Interoperability from the Ground Up

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E-ZPass Interoperability

How It Works

Presentation By:
PJ Wilkins, Executive Director, E-ZPass Group

October 20, 2014
Interoperability in the USA
IOP TODAY
IN USA
The E-ZPass Group

• Formed in 1990 by 7 toll agencies in 3 states
• Has developed into one of the most successful transportation related programs in the country
• Today consists of 26 toll agencies in 15 states, with more than 3600 toll lanes
• Yet is one of the most misunderstood organizations in the country
  – Is structured as a not for profit, unincorporated association
E-ZPass FUN FACTS & FIGURES

- Started IOP in 1993
- 26 Agencies, 15 States
- $7.5 Billion Revenue
- $3.5 Billion Exchanged
Success and Acceptance Brand Recognition
Why So Successful?

• One Tag – One Account
• Seamless Network
• Commercial Vehicle Operations
How It Works --- Key Elements

• Reciprocity Agreement with Toll Guarantee
  – If the tag is reported “valid”, then toll is guaranteed

• Common “Core” Business Rules
  – Limited number of rules we all agree to, but agencies remain independent in establishing their own rules when it makes sense to do so.

• Common File Specifications
  – All agencies send/receive data consistent with the filespec

• Rigorous Testing Protocol
  – Ensures high degree of confidence in our equipment

• Very High Performance Standards
  – Leads to customer satisfaction and confidence in revenue collection
What’s Next?

• National Interoperability
  – Congressional mandate for national interoperability in 2016
  – Unfunded mandate
  – Technical challenges
    • 7 existing protocols
    • Different user requirements/environments (read versus read/write, data mapping)
  – Business challenges
    • Toll Guarantee
    • Business rules
    • Governance
  – Cost of interoperability
    • Transaction charge for IOP, or just the “cost of doing business?”
If I had a crystal ball........

• Will National Interoperability be achieved?
  – Yes, but not necessarily by 2016
  – Will happen through expansion of regional interoperability
  – Connection of those existing regions
Interconnected Regional Networks

Possible Regional Transponder Interoperability

Western Canada
Washington
Utah
Colorado
California
Mexico
Texas
Florida
Eastern Canada
Interagency Group (IAG)
Our Goal: National Interoperability

• One National ETC Protocol
  – 7 initial protocols pared down to 3 remaining to compete
    • TDM (IAG)
    • ISO 18000-6 type B (Sego)
    • ISO 18000-6 type C

• Agencies can keep what they have for their home system
  – Either use multi-protocol reader or Pay by Plate for those transactions

• Over time agencies would transition to the new protocol
EasyGo® – 10 years later
Mogens Hansen, CFO

IBTTA Prague, Interoperability from the Ground Up, Monday, 20 October 2014
Sund & Bælt Holding A/S, Denmark

- State owned company

- Annual report 2013:
  - Revenue EUR 590 million
  - EBIT EUR 230 million
  - Debt EUR 5.9 billion
How did it start
Experience from the set up phase

- It takes time – 3 years from decision to start of operations

- Technical challenges – practicable
- Common data interface / EasyGo HUB

- Agreements and procedures are a challenge
The set up of the solution

- Cooperation of TCs from Denmark, Norway and Sweden
- A Service for all vehicles
- One DSRC OBE – one contract – one invoice for toll collection in 3 countries
- OBE issued by local TSPs
- Available since March 2007

Experience:
- The decision to offer the service to all types of vehicles and therefore easy to communicate to customers has proved to be an excellent prerequisite for success
- Customer service – Important to ensure adequate knowledge about the service
- High quality
Development of the service

- New strategy – “Influence and adapt”
  - Protect investments
  - Prepare for EETS

- Contact to ASFINAG
  - EasyGo+
  - Upgrade of set up – to meet EETS requirements
  - Experience: It takes time

- Expand the service with new TCs:
  - More roads, bridges and tunnels
  - More ferry services
  - Parking facilities
Results obtained

• A service in demand

• Happy customers

• Efficient toll collection

• Low costs – small organisation
Next step

- Should EasyGo® continue to extend its services?
  - Certainly
  - Effective access for new TSPs to a HUB of TCs
  - We believe that a regional development will be the driving force of EETS
  - Create an interconnected region
  - Combine DSRC and GNSS

- In general:
  - We believe that the truck business will be the prime mover of EETS
  - The private car segment primarily requests regional solutions
Experience

