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Innovations & Technologies for Sustainable Mobility, Environment and Road Safety
Prague, Czech Republic | October 19-21, 2014

Interoperability from the Ground Up

MODERATOR

Alain Estiot, Toll Collect GmbH

PANELISTS

P.J. Wilkins, E-Zpass Group

Mogens Hansen, Sund & Baelt Holding A/S

Kevin O'Sullivan, Arup

Keziban Girisit, Axxès

P.J. WILKINS
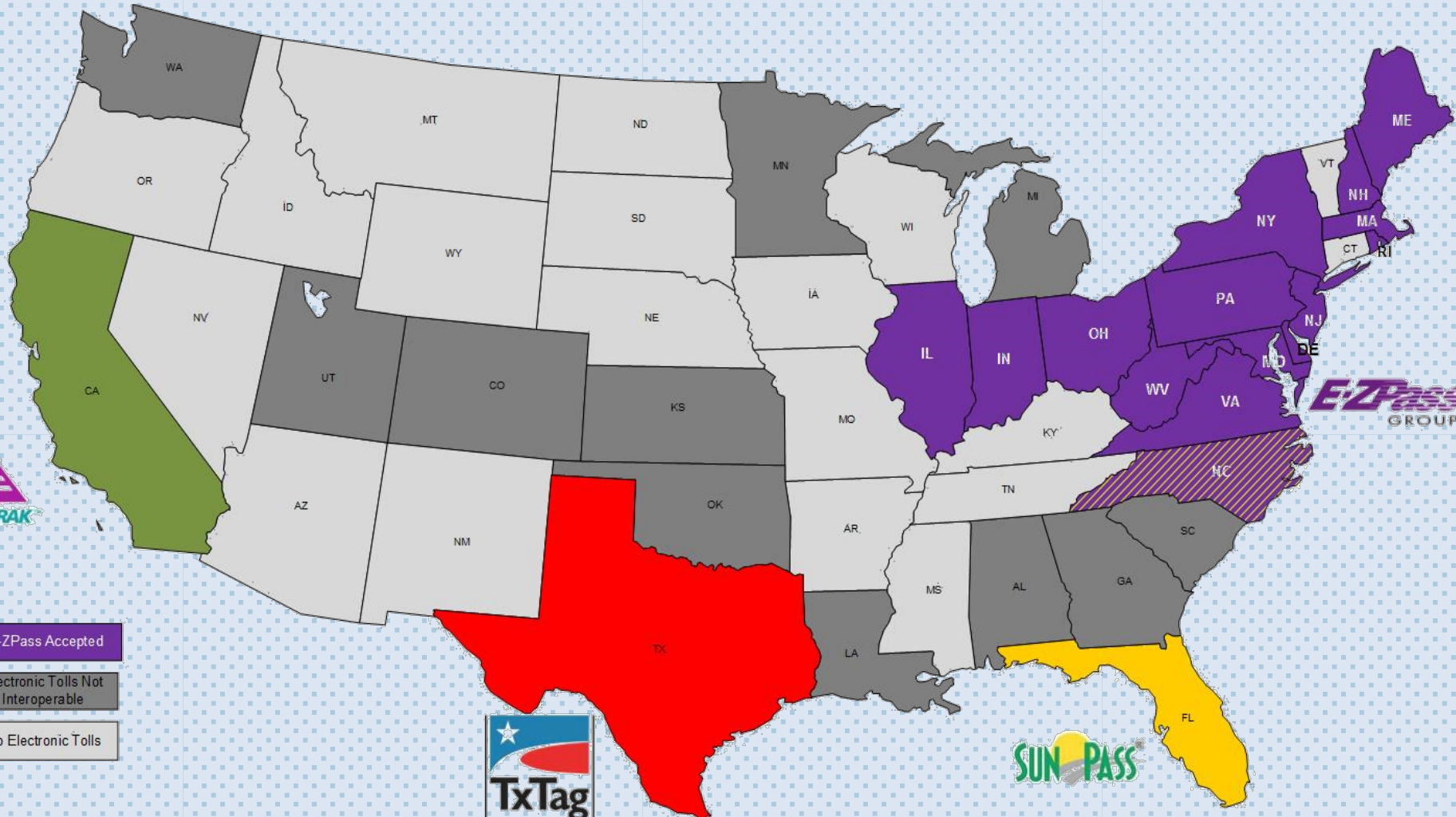
E-ZPass Interoperability
How It Works

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

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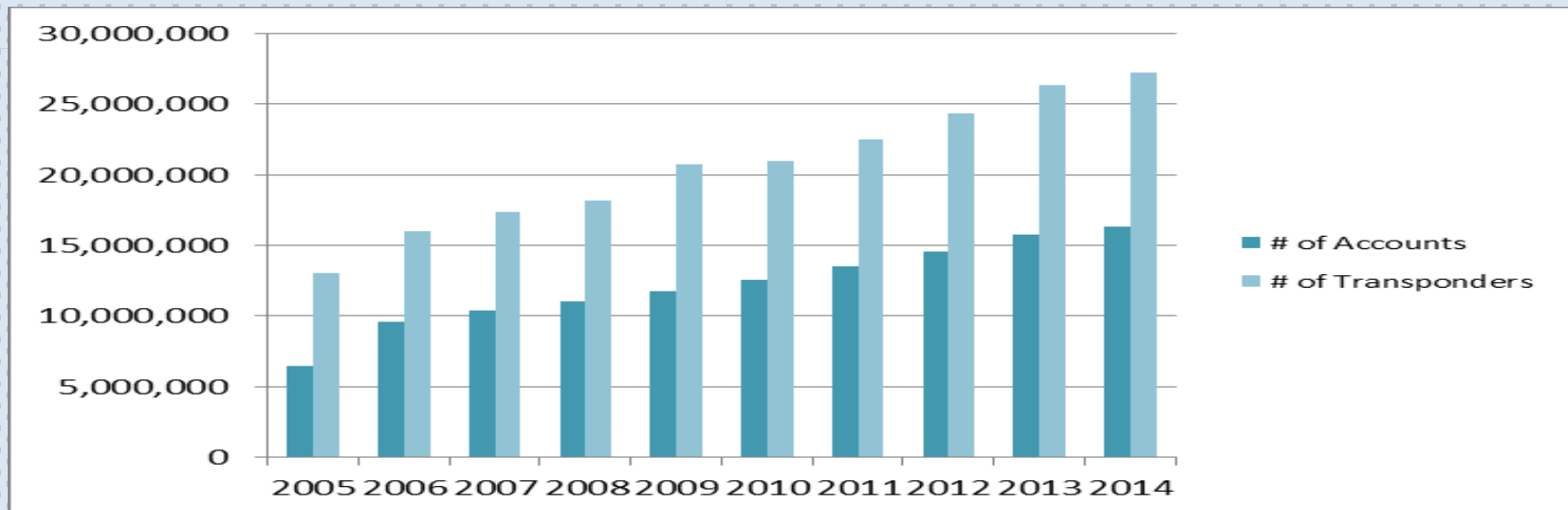
Success and Acceptance Brand Recognition

