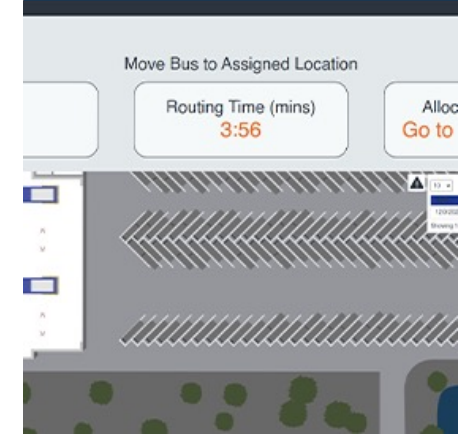
Contextual Data
Up-to-date information of vehicle status (incl. fuelling, cleaning, charging and maintenance)

Integrate Systems
Dynamically assign vehicles to routes and automatically update existing dispatch and maintenance systems

User Dashboards
Give relevant information, such as parking guidance and maintenance to users via connected devices

Ubisense

Total Visibility
Ubisense Transit Management provides depot operations, maintenance, and dispatch teams complete visibility across all depots in real-time

Total Control
Ubisense Transit Management provides confidence in the assignment of drivers and dispatch of vehicles for on-time pull-out

Ubisense

Optimising Routing

Guide Drivers to specific spaces

- Parking lanes or bays
- Cleaning, fueling, or charging areas
- Maintenance bays

Based on vehicle or space status

- Optimized parking bay for next scheduled pull-out
- Charging point based on state-of-charge or availability
- Maintenance required by vehicle

Using most appropriate device

- In-cab displays or tablets
- On-site screens and display boards
- Notifications to mobile devices

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Automated Everyday Tasks

Cleaning
Automatically marked vehicles as cleaned when they pass through washing stations with sufficient dwell time

Fuelling
Record vehicles as fuelled once passed through the pit-stop area and update status as 'ready for dispatch'

Charging
Optimise electric vehicle charging stations by combining state of charge (SoC) information with charging bay availability

Secure Barrier Entry
Automatically raise secure gates and barriers when authorised vehicles return to the yard

Maintenance
Direct vehicles requiring maintenance to the correct bay or parking location and update status when exiting the inspection area.

Driver Assignment
Assign the drivers to the optimal vehicle and routes based on parking location and status to ensure on-time pull out

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Integration to CAD/AVL

gmv INNOVATING SOLUTIONS

CONDUENT Transportation

PSI

strategic mapping INC.

avail TECHNOLOGIES, INC.

ISR Transit

ETA TRANSIT

EQUANS

Swiftly

Ubisense

Typical ROI
66%-81%
Per Year

Payback within 12-18 months

- Eliminate manual mark up
- Reduction of shuffle time through correct vehicle staging
- Elimination of dispatch errors & delays
- Time saving from streamlined operations
- Significant reduction of idling time and fuel costs

Estimated ROI between 66% and 81%
Based on a 400 bus depot saving $295-$360k per annum

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SmartSpace® Options

	SmartSpace® Core	SmartSpace® Transit (Full Solution)
Spatial Definition Of Vehicles And Depot Spaces (Lanes, Bays, Buildings, Etc)	✅	✅
Vehicle Data Management	✅	✅
Connection to Real-Time Location System Data Streams	✅	✅
Software Defined Location Rules (Lane Snapping, Object Dampening, Parking Bay Snapping)	✅	✅
Manage Vehicle Tag Associations (Via Web Form)	✅	✅
Integration To Customers Active Directory for user authentication, access, role, feature control, and administration	✅	✅
Core Location API	✅	✅
Advanced IT Support For High Availability And Health Monitor	✅	✅
Failover Control, Test And Dev Environments	✅	✅
Pre-configured Realtime Alerts And Notifications For Process Issues	❌	✅
Pre-configured Searches to Quickly Find Vehicles Of Interest With Drill Down	❌	✅
Standard Reports And Dashboards (Web Reports) On Performance And Location History	❌	✅
KPI Dashboards For On Time Performance, Maintenance Efficiency	❌	✅
Business System API	❌	✅
Automated Status Changes Based On Location Or Process Completion	❌	✅
Driver Guidance Based On Vehicle State, Available Parking	❌	✅
Digital Browser Based Web Map Of Your Facility (web Map) To Search And Locate Vehicles	❌	✅
Colour Coded Status And Icons Indicative Of Vehicle Status	❌	✅

Ubisense

Global Deployments

US

METRO TRANSIT

Five garages and 1000+ buses since 2009 with automated dispatch and maintenance support

US

BROWARD CO.

Fast bus locating and automated parking, dispatch and nightly maintenance across indoor and outdoor

CANADA

RTL

Fast bus locating and automated parking, dispatch and nightly maintenance since 2011

EUROPE

VBL

Fast bus locating and automated driver assignment and dispatch across multiple sites

EUROPE

TPF

Automated parking guidance, driver assignment and dispatch since 2018 across multiple sites