Case Study: Mumbai Trans Harbour Link (Atal Setu)

Background

The project is the first multi-mode tolling operation in India, ensuring zero congestion and saving 47,421 tons in carbon emissions and 20.6 million litters in fuel savings per annum.

Open Road Tolling (ORT), with all-electronic toll collection, is now the preferred practice, being more efficient, environmentally friendly, and safer than manual toll collection. It allows drivers to move in and out of toll systems without delay.

The Mumbai Trans Harbour Link (MTHL), also known as the Atal Setu, is a prestigious project undertaken by **MMRDA** (The Mumbai Metropolitan Region Development Authority) Stretching **21.8** kilometres, it's the **longest sea bridge in India**, with a remarkable 16.5 kilometres spanning the sea itself. Officially opened on January 12, 2024, the bridge is expected to handle over 70,000 vehicles daily, significantly improving traffic flow and travel times.

Challenges

While the MTHL tolling system boasts numerous advantages, implementing such a cutting-edge solution wasn't without its challenges. The initial investment in UHF RFID (Radio-Frequency Identification) technology and infrastructure would be significant compared to traditional tollbooth setups. Hence ensuring the solution design would deliver a first-time right deployment was key. Additionally, ensuring public familiarity and smooth adoption of the electronic system required targeted education campaigns. Compatibility with existing RFID tags used in other tolling systems also presented a hurdle that needed to be addressed.

Solution Requirements

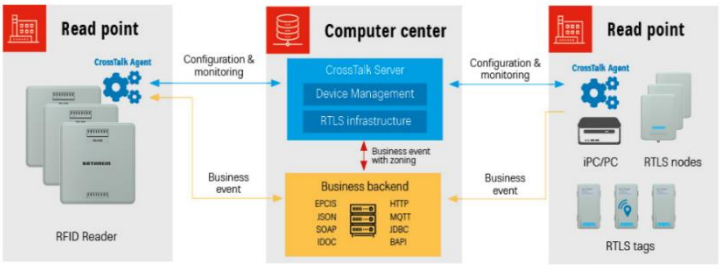
- High-Speed Tolling
- Health Monitoring of RFID Hardware
- Alerts & Notifications for Hardware Failures
- Local Data Storage in RFID Readers
- Selective Transaction Information for TMS (Toll Management System)

Actual Image – Mumbai Trans Harbour Link Toll Plaza

Benefits

Safety benefits: Generally, Open Road Tolling facilities are nearly accident-free. ORT allows vehicles to travel at normal highway speeds, avoiding dangerous stop-go traffic and sudden merges, and eliminating the danger of drivers jockeying for lane position. ORT can also cut down on the distractions toll payers face while driving, such as fumbling for change or having to slow down or stop to pay the toll.

Economic Benefits: Delays cause losses to both the driver and the overall economy. Drivers suffer direct costs of increased fuel consumption and vehicle wear and tear owing to idling and stop-and-go movement, as well as indirect costs of stress. Valuable time is spent in traffic instead of productive work. Delays also drive up the cost of shipping goods—a cost usually passed on to the consumer. ORT reduces delays and thus provides economic benefits.



Illustrative Image - Kathrein software suite

Solution

Intellistride's solution architecture combining Kathrein UHF RFID Hardware & Software portfolio makes it possible. Our cutting-edge solution prioritizes efficiency with real-time monitoring and proactive hardware alerts. Data security is never compromised, even with onboard storage. Drivers get a boost too, with lane-specific updates delivered directly by the RFID system, ensuring a smooth and informed journey. Intellistride's comprehensive suite includes Free Flow, Open Road Tolling, and Single Lane Free Flow, setting a new standard in driver-friendly tolling.

Actual Image - Kathrein Reader and Antenna

Result

The MTHL bridge has transformed its tolling system with Intellistride's UHF RFID solution. Vehicles now zip through at high speeds, significantly reducing congestion and fuel usage. Robust data management and real-time hardware monitoring ensure smooth operations and optimal performance.