



Rail Digital Services
4th floor, Zone 26-28
Department for Transport
Great Minster House
33 Horseferry Road
London
SW1P 4DR

By email to: RailDigitalServices@railexecutive.gsi.gov.uk

Our ref: RTIG-c104-mc
Date: 9 July 2015

Dear Sirs

Re: Improving mobile communications to UK rail passengers

Thank you for the opportunity to respond to the consultation at reference.

The attachment to this letter provides the corporate view of RTIG as a group; individual members may have different perspectives and may, of course, make their own submissions. While we have not undertaken a full consultation of RTIG members, we have invited specific response from a number of those with particular interest in the subject.

We trust this is helpful, but are happy to clarify or explain our views in more detail.

Yours sincerely

A handwritten signature in black ink, appearing to read 'MC' followed by a flourish.

Mark Cartwright
Managing Director

Registered Office:
The Real Time Information Group Ltd
1 Mann Island
Liverpool L3 1BP

Registered in England: 05037998

Main Office:
Secretariat, RTIG
c/o Centaur Consulting Limited
Surrey Technology Centre
Surrey Research Park
Guildford, Surrey GU2 7YG

tel: +44 (0)1483 688270
fax: +44 (0)1483 688271
email: secretariat@rtig.org.uk

Improving mobile communications to UK rail passengers: RTIG's response

Introduction

RTIG is a community group whose members include UK local authorities, public transport operators and system suppliers, with representatives from Government and other key industry groups. Our aim is to further the effective use of information technology in the public transport sector, through sharing experience and through developing common approaches and specifications.

RTIG was established in 2000 with the express purpose of bringing together a range of stakeholders within public transport, to promote knowledge sharing and consensus. This has given RTIG access to a wide range of perspectives, expandable where appropriate, and an objective credibility across the sector.

Mobile communications is of the essence in all of the technology services that RTIG supports its members on: from early days working with the Radiocomms Agency (and later Ofcom) on Band III spectrum, through discussions of MESH networks as an (almost) zero-revenue option, to the framework contract for public packet data services widely used by local authorities. Of specific relevance was our work during 2011-2012, supporting RSSB in its project T964 on Rail Mobile Broadband.

Below are our comments on the specific questions raised in the consultation document.

Government intervention

Q.1 Why is there not already good mobile coverage on rail?

"Good" coverage means something which is consistent along the length of each journey, and of a quality (in terms of capacity, bandwidth and latency) that users expect from elsewhere on the network.

There are several aspects to why this is challenging. First, there are technical challenges in getting coverage to shielded vehicles with large number of people moving quickly. Second, and associated, the return on investment by mobile network operators (MNOs) – operating under their standard business model – is too low to be attractive, at least relative to other investments.

In addition, the fragmented operational practice within the GB rail network (both between operators and infrastructure, and within franchise areas) mitigates against a joined-up implementation.

Consistency also needs to be sustained across, and within, trainsets (and operators). Coverage cannot be counted as "good" if reception depends on which vehicle you are on, as it currently does. It is paradoxical that newer fleets suffer more from radio attenuation than older – the implication being that for some journeys, you can have comfort or connectivity, but not both!

Q.2 Is Government intervention necessary and, if so, how is it best targeted?

This is a political question and we cannot comment very far. However we suspect that some degree of coordination, at least, of the overall architecture of comms on the GB rail network will be necessary, whether through an informal network forum or a more formal technical design authority.

Technical Solutions

Q.3 What would be the most effective strategy for meeting the mobile connectivity needs of rail passengers?

We strongly suspect that this will vary between cases. Mainlines may be best served by a corridor approach – for example, femtocells slaved to a trackside fibre backhaul – whereas suburban services may be able to rely more on ambient coverage – perhaps through on-board repeaters. However the continuing dynamic nature of the market (including both the rate of technology evolution and uncertainty over actual passenger demand) means that it is difficult robustly to identify a straightforward optimisation.

Q.4 What would be the costs of delivering each of the technical solutions and what would the passenger experience be in each case?

We are not best placed to estimate costs of individual solutions. We do believe, though, that one of the challenges is ensuring that “local” optimal solutions can, in some way, federate into a consistent passenger experience. Anecdotal evidence is that people would prefer a low but consistent delivery, to a delivery which oscillates between excellent and absent.

Q.5 Are there technical solutions which have not been considered? If so, what are the benefits over other options, and what would be the associated costs?

We believe that the principal solutions are captured. There will inevitably be others that provide variations on these approaches.

Q.6 What technologies and solutions have been successfully used in other countries or industries to address similar problems?

We are not familiar with overseas solutions, but would caution that any technical approach might still need to be adapted heavily in its implementation to suit the commercial and governance structure of GB Rail.

Q.7 Do you foresee any particular safety risks to the railway associated with a particular type of technical solution or strategy?

No, unless the architecture of the solution in some way compromised the signalling system or other operational safety-related system. Clearly this would need to be assured by the relevant authorities.

Benefits

Q.8 Are you supportive of initiatives to improve mobile coverage on rail, and do you believe there is an appetite for this from the public?

Passengers of course would prefer it if rail mobile services were better, in particular if they suffered less from blackspots and dropped calls. Equally, they don't want to pay for it.

Q.9 Are there any other parties or services, both Government or otherwise, that could benefit from the improvements to mobile communications on the rail network?

Yes, if there were significant upgrade of the mobile infrastructure there would be a knock-on improvement along the rail corridor – for example to neighbouring villages – supporting the “rural broadband” agenda.

There would also be benefits to rail and rail-related (eg freight) operations, though the comments under Q7 above apply: there is a critical safety difference between using the improved comms for customer information systems, track teams, or signalling.

