

Net gains

Once a train is equipped with an onboard IP network, a whole host of applications can be implemented to enhance the passenger experience

The onboard IP platform is not only a means of providing internet access for train passengers, but can also provide the basis for a passenger information system (PIS), screen-based infotainment, audio announcements and an infotainment portal.

“Operators in most areas, especially in Europe, are committed to providing basic journey information, including the next stop and the destination – both on screens and via audio announcements – and ensuring the information is accessible to people with disabilities,” says Marc Schrader, head of research and development for PIS at Nomad Digital. “This is the baseline, which is typically funded by train operators.”

But this is the tip of the iceberg in terms of services enabled by Nomad’s OBIS platform. It can distribute more detailed journey information – for example, on delays and onboard services – as well as destination guides, live news, weather reports, emergency announcements and entertainment content.

Business model

Integrated advertising helps to fund the enterprise. “Some of our customers manage to refund up to 50% of their investment through advertisements,” says Schrader. “In other projects the whole system is owned by the content provider.”

He says most infotainment services are free to passengers, even pure entertainment offerings, which are typically the domain of long-distance trains. “We’ve found that passengers are a bit reluctant to pay for services, but it’s still fairly early days,” says Schrader. “Today most of these services are free, implemented purely to provide a better traveling experience.”



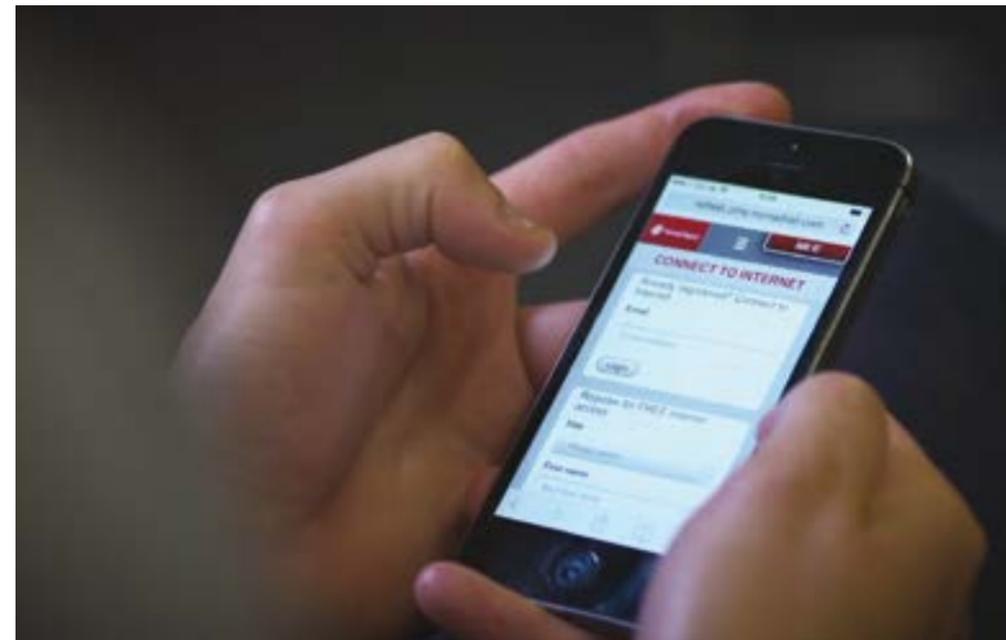
ABOVE: Adverts can help offset the cost of providing comprehensive information to passengers

The content is hosted on board and updated wirelessly. Operators can manage the onboard content from shore-side. On the train it can be displayed on installed screens, or through a portal that passengers can access via their PEDs.

Connecting America

Nomad is now working on a nationwide PIS and infotainment solution for Amtrak in the USA. “It’s our largest PIS deployment,” says Schrader. “It will provide a comprehensive set of live audiovisual information, but also infotainment services on various channels. This can also be combined with interactive information.”

Amtrak already offers some interactive information on portals and wi-fi, enabled by Nomad. The expansion will result in the train gathering and disseminating much more information about the journey – including expected arrival times, onboard services, points of interest along the route, and so on.



LEFT: Nomad is seeing big demand for onboard portals, which passengers connect to via their PEDs

INFORMATION FOR ALL

Passenger information systems can help make journeys smoother for everyone, not least people with disabilities.

“These kinds of systems can advise people using wheelchairs where to board, guide them to universal access toilets, enable them to request help to leave the train, and indicate if platform elevators are available, for example,” says Marc Schrader of Nomad.

But to be fully effective, these systems need to disseminate information in various ways. “For people who are blind or partially sighted there could be a special information channel, providing a text-to-speech service,” says Schrader. “For deaf or partially deaf people, announcements can be linked directly to their hearing aid, using an app on their smartphone.”

