



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



The Challenges

- 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**



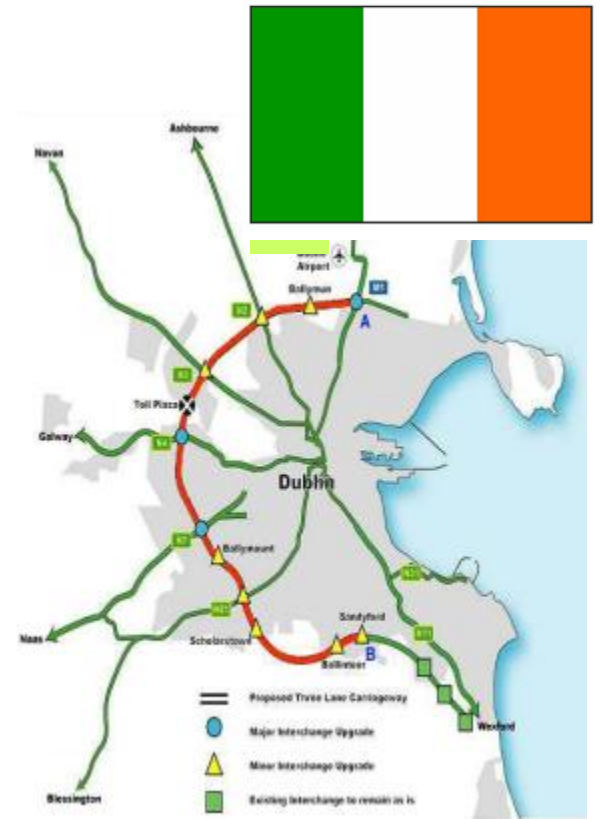
Case: M50 Dublin Ring Road

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



Context

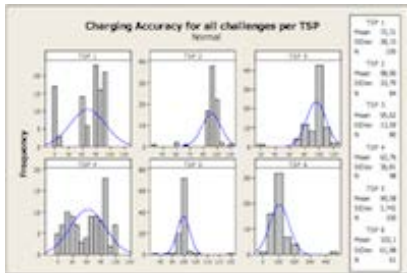
- Multi Vendor demonstration of Time, Distance and Place Road User Charging.
- Key objective -learning to inform future Swedish policy.
- Used real road haulage companies.

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.



Arena Field Trial



Case: Department for Transport, TDP demonstration project

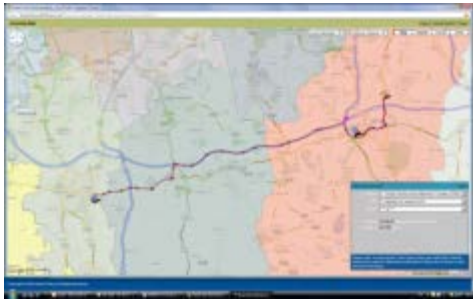


Context

- > 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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