Q.10 Are there other quantifiable benefits of introducing improved mobile coverage on trains, for instance by facilitating work for business travellers?

We are not best placed to answer this question but are sceptical of placing too much reliance on quantified behavioural estimates.

Various studies exist, of course, but there is always an element of guesswork about what people will actually choose to do – for instance, business travellers might say they will work more but actually end up streaming entertainment instead.

There are numerous additional benefits proposed but, as far as we are aware, have not been robustly quantified. For instance, improved in-train communications should allow for improved communication to both passengers and train crew on disruptions and connections. But this is hard to put a monetary value on, and not all implementations would need uninterrupted communications.

Q.11 To what extent will improved mobile communications make rail a more attractive travel option?

We are not best placed to answer this question. Transport Focus has done considerable work on what improvements travellers would like to see, based on current service levels; but again, there is a risk that any “new normal”, however much improved, might rapidly become a neutral or negative (rather than attractive) factor.

Q.12 Are there any other benefits associated with this work?

We have no suggestions for this.

Delivery Strategy

Passenger requirements are only one input to the delivery strategy, especially if by “requirements” is meant “desires”. Generally, Transport Focus would probably be best placed to answer this question.

Also of relevance is that the profitability of different travellers to the operator will vary, both individually and marginally as a cohort. Operators may be able to advise on the impact of this.

Finally there is the pragmatics and economics of technical delivery. Even if (say) passengers in suburban services would have the greatest requirements, it might be better to prioritise intercity routes if they can be equipped for one-tenth of the cost and with fewer planning disruptions.

Any roll-out would need to be phased, at least, and we believe passengers would understand this.

Q.13 Are the requirements of passengers consistent throughout the UK? If not, where should investment be targeted? Are there areas which would benefit more from voice rather than data services, and vice versa?

We would suggest that passengers across the country share a desire for services to be improved. Geographical preference would need to have strong political justification.

Q.14 How do the requirements of passengers vary by journey type e.g. commuter, business, leisure, etc.?

A business traveller on an intercity service may choose to do different things from a group of young people travelling home from school, or from a family on a leisure trip. However he/she may not.

From a purely network perspective, the requirements (in terms of connectivity, capacity etc) depend on the mobile-accessible services that are available. If, say, business users are happy with just email, then the requirements of leisure surfers might be dramatically higher. If videoconferencing becomes a lot more common in business contexts, this might flip.

Operators will naturally wish to prioritise profitable passengers. It is a political decision as to how far this should be left as the main driver of deployment.

Q.15 Who are the key stakeholders who should be directly involved in this work and how can these organisations work together to aid delivery?

This depends on the strategy. A national approach would require the whole of GB Rail and relevant bits of its supply chain involved. A local approach – if, for example, rollout were firmly on a franchise area basis – might need fewer organisations involved, but would result in a more patchy outcome.

We would recommend that any Government initiative should at least have a layer of national coordination, involving national bodies and groups such as ORR, ATOC, RSSB,

Ofcom and NRT as well as relevant parts of central Government (probably including DCLG).

The South East Flexible Ticketing project (SEFT) might be an interesting governance model to consider – although there are of course many differences between the contexts.

Q.16 What risks are there in pursuing this initiative?

There is of course the risk that the project will fail to deliver improved coverage, and the (much larger?) risk that passengers will not value the improvement very highly.

There is a risk that the outcome goals for the improvement – whether in terms of GDP enhancement, rural inclusion, reduced passenger stress etc – will not be achieved, or will be under-achieved.

There is a risk that the cost of rollout will exceed the benefit (however calculated).

There is a risk that the normal operation of markets – both communications and transport – will be distorted or disrupted; for example, resulting in delayed investment elsewhere in the MNO/rail networks.

There is a risk that newer disruptive technologies will render the improvement inadequate or even redundant.

Behavioural insights

We are not best placed to answer these questions. Ofcom may be a good source of intelligence on future devices and general usage expectations; TOCs on the passenger experience.

Notwithstanding that observation, our own expectation is that data communications will become more important than voice, especially as and when VOIP services mitigate the need for circuit-switched connections.

We would reiterate the need not to lock to a specific communications infrastructure, though. A service which enables passengers to get a “good 2015 experience” in 2020 is likely to be laughably inappropriate. The ambition should be on how to enable coverage across the rail estate to sustain a parity with “decent” current services from fixed locations, as that evolves.

Q.17 What does a good passenger experience look like?

Q.18 What devices can we expect the majority of rail passengers to use to communicate while on the train in the next 2, 5 or 10 years?

Q.19 What capabilities of mobile devices will passengers seek to use while travelling? What will be the most important and frequently used functions by passengers?

Q.20 Is the ability to make and receive phone calls or being able to access the Internet with high-speed data more important to passengers?

Q.21 Will consumers prefer to access the Internet using Wi-Fi or 4G/LTE in future? If both are available, what is the preferred method of connection?

Q.22 How do passengers' preference towards using Wi-Fi change with the requirement of needing to register and log-in?

Q.23 In 5 years, what would the data throughput to a train need to be to ensure that all passengers of that train are satisfied with performance?

Commercial arrangements

We are not best placed to answer these questions.

Q.24 How can we ensure that all relevant parties have the right commercial incentives to support successful delivery of a solution?

Q.25 What sources of private funding could be used in this initiative?

Q.26 What existing infrastructure could be shared or used to improve coverage, and what commercial arrangements could be established to encourage this?

Q.27 What arrangements could be made for the integration of an alternative service provider or aggregation network with mobile network?