

Passenger experience | social distancing ||

## Controlling occupancy levels in real-time

With public transport operators currently adapting to social distancing guidelines, new technologies are helping to reassure passengers that services are safe to use, as Init project manager **Georg König** explains.

**A**VOIDING crowded public transport vehicles or congested platforms has become critical in recent weeks in order to ensure the health and well-being of public transport users. Indeed, helping passengers to maintain a safe distance from their fellow travellers is a key factor in winning back confidence and increasing the use of public transport in the short term.

Even in times of high occupancy, which are expected to return in the medium-term, an even distribution of passengers supports faster boarding and alighting of trains and thus shorter dwell times at stations, helping operators to run more trains and serve more passengers.

Yet common behaviour patterns potentially endanger both this recovery and more efficient operation.

Rail passengers tend to cluster in certain areas of the platforms when waiting for the train and many stay close to the door on trains once they have boarded so they can alight quickly. For these reasons, some sections of the train become overcrowded, potentially jeopardising strict social distancing guidelines, while in other sections there is still plenty of space with available seats.

This is a well-known and unpleasant phenomenon in all underground and suburban railways. It is unpleasant because it affects service quality, it creates situations that risk safety, extends the time spent at stops hampering subsequent traffic and can cause considerable delays during the course of an operating day.

Accurate information on the occupancy rate of trains can help to better match supply with demand and allow operators to adjust service frequency accordingly. Innovative approaches are available to solve those challenges, including the use of Init's passenger counting system Mobile-APC.

As soon as a train's doors close for departure, the onboard computer detects the current carload with the help of sensors and transmits the data to the central background system located in the operations control centre. Mobile-guide is able to correlate data on the current car load with the

passengers' typical boarding and alighting behaviour at the following stop. Historical operational data and a self-learning algorithm are used for a more reliable prediction.

This process is patented in the United States and in Europe according to the European Patent Convention. The expected carload is determined for the time after the passengers have alighted the vehicle. Factors such as the specific line and stop, and the time and type of day, are considered in the calculation.

At the next station the retrieved data can be indicated via illumination signs on the platform using green, yellow or red LEDs, or via common passenger information channels such as displays, apps or the internet to inform passengers which train sections have the most available space so they can enter these vehicles accordingly.

Operators are able to define the threshold values for low, medium or heavily occupied vehicles depending on their needs. In the short-term this will enable them to efficiently monitor lower threshold occupancy levels to support social distancing. It will also be straightforward to adjust these levels as traffic returns to normal, with operators able to use this occupancy rate data to

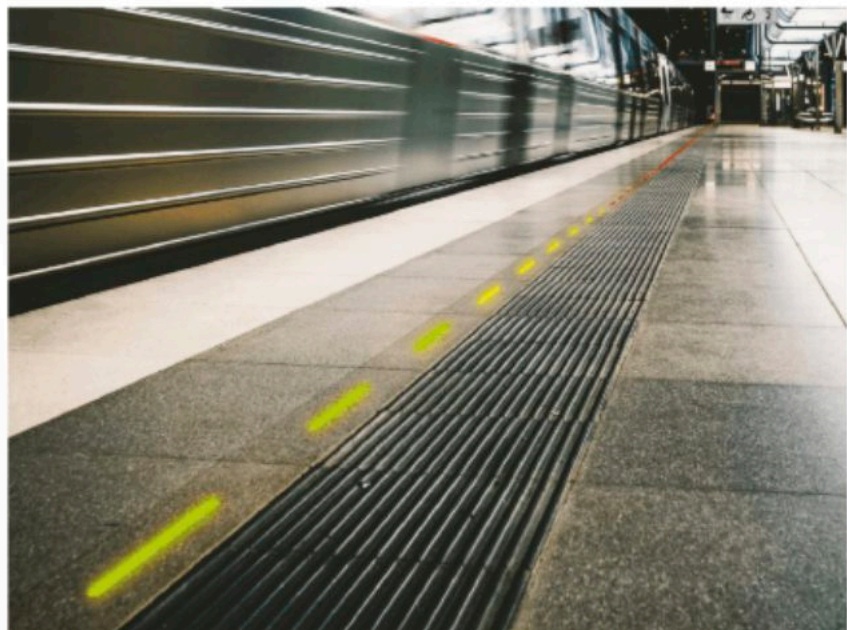
tailor their schedule to the number of passengers using the network.

As well as enabling passengers to position themselves in waiting areas where there are free seats, this data can support the planning of a complete trip by enabling the passenger to choose trains that they can see will be carrying fewer passengers, or to select a service operating on another line altogether. This not only makes travelling safer and more comfortable, but also reduces dwell times at stations due to shorter boarding and alighting times.

However, occupancy rates can also be controlled directly in the operations control centre or by the driver.

Transport companies already operating an automatic passenger counting system as well as Init's Mobile-IICS system, which is based on mobile radio technology, can now benefit from the advantages of an integrated solution.

Whether in times of Covid-19 or when the number of passengers returns to normal levels, the occupancy rate of public transport vehicles should not be left to chance but should be managed effectively with a passenger guidance system. This will go a long way to help restore customers' confidence and reliance in public transport. **IRJ**



A possible way of indicating sections of the train with space available: an LED control system from SIUT with colour-coded signals. Photo: SIUT