Automation sets a new benchmark

Automated metro lines are no longer a trend to be considered or debated, they are an indisputable reality.

In the early 2000s, when we were thinking about building a 50 km orbital line in Barcelona, we had our doubts. In the end we opted to go with full automation, and that decision has had a positive effect on the network. Things have changed considerably in the last few years. Automation has become so commonplace that the situation has practically been reversed: anyone thinking of opening a new line with conventional driving must justify their decision.

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In the past, the main hurdle was the technology, its cost, and a concern whether automation was mature enough to ensure the project was completed on time. Now the scenario is different. With more lines operating and many projects underway, the market offering is much greater and more competitive. From a technical standpoint, the debate is almost over.

But even though things have changed, maybe we have too much of our old inertia. Technology is still the axis around which all projects revolve, and not enough attention is being paid to other areas that could prove critical. In particular, I believe we need to consider the organisation, the passengers and the infrastructure.

The requirements of an automated metro line demand a new organisational approach. Job profiles should include new functions, and the control centre takes on a decisive role. Many of the classic internal frontiers dissolve, such as that between operations and maintenance. And new key performance indicators are needed, such as incident response time. All of these aspects require an appropriate organisational design that goes well beyond the part that is linked directly to operation of the service. This can be a complex challenge for metros whose established structures are grounded in conventional lines.

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The combination of technology with an appropriate organisational model opens up the opportunity to offer a level of service to our passengers which can overcome any prejudice that they may feel towards an automated line. But for that to happen, we need to redefine our processes. A good example is that all too often the flexibility in train operation is not balanced by a similar flexibility in our communication with the passengers. This is a chance to take a leap forward in the travel experience.

Likewise, the advances in signalling technology have not had a proportional impact on the criteria for infrastructure design, or the facilities provided. Automation opens up opportunities for a new type of service offer that better adjusts supply to demand. This is not just in terms of capacity, but also in type — for instance, express or mixed services, and breaking with the traditional end-to-end running or stopping at every station.

If we are to exploit the full potential of automated lines, we must really consider all areas together. This is not easy, as it affects the decision-making process — not seeing all the advantages may mean that automation is not sufficiently attractive to overcome the obstacles of conversion. That may be one reason why so few existing lines have been converted and why lines already equipped with CBTC are not advancing towards full automation.

To make real progress, every project must be appropriately managed, and reflect the viewpoints of all parties involved. Such an approach provides a unique opportunity to redefine the business model. This is a key challenge for transport operators in an increasingly competitive and globalised environment, and it reflects the approach to automation that we are taking at TMB.

Data in the latest report from UITP’s Observatory of Automated Metros show that there are now 48 automated metro lines in operation with almost 700 route-km. This is significant, but perhaps even more so is that the rate of growth has doubled in each decade compared to the previous one. This trend is likely to continue, and the forecast suggests that the number of route-km could triple over the next 10 years; this would see 1 800 km of automated metro lines in operation by 2025.

Today, there are automated lines in 32 cities of all sizes and demographic environments, which demonstrates that the concept is adaptable. Perhaps the best proof is that once a city opens an automated line, it never opens another conventional one!

The future looks good. The growth forecasts, coupled with an ambitious approach to changing the business model, could bring a leap in both the quality and type of service provided. The automated metro is emerging as a new benchmark, which is helping to improve the overall attractiveness of public transport.

More data about automated metro lines can be found at the UITP’s Observatory of Automated Metros:
www.metroautomation.org