

Asset digitalization and monitoring

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Agenda

- 1 PSG mission and main initiatives
- 2 Standardisation efforts in Passenger Services
- 3 Highlights on Air+Rail and D2D projects

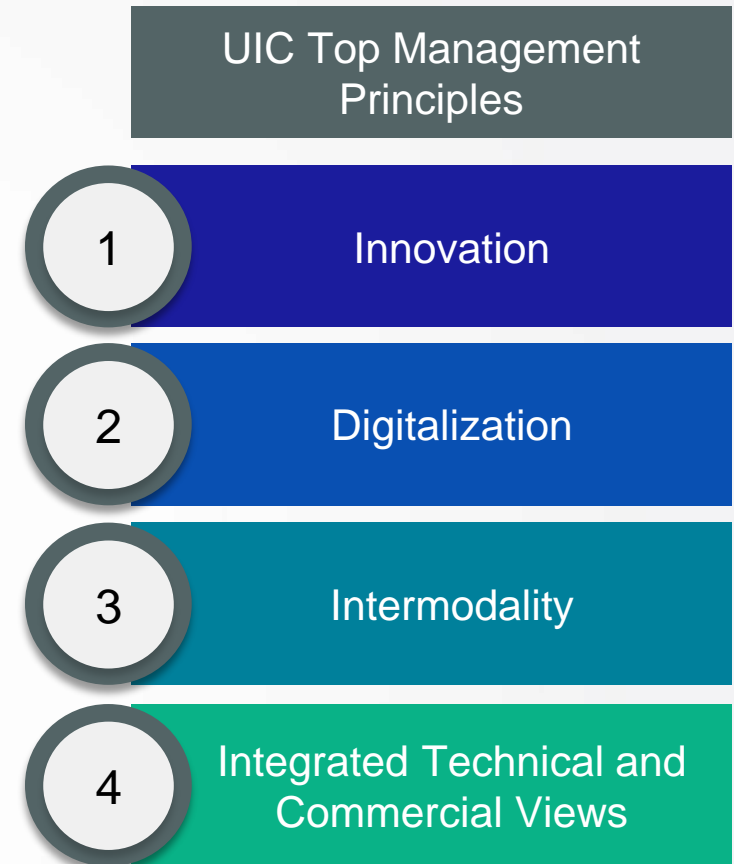
1. PSG mission and main initiatives

Passenger Services Group 3-year Program

During 2018 the PSG decided to start 3-year work program, aimed to provide innovation and fresh energy to the activities of the group.

Pillars of the action were founded on the principles stated by the UIC top management: Innovation, Digitalization, Intermodality and integrated Technical and Commercial views.

In 2019, the first results are coming up and show the substantial effectiveness of the plan, with a budget situation that is significantly positive and innovation activities and new working methodology in place.



PSG's Initiatives

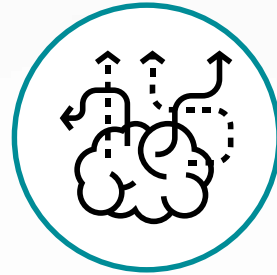
Main Initiatives	Description
1 MERITS Enhancement	The MERITS system in March 2019 made accessible to third parties stations and timetable services.
2 Standardization of e-ticketing	Standardization based on the concept of Security in System (dematerialized online ticketing) is now complete for IRT with the publication of IRS 90-918-1.
3 Enabling E-ticketing NRT (UIC Leaflet 90-918-4)	Standardization of NRT is now at the stage of the approval of the new IRS 90-918-4. Central implementation of registries will take place in 2Q 2019.
4 Air+Rail	Integration between rail and air transportation can provide several benefits to rail and air players. PSG will publish at the end of 2019 a paper including analysis of relevant intermodal endeavors and identification of key barriers.
5 D2D	Integration between rail and other surface transportation services (e.g. car / bike sharing, public transportation) enables door-to-door solutions for passengers. PSG will publish a paper including the identification of candidate standards for integrated ticketing.
6 Innovation Workshops	Workshops run by subject matter experts with multimedia materials and interactive tools, attended by RUs, to disseminate knowledge and generate ideas on new technologies and potential game changers in passenger rail.