From implementation:
• It takes time
• The technical solution is practicable
• Agreements and common procedures are a challenge
• Common data infrastructure – data exchange via EasyGo HUB

From operations:
• The service has been available to all types of vehicles – easy communication to the SU
• Customer service – Important to ensure adequate knowledge about the service
• Quality – the main challenge – is important to efficient operation and to ensure a good reputation
• Small and efficient organisation
• Gains in relation to efficient toll collection from customers that drive across borders
• Interoperable services are on demand
Thank you for your attention

Mogens Hansen
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Ireland National Interoperability Overview
Kevin O’Sullivan Arup
20th October 2014
At the outset there were two main reasons for promoting ETC interoperability

- Firstly, it was noted that full interoperability would be of significant benefit to road users in general and in particular to regular and strategic users of the new motorway network;

- Secondly, the introduction of interoperability was viewed as a ‘springboard’ to deliver increasingly ambitious levels of Electronic Toll Collection (ETC) on the network;

- It was also argued that from the road user’s perspective interoperability should be considered a ‘necessity’;
The current situation is influenced by many changes over the past decade

- 2003–2010 - New motorway network with toll roads;
- 2007 – Appointment of 1st Interoperability Management Service Provider;
- 2007 - Introduction of national ETC interoperability;
- 2008 - Introduction of ORT free flow on M50;
- 2008 - Introduction of National Toll Service Providers;
- 2012 – Tender for 2nd Generation Interoperability Management Service Provider;
- 2014 - Implementation of 2nd Generation IMSP
- Ongoing – Preparation for European Interoperability;
Irish Network

- There are currently ten toll roads on the national network and one on the local network;
- The majority of the toll roads have been funded using Public Private Partnerships. Others Operator model;
- Virtually all Ireland’s commerce and industry depends on road links;
- Roads carry 96% of passenger traffic and over 98% of internal freight;
- Population increased 8% since 2006 to 4.6m;
- Car ownership ~ 2.5 million;
Irish Tolling System

- Single-point tolling;
- Standard toll plazas;
- ETC options and express lanes;
- Open-road tolling;
- DSRC.
STAKEHOLDERS
Central Clearing House: “hub and spoke” solution to Interoperable ETC

From IMSP to Toll Roads and other ETC operators:
- Aggregate B/G/W Lists
- Relevant Transactions
- Monthly Balance Statements

From Toll Roads and other ETC operators to IMSP:
- Black/Grey/white Lists
- Roaming Transactions

IMSP

Road Operator 1

Road Operator 2

Tag Provider 1

Balance Payments (Monthly)
Independent [Toll] Service Providers enter market

- Step-change in market
- Now ETC accounts for 50% of all tolling transactions
- IMSP processed €95M interoperable tolling transactions in 2013
- Cheaper toll collection for TCs
- Complex contractual arrangement
- Continuing obligation to be interoperable with each other
- Lack of security on revenue collected
The basic business case is positive for the tolling sector – due to operational savings

<table>
<thead>
<tr>
<th>Annual National Estimates (2011)</th>
<th>€ millions</th>
</tr>
</thead>
<tbody>
<tr>
<td>ETC Toll Revenue</td>
<td>€120</td>
</tr>
<tr>
<td>User Contribution (Admin Fees) – Revenue</td>
<td>€5</td>
</tr>
<tr>
<td>ETC Operating Costs*</td>
<td>- €15</td>
</tr>
<tr>
<td>Operating Cost Savings due to ETC (for Toll Road Network)</td>
<td>circa. €80</td>
</tr>
</tbody>
</table>

*Costs split between Road Users and Tolling Sector approx. 33% : 67%
Funding Arrangements – who pays today?

- **Network Manager (NRA):**
  - Funds Interoperability Management Infrastructure and Systems (e.g. operating payments and capital for interoperability management service provide);

- **Toll Road Companies:**
  - Interoperability costs (e.g. systems and operations costs);

- **Independent EETS Style Tag Providers:**
  - System and Operational costs
  - Pay IMSP usage fees;

- **Users / Motorists / Customers:**
  - Account Administration Charge (next slide);
Charges to Users / Motorists are relatively low in current environment

- Current Policy on User Charges:
  - Administration Charge – to cover cost of supply of OBU and account management function. Some tag / service providers charge a fixed fee (e.g. €1 per month per OBU) and some charge a percentage fee (e.g. 5% of the toll charge);
  - No uplift in Toll charge for ETC – despite “better product” for road user;
  - Reduce Fees for ORT
  - No additional roaming charges to users for interoperability – unlike mobile phone model;
Developing the Model