E-ZPass Customer Distribution by Issuing Authority

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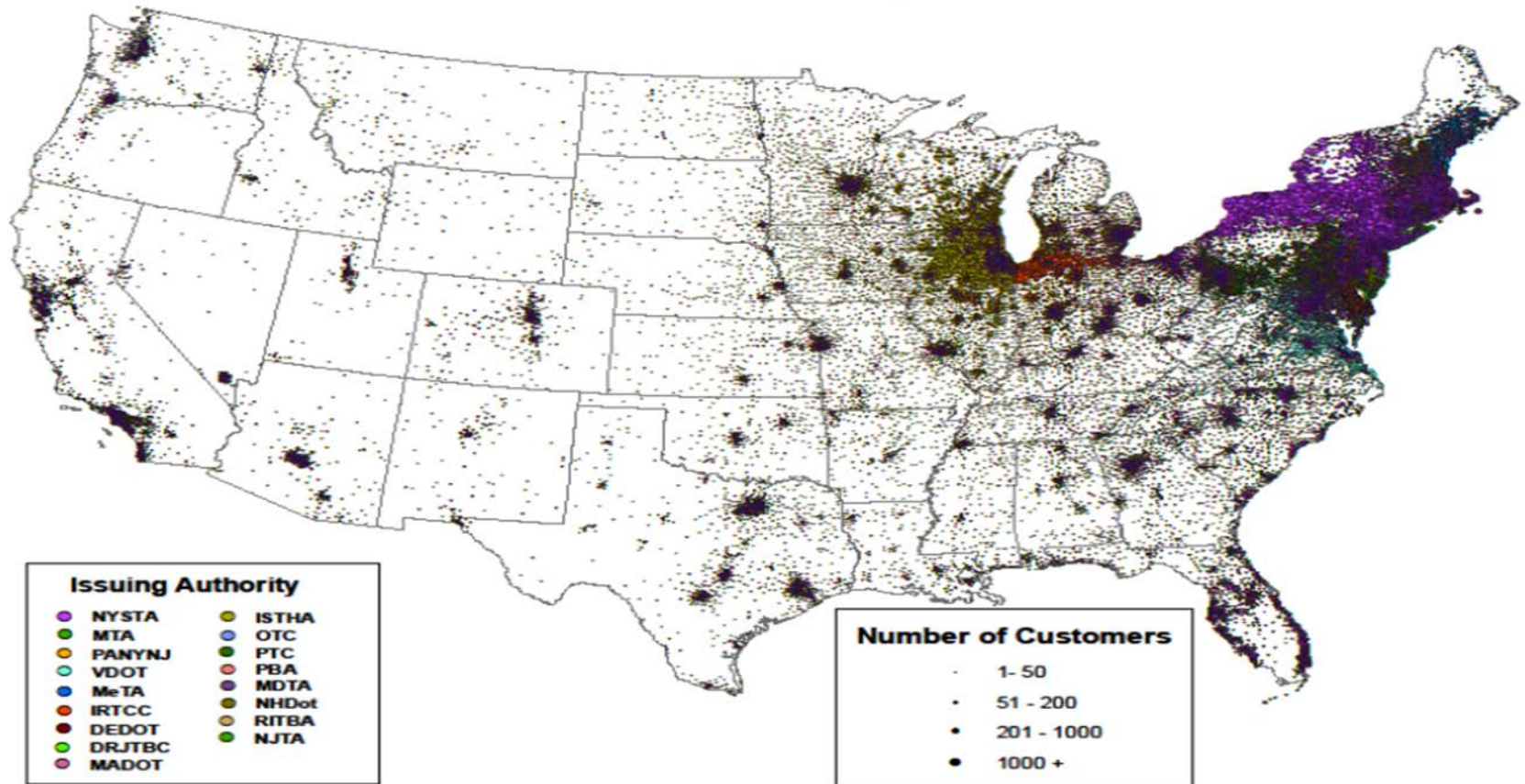
Why So Successful?

