IBTTA
TOLLING. MOVING SMARTER.

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Toll Interoperability

Benefits, Models, Solutions

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- Global State of Interoperability
- Sanef innovations in Interoperability
- Trending towards the Hub model
- ATI
- E-ZPass with RITBA and NFBC
- Other Solutions: IMSP
- PMH1 – GEB Interoperability
- Comparison of IOP Hub Solutions

➢ As we all know, more and more agencies are moving to AET model.

➢ ETC Interoperability is a key factor in advancement of the tolling industry. It's also one of the most challenging.

➢ Today, the interoperability landscape mostly consists in a patchwork of either non-interoperable toll systems or incompatible local interoperability networks. But this situation is rapidly changing.

➢ Sanef is advancing interoperability with Hub-based and real-time processing solutions…

FastToll Interop'

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Sanef Innovations in Interop

➤Sanef has recently implemented interoperability models that include:

   ➤ATI (USA);

   ➤E-ZPass (USA);

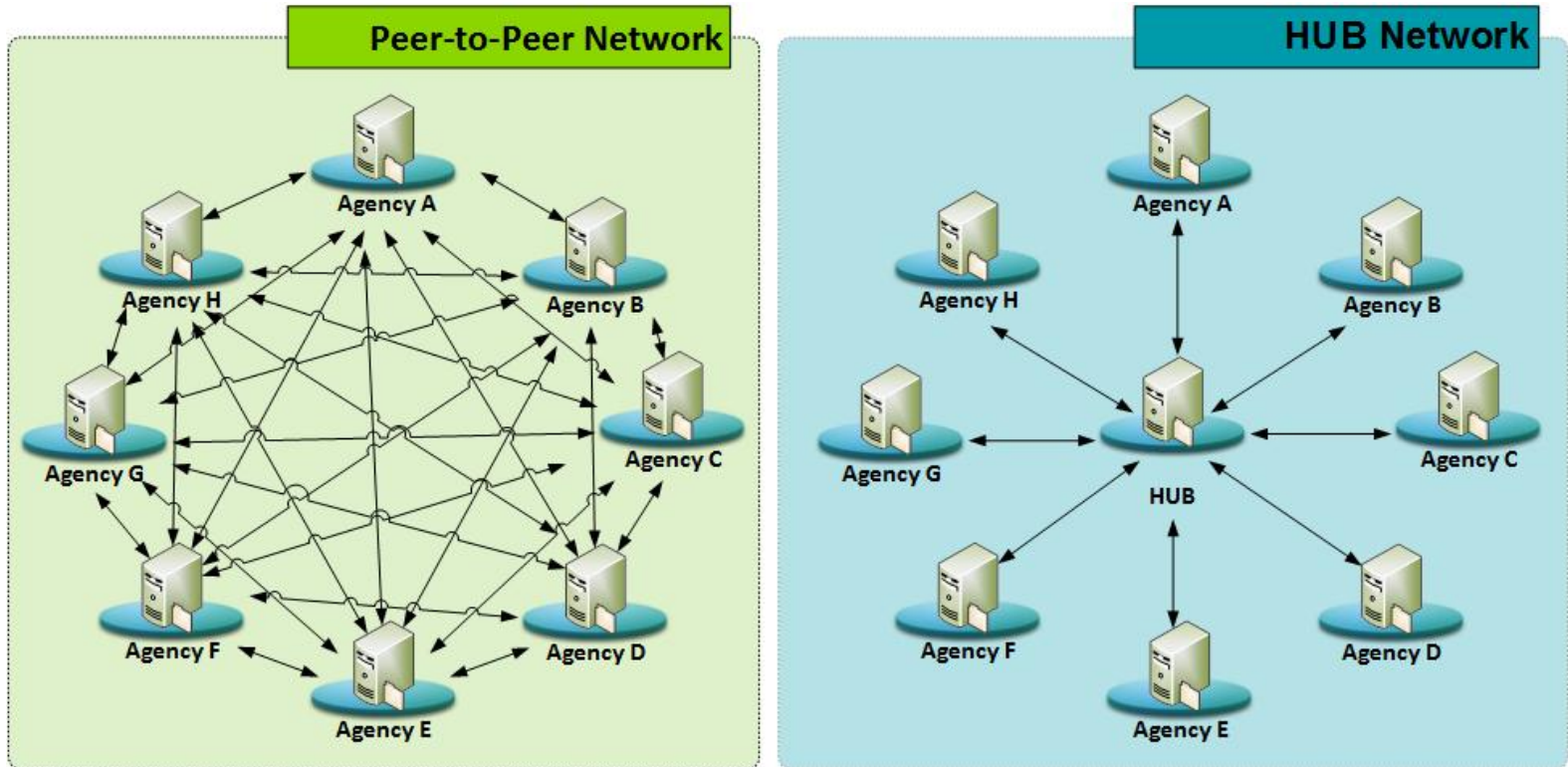   ➤IMSP (Europe – Ireland);

