

Engage 2

PASSENGER-CENTRIC DIGITAL AIRPORT & MULTIMODALITY

Results of the meeting

24/02/2026

09:00 – 16:00 (CET)

Athens Airport (Sofitel Hotel | Greece)

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Operator Experience in a Multimodal, AI-Enabled Environment

The discussions highlighted that operator experience is increasingly shaped by system complexity, multimodal coordination, and the integration of AI-driven tools.

1. Fragmentation and Misalignment Across Stakeholders

Operators face major challenges in coordinating across transport modes (air, rail, maritime, public transport). Differences in business models, regulations, data governance, and operational priorities create friction. Limited trust, unclear data ownership, and contractual barriers further constrain collaboration. There is a strong need to move from siloed optimisation to end-to-end journey management, with shared situational awareness (particularly for disruption situations) and harmonised processes.

2. Data as Both Enabler and Constraint

Data sharing is essential for predictability, capacity optimisation, and disruption management. However, legal constraints (e.g. GDPR), cybersecurity risks, unclear liability, and low passenger willingness to share data complicate implementation. Participants emphasised the importance of common platforms, interoperable standards, clear governance rules, and decision-support tools to enable meaningful and secure data exchange.

3. Automation, AI, and Human Trust

AI and automation are seen as necessary to manage growing complexity, but they raise concerns around overreliance, deskilling, accountability, and safety assurance. Operators require transparent systems with clear failure modes, confidence indicators, and robust fallback procedures. Building calibrated trust in AI will take time, exposure, and evidence. Higher automation does not reduce expertise needs—it increases them. Anticipating these skills in an uncertain future is a challenge (e.g., in the future operators may have to interact with passengers' digital assistants). The central role of AI and the current, highly unstable geopolitical context also raise the question of how to ensure Europe's technological autonomy/digital sovereignty.

4. Cultural and Organisational Transformation

Resistance to change—especially in safety-critical roles—remains significant. Successful implementation requires inclusive onboarding, co-design approaches, regular stakeholder dialogue, and visible governance structures. A shift from transactional relationships to partnership models, moving from airport management to transfer management, was identified as crucial for long-term alignment and resilience.

5. Skills, Training, and Workforce Evolution

Future operator roles demand stronger data literacy, AI awareness, cross-modal understanding, and crisis management capabilities. Training must cover not only system use, but decision-making in

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abnormal situations and reversion to manual operations. Workforce planning and re-skilling are essential to adapt to evolving socio-technical environments and prevent the loss/degradation of critical human abilities.

6. Measuring Improvement

Operator experience should be assessed through a combination of operational KPIs (capacity, punctuality, recovery time, intermodality success, safety) and human-centred indicators (workload perception, trust, usability, operator satisfaction). Assessing multimodal transport calls for door-to-door KPIs. Indicators are also needed to measure the contribution of multimodality to these KPIs, such as connecting times, the percentage of successful transfers, and the market share of multimodal connections, to mention some examples.

Overall Conclusion

Leveraging multimodality to improve operator experience requires a holistic socio-technical transformation. It is not solely about deploying AI or digital platforms, but about aligning governance, business incentives, workforce skills, and trust frameworks. Collaboration, data sharing, and human–AI integration emerged as the defining pillars for the future. New KPIs and measurement methods are essential to properly assess the contribution of multimodality to the improvement of the transport system.

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Passenger Experience in a Multimodal Ecosystem

The discussions converged on one fundamental shift: moving from a system-centric model to a truly passenger-centric approach across the entire journey.

1. Lack of End-to-End Visibility and Coordination

The most critical challenge identified was the absence of integrated, multimodal visibility across passenger journeys.

Key gaps include:

- No shared view of passenger itineraries across transport service providers (TSPs).
- Limited interoperability between air, rail, and bus systems.
- Poor correlation of timetables and process durations.
- Difficulty calculating reliable intermodal minimum connecting times.
- Low predictability of delays and disruption impacts.

Participants highlighted that fragmentation directly leads to uncertainty, missed connections, and longer waiting times.

A common proposal was the creation of:

- A single multimodal platform for itinerary registration.
- Shared data standards and exchange protocols.
- A unified data governance authority or administrator.
- Mandatory (or legally supported) data sharing frameworks.

2. Delays, Waiting, and Uncertainty as Core Pain Points

Across both groups, the main stressors for passengers were:

- Waiting times (security, check-in, passport control, baggage reclaim).
- Taxi time and missed connections.
- Unreliable delay predictions (weather, network disruptions).
- Lack of real-time information.
- Anxiety before boarding or during tight transfers.
- Anxiety linked to hand luggage and the need to have bags on board — a growing behavioural shift driven by increased use of cabin baggage, which has become a notable stress factor in the passenger journey.

Reliable information about waiting times and disruptions was seen as equally important as reducing the waiting time itself.

Punctuality of the entire door-to-door journey emerged as the primary hard KPI.

Importantly, not all waiting times are perceived equally. There is a clear asymmetry: pre-departure waits are treated by passengers as “buffers” (anticipated and tolerable), while post-arrival delays are experienced as pure waste of time. This distinction has practical implications for how waiting times should be weighted in experience metrics.

3. Data Governance, Privacy, and Accountability

Improved passenger experience depends on data—but:

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- Privacy regulations create constraints.
- There is low clarity on who owns and manages passenger data.
- Lack of accountability when multimodal journeys fail.
- Liability issues in single-ticket scenarios.
- Conflicts of interest between airlines, airports, and other operators.
- An observable decline in quality of service over recent years, reflecting the tension between operator benefit-maximisation and passenger welfare.