Innovation workshops are a source of ideas for future initiatives



1

Workshops cover topics with potentially **high impact** on the passenger rail business in the next year



2

During the workshop, a **brainstorming session** is stimulated among the attending RU's representatives



3

Following the discussion and brainstorming, new ideas for **future Innovation initiatives** come out from the workshops

Examples of outcomes of the **Digitalization innovation workshop** held in February 2019



About Planning and shopping experience:

- Extend MERITS to other transport modes
- Standardise modeling pricing and conditions in the same data model



About Station experience:

- Standardise seamless Wi-Fi experience from station to train



About In-journey experience:

- Extend MERITS to share real-time information

2. Standardisation efforts in Passenger Services

Focus on Enabling E-ticketing NRT (UIC Leaflet 90-918-4): IRT and NRT Context

Integrated Reservation Tickets

- Ticket for a specific train on a travel day usually including the seats
- The tickets are sold by an **Distributor/Issuer** but managed for a train in **one central system** of the **Attributor**
- The ticket is valid on that train on a certain day only

IRT tickets have been standardized (leaflets 918-0 / 918-1) thus they don't share NRT's limitations.

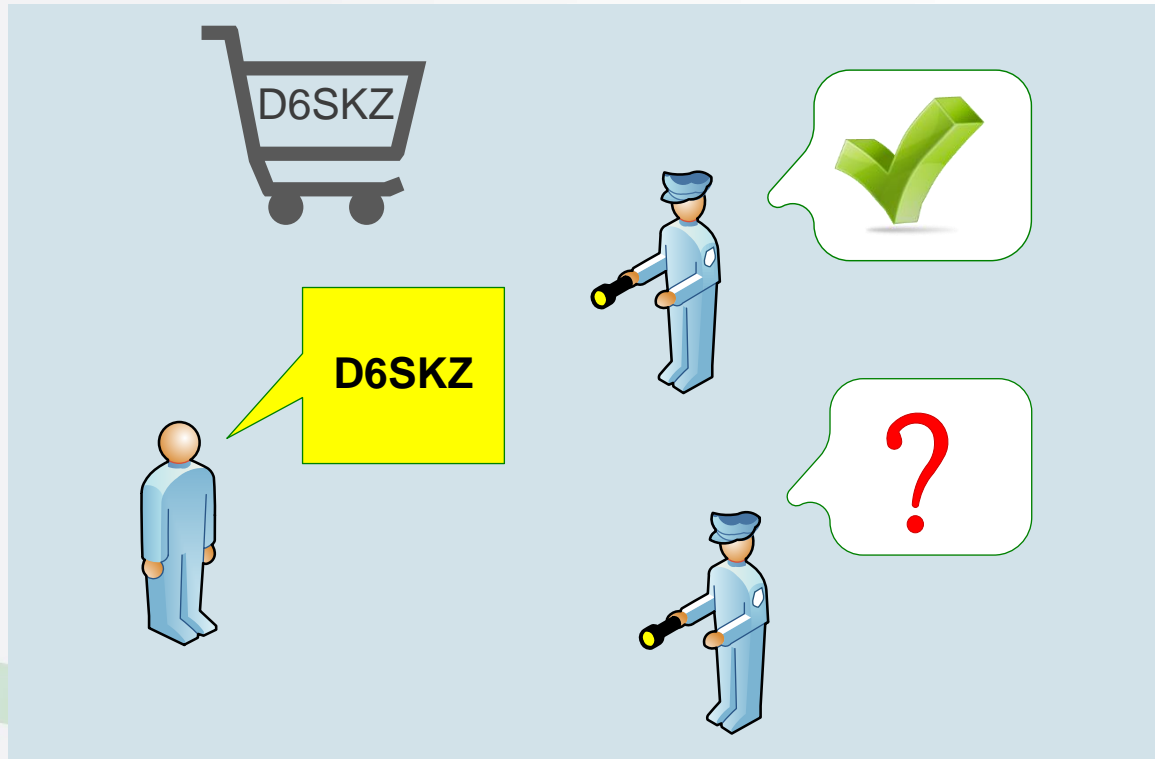
Non-Integrated Reservation Tickets

A ticket **not including an integrated reservation**, which means that **there is not only one central system** to manage all the ticket data for the product on a route. **Many systems** can create a ticket for the **same routes** and carriers independently. This means that carriers do not know:

- which tickets have been issued
- for which train and date tickets are valid for
- when a ticket has already been used