- 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
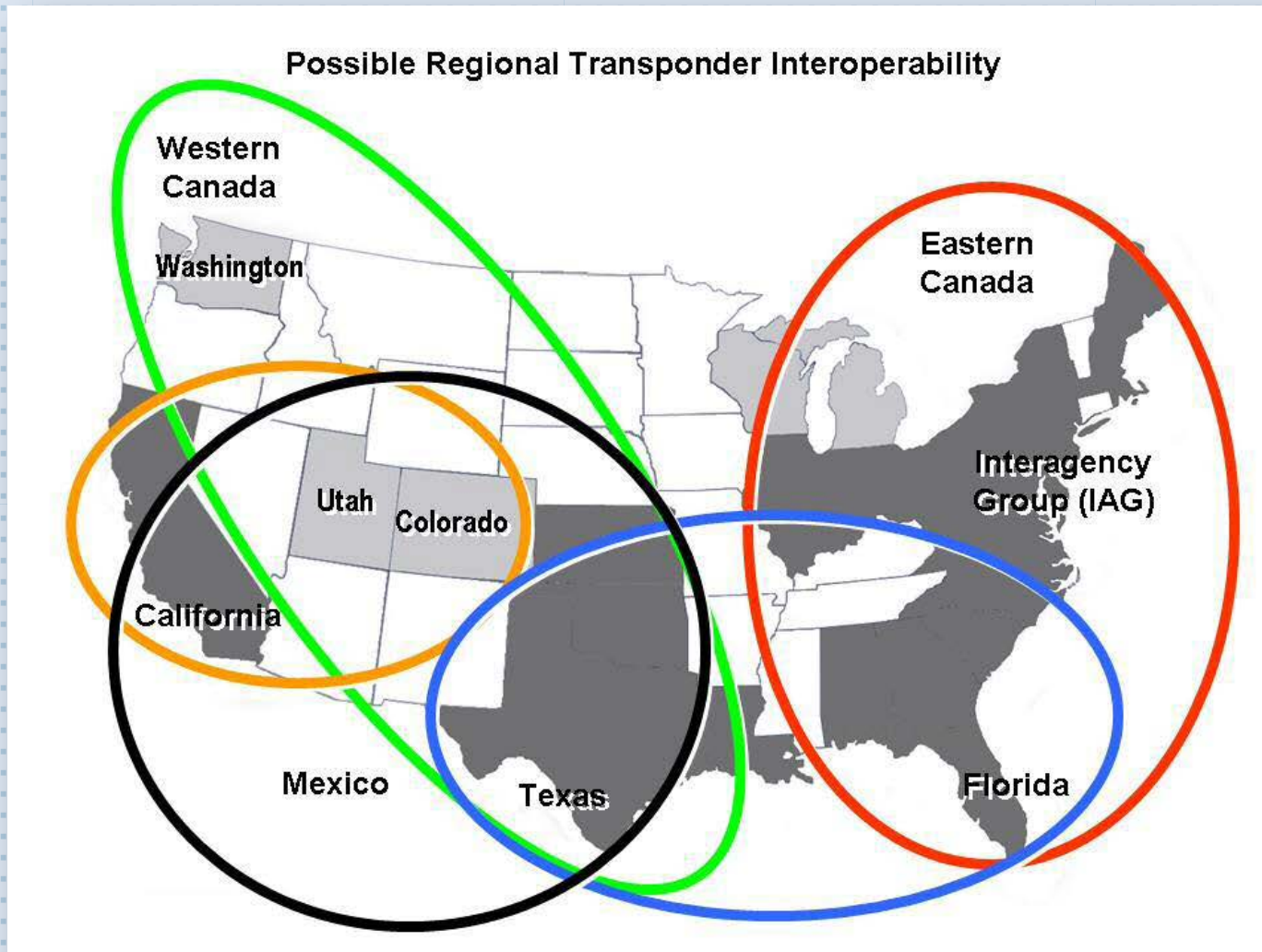
Our Goal: National Interoperability

- 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

Questions
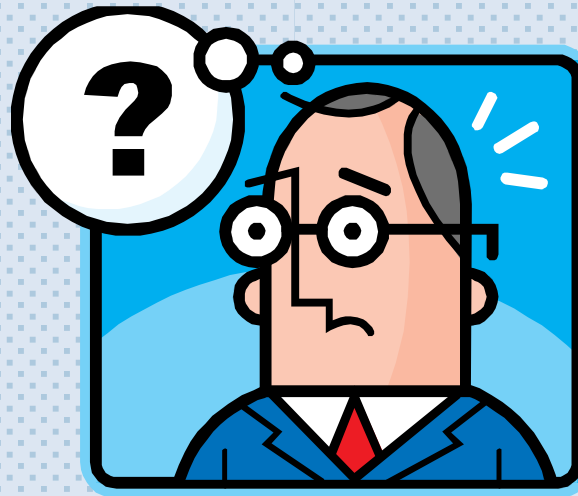
MOGENS HANSEN

EasyGo® – 10 years later

Mogens Hansen, CFO

IBTTA Prague, Interoperability from the Ground Up, Monday, 20 October 2014

Sund ≈ Bælt
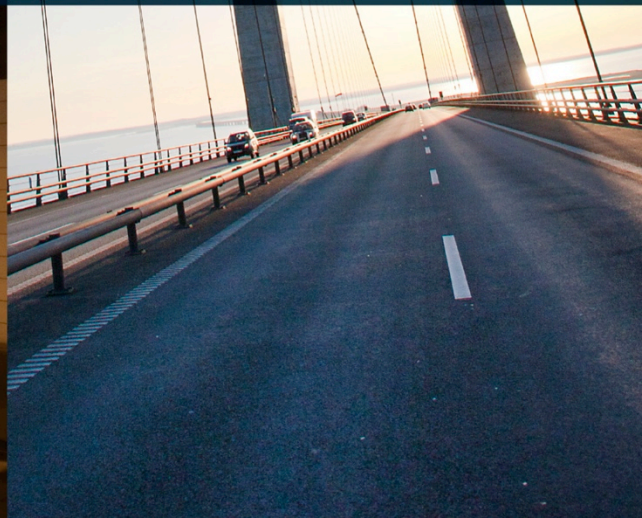
Sund & Bælt Holding A/S, Denmark

- State owned company

- Annual report 2013:
  - Revenue   EUR 590 million
  - EBIT   EUR 230 million
  - Debt   EUR 5.9 billion

