James Hammett

UKTram

Driving Innovation

In the UK

Who are we?

UKTram
The voice of light rail

The Trade Body for Light Rail in the British Isles

UKTram's Remit

- UKTram covers the need of our members and Stakeholders across all aspects as listed below:

- To promote the adoption of light rail as an effective, reliable, environmentally sustainable and cost-effective way to meet the transport needs of modern urban areas.

- Reduce the time and costs involved in developing new tramways in the UK and extending existing networks to broaden the market base and increase existing capacity and capability.

- Increase technical standardisation across the sector whilst sharing and promoting

best practice amongst tramway operators and those responsible for maintenance.

- Draw together professionals from across light rail to deliver a single pool of expertise that's accessible to national and local government as well as operators and other interested parties.

- Encourages and supports creative approaches, that will reduce cost, improve efficiencies, enhance customer experience, and reduce construction and maintenance costs of Light Rail systems in an open-minded unbiased approach.

- The UK's Light Rail Safety and Standards are looked after under the remit of our Subsidiary Company, the Light Rail Safety and Standards Board (LRSSB).

Our Members & Stakeholders

System Operators, Maintainers of Infrastructure & Rolling Stock, Passenger Transport Executives, City, Town, County Councils, Concessionaires, Manufacturers & Trade Suppliers, Industry Advisors & Experts from Tramways, Light Railways, Metros, Subways, Heritage, ULRs & PRT Systems from all parts of the British Isles including, England, Scotland, Wales, Ireland, Northern Ireland, Channel Isles and the Isle of Man.

Driving Innovation!

Current Areas of Driver Innovation Development in the UK are:

- **Driver Assistance Systems – D.A.S.**

    Including   - Driver Vigilance

    - Speed Monitoring/Control

    - Obstacle Detection

- **Fatigue/Health Monitoring**
- **Hazard Perception – Computer Programme**
- **Simulation – from driving, Power/SCADA & control room (as seen earlier)**
- **Track Safety – Computer Programme**
- **Authority to Work – Permit system (Permit+)**

Driver Vigilance Monitoring

- **All UK Tramways have driver vigilance devices (DVD's) set-up on their Trams**

- **Types of different Vigilance used:**
  - ➢ **Traction-Brake Controller movement**
  - ➢ **Time response button/trigger/pedal**
  - ➢ **Cab input monitoring TBC, switches, indicators etc.**
  - ➢ **Facial Infra-red/Camera monitoring**

Speed Control

Following the publication of the UKTram commissioned report on Speed Management devices (on behalf of the sector) [RAIB Sandilands Recommendation 3]. All UK Tramways have either fitter or are fitting Speed Control systems on their Trams.

Speed Control Types:

Global Positioning System (GPS)/Global Navigation Satellite System (GNSS)

Trackside belise/Tag Infrastructure based System.

There are advantages and disadvantages for both approaches, but the review showed both were feasible as solutions, industry has therefore gone forward as follows.

- **Blackpool** – Have installed Bombardier/Alston supplied system Compass system.

- **Manchester** – Have awarded a contract to ESG for a trackside belise system.

- **Sheffield** – Have selected and awarded SIMOVE to fit their GPS based System.

- **Midland Metro** – Are using a CAF location based AVSMS using their existing track side technology.

- **Croydon** – Have (PPOS) ESG system fitted. This is working and protecting 13 highest risk locations on the network.

- **Nottingham** – Are in the process of rolling out a system by Efasec. This is a system developed from their existing AVLS .

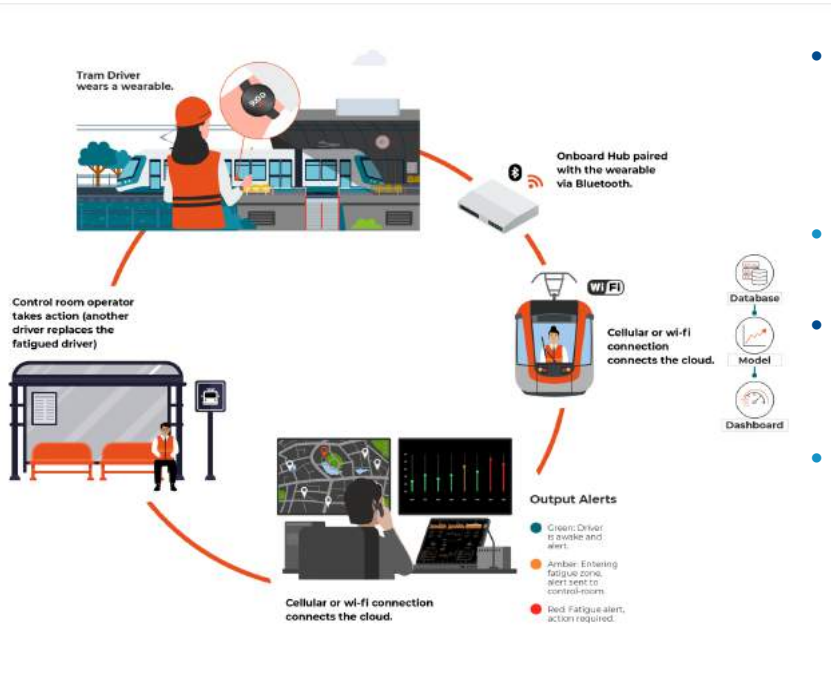- **Edinburgh** – CAF are installing Leadmind across the fleet.

