Freight Delivery Trial
- Problems, Expectations and Results

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CVIS London Test Site

London Trial of CVIS aims to establish whether innovative roadside to vehicle communications can be used to facilitate freight operation.

Evaluation of deployment of CVIS in a mixed-use urban street with real fleet operators and real street operations

PTRC
Mayor’s Transport Agenda

One of the areas that the Mayor wishes to prioritise is smoothing traffic flow.
Smoothing traffic flow

- Fewer parked freight vehicles clogging up the streets
- Less clutter on the pavement so I’m not slowed down
- Fewer road openings obstructing the traffic
- Less time spent waiting for lights to turn green
- Fewer traffic lights
- More time moving rather than stopping
The Mayor’s Transport Strategy – Facilitating Freight

- Local freight transport schemes and new ways of delivering goods, will be encouraged.
Co operative Freight and fleet (CF&F) Parking Zone

- Pre booking of loading bay.
- 1 Roadside unit (RSU)
- 10 Onboard units (OBU)
- Real freight operators
Approach

• Apr - July 09: Lab build and test
• Aug 09: Off-street test and before data collection

• On-street:
  • Sep 09: Vehicle install
  • 21 Sep 09: Start
  • Oct 09: Vehicles operational
  • Nov - Dec 09: Collection and Collation of results.
  • 18 Dec 09: Trial Ends
  • Jan 10 onwards Evaluate results

PTRC
Operation

Freight operators make a reservation via the web interface.
Reservation is downloaded via 3G
Operation

Vehicle approaches loading bay

GPS provides location details

Estimated time of arrival (ETA) is displayed on touch screen.
Operation

Vehicle arrives in the loading bay

IRID camera detects vehicle in bay
Operation

Infra red communication
3G link sends information to server

Thetis Back Office

Validate booking

Roadside Unit

London Streets
If correct booking and vehicle, information sent back to RSU

Thetis Back Office

Validate booking

Roadside Unit
Infra red communication

Information sent back to the vehicle via infra red transceiver

Thetis Back Office

Roadside Unit

Infra red communication

London Streets
If CVIS vehicle due and no infra red connection, sms text sent to enforcement officers.
Key CVIS partners

- **Transport for London (TfL)** – London Test site Leader
- **Volvo Sweden** – Application development & Freight Operator booking tool
- **Thetis** – Parking Zone Operator Server
- **PTV** – ETA data
- **Logica** – IPV6 tunnel
- **Efkon** – IR components
- **Imperial College** - Validation
Key Aspects

- Roadside Unit - RSU
- Participants - Freight operators
- Vehicle or On Board Unit – OBU
- Back Office
- Enforcement
- Validation
The Loading Bay
Earl’s Court Road
The Loading Bay on Earl’s Court Road
RSU Installation
RSU Installation
Participants

8 Participants – 10 vehicles.

- Alliance Healthcare
- Coca Cola
- 3663
- Kamkee
- The Barn
- Hallgarten Druitt
- First Quench
- Waverley
Trial Participants

Loading trial
Transport for London (TfL) has begun a three-month trial of a new permit-based loading bay system in Earls Court Road, London with the co-operation of eight different vehicle operators. Vehicles involved in the trial, which aims to streamline freight deliveries, have been fitted with units to communicate with an infrared beacon at the loading bay for access.

Freight Transport Association Newsletter September 2009
OBU installation
Vehicle install

- A - In Car IR Unit
- B - Touch Screen
- C - OBU
- D - Back up battery
Application - HMI

- Reservations have been updated!
  Click to update

- Reservation OK!
  You may enter the parking bay

- Approaching...
  R153-PK1-SL2
  Earls Court Road
  Jul 13, 2009 6:00:00 PM
  Jul 13, 2009 7:00:00 PM
  ETA: 16 min
  Cancel approach
Back Office

- Fleet operator back office – Web booking tool. (Volvo)

- Parking zone Back office. (Thetis)
Enforcement

RED ROUTE
No stopping at any time
Except CVIS permit holders

CVIS PERMIT
Transport for London

CVIS PERMIT
Transport for London

RED ROUTE
No stopping at any time
Except CVIS permit holders

London Streets
Enforcement
Validation

The validation process is in two parts;

• Technical Validation
  – Operation, does it work?

• Impact Study
  – Does this application provide any useful benefits?
  – If so, to whom?
  – Does it fulfil the user and operator needs?
Technical Validation

1. Setup and deployment
   - Does the system work?
   - What are the issues for future trials/deployment?

2. Evaluate Thetis Reservation log
   - How many successful reservation validations?

3. Evaluate on street activity record with Video
   - How well does system capture on street activity?
Technical Validation –
Set up and deployment

Does the system work?
What are the issues for future trials/deployment?

