

Success story

## ZIGPOS Ultra-wideband RTLS positioning



### Combining UWB Real-Time Locating System with secure transporter authentication

In many business and industrial processes, objects such as containers, components, machines and finished packaged goods must be securely transported by authorized persons or robots from location A to location B. Ensuring that this process is successfully executed at the right time, at the right place, along the right route, and by the right person or robot is crucial. It is also important to log all movements for quality, reporting, secu-

urity and auditing purposes. As many of these processes are carried out in GPS denied areas (indoors), the ZIGPOS RTLS can be implemented using "Ultra-Wideband" (UWB) technology. UWB's low-frequency and high-bandwidth mean that signals can pass through walls and obstacles and operate in the presence of other radio signals, such as those from mobile phones

Based on 500+ MHz UWB radio signal distance measurements, Dresden-based ZIGPOS has developed an indoor locating system that tracks people and objects in 3 dimensions to within 30 cm. Objects are fitted with a UWB transmitter that is tracked by at least 3 receivers which enables calculation of location based on trilateration\*. Object identifier and timestamp are also recorded.

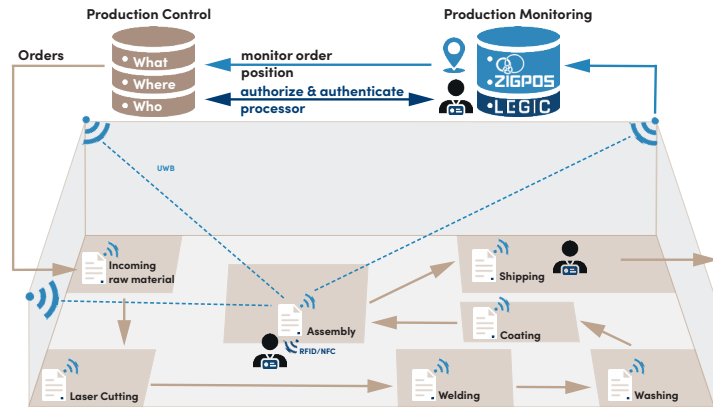
To securely verify that only an authorized person or machine is handling the object, the LEGIC Security Platform has been integrated into the system. The design includes LEGIC's EAL 5+ certified IoT security module SM-6310 embedded in each ZIGPOS RTLS-enabled object. The contactless modules verify a transporter's credentials which are stored on the transporters' RFID tag or smartcard.

Credentials are managed and distributed via LEGIC's cloud-based Security Platform. Leveraging "Root-of-Trust" for secure management of people interacting with things, the RTLS turns object data and spatial context into secure, actionable information.

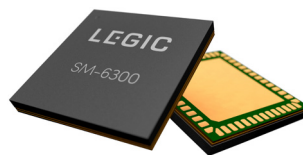


When an object needs to be moved, for example, the transporter's RTLS transponder tag or smartcard is verified via "Near-Field Communications" (NFC) by the RTLS-enabled object. LEGIC's technology enables instant authentication of the transporter, either human or robot, and passes its credentials to the RTLS application. The application authenticates the transporter and communicates to the transporter details about when and to what destination the object should be moved, and along which route. Once the object detects movement, a visual and/or audio indicator (green/red light and alarm) confirms whether the correct person or machine is transporting the object.

LEGIC's Security Platform enables the secure cloud-management of users and credentials via contactless smartcard. This gives the ability to authenticate, track and guide people and robots and their payload to the correct destination.



### ZIGPOS' RTLS combined with LEGIC authentication technology in an industrial environment



**LEGIC's SM-6310 series contactless IoT Security Module**



#### Features of the ZIGPOS UWBRTLS:

- **Secure Auto-Identification** of human or machine transporters based on the LEGIC Security Platform
- **End-to-end (E2E) tracking** of goods via RTLS and GPS/GNSS
- **Real-time indoor positioning** and tracking to within 30 cm
- **Micro-navigation** to help transporters reach their destination
- **Key management and access control** to enclosed rooms
- **Geofencing** - Detection of when objects enter or leave designated areas
- **Time keeping** for flow analysis and throughput measurements
- **Flexible wireless connectivity** via UWB, Bluetooth, RFID, NFC
- **Enables over 1 million positions** per Li-ion battery rechargeable via micro USB or inductive Qi charging
- **Contact and location history** - analysis via positional data based
- **Visual and audible alerts** and notifications - Beeper, 2 x LEDs, I/Os

- **Messaging** and User Guidance via 2.7-inch e-paper display
- **Contactless ePayment** for micro-location services
- **Fall and shock** detection

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\* Determination of the location of a point based on its distance from three other points. The distance between two UWB devices can be determined by measuring the time that it takes for a radio wave impulse signal to travel between two points.