   ➤PMH1-GEB (Treo);

   ➤RNUT (Chile)

➤ Sanef, in Europe, operates EETS model services such as:

   ➤Bip & Go (Tag Issuer only)

   ➤Eurotoll (First Toll Service Provider)

Commercial in Confidence

- ➢ E-ZPass has been the de-facto standard for the peer-to-peer model
- ➢ A clear trend is towards Hub-based solutions.
- ➢ Sanef implemented national and regional hubs for:
    - ➢ Alliance for Toll Interoperability (ATI) Hub
    - ➢ Vancouver Region (Port Mann Bridge and Golden Ears Bridge)
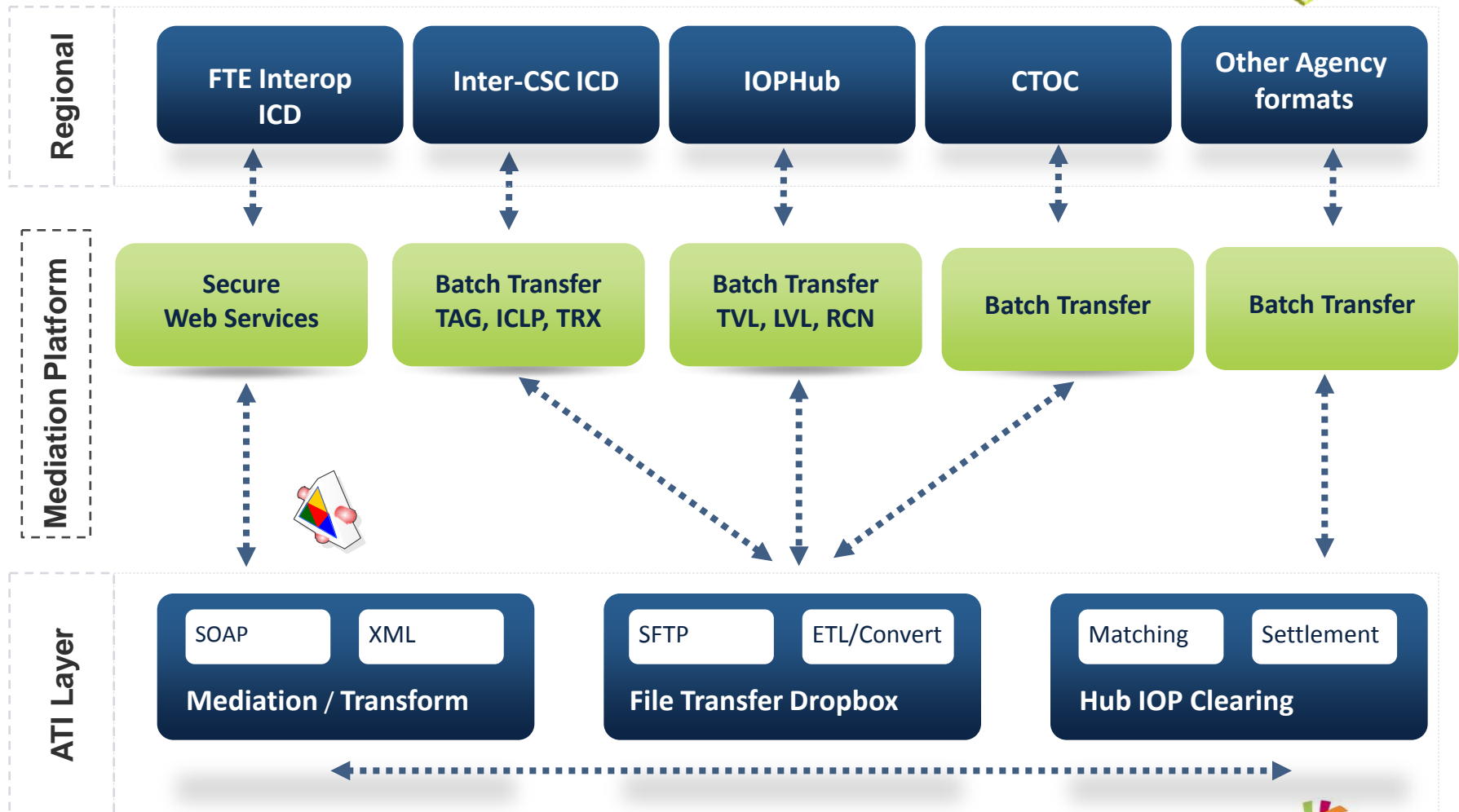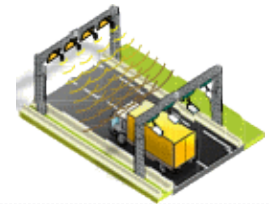   - ➢ Ireland with IMSP National Hub using the European Electronic Toll Service (EETS) standard

