Enhanced On-Train Passenger Announcements (OTPA) via GSM-R

Network Change Notice – Industry Briefing
30 November 2022
Welcome and introduction

Jo Shelley, Head of Programme Management, Network Rail

- Introductions
- Smarter Information Smarter Journey programme
- Delivering onboard customer information – audio
- OTPA application as an Network Rail Service
- Network Change Notice: On-train implementation
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Why? – TOC perspective

Steve White, Managing Director, Southeastern

• Service will enable TOCs to keep customers better informed, especially on DOO services

• Lack of information is a recognised customer pain point, especially during disruption

• Solution leverages existing technology and resources

• Enhancing safety through reducing self-evacuation risk

• Supports train crew with regular customer messaging, if train crew need to prioritise incident management
Why? – ORR perspective

Ian Prosser CBE, Director, Railway Safety, Office of Rail and Road

• ORR commissioned the ‘Winder Phillips’ report into customer information which underpins SISJ programme

• Industry was not doing enough and needed to improve

• Capability existed through GSM-R and PA systems, but not configured and exploited effectively

• OTPA will enable relevant, timely and consistent information onboard if used correctly
Passenger Information During Disruption – GSM-R functionality

Anne Gray, Customer Information Strategy Manager, Scotrail

• GSM-R Fixed Terminals currently used to call individual trains

• Trial shows demonstrable improvement in customer satisfaction

• Current system limitations include:
  • Live messages only
  • Require driver permission, not always granted even during disruption
  • Shares voice channels with signaller, risk of interrupted messages
  • One train at a time
  • No location triggered or pre-scheduled messages

• Benefits being delivered, opportunity to enhance

If you can remove the sound from the Driver’s cab then you will remove the main source of complaints from Drivers. If you can remove the requirement for an initial call to the Driver then the sky’s the limit for GSMR usage.

Kevin, Scotrail Driver and Fixed Terminal Operator
Developing requirements through TOC working group

Kim Griffin, Head of Real Time Information, GTR

• We’ve taken a collaborative industry approach to the development of the system including its user and technical requirements.

• A bi-monthly working group has established what we should and could do and fed back regularly on the best approaches.

• Focused with TOC Control professionals who lead the teams that will ultimately utilise the system including the all important feed in from controllers themselves.

• We’ve got consensus across the working group TOCs that this is the right technology driven approach.
Lack of information creates risk and dissatisfaction

John Till, Head of Information Delivery, Southeastern

- Significant pain point for passengers is lack of information on DOO services – they don’t feel “in control” when things go wrong
- Lewisham incident in March 2018, large number of passengers detrained from multiple DOO trains onto tracks during heavy snow – ability to speak to passengers onboard the trains would potentially have prevented this.
Improving passenger experience with great information

John Till, Head of Information Delivery, Southeastern

• Providing high quality information provides reassurance, especially those with anxiety for example, whilst at the same time helping to keep passengers “on side”

• When done well, it can increase satisfaction or at least minimise the impact of disruption

Great announcement from the driver of the delayed 7.53 HLB to CHX service. Ticked all the boxes for me. First class @Se_Railway ^RM

18.50 from Cannon Street train driver is great with his announcement and sentiment about the delays @Se_Railway

@Se_Railway the driver of the 7.10 Slade Green - Charing X today has excellent announcement skills. Clear, friendly and helpful. Great for today's issues at New Cross. Please pass on my thanks if you can.
OTPA Service and System

Lynn Tippet-Wilson, Senior Delivery Manager, Network Rail
OTPA technical solution
Paul Owens, Enterprise Architect, Worldline

Announcement Engine
- Type: Immediate / Scheduled / Location
- Train Selection: Search & Select target trains
- Announcement Text: Enter optional pre-amble, enter announcement text for each language
- Set Trigger: Set time, set location, set repeat
- Validation: Spell check, banned words check, audio playback

WOTIS
Data Plan and GSMR
R2
ReadSpeaker
RailAuth
Cognito
Web Application

LINX
EMS
GSMR SMS-C
SMART
TRUST
WEB
Gemini
PA System
Driver's Cab mobile
GSM-R

Other / REF
ITPS

Customer Information Managers
Industry collaboration

Dan Mann, Director of Industry Operations, Rail Delivery Group

- This industry is at its best when it works together
- TOC collaboration under the Customer Information Group (CIG) governance achieving positive outcomes
- Deliver benefits working together and share best practice
- Not just a technology project, success will be driven through managing change
- Solution is a start not an end, manage the in-life service, and seek opportunities to develop
Implementation and scope of Network Change Notice