How did it start
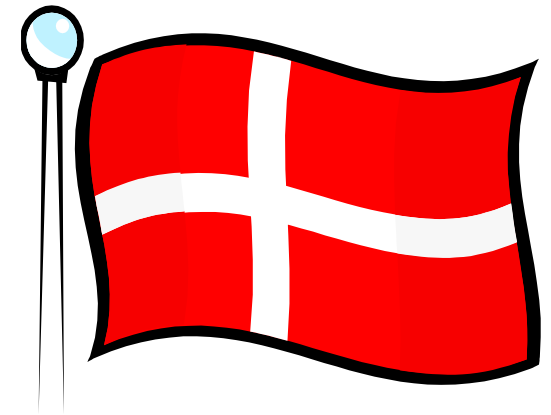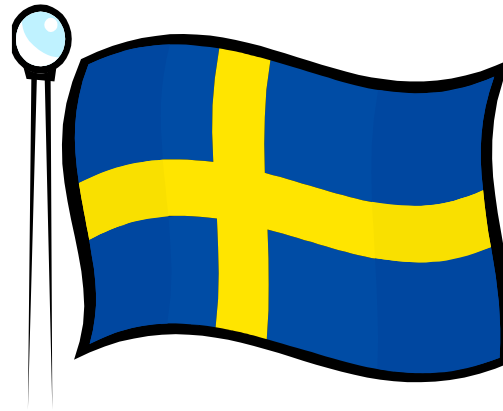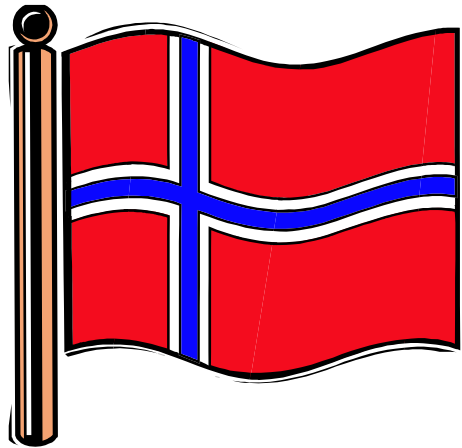
Experience from the set up phase

- 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

Traffic growth 2008-2014

- Happy customers

- Efficient toll collection

- Low costs – small organisation
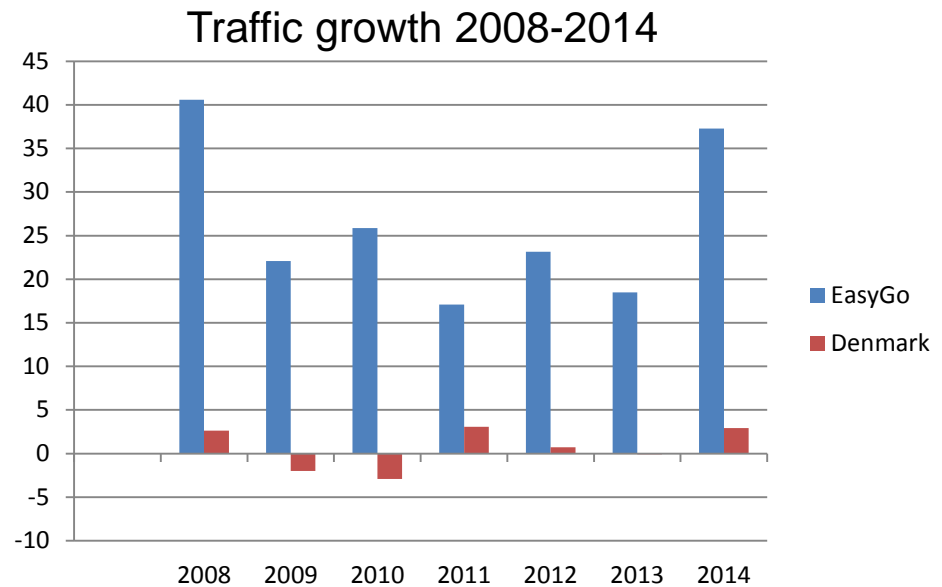
Next step

- 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

mh@sbf.dk

KEVIN O'SULLIVAN

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 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;

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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;

Toll Plaza Locations 2010

Legend:
- € Toll — Toll Plaza
- Motorway
- Dual Carriageway
- Two Plus One
- Single Carriageway

NRA
National Roads Authority

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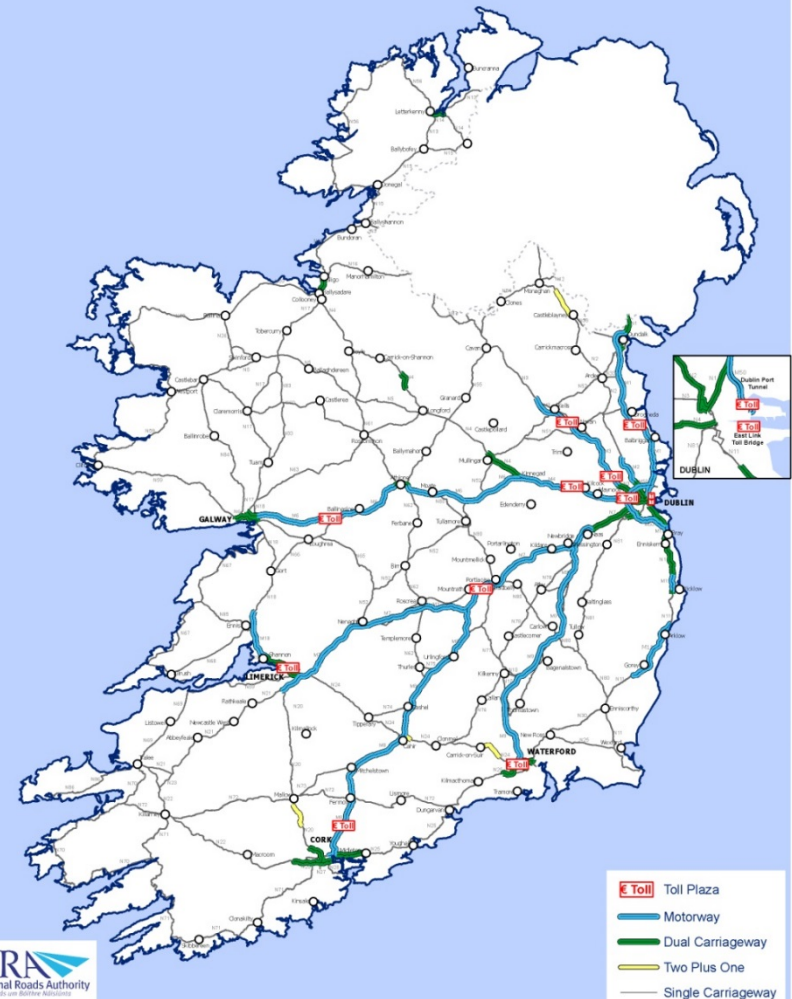
Irish Tolling System