Alliance for Toll Interoperability (ATI)-Secure Interagency Flow (SIF)
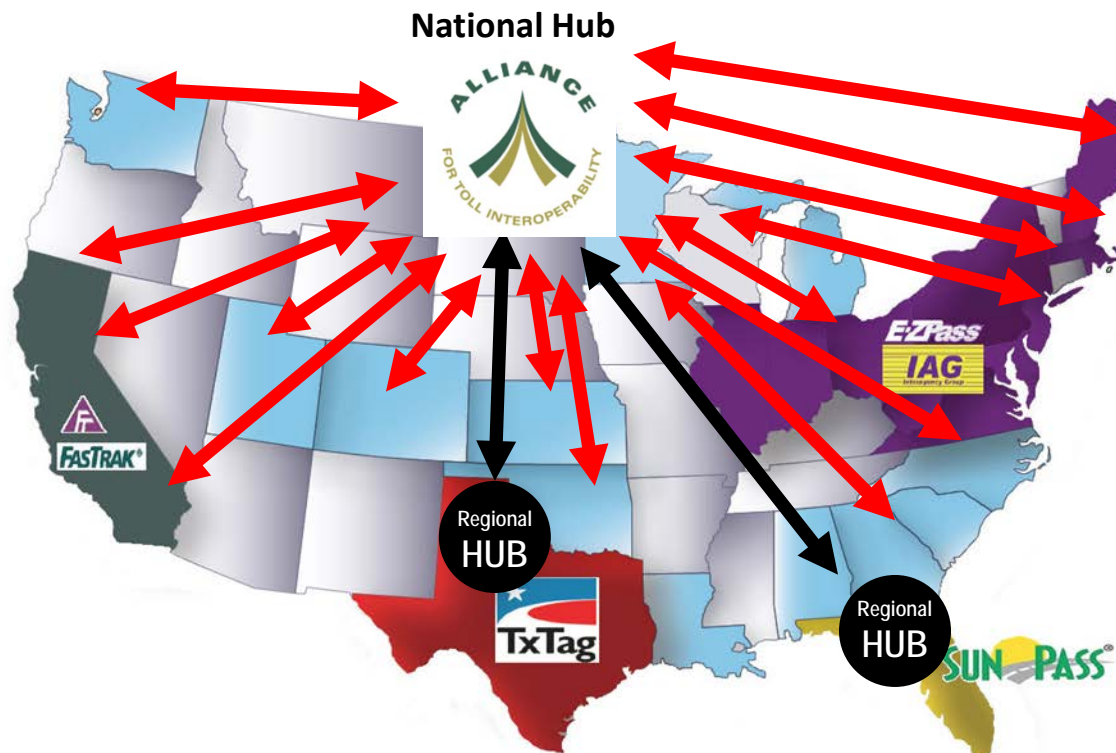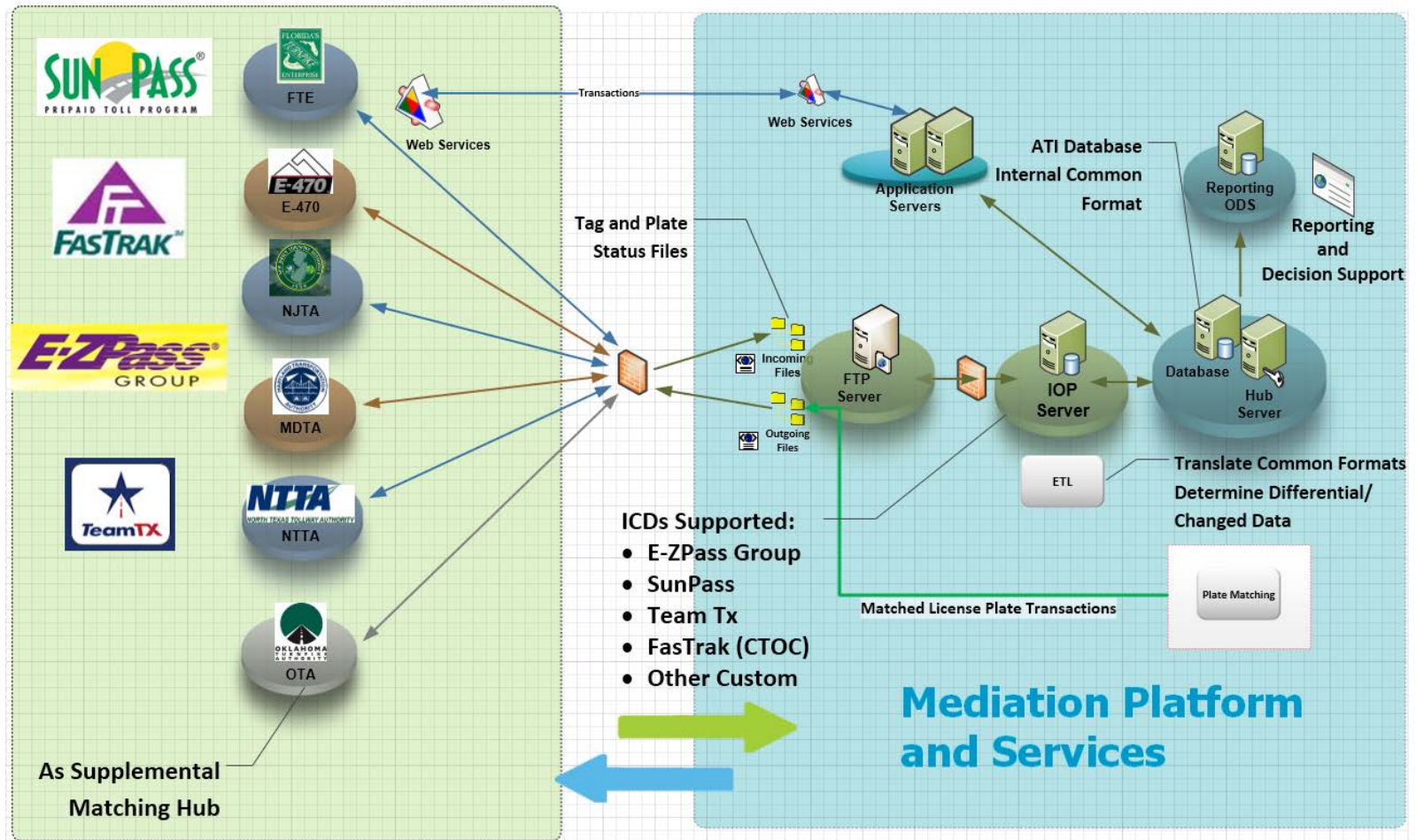
- ➢ *About Secure Interagency Flow*
- ➢ ATI allows members to exchange and settle out-of-state video/plate transactions with valid pre-paid ETC accounts (also known as i-Toll transactions in the E-ZPass interface)