NRT's limitations with today's controls

No interoperability between TCOs



No transfer of annotations

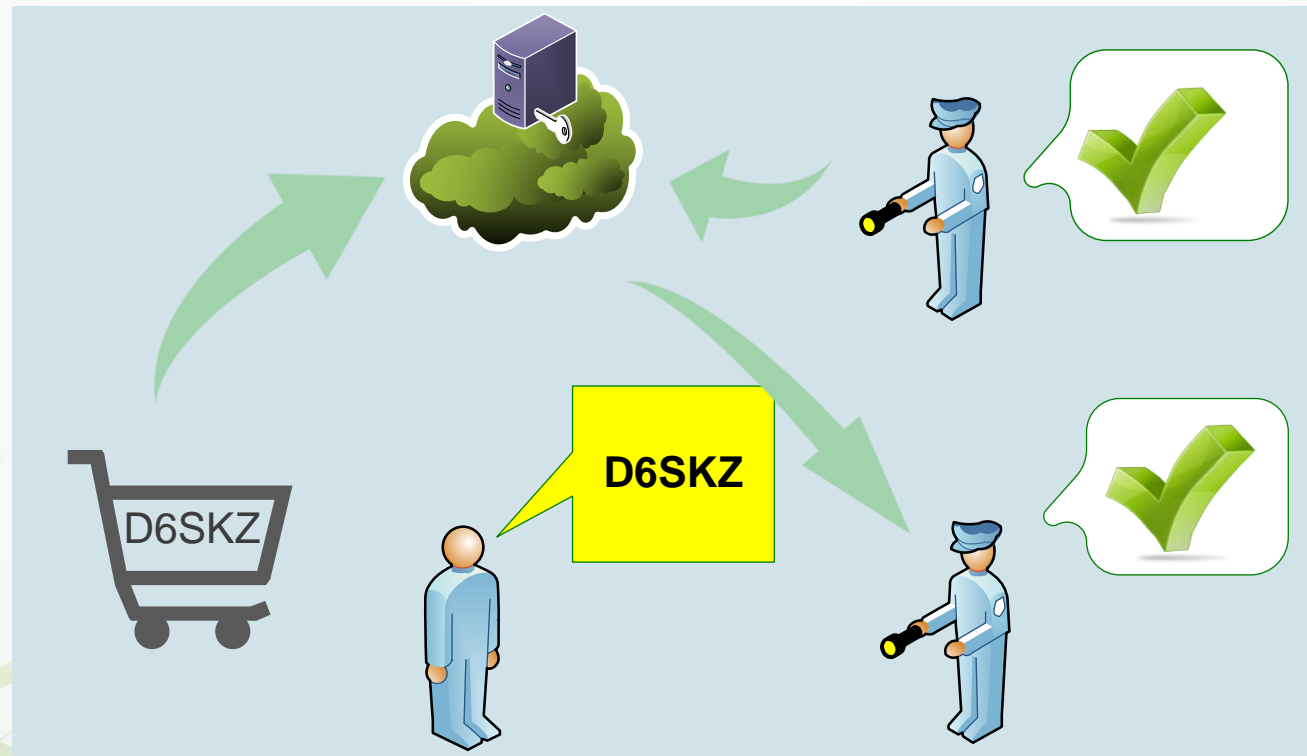


ETCD initiative

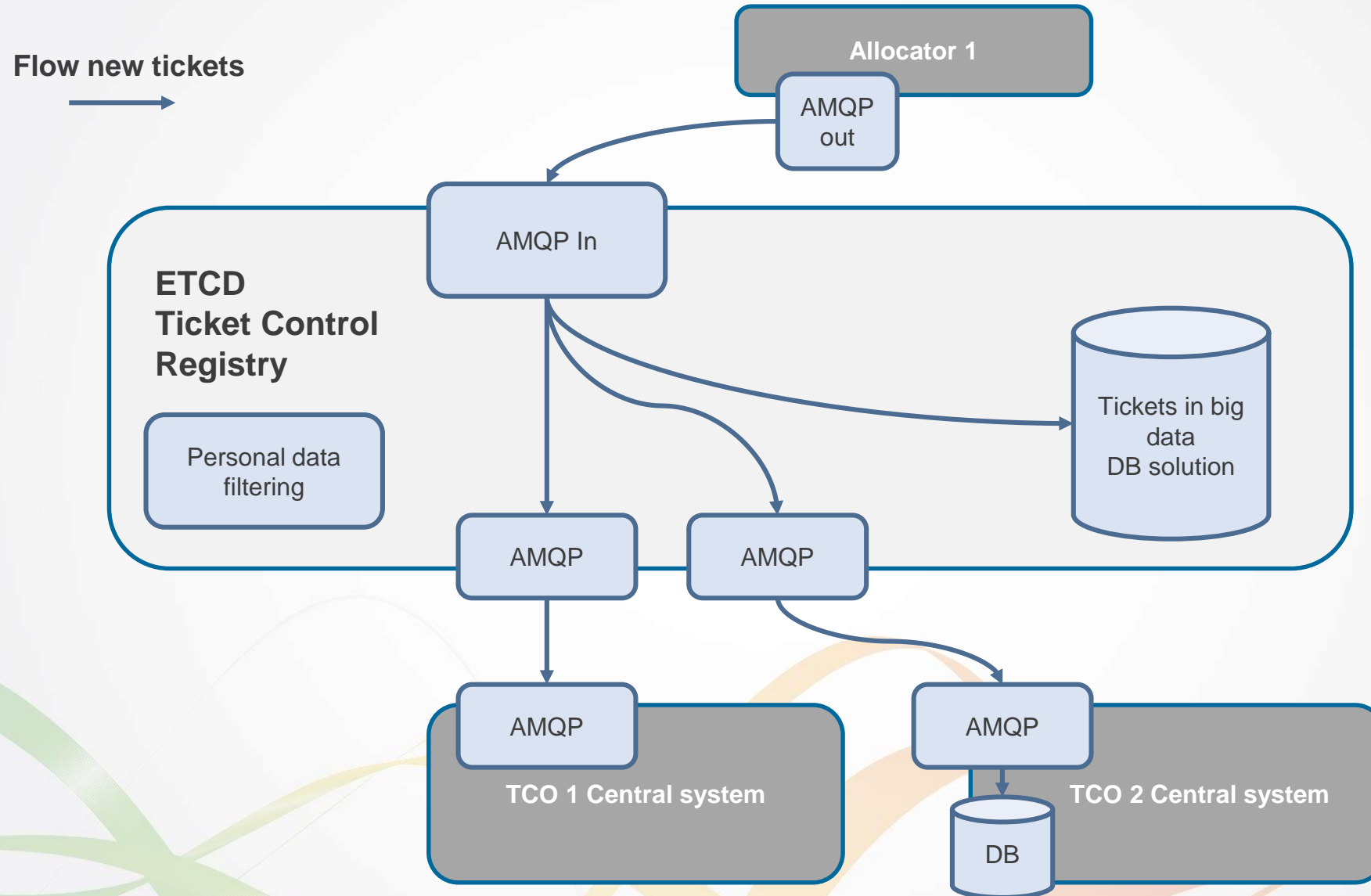
UIC is looking for a Software as a Service (SaaS) solution implementing the Ticket data exchanges for e-Ticket control for its members, as defined in IRS 90918-4 (which contemplates a central **electronic ticketing control database (ETCD)**).

Once launched, the ETCD service will become an important foundation for passenger travel based on the increasingly adopted e-Tickets. Moreover, the ETCD architecture will be capable of supporting future UIC services requiring the storing or checking of Ticket data.

Interoperability between TCOs



Target implementation: ETCD Business architecture



3. Highlights on Air+Rail and D2D projects

UIC's Role

UIC intends to be a catalyst for accelerating intermodal integration with these specific Programs

Pillars	Description
1 Awareness	Increase the awareness and knowledge of members about intermodal integration, including opportunities, scenarios and solutions.
2 Elimination of Barriers	Identify the major technical barriers to adoption and develop a solution strategy to remove or mitigate them
3 Standardization	Provide technical guidance and standards in order to facilitate integration and increase confidence of players in investing
4 Enablement	Provide technical solutions, including enabling platforms, to accelerate adoption and facilitate multilateral approaches

Introduction and Context of Air+Rail Project

Air+Rail capabilities are key to improve travelers' journey experience

Air+Rail INTERMODAL TRANSPORTATION

Air+Rail AS COMPLEMENTS



Air & RAIL AS COMPLEMENTS



Rail complements air by replacing or adding a short/ medium distance connection which is integrated with the air service in one product