- 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

Information Flows

Road Operator 1

Road Operator 2

Tag Provider 1

€ € €

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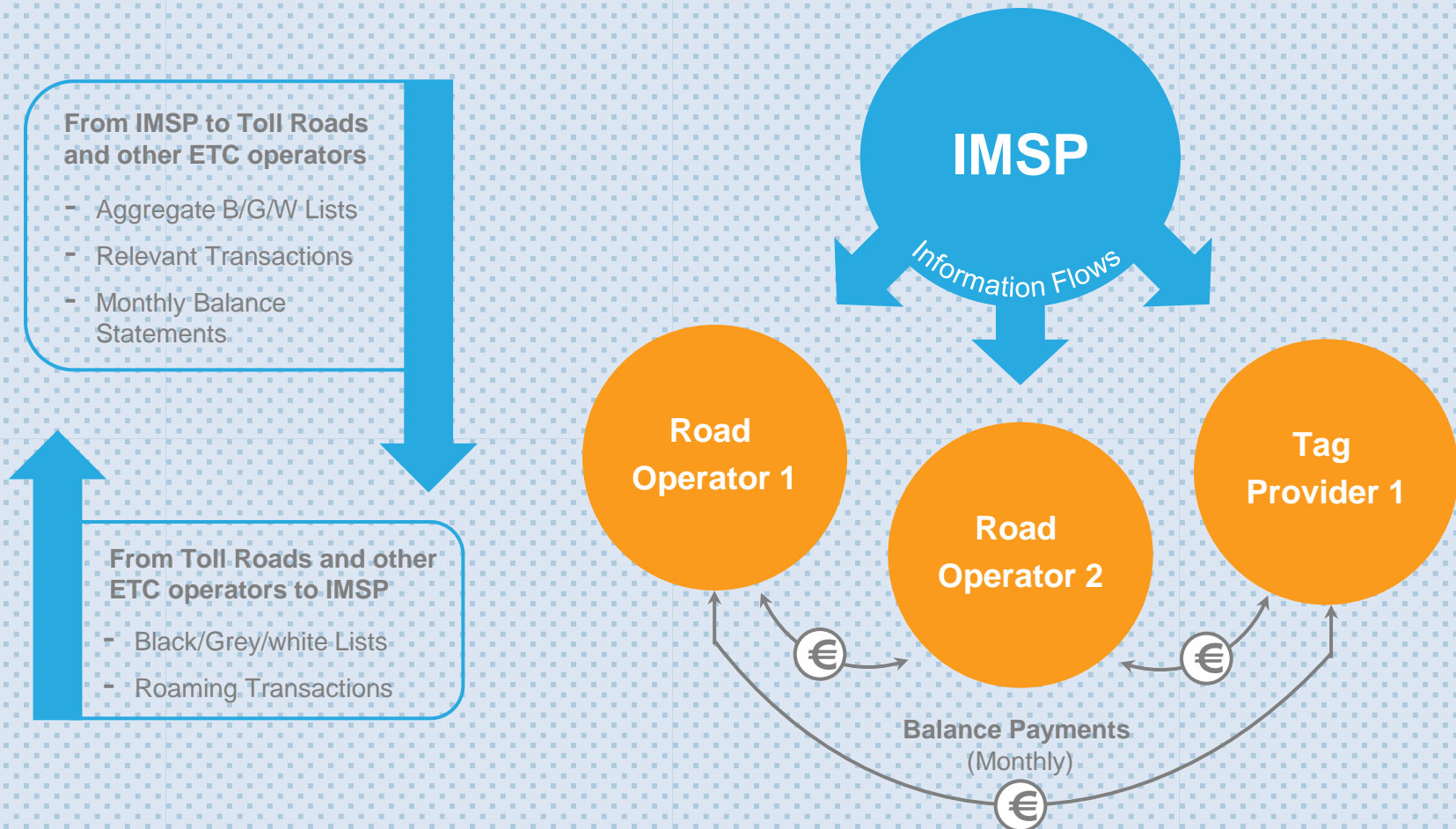
Independent [Toll] Service Providers enter market

- 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

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The basic business case is positive for the tolling sector – due to operational savings

Annual National Estimates (2011)	€ millions
ETC Toll Revenue	€120
User Contribution (Admin Fees) – Revenue	€5
ETC Operating Costs*	- €15
Operating Cost Savings due to ETC (for Toll Road Network)	circa. €80