ATI Support for Regional ICDs

Regional

FTE Interop ICD	Inter-CSC ICD	IOPHub	CTOC	Other Agency formats

Mediation Platform

Secure Web Services	Batch Transfer TAG, ICLP, TRX	Batch Transfer TVL, LVL, RCN	Batch Transfer	Batch Transfer

ATI Layer

SOAP	XML	SFTP	ETL/Convert	Matching	Settlement

Mediation / Transform — **File Transfer Dropbox** — **Hub IOP Clearing**

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Why Join ATI:

➢ **Recover lost revenue from Out-of-State Transactions**

- In the ATI pilot, with just 6 agencies over a three-month period:
  - Over $1.2 million in tolls recovered
  - More than 625,000 matches

➢ Contact ATI for information about cost benefits. They have financial model worksheets for conducting cost/benefit analysis. ATI can also provide sample files for an agency to conduct its' own analysis
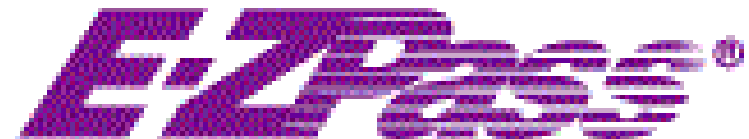
E-ZPass Interoperability

➢ E-ZPass is a good model moving forward towards national interoperability.

➢ It has evolved as the **"De facto standard"**

   ➢ The interface is open to multiple Customer Service Centers (CSCs)

   ➢ Kapsch opened IAG TDM Protocol

   ➢ IOP Specs are published on E-ZPass

➢ Sanef has provided our own FastToll Toll ERP™ Back Office Software to the Rhode Island Turnpike and Bridge Authority (RITBA).

➢ RITBA is a good example of where the E-ZPass supports an open business model where any agency or Toll System integrator can participate.

- ➢ A breakthrough towards national interoperability is the new E-ZPass Affiliate Membership program.

- ➢ It has been a long road towards making it economically feasible for smaller agencies to accept E-ZPass at their facilities. The Affiliate program makes it possible.

- ➢ The demand for E-ZPass is evident in the signage shown here:

- ➢ Sanef is providing our FastToll Interop™ for E-ZPass Interface software to the Niagara Falls Bridge Commission, which will be starting to accept E-ZPass this summer.
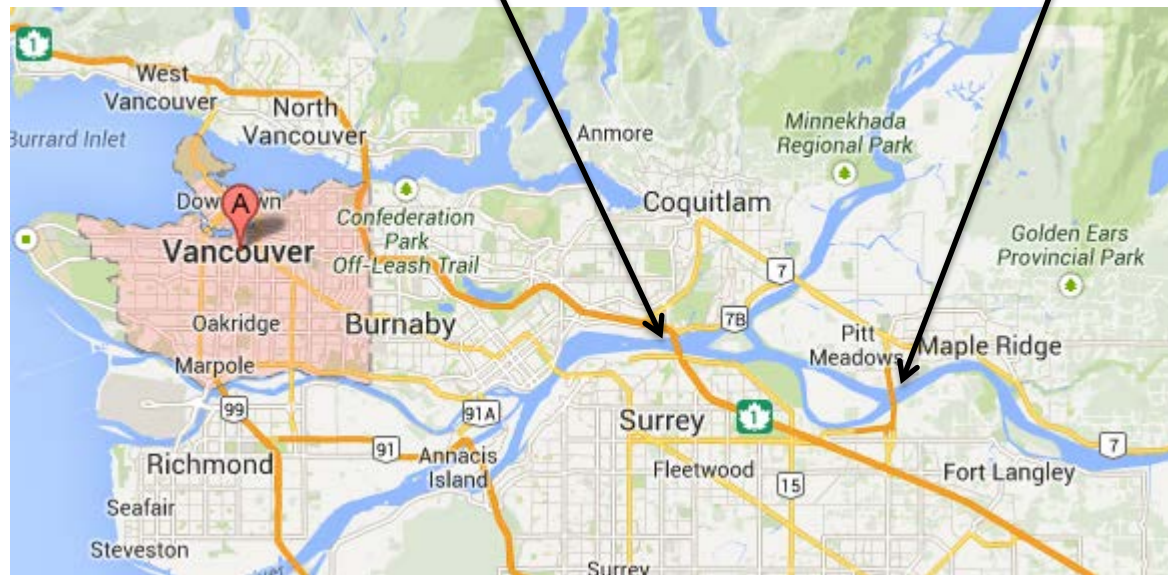
Other Interoperability Models

Commercial in Confidence

PortMann (PMH1) – Golden Ears Bridge (GEB) Interoperability, (Vancouver, British Columbia)

Port Mann Bridge (MLFF)

Golden Ears Bridge (MLFF)

Technical Interoperability with Multi-Protocol Readers that support 3 protocols:

- 6C, Title 21 and ASTMV6
- Loops & lasers for classification
- Video tolling
- Pre and post payments

6C sticker tags - 500,000 on windshields as tolling starts

On the software side

- Implemented regional real-time clearing Hub-based solution
- No need to exchange tag and plate status files

Interoperability Transaction Flow (GEB-PMH1)
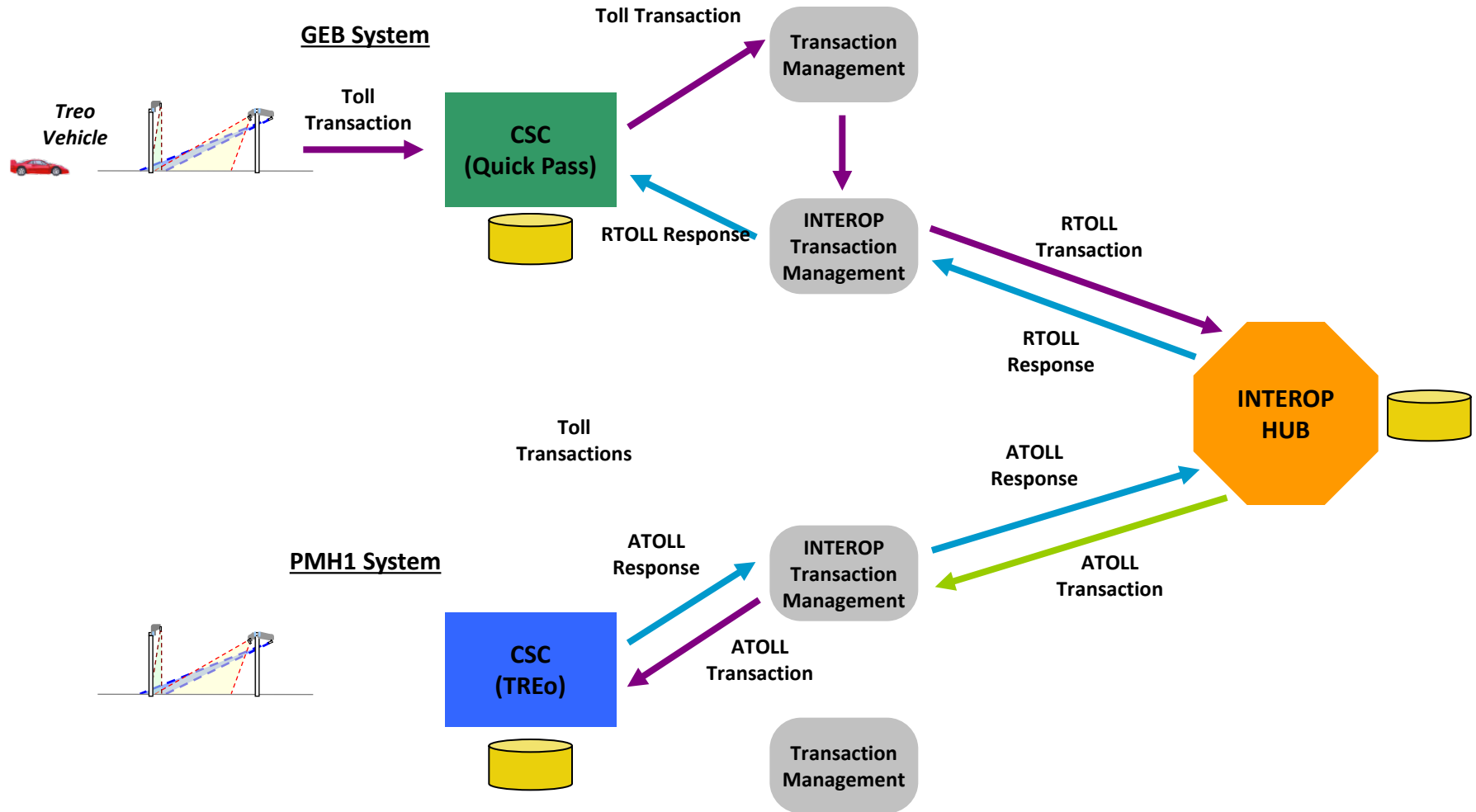
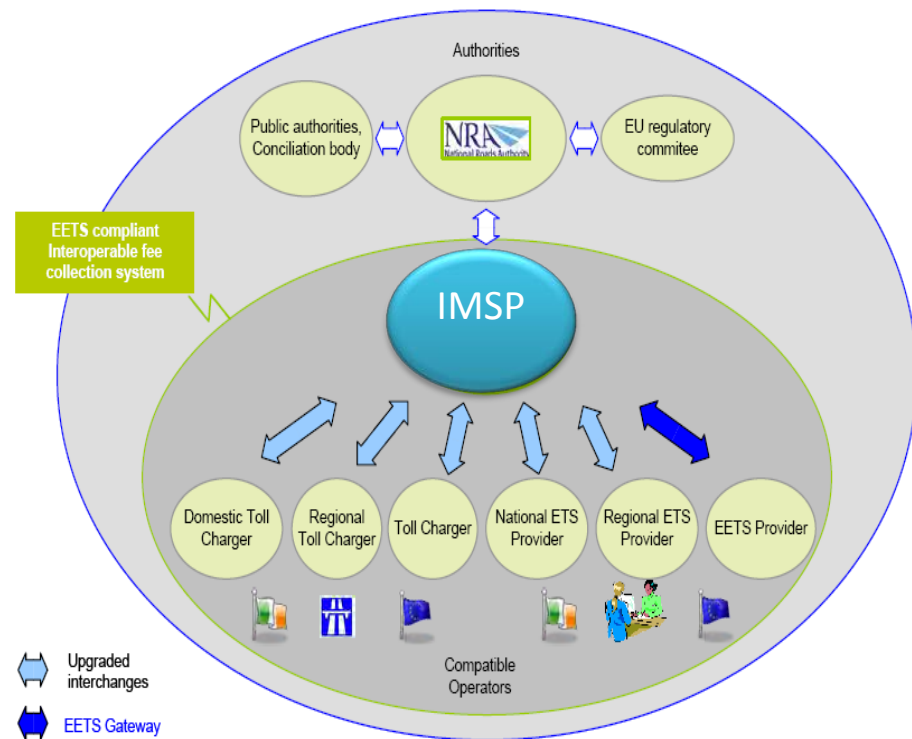# Interoperability Management Service Provider (IMSP)- Ireland

