Cross-Border Cooperation of Island Urban Areas to Improve Environmental Conditions using Intelligent Transportation Systems

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https://greece-cyprus.eu/step2smart

7th Conference
On Sustainable Mobility & Intelligent Transportation Systems

Shifting towards Account Based Ticketing (ABT) and Contactless EMV in public transport
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MINISTRY OF TRANSPORT, COMMUNICATIONS AND WORKS

DEPARTMENT OF PUBLIC WORKS

SUSTAINABLE MOBILITY SECTION

PT Telematics – Original Project Scope

Fare Collection System (FCS)
- Clearing House
- On Board FCS
- Plastic (Desfire EV2) and Paper (Ultralight) cards
- 32 POS
- E-sales top-up (Internet)

Fleet Management System (FMS)
1. On Board FMS with PA
2. Ecodriving
3. Prepared for CCTV & PC
4. Control and Monitoring in Real Time
5. QoS Reports
6. Integration with ext. planning system

Passenger Information System (PIS)
- LED Displays in Stops and Stations
- On Board PA
- Website information
- Mobile Apps
- Integration with 3rd party systems (ETAL, Solomou, GTFS, SIRI…)
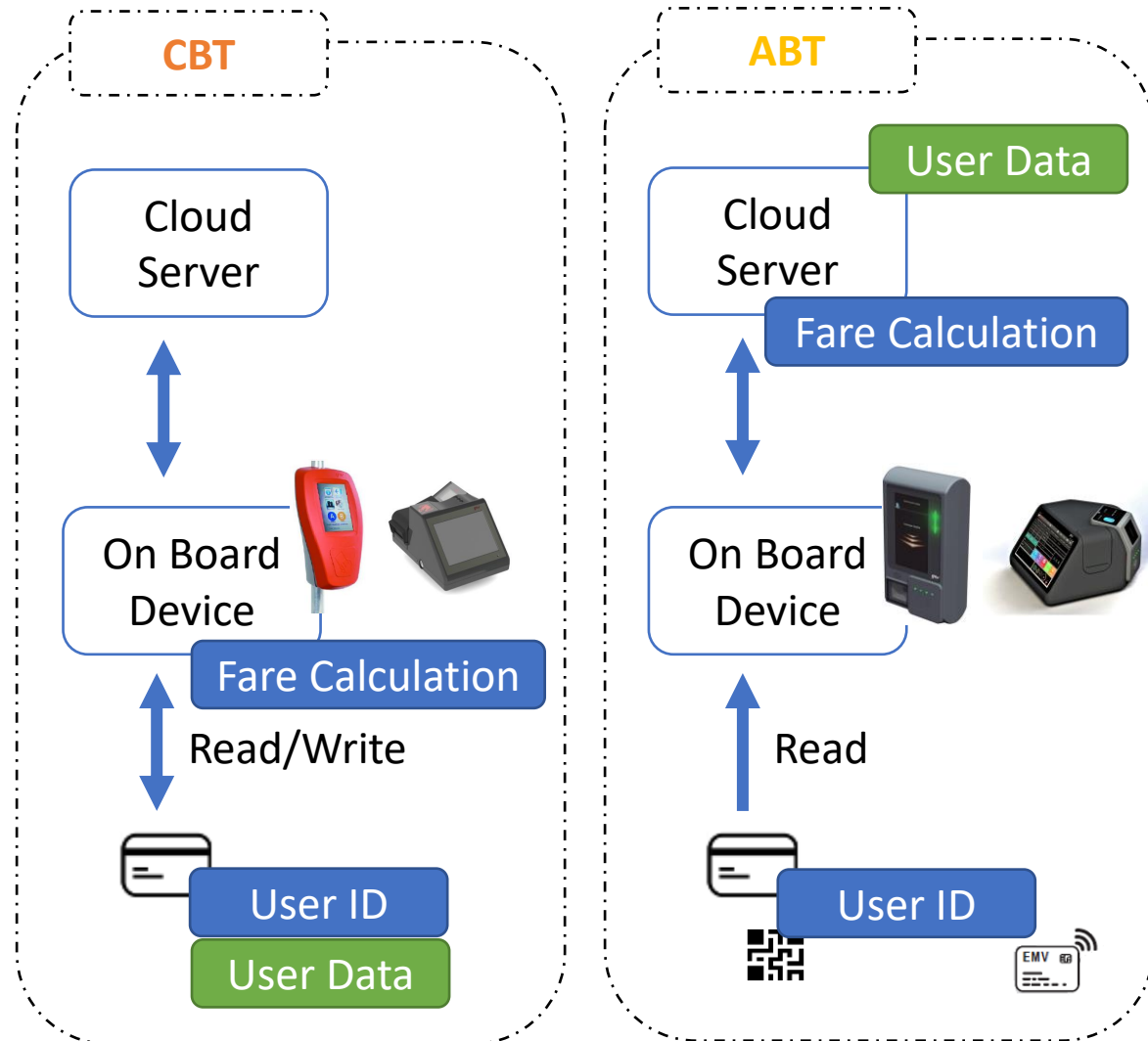
Scope
- 6 PT Operators
- Approx. 800 Buses
- 2 years implementation (2016-18)
- 8 years maintenance (2018-2026)
- On going enhancements

Original Project Scope conclusions:

- There was no previous background in ITS in Cyprus and needed to adapt to the country specific features

- Thanks to the system, the PT Ops could optimize their management

- The Final users' perception will improve

- The MTCW was able to launch the new concessions' tenders

What is Account Based Ticketing?

