Background

Swarco Traffic Ltd

- Swarco and its companies, particularly Futurit, had been providing products to major UK traffic companies for a number of years.
- In late 2009 Swarco entered the UK market by establishing Swarco UK, which was formed with a small group of employees all well known to the UK traffic industry.
- As a part of a planned strategy in July 2011 Dambach UK took a new name, ‘Swarco Traffic Ltd’ in the UK and absorbed the Swarco UK business and employees.
- Swarco Traffic Ltd not only offers the UK the traditional Dambach and Futurit VMS and Signage products and Systems, but the whole Swarco wide Product Portfolio.

Some History

History of ‘UTOPIA’ and ‘SPOT’

- UTOPIA (Urban Traffic Optimisation by Integrated Automation) is a hierarchical-decentralised traffic signal control strategy. It is used in many cities in Italy as well as Netherlands, USA, Norway, Finland and Denmark.
- UTOPIA/SPOT minimises the total time lost by private vehicles during their trips, subject to the constraint that public vehicles to be prioritised shall not be stopped at signalised intersections.
- The optimisation is at two levels: At the local level, the controller determines the signal settings by optimising a cost function adapted to the current traffic situation. At the network level, optimisation is based on the cost function taking account of the state of neighbouring intersections. The bus priority is provided by shifting the ‘green window’ to match the estimated arrival time of a bus at the stop line.

Installed Base

‘UTOPIA’ in Europe

- In several countries: Sweden (Göteborg), Finland, Norway (Oslo, Trondheim), Denmark (Copenhagen), The Netherlands (Utrecht, Den Bosch, Heerhugowaard, Rhenen,...), Belgium (Brussels), Poland (Lodz, Gdansk, Malbork, ...), Romania (Bucharest), Ukraine (Kiev) ...
- ... for more than 30 cities

Applications and Architecture

‘SPOT’ and ‘UTOPIA’ Applications and Architecture

- Traditionally in the UK SCOOT and MOVA have been the chosen control strategies in the traffic engineers toolbox, especially when something more than simple fixed time or vehicle actuation is required.
- In Europe the situation has been very different with a number of different control strategies being available from the different suppliers, many of them having the benefit of public transport priority at their core, as opposed to a later add-on.
SPOT the Difference

Applications and Architecture

‘SPOT’ and ‘UTOPIA’ Applications and Architecture

- With the arrival of Swarco Traffic Ltd into the UK market comes the opportunity for some of the European products and strategies to be deployed and fully supported in a way that has not been possible before.
- At the forefront of the Swarco control strategies is SPOT and adaptive algorithm that is flexible enough to run at an individual junction (like MOVA) or expand to a group of junctions (like linked MOVA or a SCOOT region) or with the addition of the UTOPIA instation operate as a complete coordinated ITS solution.

SPOT Outstation and I/F Capability

SPOT (Universal) Outstation

- Specification
  - ARM 9 200 MIPS processor
  - 64MB Flash, 32MB RAM
  - SD Card Reader
  - Communication Options
    - 2 x SHDSL Channels
    - 3 x Fibre Optic Channels single and multimode
    - 3G Modem
    - Ethernet (ADSL, Mesh etc.)
- Peripherals
  - 4 Digital Outputs / 8 Digital Inputs
  - 8 Digital Outputs / 16 Digital Inputs
  - 24 Digital Outputs
  - 24 Digital Inputs

SPOT to a UK Controller

- Parallel (0141 style) UTC interface 16 output and 16 inputs
- Configure required stage control and reply bits
- Add extra detection in controller if required
- Add SPOT peripheral for parallel interface

SPOT Detection Requirements

SPOT Vehicle Detection

- SPOT Requires incoming and outgoing detectors much like MOVA and SCOOT
- Incoming detector minimum distance from stop line is 75m to 105m
- Detector should be clear of queues
- Needs both dynamic and presence detection
- Outgoing loop at exit
- If exit volume low (side road) can be omitted
- Video detection can be used as a loop alternative

“SPOT” Junction Layout

- SPOT incoming loops
- SPOT exit loops

SPOT Configuration

- Stage Definition
- Detector allocation
- Parallel or Serial Interface
- Communication setup
- Neighbouring nodes
- Green Times
- Approach weighting
- Public transport weighting
SPOT the Difference

SPOT to SWARCO ITC 2 Controller
- Additional detection wired into ITC-2
- ITC-2 Configured for SPOT
- Add SPOT Outstation
- RS232 Communications Link
- Full phase, status, diagnostics, plan control, detector status

SPOT to SWARCO ITC 2 Controller
- Remote access to controller status and alarms plus SPOT via instation

SPOT – Linked Sites
- Linking SPOT sites can reduce detection requirements
- Queue information can be shared reducing detector requirements
- Remove entry loops and use exit loops
- Extend benefits across the network

SPOT Configuration and Connection

SPOT Connection Methods

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Example Oslo Network Topology

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Large Scale SPOT Deployment

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Example Oslo Network Topology

SPOT > UTOPIA > Public Transport

SPOT Public Transport Priority Mechanisms

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SPOT > UTOPIA > OMNIA System

Total SPOT > UTOPIA > OMNIA System

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Current Plans and Trials

'SPOT' and 'UTOPIA' Current Plans and Trials

We have a number of ongoing activities to show that the European Strategies, Systems and Products are fully transferable to the UK; these include:

- Wicklow – Ireland
  A single junction that has benefited significantly from the implementation of SPOT.
- Southampton – Romanse
  The modelling and then possible live trial of a number of sites on a Southampton Bus corridor.
- Galway Project
  The implementation of a full SPOT UTOPIA System by Swarco Traffic Ltd.

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Summary

'SPOT the Difference'

 Whilst there are a number of differences with 'SPOT' (and UTOPIA) product and systems offerings, there are also a number of similarities.

- Swarco products being based on European advances are able to deliver a number of benefits especially when it comes to communications, advanced functionality and open architectures, in particular:
  - Public Transport which is at the heart of many of the European products and strategies delivering the fully integrated benefits that can be seen in Europe
  - Modern Communications, both at the hardware (IP) interface level and the 'Open' ITS NTCIP protocols. And DATEX II standards.
  - Truly Open Systems, allowing easy integration, enhancement and expansion of Software functionality both on the instation and outstation platforms.

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Thank you for your attention

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