Toll Interoperability

Benefits, Models, Solutions

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Project Manager
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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
Global State of Interoperability

- 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…
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)
- 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
ATI Hub Interface Overview

ICDs Supported:
- E-ZPass Group
- SunPass
- Team Tx
- FasTrak (CTOC)
- Other Custom

As Supplemental Matching Hub

Mediation Platform and Services

Translate Common Formats
Determine Differential/Changed Data

Reporting and Decision Support

Translate Common Formats
Determine Differential/Changed Data

ETL

Database

Hub Server

IOP Server

FTP Server

Application Servers

ATI Database Internal Common Format

Reporting ODS

Incoming Files

Outgoing Files

Tag and Plate Status Files

Web Services

Transactions

Commercial in Confidence
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
PortMann (PMH1) – Golden Ears Bridge (GEB) Interoperability, (Vancouver, British Columbia)
Technical Interoperability with Multi-Protocol Readers that support 3 protocols:

- 6C, Title 21 and ASTM V6
- Loops & lasers for classification
- Video tolling
- Pre and post payments

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)

Toll Transaction

GEB System

CSC (Quick Pass)

Transaction Management

INTEROP Transaction Management

RTOLL Response

INTEROP HUB

PMH1 System

CSC (TREo)

Transaction Management

ATOLL Response

ATOLL Transaction

INTEROP Transaction Management

Transaction Management

ATOLL Response

RTOLL Transaction

RTOLL Response

Commercial in Confidence
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)
IMSP Hub: Benefits

- 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
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

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<td>15</td>
<td>2</td>
<td>13</td>
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<td>Daily Transactions on Interoperable Network</td>
<td>est. 200,000</td>
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<td>110,000</td>
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<td>Number of Interoperable Vehicles</td>
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<td>1,000,000</td>
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<td>Agencies</td>
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- Clear trend towards Hub model to support scalability requirements for national interoperability.
- Use of real time interface or frequent file exchange is needed.
Thank you for your participation

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