

# Independent Safety Assessment for the Automated People Mover

## 01 THE CHALLENGE

Automated People Movers (APMs) are being used all around the world to transport passengers in airports and dense urban areas. Bombardier's INNOVIA APM 300 vehicles were selected for the Shanghai Metro Line 8 Phase III because they are fully automated and highly reliable. In order to safely transport millions of people each year, appropriate certification was required.

APM technology is currently in operation in at least 25 locations across the globe, including some of the busiest airports, like Hartsfield-Jackson in the USA, London Heathrow in the UK and Beijing Capital in China. However, the specific adaptations required to apply the technology to Shanghai's Metro system demanded a full reassessment and recertification from a safety perspective, which required independent expertise.

## 02 THE SOLUTION

An independent safety assessment plan for these vehicle systems was carefully developed in accordance with international CENELEC standards and the relevant safety requirements. The safety assessment activities were executed with the required flexibility to meet the demanding project schedule and safety milestones, covering project plans, specifications, design, tests and supplied products, as well as installation, commissioning and operations artefacts. System artefact inspections, safety audits, vehicle test witnessing and safety assessment reports were also delivered as part of the project.

## 03 THE RESULTS

By providing continuous safety assessment feedback, our work ensured system quality and delivered the necessary assurance and safety-case argumentation.

Critical's assessment ensured that applicable international standards were successfully followed and that safety specifications were fulfilled, which allowed the fully automatic driverless system to enter service in Shanghai safely.

## 04 KEY TECHNOLOGIES

- Independent safety assessment
- CENELEC Standards (EN 50126, EN 50128, EN 50129)
- Safety audits
- Test witnessing
- RAMS

## 05 CLIENT

**BOMBARDIER**  
the evolution of mobility

## 06 PARTNER

**DIGITALRAIL** 

**Critical**  
software 

## ABOUT CRITICAL SOFTWARE

Critical Software provides systems and software services for safety, mission and business-critical applications. We work closely with our clients, helping them to meet the most demanding standards for performance and reliability.

We were founded in 1998, with NASA our very first client. Today, we work across many international industries and have offices across the globe.

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We are CMMI Maturity Level 5 rated.  
For a list of our certifications & standards visit our website.