Obstacle Detection

- **Currently Blackpool Transport are installing and calibrating their Obstacle Detection system on their Bombardier fleet using the Compass system.**

- **Bosch system trialled by LRSSB in Sheffield.**

- **Comparison report being produced by LRSSB to compare options for the UK systems.**
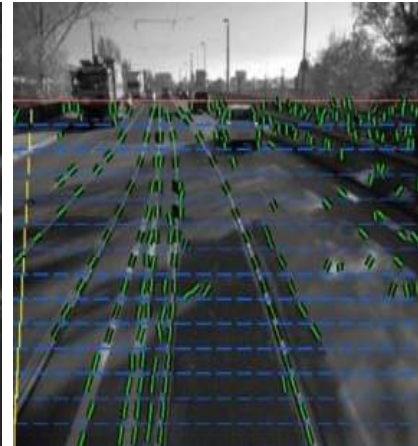
FOCUS+

- **FOCUS+ is part of the Scottish Enterprises funded, Driver Innovation Safety Challenge (DISC) in conjunction with UKTram, City of Edinburgh Council, Edinburgh Trams, with testing and verifying supported by LRSSB.**
- **FOCUS+ is a wearable device that has been designed to detect the onset of fatigue in tram drivers by IHF Ltd.**
- **Following extensive trials, the FOCUS+ prototype devices have demonstrated their potential to reduce the risk of accidents by alerting the control room (as pictured).**
- **The next phase of the project is the production of an updated device following feedback during the trials, which will then see Edinburgh Trams become an early adopter of the commercially available prototypes.**

Hazard Perception

- PC/Laptop based Programme.

- Ideal for testing potential Drivers at interview, or Trainee Drivers, or current drivers.

- Developed by Avansim, raised at UKTram Function Group meeting HTC (Heritage Tramways Committee) & then endorsed by LROC.
- Prioritised as a 'Hot Topic' – fed into LRSSB's Light Rail Safety Committee (LRSC)
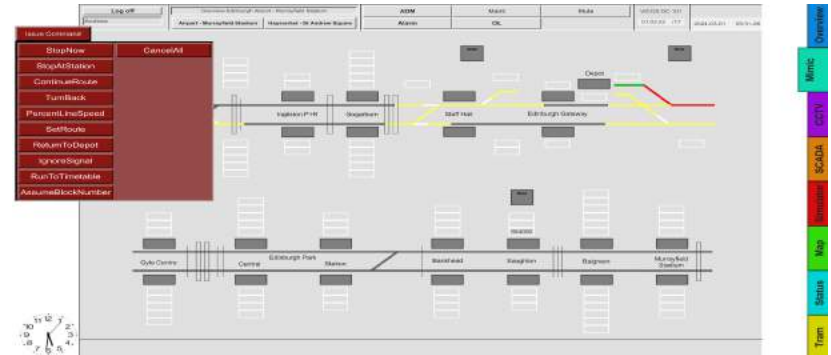
Hazard Perception

Misidentified Hazard
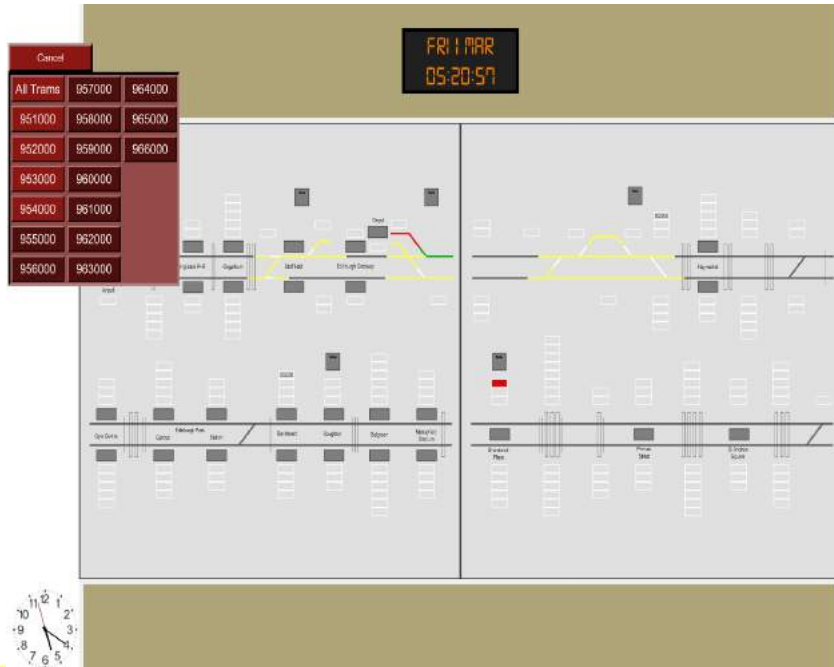
Correctly Identified Hazard

