SATELLIC TOLL DETECTION

MODERN ON-BOARD APPLICATION FOR ACCURATE TOLL CHARGING

If electronic tolling systems based on autonomous on-board units (OBUs) are to be successful, accurate and reliable toll detection is a must. To ensure high accuracy and reliability, Satellic Toll Detection comprises a number of functions that run on the OBU.

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KEY FEATURES

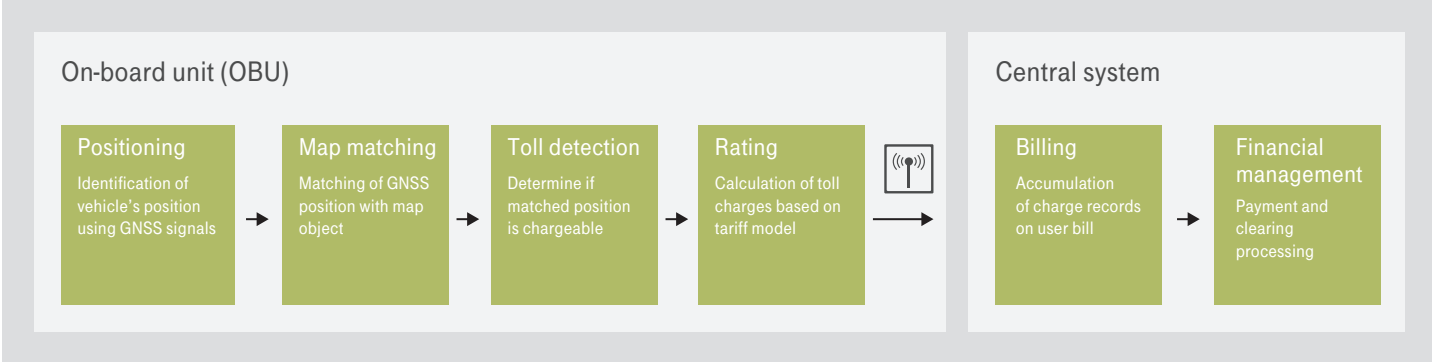
- Innovative map-matching algorithm detects use of toll roads by means of GNSS position signals
- Determination of relevant tariff data (e.g. kilometers driven, time, duration, location, direction)
- Local rating, toll charge calculation, collection and aggregation of charge data
- Temporary storage of charge data in secure on-board storage system
- Secure transmission of charge data to the central system via GSM/GPRS
- Extremely high precision on all road types
- Ability to cover complete national street networks (all road types)

BENEFITS

The on-board operation of Satellic Toll Detection delivers significant benefits:

- Robust privacy protection; no location data is transmitted to the central system if not requested by the road user
- Compliant with European privacy legislation
- Reduction in mobile communication costs and central processing equipment as a result of reduced data transmission
- Increased user acceptance thanks to immediate display of the detected toll fee

FOUR KEY STEPS TO FLAWLESS TOLL CHARGING



1. POSITIONING

The OBU's integrated GNSS/GPS receiver provides GNSS information such as position, speed, orientation and confidence degree on a second-by-second basis.

2. MAP-MATCHING

Based on the GNSS data, the map-matching algorithm identifies the related road segment or area on a digital map.

3. TOLL DETECTION

After the map-matching algorithm has identified that the vehicle has used a geo object (road segment or area), the toll detection process checks whether or not this geo object is part of a chargeable tariff scheme. To do this, the toll detection algorithm searches in a toll-object table, which links each chargeable geo object to a toll object. If the identified geo object is not part of a tolling scheme, all position data is immediately deleted.

4. RATING

If vehicles are driving on a chargeable road segment or within a chargeable area, the toll charge is calculated based on tariff rules linked to the toll object. This process is called rating and it generates a charge data record (CDR), which is securely transmitted to the central system for billing.

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