• Tests demonstrated that the CVIS system as deployed in London can perform reliably under real, on-street conditions.

• The application was able to effectively alert Traffic Wardens/Police Officers and trigger enforcement action.

• However, significant improvements would need to be made to the system to provide a robust solution for full deployment in larger scale field operational tests.
Technical validation – Evaluate Thetis reservation log

White Renault Van (Unichem)
Vehicle registration: CE09 EJF
Arrived at 10:07:34, (06th Nov)
Thetis logged at 10:09:00
Reserved between 10:15 & 10:29
(Reservation Code: R963-PK4-SL1)

Results show about 40% of bookings were validated
### Impact Study – Monitor baseline without CVIS

- Monitor on-street behaviour (before and after trial)

<table>
<thead>
<tr>
<th>What action do you take if you encounter a blocked bay? (ranked responses; 1-5)</th>
<th>Operator A</th>
<th>Operator B</th>
<th>Operator C</th>
<th>Operator D</th>
<th>Operator E</th>
</tr>
</thead>
<tbody>
<tr>
<td>Park as close as possible to the loading bay and continue with delivery</td>
<td>3</td>
<td>3</td>
<td>-</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>Park at a holding location near bay and wait in vehicle for bay to become free</td>
<td>1</td>
<td>2</td>
<td>-</td>
<td>5</td>
<td>-</td>
</tr>
<tr>
<td>Drive around the block and return to bay hoping that it is free</td>
<td>2</td>
<td>1</td>
<td>1</td>
<td>2</td>
<td>1</td>
</tr>
<tr>
<td>Reschedule delivery for later in the same day</td>
<td>4</td>
<td>4</td>
<td>-</td>
<td>3</td>
<td>-</td>
</tr>
<tr>
<td>Reschedule delivery for another day</td>
<td>5</td>
<td>-</td>
<td>-</td>
<td>4</td>
<td>-</td>
</tr>
<tr>
<td>Other (Park legally on a local single yellow line)</td>
<td>-</td>
<td>-</td>
<td>2</td>
<td>-</td>
<td>-</td>
</tr>
</tbody>
</table>
Q2.4: Did the use of the system improve your experience of using the loading bay on Earl’s Court Road?

- Yes, 4
- No, 1
- Don’t Know, 2
Q3.4: How important is the booking or re-booking of delivery slots from the vehicle?

- Very Important, 2
- Important, 1
- Neutral, 2
- Not important, 2
Q2.3: How did you rate the reliability of the system?

- Very reliable: 0
- Quite reliable: 6
- Not reliable: 0
- No response: 1

Legend:
- Very reliable
- Quite reliable
- Not reliable
- No response
Q3.2: How do you rate the Booking System in terms of ease of use?

- Easy to use: 5
- Neutral: 1
- Hard to use: 0

Easy to use: 5
Neutral: 1
Hard to use: 0
Q3.2: How important to you is integration with other fleet management tools and in-vehicle devices?

- Very Important, 2
- Important, 1
- Neutral, 3
- Not important, 2
Q2.1: How did you rate your overall experience of the CVIS Trials?

- Good, 3
- Quite good, 2
- Neutral, 2
- Quite bad, 0
- Bad, 0
Impact Study – Monitor CVIS introduction

Interview study participants

• Operators

The Post-trial survey was broadly very positive –

‘Booking of the slot was a piece of cake. Running from PC was very easy.

Driver training took 30 minutes – 1 hour and the first driver was able to train a second driver easily. Was everything that we needed’.

Alliance Healthcare
Interview study participants

• Enforcement

- System shows promise and attempts to address an important area of urban traffic management. However, the enforcement regime devised for the trial currently unworkable at any level of scale.

- Suggestions included automatic enforcement through camera-based systems and/or the use of the Urban Parking Zones application in more homogeneous traffic environments, eg Museums in London.
Freight Operator Suggestions

- ‘To have the ability within the truck unit to see and book earlier or later time slots than originally booked. Being able to cancel remaining time booked if a delivery is made more quickly than expected. Operators may be inclined to book slots even if they are not sure if they will make a delivery’

- ‘Equipment would need to be made much smaller and integrate with the vehicle. Satellite navigation and live tracking all in the same package would be advantageous’
Key Lessons Learnt to date

• Hardware size and reliability
• Power
• Engineering Screen (fault finding)
• Application developers to visit site
• More testing before deployment
• Scalability to a wider area – enforcement?
Thank you

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