CONTRACT ARRANGEMENTS



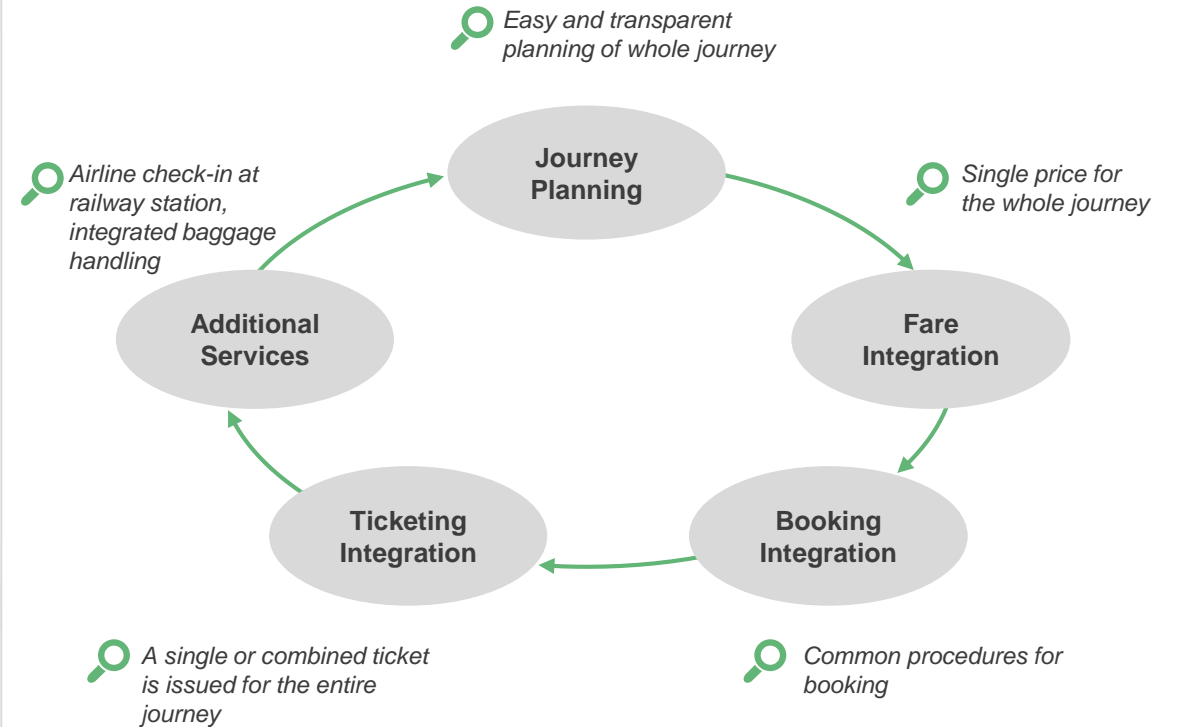
The passenger may have a separate contract with each operator or a single transport contract agreement with only one entity, which represents each of the operators participating in their journey

INTEROPERABILITY IS KEY



Better multi-modal experience requires interoperability among the business applications of the transport service providers that need to dialogue with each other

Air+Rail INTEGRATION



Air+Rail cooperation can provide benefits to all parties



Rail operators

- Access to global network of online and traditional travel agents
- Opportunity to win market share from other airport ground transport operators
- Additional international sales opportunities
- Booking, ticketing and revenue collection managed through travel agents' and airlines' normal workflow



Airlines

- Extend network reach
- Expand relationships with high-yield customers
- Improve service to passengers
- Capture ancillary revenue opportunities



Travel Agents

- Expand product mix to air and rail capturing additional revenue
- Apply standard airline booking and ticketing processes to rail segments
- Provide better service to customers
- Simplified back-office processes



Travelers

- Seamless travel experience to final destination
- Simplified booking and ticketing
- Access to combined offers and promotions
- Facilitated access to rail offerings in destination country

A number of challenges have slowed air-rail cooperation



Lack of common standards and technology platforms enabling distribution systems for multi-modal tickets

Different selling and distribution systems used by air and rail operators which do not communicate with each other

Different business models and lack of overall business models for intermodal solutions

Limitations and constraints deriving from the **airline GDS model**

Air+Rail 2019-2020 Activities

1

Strategy (2019)

2

Design (2020)

Objectives

Provide a clear strategic vision based on analysis of context, trends and scenarios

Provide stakeholders with technical guidelines and standards for implementing intermodal solutions