Participants stressed the need for:

- Clear legal frameworks.
- Defined responsibility for rebooking and protection.
- An interim approach to liability via insurance companies, offering liability coverage as a service as a practical stepping-stone ahead of full regulatory frameworks.
- Trust-building mechanisms.
- Transparent governance of shared data platforms.

In cases where flights are replaced by rail (e.g. short-distance bans), passenger protection must remain guaranteed.

Tensions arise between data sharing and the level of predictability and personalisation that can be offered to passengers.

4. Single Ticketing and Seamless Multimodality

A unified ticket and payment system was repeatedly identified as a key enabler.

Benefits include:

- Simplified booking and payment.
- Clear accountability.
- Improved connectivity KPIs.
- Reduced passenger stress.

Multimodal alliances—both national and international—were suggested as practical pathways. Some regional examples (e.g. Germany, Switzerland) were mentioned as early models, though still limited in scope.

5. AI and Digital Solutions as Enablers

AI and digital tools were seen as critical for improving predictability and coordination:

- AI-based terminal operations (gate allocation, taxiing).
- AI-driven optimal decision-making.
- AI-based meteorological forecasting.
- Real-time infomobility tools for passengers.
- Mobile applications calculating reliable arrival times.
- Dynamic rebooking via digital “travel companion” systems.

A “travel companion” concept gained strong support—an app capable of:

- Monitoring the full multimodal itinerary.
- Suggesting alternatives in case of disruption.
- Providing real-time navigation and updates.
- Allowing voluntary (or regulated) data sharing between providers.

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However, complexity must remain hidden from the passenger. The system must be intuitive and simple.

A distinction was drawn between open systems (where passengers are unknown to the operator) and closed systems (where they are known). This distinction is important for the design of disruption management tools: in open systems, a neutral planner is needed to provide structured alternatives to all passengers.

The core logic of this neutral planner is conditional and rule-based: if the delay experienced exceeds a defined threshold X, the system automatically identifies and presents the most suitable alternative to reach the passenger's final destination. This reduces uncertainty and supports informed decision-making at the moment it matters most.

6. Accessibility and Inclusion

Special attention was given to:

- PRM (Passengers with Reduced Mobility) challenges.
- Ease of navigation within terminals.
- Clarity of gate access information.
- Seating availability in waiting areas.

Accessibility was framed as both an operational and emotional component of experience.

7. Balancing Experience and Commercial Interests

Participants acknowledged structural tensions:

- Passenger experience vs. airport revenue (e.g. time spent in commercial areas).
- Passenger experience vs. airline operational priorities.
- Environmental positioning of rail vs. air competition.

There is a need to define clearly:

- What constitutes value for different passenger types (business, leisure, commuter).
- Importantly, not all passengers experience dwell or waiting time negatively: while business travellers prioritise speed and seamlessness, leisure passengers may actively welcome waiting time if it is accompanied by comfort. This heterogeneity must be reflected in how passenger experience is defined and measured.
- Which metrics truly reflect appreciated experience versus commercial optimisation.

8. Measuring Passenger Experience

There was agreement that both objective and subjective metrics are required.

Operational KPIs:

- End-to-end punctuality.
- Connectivity performance between modes.
- Waiting times (security, check-in, baggage).
- Ease of gate access.
- Disruption recovery time.
- Itinerary disruption metrics: number of missed connections and stranded passengers.
- Resilience metric: number of viable alternative itineraries available in the event of a delay.
- Check-in duration.

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Perception-based measures:

- Stress and anxiety levels.
- Trust in operators.
- Perceived reliability of information.
- Satisfaction surveys and questionnaires (ideally capturing their total journey to capture the overall travelling experience rather than individual segments).
- Survey delivery channels include mobile apps, trip planners, and airline post-journey surveys, enabling data collection at scale across the full passenger population.

Quantification must distinguish between:

- Metrics passengers truly value.
- Metrics that are operationally convenient but not perceived positively.

Across all indicators, predictability was identified as the single most important dimension: even significantly delayed journeys are felt as less damaging when passengers have reliable, timely information about them. This points to the centrality of infomobility and proactive communication in any passenger experience strategy.

Passenger experience is multifactorial. Prioritising the drivers that most strongly influence perceived journey quality — identifying what passengers consider to have the greatest impact on their experience — would enable a more focused allocation of resources.

A persistent structural gap is the fragmented visibility of passenger flows. While individual elements of the passenger journey can be monitored in isolation (e.g. security control performance), an integrated end-to-end picture is currently very difficult to obtain. Closing this gap is a prerequisite for genuinely passenger-centric mobility management.

Overall Conclusion

Passenger experience in a multimodal context is currently limited by fragmentation, lack of accountability, and insufficient data integration.

The key transformation required is:

- From operator-driven processes to passenger-centred design.
- From siloed modes to integrated multimodal journeys.
- From reactive disruption handling to predictive and AI-supported management.
- From unclear responsibility to unified ticketing and governance models.

Ultimately, passengers seek three fundamental outcomes:

1. Reliability (arrive on time, even across modes)
2. Clarity (real-time, trustworthy information)
3. Simplicity (one ticket, one payment, one accountable system)

Improving passenger experience, therefore, requires not only technology but regulatory alignment, partnerships, and a redefinition of responsibility across the mobility ecosystem.

Underpinning all three outcomes is one overarching passenger need: confidence in the system. Passengers must be able to trust that the multimodal ecosystem will perform reliably, communicate honestly, and take responsibility when things go wrong. Building that confidence is ultimately the measure of success.