*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
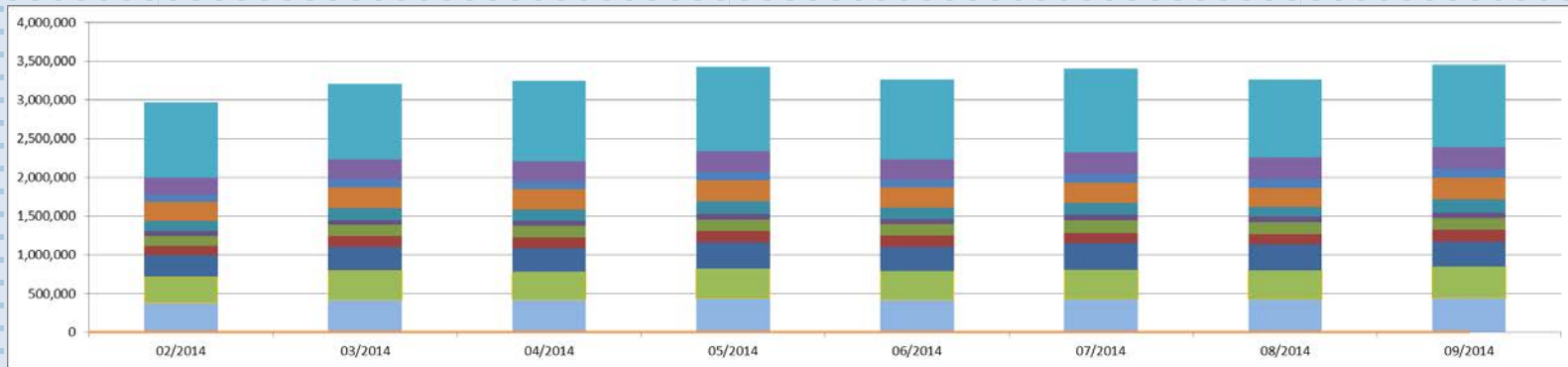
- Transactions Per Month By Toll Service Provider
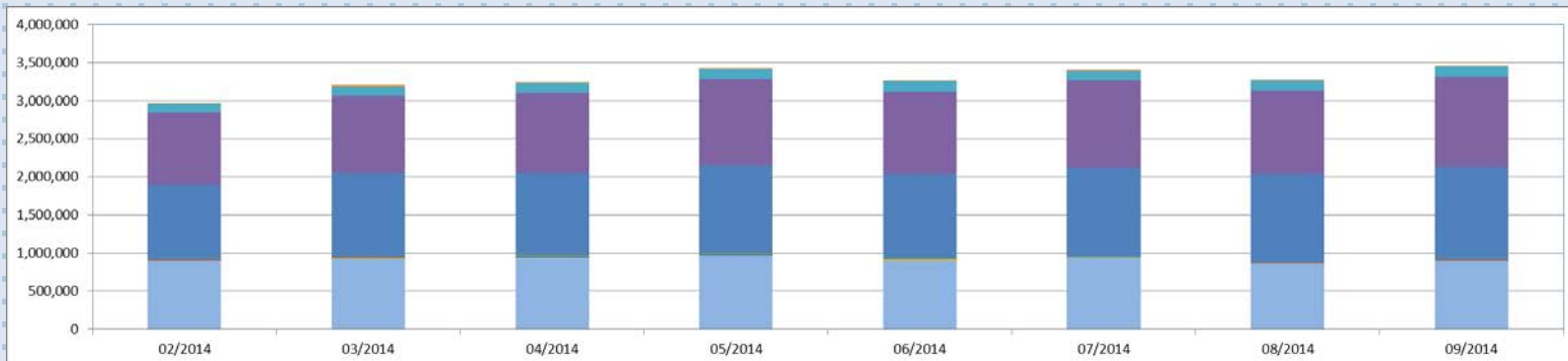
Thank You

Kevin O'Sullivan

Arup

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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:
  1248,4 for LV - 162,2 for HGV

- Revenues in million of euros:
  5 856,5 for LV and 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

TIS-Liber-t

Data and information provided by ASFA
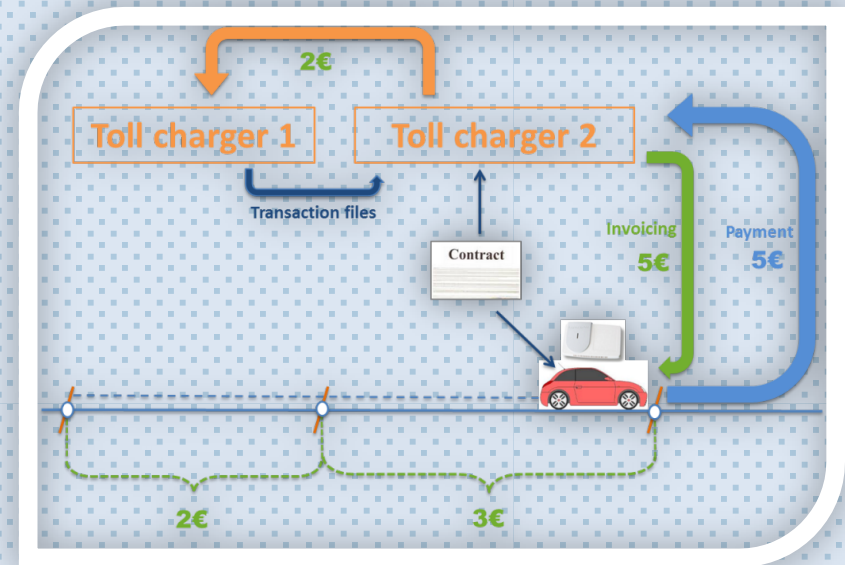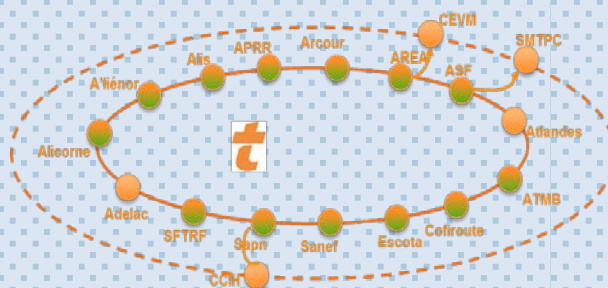
Interoperability for HGV with TIS PL

