Standards Activities: What do they mean for Texas?

5.9GHz DSRC & the OmniAir Program on behalf of Tolling

Topics

1. OmniAir Overview
2. 5.9GHz and Tolling
   - A Revolution in the Technology
   - An Evolution in Business and Your New Partners
3. The Certification Program
OmniAir Overview

- OmniAir Consortium, Inc.
  - A non-profit association advancing the national deployment of interoperable DSRC systems through Certification.

- Device Certification Program
  - A third-party test of compliance with 5.9GHz DSRC device standards & interoperability requirements.

- EPS National Interoperability Specification
  - EPSNIS - a document specifying a standard, uniform transaction process and network interfaces from OBU and RSU to Service Provider, Clearinghouse and Issuer.

- OmniAir Member Goals
  - Public Standards
  - Private Competition
  - National Interoperability
  - Lower Cost
Public/Private
- E-470 (Chair)
- IAG (Treasurer)
- MTA Bridges & Tunnels
- FL Turnpike Enterprises
- TTA Div. TXDoT
- ISTHA
- OOCEA
- PANYNJ
- NTTA
- Tampa X-Way
- NYS Bridge Auth
- IBTTA
- SW Research Institute
- TransCore (Vice Chair)
- Caseta Technologies
- Kapsch TraffiCom
- MARK-IV
- Traffic Technologies
- HNTB
- EFKON USA
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5.9GHz & the Tolling Application

1. A Revolution in the Technology
2. An Evolution in Business Model

Revolutionary = new, substantial

- 5.9GHz DSRC technology is a revolution in:
  - Performance Attributes
  - Applications
  - Method
**National Interoperability** vs Disjointed Regions

- **Exclusive Lic/Non-Interf** vs Subject to Interference
  - 900MHz Phones
  - Rail-Car AEI Readers
  - spread spectrum devices

- **Rapid Access (50ms)** vs not-so rapid access
- **27Mbps Data Rate** vs .5Mbps
- **Private & Secure** vs ?
- **7 Channels** vs 1-2 channels
- **Pub Saf Message Priority** vs no enforced priority scheme
- **Operator Driven** vs Manufacturer Oriented
- **3000 feet range** vs 300 feet
Applications: Safety, Management & Data

- ACCESS CONTROL
- DATA TRANSFER / INFO FUELING
- TRAFFIC INFORMATION
- INFRASTRUCTURE BASED PROBE DATA COLLECTION
- CURVE SPEED ASSISTANCE [ROLLOVER WARNING]
- INFRASTRUCTURE BASED - STOP LIGHT ASSISTANT
- INTERSECTION COLLISION WARNING/AVOIDANCE
- COOPERATIVE COLLISION WARNING [V-V]
- VEHICLE BASED PROBE DATA COLLECTION
- COOPERATIVE ADAPTIVE CRUISE CONTROL
- COOPERATIVE VEHICLE SYSTEM – PLATOONING
- HIGHWAY/RAIL [RAILROAD] COLLISION AVOIDANCE
- IMMINENT COLLISION WARNING
- EMERGENCY VEHICLE VIDEO RELAY
- ROAD CONDITION WARNING
- WORK ZONE WARNING

- MAINLINE SCREENING
- BORDER CLEARANCE
- ON-BOARD SAFETY DATA TRANSFER
- UNIQUE CVO FLEET MANAGEMENT
- DRIVER’S DAILY LOG
- VEHICLE SAFETY INSPECTION
- TRANSIT VEHICLE DATA TRANSFER (gate)
- TRANSIT VEHICLE REFUELING MANAGEMENT
- ROLLOVER WARNING
- LOW BRIDGE WARNING

Applications: Opt-In*

- Electronic Payment Services
- Auto-maker CRM Services
  - Remote Diagnostics
  - Towing Service Notification
- Rental Car Processing
- Emergency Services and Medical Information
- TBD E-Commerce & ‘Info’-tainment

*Opt-In:
Voluntary Provision of Identifying Data in exchange for a service you want to have.
Method

- 915MHz ETC uses a tag ID number associated with an account, both owned by the operator
- 5.9GHz Device: no tag distribution, mounting, or battery issues
- 5.9GHz EPS: will use Public Key Encryption to authorize a secure transaction - the account could be outside the operator’s domain
The Application Standard can be the EPSNIS

