

Success story

» **Indoor location**

Optimization of the supply of
tunnel lining segments of »
tunnel boring machines



» Omniscient & ELA Innovation improve

logistics on the site of the Grand Paris line 15 south tunnel

On a tunnel site, the **supply of tunnel lining segments** plays a major role in the progress and overall performance of the site. Indeed, the production and logistics of a tunnel boring machine (TBM) represent **30% of the problems to be dealt with on a tunnel site**. If the tunnel lining segments, which are transported by rubber-tired trains, are not laid regularly, the TBM cannot continue to advance and the site is brought to a standstill. To meet this challenge, Omniscient has deployed its **geolocation solution** integrating ELA Innovation beacons in the T3A tunnel of the Grand Paris line 15. This **completely autonomous connected solution** allows the logistics and production manager to precisely **locate in real-time** all the rubber-tired trains, to know their **direction of circulation**, their **presence in the loading or unloading areas** or to be **alerted in case of abnormal stops**.

» The key players



Tag manufacturer



Mesh technology provider



Solution provider



End-user



« ELA Innovation is working with us on this tunnel project by providing sensors and location chips. They worked on optimizing the life of their battery to allow the sensors to last several years. Once the data is collected in the field, we interpret it. ELA Innovation products are reliable, rugged, waterproof and well adapted to field conditions. The mobile tags with a particularly large battery (5Ah) allow us to have a location at 30s for over 1 year. »

Nicolas LEMAIRE, CEO, Omniscient

» The client requirements

- ✓ To transmit **precise location** or activity information (even at a depth of tens of meters)
- ✓ To provide **an autonomous and robust technological solution** adapted to **underground construction sites**



» The equipment

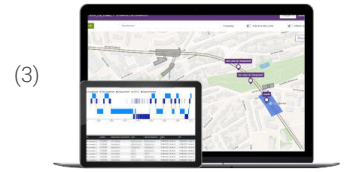
- ✓ Blue PUCK ID+ Mesh (mobile beacons) (1)
- ✓ Blue ANCHOR (fixed beacon) (2)
- ✓ SolidRun gateway
- ✓ Plateform My Omniscent (3)



(1)



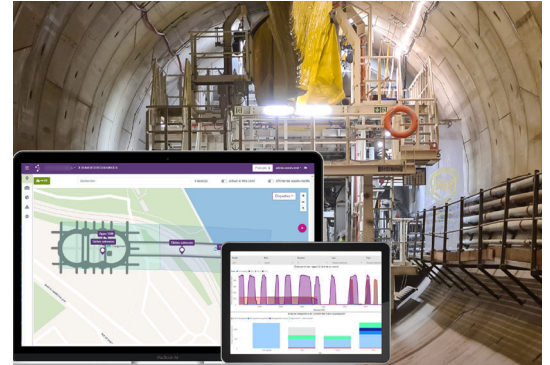
(2)



(3)

» Technical functioning

From a technical point of view, the location solution relies on a **mesh network of fixed and mobile beacons**. The first one, also known as anchors, are installed evenly every 25 meters throughout the tunnel (over 4,1 k), while the latter, the mobile beacons, are installed on the equipment - the rubber-tired trains. Every 30 seconds, the mobile beacons interact with **the anchors & the positional messages and information are transmitted to the gateway**. Placed at the entrance of the tunnel, the gateway will send the raw data back that **Omniscent's algorithms are going to treat and interpret**.



On the My Omniscent business platform, the production and logistic supervisor will be able to visualize several informations through **dashboards/charts** as : the position of the rubber-tired trains, their circulation direction or the time spent in the loading or unloading zones. Alerts can also be received rapidly if there are abnormal stops, preventing delays on the site. The wireless infrastructure solution **has improved the overall productivity** of the construction site and **ensure its monitoring** in terms of **safety and work quality**.

» The results

- ✓ **Better productivity** on the site
- ✓ Quick identification of **safety** and **quality** issues
- ✓ **Reduced risk** of delays

» The advantages

- ✓ **Real-time** tracking and positioning
- ✓ **Accuracy of tracking (5 to 10m)**
- ✓ **Wireless** infrastructure, **easy to implement**