Interoperability Management Service Provider (IMSP) replacing the current Information Exchange Agent (IEA), the interoperability Hub of Ireland

Project Facts

- ❖ A centralized clearing Hub
- ❖ A neutral third party
- ❖ **15 agencies**
- ❖ Financial consolidation
- ❖ 1.9M cars / 345k trucks
- ❖ 3M to 6M transactions / month
- ❖ List management
- ❖ Live since July 2013

One account, one invoice, one platform and supports different business models such as Tag Issuers and Toll Service Providers (back office solution only)

Authorities

Public authorities, Conciliation body · NRA National Roads Authority · EU regulatory commitee

EETS compliant Interoperable fee collection system

IMSP

Domestic Toll Charger · Regional Toll Charger · Toll Charger · National ETS Provider · Regional ETS Provider · EETS Provider

Compatible Operators

Upgraded interchanges

EETS Gateway

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- Increase the value of ETC
- *One account, one invoice, one platform principle*
- First EETS standards based hub
- Any Toll Charger will be able to join in to exchange transactions and data and offer interoperability to their customer to use their DSRC Tag on Irish toll roads.
- Cloud based solution
- Increase user acceptance of ETC

Irish Toll Road Users
1,9 Million cars
345 000 trucks
13 operators

EETS Toll Road Users
251 Million cars
4,4 Million trucks
300 operators

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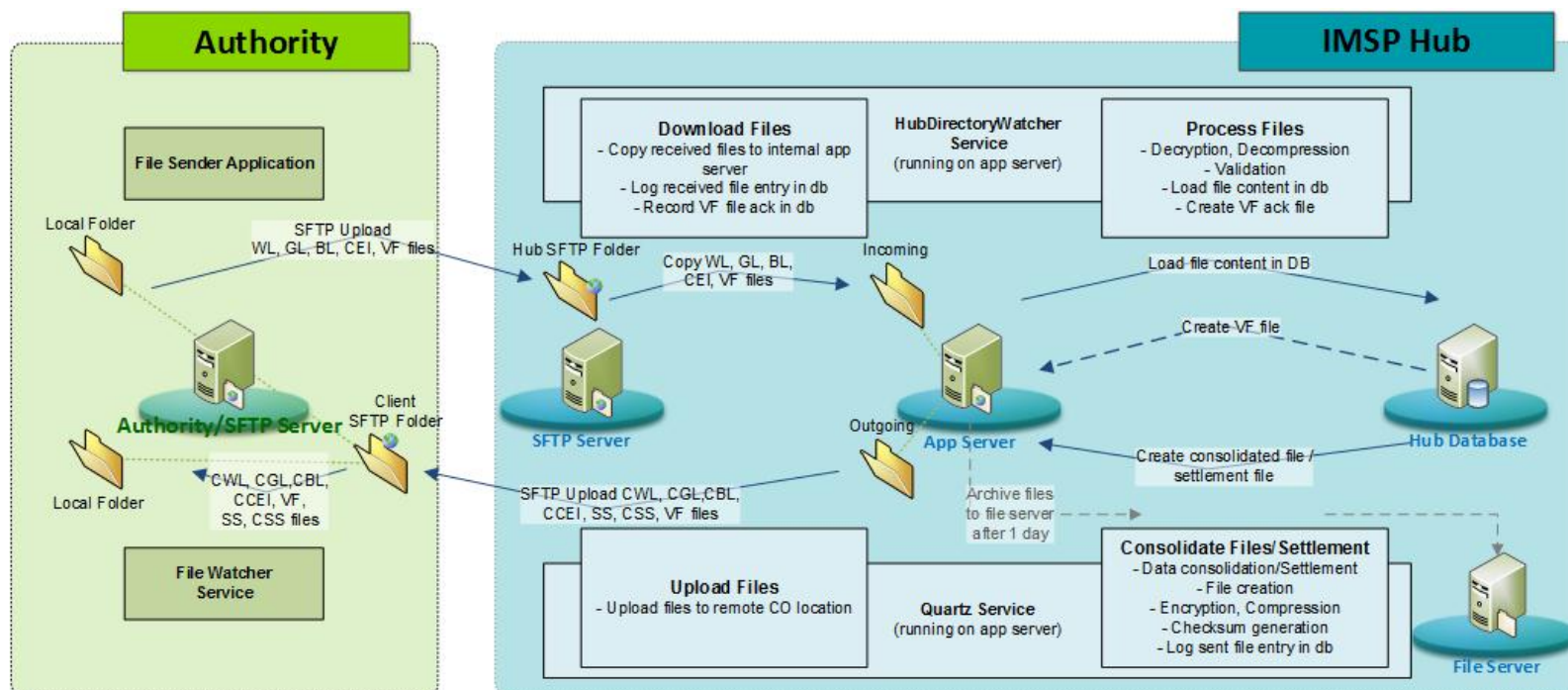
- ➤ What's innovative in the IMSP Hub is:
  - ➤ Hub-based settlement
  - ➤ More Frequent distribution of Tag Validation Lists (2x per day)
  - ➤ Full Dispute Workflow Management
  - ➤ Based on European and ISO standards (EETS)

Comparison & Conclusion: Sanef IOP Solutions

Project	ATI (USA)	PMH1-GEB (Vancouver, CA)	IMSP (Ireland)	E-ZPass (USA)
Sanef ITS Involvement	Hub Design & Supply	Hub Design & Supply GEB & PMH1 Clients	Hub Design & Supply eflow Client	RITBA and NFBC Clients
Statistics				
Number of Agencies	15	2	13	27
Daily Transactions on Interoperable Network	est. 200,000	est. 20,000	110,000	6.8 million
Number of Interoperable Vehicles	est. 20 milliion	1,000,000	483,000	34million
Architecture				
Interoperability Model	Hub	Hub	Hub	Peer-to-Peer
Data Exchange	Files (FTP) Web Services	Web Services (both at hub and agencies)	Files (Web Services)	Files (FTP)
Transaction Exchange				
Tag/Plate Interoperability	Plate	Tag and/or Plate	Tag and/or Plate	Tag and/or Plate
Transaction Matching Made By	Hub	Agencies	Agencies	Agencies

- Clear trend towards Hub model to support scalability requirements for national interoperability.
- Use of real time interface or frequent file exchange is needed.

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Thank you for your participation

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