



Computing Intelligence for Rail & Public Transport

LYVE – Localize Your Vehicle

Precise client-based positioning solution for rail and road vehicles and other powered assets for indoor and outdoor applications with minimized infrastructure.



LYVE – THE CONCEPT & BENEFITS

LYVE is an open high-precision client-based localization solution for vehicles and powered assets in depots, areas with limited satellite visibility and daily operations – seamless indoor & outdoor positioning in sub-meter accuracy using in-vehicle sensor data fusion.

LYVE consists of infrastructure components and equipment installed in the vehicle and combines the positioning technologies GNSS / RTK (real-time kinematic) and UWB (ultra-wide band) in one solution. LYVE consistently follows the approach of position calculation in the moving asset. This eliminates the need for complex and costly localization servers on the land side.

The *tracelets* installed in the vehicle determine the position using the best currently available positioning technology (GNSS / RTK in outdoor areas, UWB in areas with limited satellite visibility), while the so-called UWB *satellites* are installed on the landside in restricted areas.

LYVE Benefits:

Client Based Positioning

- Each vehicle calculates its own position, allowing any edge application to be upgraded with sub-meter location accuracy.

Minimal Infrastructure Costs

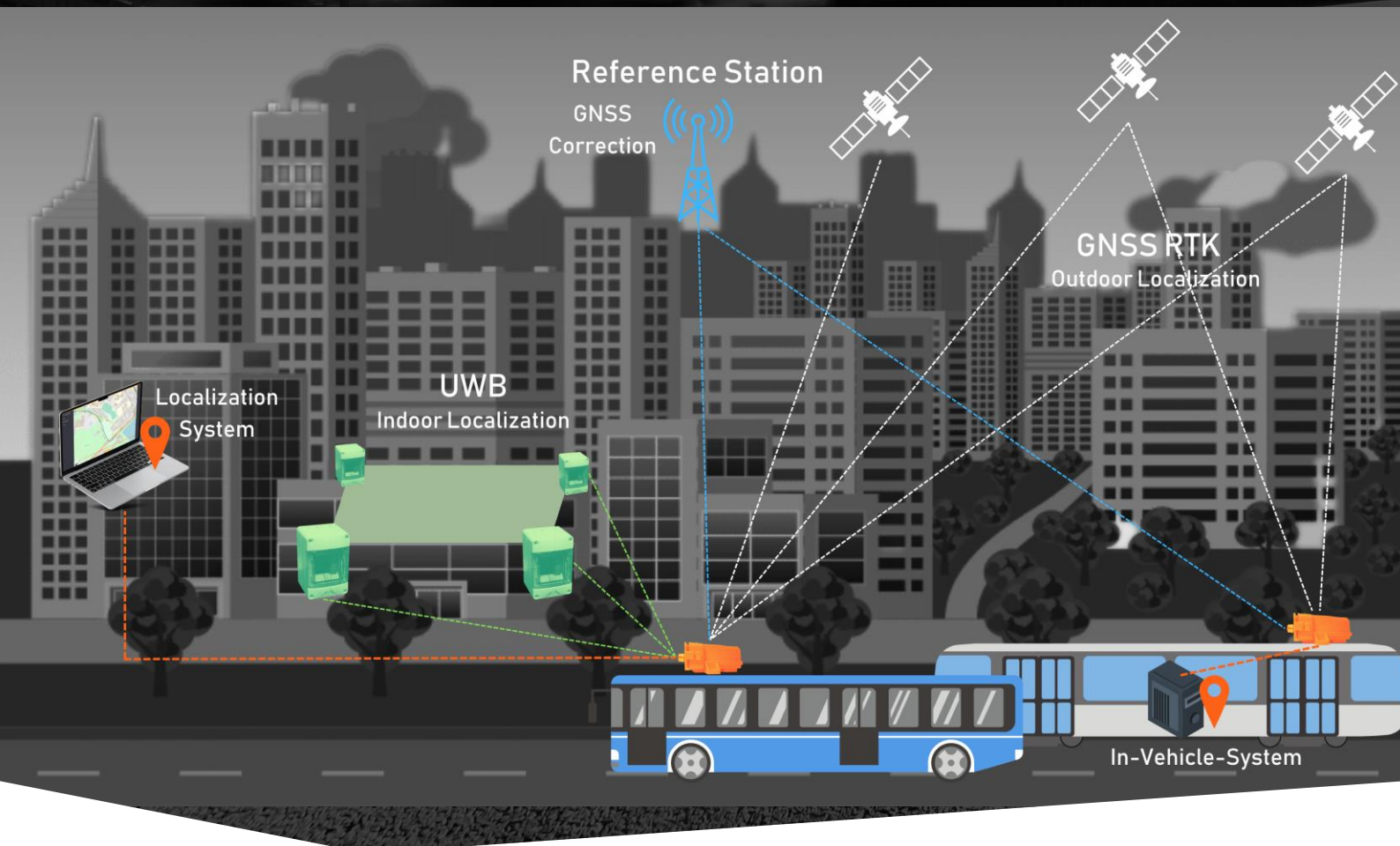
- No localization infrastructure required outdoors. No network infrastructure required indoors.

Flexible Connectivity

- Flexible communication of the position via Protobuf messages to landside localization systems or to in-vehicle systems for valorize edge applications with an accurate position.

Remote Monitoring

- Transparency about the currently used location technology, quality of position and its accuracy.



THE PORTFOLIO

LYVE Vehicle Components



Vehicle Tracelet

High precision localization module

SI003 – Ethernet Interface

SI002 – WLAN Interface

- Onboard position calculation < 1m accuracy
- UWB receiver IEEE 802.15.4-2015;
- GNSS/RTK multiband GNSS receiver
- Inertial Measurement Unit (IMU)
- Wheeltick counter according to IEC 16844-2
- Voltage input 9...36V DC (24V nom.); Ignition
- Monitoring and remote maintenance (e.g. OTA update of firmware)
- EN 50155 and E1 qualified

LYVE Infrastructure Components

LYVE components in the infrastructure are only required for areas with limited satellite visibility. The selection and number of infrastructure components strongly depends on the locating area and condition (e.g. shading) and is finalized in the planning of an installation



UWB Satlets

IP65 satlets synchronizing via UWB radio for land-side areas with limited satellite visibility



WLAN Access Point

WLAN infrastructure for reception of positioning information from vehicles



Edge Computer

Central device mgmt of satlets, tracelets, WLAN infrastructure and opt. local reference station



UWB Monitor

Monitoring, diagnostics and updates for up to 30 satlets per satlet monitor



WLAN Controller

WLAN infrastructure management, diagnostics and updates; once per location area



GNSS Reference St.

Local GNSS reference station for correction data to support RTK positioning. (Optional)



THE COMPANY

We increase the competitiveness of transport operators through computer-aided solutions using latest technologies such as machine learning and IT security for condition-based and predictive maintenance.

Ci4Rail offers computer and service solutions that support mobility operators, vehicle manufacturers and manufacturers of subsystems in their digital transformation.



Our Mission:

Driving the digitalization of rail and public transport with game changing technologies

Our Vision:

A world in which everyone likes to use public transport because it is faster, cheaper and more environmentally friendly than other forms of transport.

Our focus is both on new equipment and retrofit for:

- Long distance passenger transport
- Freight rail transport
- Rail-bound local public transport
- Road-bound local public transport