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 **ASFA**

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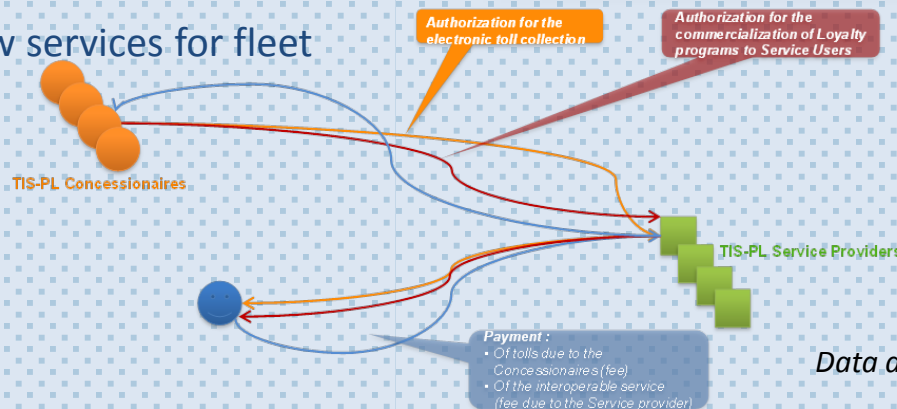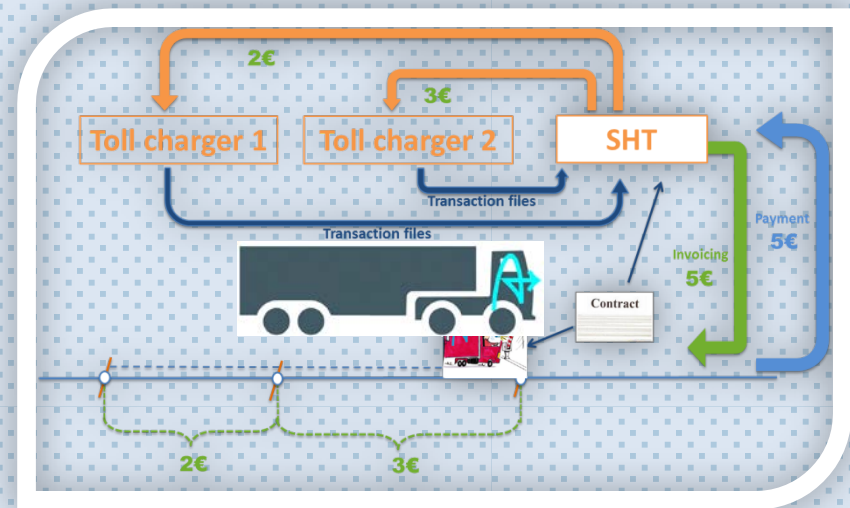
The HGV tax on national roads

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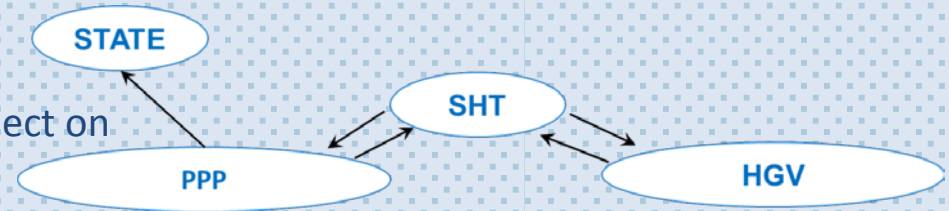
A new OBE is deployed with DSRC system for enforcement needs and GNSS system to transmit the charging points crossed by the HGVs

5 km maximum

* 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.

On October 9th, launch postponed sine die

![IBTTA TOLLING. MOVING SMARTER.]

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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
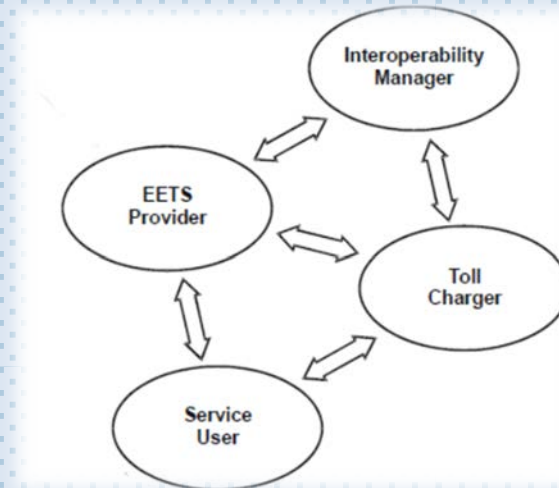
Develop the interoperability
across Europe

> Our reason for being

Offer an innovative product
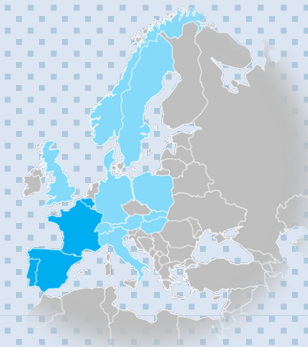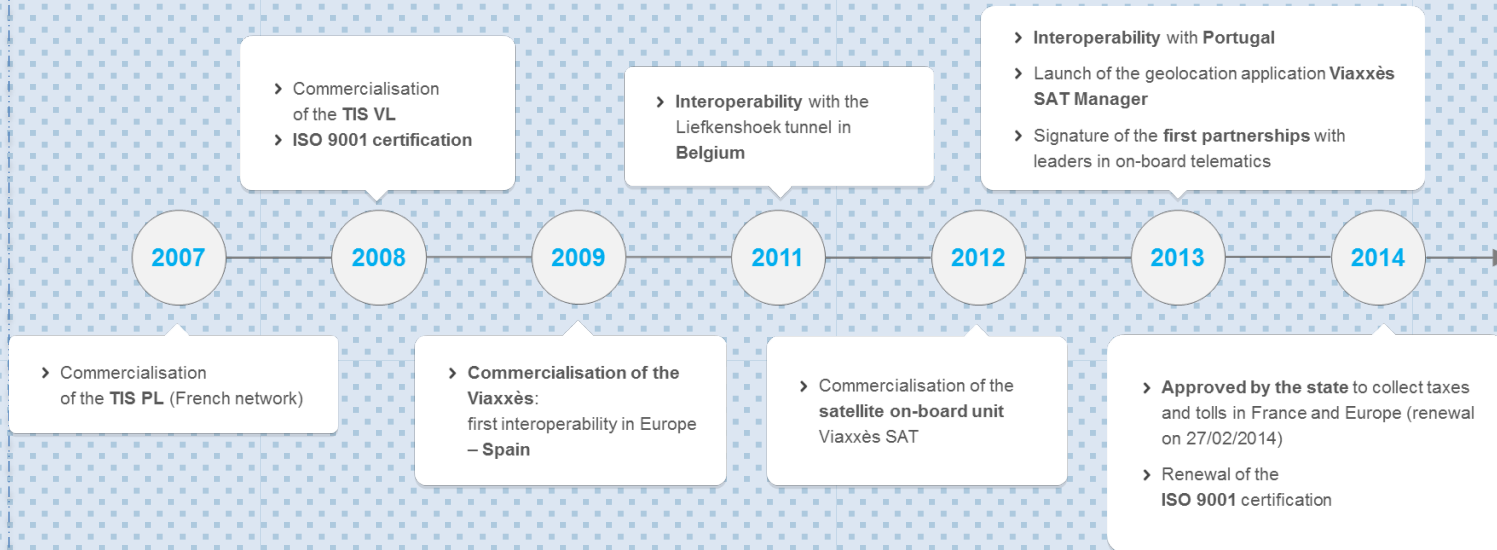in the era of time