Mike Johnston, Customer Project Director, Network Rail

- Operations teams need to be ready to exploit
  - Business change templates being developed to support adoption
  - Train the trainer package will support TOCs to embed

- Accessibility and Inclusion compliant

- Network Change Notice will cover full scope of train modifications
  - GSM-R cab mobile V5.0 software and Text to Speech engine
  - CACU/PIS modifications to address Driver Distraction

- Engineering teams will implement technical changes under Network Change Notice
  - Completion without impacting fleet availability
01 AUTHORITY
NR authorised the development of the software solution

02 REQUIREMENTS
Detailed requirements agreed with CIG / TOCs

03 CACU SCOPE
CACU scoping to specify and commence any modifications required

04 DEVELOPMENT
Completion for the software development for User Application and cab radio

05 APPROVALS
Factory, Site and User Acceptance Testing, Industry body approvals

06 OPERATIONAL TRIAL
Operational Trial from Oct - Dec 23 will prove the system across multiple fleets to meet GSM-R requirements

07 ROLLOUT
Implementation of GSM-R software on train fleet commences

08 COMPLETION
Forecast completion of all GSM-R software and CACU upgrades
GSM-R Cab Mobile

V5.0 Cab Mobile Software Development
Russell Clarke – General Manager Mobile Communications
Enhancement to the Cab Mobile to receive text messages from a ground system

Text messages are converted into speech and played over the PA system

Utilises existing hardware deployed as part of the V4.0 upgrade

Text-to-speech engine supports 8 languages, 19 voices

Embedded text-to-speech engine does not require LTE activity

Supports Geofencing for triggering announcements (future capability)

No impact to existing GSM-R operation

Extensive testing regime planned with the ground system supplier

Extensive testing regime planned including industry Factory Acceptance Test
V5.0 Cab Mobile Software Update
V5.0 Additional Implementations

- GNSS Dead Reckoning enhancement
  - Increase performance of algorithm to predict GPS location without GPS coverage e.g. when the train is in a tunnel

- Muted radio fix
  - Changing hook-switch state during setting speaker volume

- Silent Cab Mobile response
  - Setting the Cab Mobile tone generator and cross point switch to a ‘known state’ to reduce the likelihood of such an event occurring
Removing Driver Distraction

Patrick Shaddock, Project Manager, Network Rail

• Driver Distraction from PA broadcasts continue, despite GSM-R software V3.6 removing broadcast from GSM-R cab speaker

• PA calls being played on the in-cab CACU/PIS speaker

• Scope is to revisit the PIDD requirement for removing the driver distraction in the cab and mute the CACU/PIS speaker

• No single solution due to diversity of train fitments

• Train Operators required to work with the CACU/PIS OEM supplier to mute the speaker on the CACU/PIS system in the driver cab

• Full technology refresh not funded, scope is limited to mute
Network Change Notice

Patrick Shaddock, Project Manager, Network Rail

- Update of the Siemen’s GSM-R cab mobile software to V5.0
  - Existing Portable Maintenance Unit (PMU) will be used

- Installation of Text to Speech software and associate application onto the processor card to enable the OTPA system to operate.
  - Portable LTE antenna to be free issued for over the air update
  - Combined GSM-R software upgrade should take about 1 hour

- Modification to ensure that the driver’s PA system speaker is muted, in line with PIDD standards

- Modification to connect the GSM-R cab mobile to the on-board PA system, where required

**Operator cost categories**

- Project Management
- Safety Management System (SMS) review and update
- Engineering Change (EC) preparation and submission to relevant ROSCO
- Technician time to download and install software on the GSM-R cab mobile
- Authorisation
- Development costs for suppliers to update CACU/PIS system software to mute the in-cab speaker
- Technician time to modify the CACU / PIS
- Where PA is not connected to the GSM-R cab mobile, reasonable design costs, labour and material cost to connect the PA to GSM-R cab mobile

∞ Reasonable costs only for physical changes to on-board systems, technology refresh or hardware upgrades are out of scope
Questions
Closing remarks

Jo Shelley
Head of Programme Management, Network Rail

Please contact:
SISJprogramme@raildeliverygroup.com
for a copy of the slides or access to the recording