Simulation

All UK systems or have or are investing in Driver simulation

- **From Full Cab mock ups, to desk-based laptops, with control & monitoring/reporting.**

- **Full Control room simulation, scenario options training, re-running events.**

- **Traction/SCADA – Full switching programmes, training, competency checking,**

Control Room

- **Main 'engine' to control room developed centrally on behalf of UKTram for members.**

- **Systems then 'add' system specifics individually.**

- **Edinburgh Trams have fully integrated all the simulators into one impressive Training room.**

SCADA & Traction Power

- **Full Traction Power and SCADA switching simulation, derived from the Control room Simulator**

- **Enables 'safe' training of critical switching, competency checking and scenarios**

Track Awareness Safety Tool

- **Developed by Avansim for the LRSSB.**

- **Track safety raised as a concern at UKTram Function Group meetings LREG (Light Rail Engineer Group) & LROC (Light Rail Operators Committee)**

- **Prioritised as a 'Hot Topic' – fed into LRSSB's Light Rail Safety Committee (LRSC)**

- **Funding committed for Innovation development of Virtual Track Awareness Tool.**

Authority to Work – Permit+

- With industry-wide interest, UKTram agreed to fund the initial development costs and partnered with Derby-based developer Codemakers to deliver the project.

- Edinburgh Trams led the development and then be the first operator to test and launch the system.

- The final package now includes a website application process plus an app to remotely access permit information.
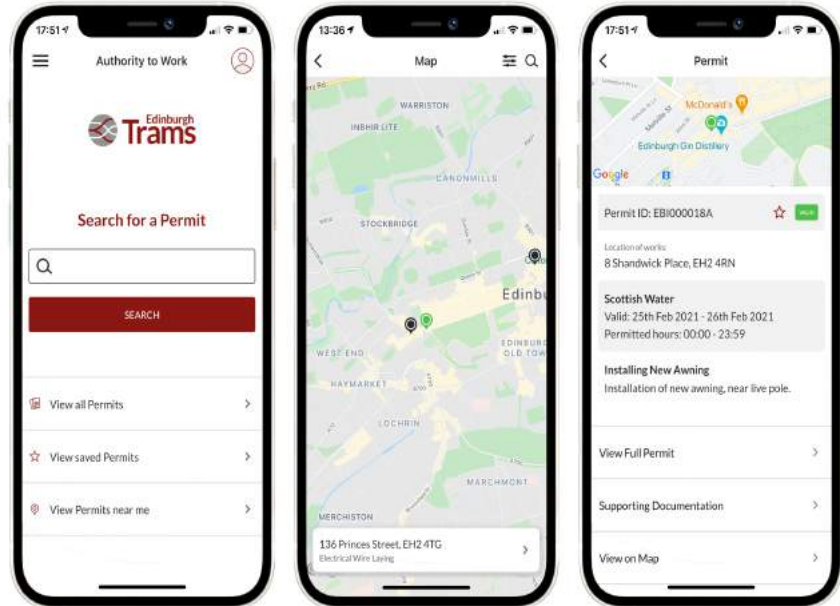
Authority to Work – Permit+

- Register to apply for permits.

- Choose the type of permit they require (electrical isolation, non-isolation and annual).

- Complete the application process step by step to ensure all of the required information is captured.

- Complete all of the safety mitigations for the work they intend to carry out.

- Attach supporting documents such as drawings, method statements and risk assessments.

- Supply the contact details for the person in charge.

- Securely pay the appropriate fee for the application type, by credit or debit card.

- Have instant access to all open and closed permits they have applied for.

How?

This has all been achieved by:

- **Sector collaboration**
- **Best Practice Sharing**
- **Embracing Innovation**
- **Forward thinking leaders**
- **Knowledge Sharing**
- **Working collectively for Sector Improvement**

Thank You!