- In current **card-based ticketing (CBT)**, the business rules and fares are stored both on board and in the users' transport cards themselves.

- **Account based Ticketing (ABT)** uses the **back office** to apply relevant business rules, determine the fare and settle the transaction.

- With ABT, the user data is stored in the user account and not in their card. The card becomes a mere identifier of the user ID.

- ABT allows therefore to **apply complex tariffs on-the-fly**: fare-capping, transfers, best-tariff, etc.

CBT

Cloud Server

On Board Device

Fare Calculation

Read/Write

User ID

User Data

ABT

User Data

Cloud Server

Fare Calculation

On Board Device

Read

User ID

Why ABT?

- From the Authority/Operator perspective **– reduced infrastructure complexity & costs**

  - **No on-board development**: After ABT deployment, there's hardly any future development at on board level.

  - **No on-card storage**: the fare scheme does not depend on the available storage in the transit card.

  - **Complex rules easily deployed**: Fare calculation at Back Office allows to define **complex rules** and provides the authorities and operators with powerful **flexibility to change the rules on the** fly. Hence, it is **much quicker to implement** and deploy new tariffs.

  - **Easier to maintain** as the calculation is done at BO, configuration and management tasks can be reduced.

  - **Simplifies the sales network.** User can travel with their own means (physical/virtual bank card, virtual QR) without prior visit to sales network.

Why ABT?

- From the user perspective – **improved experience, comfort and intermodality**

  - **No ticket:** The users do not need to buy a ticket anymore. They can seamlessly use different fare media, all of which shall be linked to the same account: transport card, barcode/QR code, EMV bank card, etc. The different fare media are all linked to the same ID account.

  - **"Pay-as-you-go": Best Fare for the user, transparently delivered**: The users do not need to worry any more about choosing the best fare for them. The system will associate all the taps from one user to its account and then calculate the **best fare for the user**, based on business rules.

  - This is **specially interesting for** occasional users, such as tourists.

Types of ABT

- Prepayment vs. post payment

  - Prepayment

    - passenger buys amount of balance → balance is assigned in user account → user taps → fare calculation in back office → virtual balance deducted from BO.

    - In card-based system, allows to **reuse existing cards** turning them into tokens.

    - Improves cash-flow of PTOs.

  - Postpayment

- Stored Value vs. EMV

  - **Stored Value** the user creates an account before travelling and then taps with an ID token. This ID token can be a transport card or a barcode/Qr in the phone.

  - **EMV** (Europay Mastercard Visa) is the payment with bank cards. EMV does not require to create an account – although it involves other stakeholders.
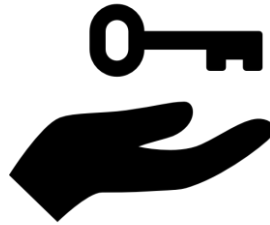
What are the challenges to incorporate EMV?

Transform existing smartcard-based systems making them **compatible with EMV**.

Adapt/Create ticketing devices to host new **EMV reader**

Involve new stakeholders
○ Payment gateway
○ Acquirer bank

End-to-end EMV certification (L3) comprising reader, gateway & acquirer

GMV EMV-ready family of devices

DTD200

- Driver Console for FMS/FCS
- Card/EMV/QR validation
- Fine ticket sales

TV100

- Card/EMV/QR validation
- Integration with FMS

GMV Success Cases to different approaches

QR, EMV: **Pamplona**

- GMV initially deployed EMV & QR ready devices in 150 buses, supporting QR payments.
- EMV has been deployed in a later stage, involving gateway & acquirer

Prepaid ABT: **Malta**

- Evolving from CBT to prepaid ABT based on transport cards.
- Huge flexibility for operator

Fixed tariff EMV: **Almeria**

- Requires tight collaboration between System Integrator, gateway and acquirer
- No back-office tariff calculation – hence simple "stepping stone" project.

Full-fledged flexible tariff ABT with EMV: **Balearic Islands**

- GMV Prime Contractor, subcontracting payment Gateway (Redsys) & acquirer (Santander)
- 1.652 validators and 611 Driver ETMs

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Thank you for your attention

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