Symposium on Mileage based User Fees: Technology Workshop
Implementation Challenges

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Oregon Pilot Goals & Objectives

1. The **feasibility** of a Road User Charging Scheme – can it work?
   • The pilot was to demonstrate those Road User Charging system fundamentals:
     ✓ An Open System
     ✓ Technology
     ✓ Road User Choice
     ✓ Service Provider
   • **Is the Market Ready**: the ability to provide and implement such Road User Charging systems – can it be done?

2. **User experience**: A Working System
   • On-board Unit (OBU)
   • Account Management (CRM)
   • Invoice
   • Means of Payment

3. **Effective demonstration**: OBU Reporting
   • Methods and Technologies
   • Simple and easy to use
   • Flexibility

4. A **Multiple Vendor** approach
Pilot Project Overview

- Sanef was selected as a vendor to implement the Road User Charging Pilot Project (RUCPP) in Oregon
- Implementation time **3 months**
- Pilot duration: **4 months**
  - November to February
- **88 participants** – Oregon, Washington and Nevada
  - ODOT, Oregon Legislature, Oregon Transport Commission, RUFTF
- Paying participants from Oregon = **1.56 cents a mile**
- Non-paying participants from neighbouring States Washington and Nevada
  - Different rates
- Participants were offered a **choice** of Service Provider
  - ODOT or Sanef
- Components of the system are **already** in the **marketplace**
  - OBU, Back-Office Tolling System
- **ODOT certified** each component
Technology Choice

• **Option 1 - The Basic Plan (IMS OBU without GPS receiver)**
  – Self-installed by Road User in OBDII port
  – Road User charged for all mileage irrespective of location
  – Transmits data using cellular data network using internal modem

• **Option 2 - The Advanced Plan (IMS OBU with GPS receiver)**
  – Self-installed by Road User in OBDII port
  – Road User only charged for driving in their home state and public roads
  – Transmits data using cellular data network using internal modem

• **Option 3 - The Smartphone Plan (Raytheon OBU)**
  – OBU self-installed in OBDII port
  – Connects to Smartphone via Bluetooth
  – Smartphone App transmits data

• **Option 4 - The Pre-paid Flat Rate Plan**
  – No OBU
  – Annual Mileage tax paid upfront
  – $45 flat rate per month
• Is a Road User Charging Scheme **feasible**?
• **Technology** – is not the problem! ... that’s the easy bit...
  – The solutions are there and getting cheaper – but there is a cost?
  – Equipment designed specifically for vehicles is **cheaper** but most importantly more reliable than **consumer mobile devices**
  – So price is a barrier to entry - **CAPEX, OPEX**
• So **how** can we make it more **affordable**?
• How does it **compare** with “pay at the pump” tax collection?
• Do we need to think more broadly in terms of **added value services**?
The Challenges

- **Cultural issues!**
- **Policy** – is key! define first the framework for Road User Charging then choose a solution to accomplish your policy objectives.
  - It will be that policy which defines the technology of choice
  - Political willingness
  - Public acceptance: **keep it fair** and **simple**
  - Interoperability for wider public acceptance
- **Choices** – give road users options to different technology and payment means
- **Privacy** – a **GPS mandate**?
- **Service Provider** – **PPP**?
Moving Forward

- Continue Pilots (testing, learning)
- System development
- Address standards:
  - Security
  - Anti-tampering protocols
  - Accuracy
  - ...
- Business Model
- Commercial Operations
- Enforcement / Independent Auditor
- The Political debate
Case: M50 Dublin Ring Road

Context
- Dublin ring road suffered from congestion mainly due to congestion at toll plaza
- Average 20,000 vehicles per day
- Political will to manage traffic through charging

Project
- Deployment of Free Flow charging
  - Replacement of the toll plazas on 31/08/08
  - All means of payment accepted (pre/post payment, video, DSRC, etc)
  - 445,000 accounts
  - 900 Points of sales
  - Call centres (up to 400 positions)
- Operation
  - Contract duration of 8 years (+3 years extension)
  - Contract value US$150 M
  - Management of the system
  - Commercial offers for fleet, foreigners, etc
  - Enforcement (Standard Toll Request, Unpaid Toll Notice, Assistance to the National Road Authority)
Case: GPS Electronic Tolling in Slovakia

Context
- The Slovak State has to finance its motorway network
- High toll sensitivity of the trucks and international traffic diversion
- Investment to be financed in the first year of operation

Project
- Design Build Finance and Operate the whole scheme for 13 Years
- GPS/GPRS OBU for the trucks +3.5 T (200,000 to date)
- Network: +1250 miles of motorways, national roads and secondary roads
- Financing of the US$200 M investment
- Contract signature in March 2009, opening in January 2010
- Occasional users in pre-paid (“plug and play”), regular users in post-paid with fixed installation
- Truck association CESMAD in charge of the installation
Case: Swedish Transport Administration
ARENA Field Trial

Context
- Multi Vendor demonstration of Time, Distance and Place Road User Charging.
- Key objective -learning to inform future Swedish policy.
- Used real road haulage companies.

Project
- Deployment of 2 different OBUs into HGV
- Complex toll scheme context (map and tariff) data.
- XML based interfaces for context data, charge reports and compliance check.
- Trials carried out in the Blekinge and Skåne
- Strong focus on providing a challenging environment to test the weaknesses of GPS and charging accuracy.
- Empirical approach to testing. 28m test track. Journeys repeated 5 times a day for 1 week

Learning
- All vendors were capable of implementing the web services interface.
- Variations between vendors in charging accuracy highlighted the importance of a certification process for the hardware and for the toll service provider.
Case: Department for Transport, TDP demonstration project

Context
- Multi Vendor demonstration of Time, Distance and Place Road User Charging.
- Key objective was learning to inform future UK government policy decisions

Project
- Deployment of 120 OBUs into a variety of vehicles (cars and trucks)
- Several “schemes” covered possible policy objectives
- Scheme A – all driven distance in England and Wales
- Scheme B – By road type in specific areas including different tariffs for each road type
- Scheme C – Driven distance on motorways plus additional tariff applied on specific sections during peak times
- Driven distance can be accurately recorded using GPS alone > 99.75%
- Privacy not the issue it was perceived to be
- Not all users are the same – differing requirements on privacy and levels of statement detail required
- Working with other suppliers and government gave value for taxpayers
- KEEP IT SIMPLE
Thank You!

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