- Lessons learnt – how can we improve?
- Flexibility and market-oriented approach
- Contractual model to allow companies assume greater autonomy and responsibility
- A technical solution to facilitate flexibility and improved performance
- Facilitate migration to new standards
- Provision for EETS?
New Technical Solution (IMSP)

• Selective interoperability
• Performance and reporting
• Bilateral agreements
• Retention of basic system of information exchange with enhancements
• Flexibility in standards employed
• Facilitation of EETS?
IMSP New Contractual Framework

- **Market-oriented**
  - No obligation to be interoperable
  - Commercial decision on the basis of open market forces
  - Commercial matters to be agreed bilaterally

- **Base framework of information exchange for consistency**

- **Future-oriented:**
  - Open with respect to standards
  - Facilitation of expansion and growth of interoperability market
  - Facilitation of European interoperability
IMSP

- Transactions Per Month By Toll Changer

- Transactions Per Month By Toll Service Provider
Thank You

Kevin O’Sullivan
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KEZIBAN GIRISIT
The French Interoperability

Keziban Girisit
Axxès – ETC service provider
Member of AETIS and REETS Project
The French Tolls

- 9,048km of conceded network
- 19 concession companies
- Annual transactions in million:
  - 1,248.4 for LV
  - 162.2 for HGV
- Revenues in million of euros:
  - 5,856.5 for LV
  - 2,683.1 for HGV

Data and information provided by ASFA
Interoperability for LV with Liber-T

2000 - launch of the interoperable transponders on the national network

- One contract between the TC and client
- Transactions cleared between TCs
  - 5 million subscribers
  - 530 million transactions
  - 213 transactions per OBE/year
  - 42% of LV transactions are ETC ones

Data and information provided by
Interoperability for HGV with TIS PL

2005 – Introduction of a new actor ‘SHT’ for management of HGVs transactions

- Contract between the SHT and client
- The SHT clears the transactions for the TCs
  - 640,000 subscribers
  - 140 million transactions
  - 240 transactions per OBE/year
  - 85% of HGVs transactions are ETC ones
  - Benefit of specific discounts
  - Access to new services for fleet management

Data and information provided by
The HGV tax on national roads

2009 – French State decision to implement an ETC on national roads

- The SHT keeps the contract with the client and manages the ETC on behalf of the PPP.
- The PPP manages the tolls system and tax collect on behalf of the French State

A new OBE is deployed with DSRC system for enforcement needs and GNSS system to transmit the charging points crossed by the HGVs

On October 9th, launch postponed sine die

* Les PL français doivent être équipés en permanence. Pour les PL étrangers, seulement quand ils circulent sur un réseau taxable.
* French HGVs must be permanently equipped with an OBE, while foreign vehicles only need to be equipped when driving on the taxable network.
The successful experience of Axxès

2005 – Foundation of Axxès for the European Electronic Toll Collection

Leader of Electronic HGV Toll in France
- 250 000 interoperable devices in circulation
- 125 000 of them are GPS units
- 30 000 clients
- 50 European Partners
- 2 workshops for OBE personalization and shipment

Develop the interoperability across Europe
  > Our reason for being

Offer an innovative product in the era of time
  > Facilitate the road for drivers and operators

Offer new services
  > Improve and simplify the daily management
The successful experience of Axxès

Since 2007 – Innovative products and value added services linked to the DSRC and GNSS systems

- Commercialisation of the TIS VL
- ISO 9001 certification

2007

- Commercialisation of the TIS PL (French network)

2008

- Commercialisation of the Viaxxès: first interoperability in Europe – Spain

2009

- Interoperability with the Liefkenshoek tunnel in Belgium

2011

- Interoperability with Portugal
- Launch of the geolocation application Viaxxès SAT Manager
- Signature of the first partnerships with leaders in on-board telematics

2012

- Commercialisation of the satellite on-board unit Viaxxès SAT

2013

- Approved by the state to collect taxes and tolls in France and Europe (renewal on 27/02/2014)
- Renewal of the ISO 9001 certification

2014

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Prague, Czech Republic | October 19-21, 2014
Interoperability: a win win business

It’s a need, it’s useful and it’s a real business

- Improving traffic flow and reducing congestion
- Increasing customer satisfaction and loyalty
- Developing activities and growing revenues
- Implementing a dynamic and global platform
The French Interoperability

Thank you for your attention
Questions??

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