> Facilitate the road for drivers
and operators

Offer new services

> Improve and simplify the
daily management

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The successful experience of Axxès

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

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

> Commercialisation of the **TIS VL**
> **ISO 9001 certification**

> **Interoperability** with the Liefkenshoek tunnel in **Belgium**

2007   **2008**   **2009**   **2011**   **2012**   **2013**   **2014**

> Commercialisation of the **TIS PL** (French network)

> **Commercialisation of the Viaxxès**: first interoperability in Europe – Spain

> Commercialisation of the **satellite on-board unit** Viaxxès SAT

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

Interoperability : a win win business

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

Improving traffic flow and reducing congestion
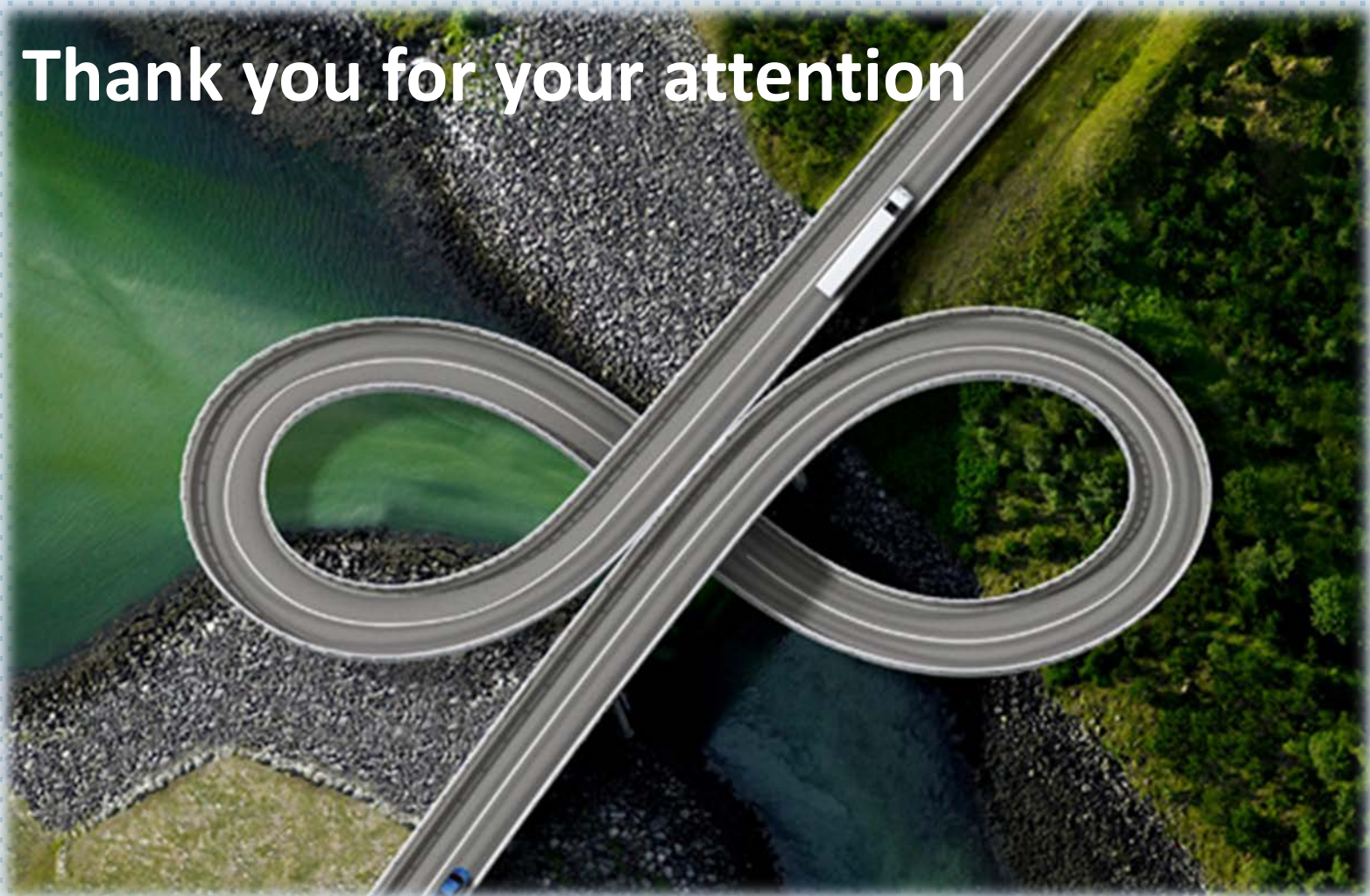
Increasing customer satifaction and loyability

Developping activities and **growing** revenues

Implementing a dynamic and global platform

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Questions??

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