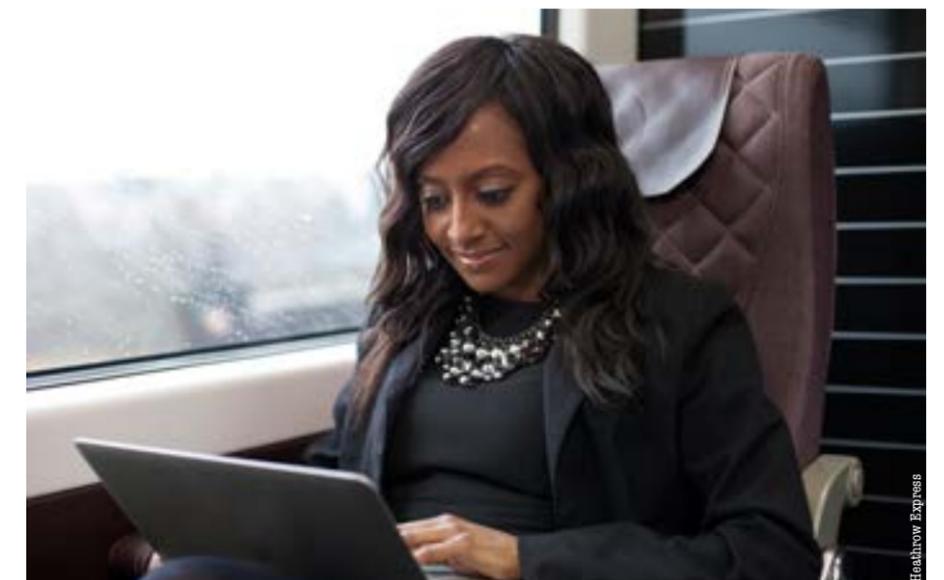
The implementation will be very complex. “There will be a lot of information channels, with different title screens for different carriages and even zones within carriages,” says Schrader. “For example, we could display menu information in the bistro. The information will be pushed from shore-side to all trains on certain routes, specific trains, or even specific carriages.”

The main challenge is that the system will serve a large number of operators, each of which has its own branding, rules and content. Some lines are used by multiple operators. Another complication is that different states might have different rules regarding what content can be shown, and they might not all own the rights to show it. “There are lots of things you have to consider, based on the position and other attributes of the train,” says Schrader. “It requires very intelligent, modular and dynamic software on the shore-side, to make sure the right content is addressed to the right trains at the right times.”

The small screen

In the sector as a whole, with non-basic information and entertainment, Schrader says there is a definite move away from implementation

BELOW: Nomad implemented wi-fi portals for Heathrow Express



Heathrow Express



LEFT: Nomad collaborates closely with each operator to implement a customized solution

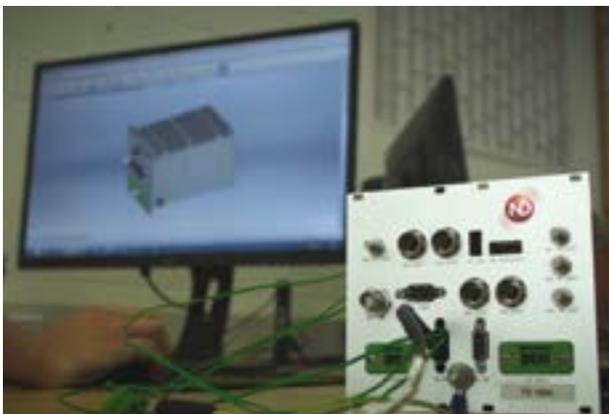
on installed screens toward streaming content to passengers' PEDs. "Most passengers bring their own screens," he explains. "It's also a much lighter investment both in terms of maintenance and hardware – only a server is needed, which may already be on board anyway."

Schrader believes this trend will enable more personalized services in the future. "We're heading into the interactive age," he says. "Installed screens will remain useful for basic announcements and media, but a portal opens the door for personalization, especially when combined with open web-based APIs."

Future visions

Open web-based APIs can enable third-party applications to communicate with the train, so they can make use of the information the train has stored about the journey, available services on board, and even passengers, if they have given permission for their information to be used in this way. "For example, if you linked a seat map of the

BELOW: With Nomad's IP solutions, all the peripheral equipment is controlled by the OBIS



◀ STREAMING DRM-PROTECTED CONTENT

Modern infotainment systems require a solution for streaming DRM-protected films to passengers' PEDs. "The content is uploaded to the train and stored in a secure area," says Marc Schrader of Nomad. "It is accessed with a temporary encryption key. The client applications that connect to these streams typically have to pass a certification process as the content providers. It is not possible for the passenger to store any of the encrypted frames in the RAM of their device."

If operators want to charge for this service, the system can be configured to refer to a list of customers before allowing access to the key. Customers have to enter their details when logging in to the portal.

train with the passenger's social media account, you could show them if any of their friends were on the train," says Schrader.

He believes this technology could provide a seamless experience for passengers. "To begin with, they would buy their ticket via an app," says Schrader. "The server at the station could tell the passenger which platform their train is on and where their seat is, or, if they have no reservation, which carriages are the least crowded. The train server would take over after the passenger has boarded, exposing data about the train to relevant apps via its API, and then guiding the passenger to their seat and perhaps informing them about the services available on board that day. Passengers could also order food and drink from a truly up-to-date menu, and have it delivered to their seat; or receive a wake-up call when the train reaches their destination, based on information from the ticketing system and the real-time progress of the train. We're not that far away from this kind of digital journey. We have all the technologies; the challenge is just in combining the various systems with open web-based APIs. These services will enable operators to get closer to their passengers." ❌

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