Electronic Payment Services for Next Generation DSRC

PART 1: BUSINESS MODEL

An Approach to Interoperable, standard & Competitive Transaction Services for the US Electronic Toll Collection Industry

OmniAir Consortium, Inc.
1101 13th St NW, Suite 650
Washington, DC 20005

EPSNIS Background

- Industry sees that 5.9GHz DSRC device standards alone do not provide for interoperable toll collection
- Application Specifications are required for ‘True’ Interoperability
- DSRC deployment without an EPSNIS will result in divergent non-interoperable systems, thwarting deployment
- Only OmniAir is actively pursuing EPS Application Standards for DSRC
EPSNIS Rationale

Today:
- ETC Relies mostly on custom-built systems
- Multiple reading/processing standards exist
- Back-office financial processing is not standardized
- Operational costs for overall toll systems are comparatively price inelastic (installation, maintenance, labor, collection, processing) despite high adoption rates and large volumes

EPSNIS Rationale

Tomorrow:
- 5.9GHz DSRC uses an integrated ‘OBU’ with an application platform hosting numerous applications
- EPS will be a ‘day-1’ application on care shipped nationally
- Applications are activated and for EPS, accounts issued by multiple parties and processes – not always an operator
- Issuers and Users expect interoperability across all EPS Channels
EPSNIS: To Prepare to Work with ETC’s Future Partners

- Technology innovation reduces barriers between previously discrete business sectors and actors (a service’s providers)
- 5.9GHz DSRC is such an innovation
- The actors that will cross into the toll sector are:
  - Automobile Manufacturers
  - Banks
- An EPSNIS offers the opportunity to collaborate rather than compete
- An EPSNIS increases the potential for the business terms to be defined by OmniAir members

Goal is to Implement Incrementally

- Leverage current technology investments and through the EPSNIS, evolve from:
  - Interoperability is regional at best
  - Multiple CSCs
  - Unique Interface Specifications lead to limited choice
CSC 3rd Party Possibilities

1. Account Acquisition: no-yes
2. Account Maintenance/Mgt/Termination: no-yes
3. Tag Acquisition, Dissemination, Disposal: no-yes
4. Violations Processing, Exception Handling and Resolution: probably remains close
5. Transaction ID, Aggregation, Routing: no-yes
How

- Test Proposal: NYSBA test site, PANYNJ host, OmniAir EPS Committee support
  - Test application – two payment architectures - and DSRC prototype device co-located in-lane with 915
  - Provide output data and summary report from an operational system
  - Apply EPSNIS Program to other interested test sites
  - Work with VII effort, Auto, Banks to Develop Clearinghouse certification program and OmniAir manage the specification over time

- Funding: Seeking I-95 Corridor Coalition Contract
  - Received funding approval at June 20th EPS PT Committee
  - I-95 awarded additional $4.8million from SAFETY-LU

- IBTTA members: an opportunity to advocate an important project

Auto OEMs, the VII and the Tolling Application

- In the VII Program, EPS has three Use Cases
  - Tolling
  - Parking
  - Fuel/E-Commerce Payment
Conclusions: Tolling with an EPSNIS…

- Offloaded from Operators, EPSNIS allows Banks, Credit Card companies and Retailers to issue OBUs & accounts:
  - reducing or eliminating fixed and recurring infrastructure costs associated with current requirements for building, operating & maintaining exclusive and numerous CSCs.
  - provides for competition in transaction processing and better market availability and penetration
- For the Patron, improved service because they need fewer accounts and are able to contact their existing Banks or Card companies to receive tags and to seek customer service
  - Customer can assign payments from any existing account with no new account to manage, i.e. from direct bank debit or credit card

- Local Operator will still provide service specifically for their roads, but can choose not to for the patron’s account.
- Does not appropriate an operator’s unique identity
- Does not preclude operator’s CRM functions
- Makes advancing toll collection easier by reducing barriers to the concept of user fees in general
- An example today is the VIA-T system in Spain (an IBTTA Award Winner).
- Result: the US toll industry can adopt EPS business model today for legacy technology and influence its evolution. And,
- It can prepare itself for the coming DRSC device revolution
Thanks for Listening!

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