Key activities

- ▶ Analysis of relevant industry and technology market trends, that may influence Air+Rail integration
- ▶ Assessment of key barriers for intermodal offerings
- ▶ Gap analysis of current protocols and standards with respect to potential integration needs
- ▶ Analysis of legal and regulatory framework
- ▶ Identification of key Air+Rail integration areas
- ▶ Proposed action roadmap to implement strategy

- ▶ Define solution to achieve fully integrated intermodal journey
- ▶ Describe impacts on processes and systems
- ▶ Define technical interoperability mapping between TAP-TSI and other involved standards

Deliverables

Position paper

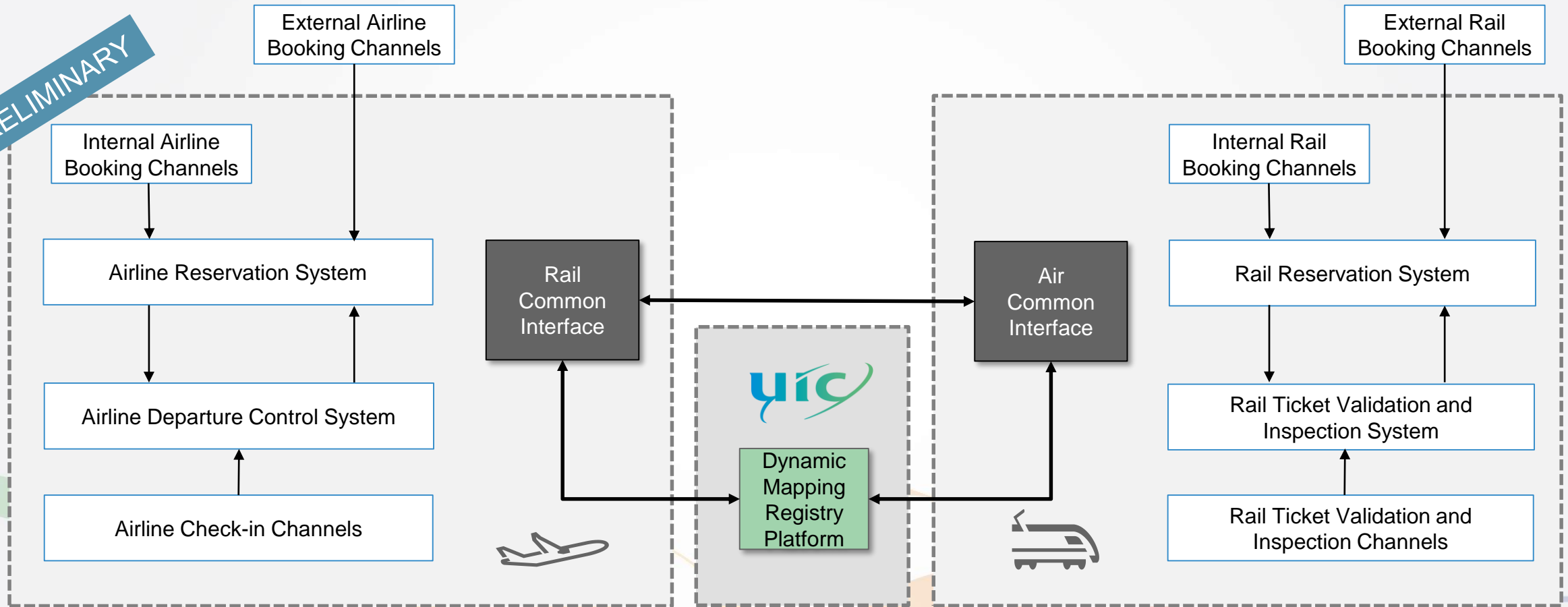
Technical Interoperability Guidelines

UIC–IATA Cooperation within Air+Rail Project: Areas of Interest

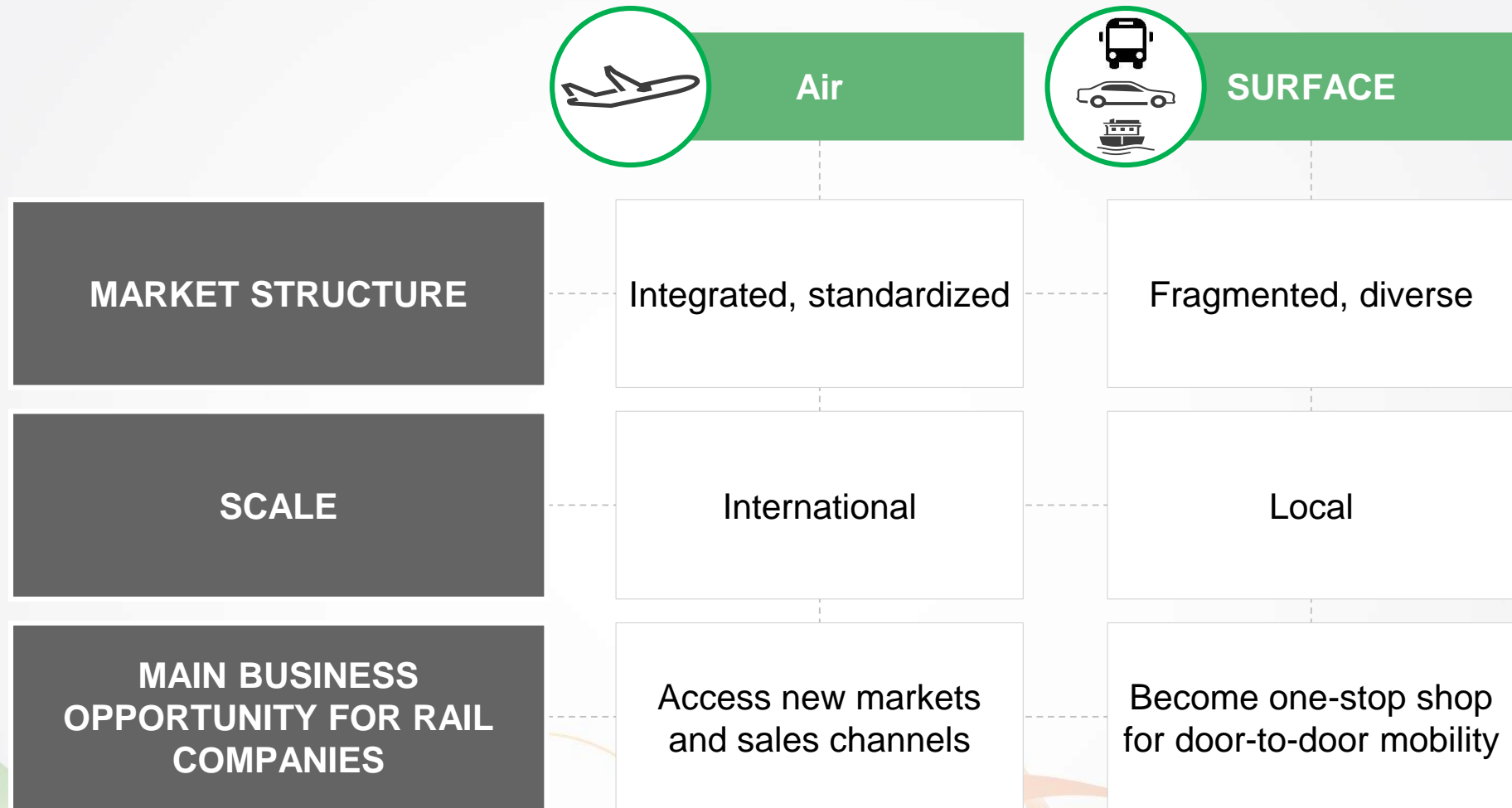
	Journey Planning & Shopping	1	Location (MCT)
		2	Timetable
		3	Fares
		4	Availability
	Booking	5	Reservation
		6	Seat assignment
	Ticketing	7	E-ticket
	Check-In / Validation & Control	8	Entitlement
		9	Seat assignment
	Customer Care	10	IRROPS and schedule change
		11	Refund / Compensation
	Revenue Sharing	12	Settlement
	Liability	13	Responsibilities

Envisaged integration architecture for Air+Rail

PRELIMINARY



Context of D2D Project



Deep differences between air transportation and surface transportation markets suggest different approaches to rail integration

Cooperation between rail and other surface transportation modes can provide benefits to all parties



Rail operators

- Improve service to customers
- Transform from pure transport provider to mobility service player
- Drive additional passenger volumes and enable modal shift
- New revenue sources



Transport companies

- Improve service to customers
- Access new markets and sales channels
- Leverage new efficient revenue collection
- Drive additional passenger volumes



Local authorities

- Provide benefits to citizens
- Attract leisure and business travel
- Better planning and implementation of mobility policies driving modal shift
- Reduce congestion



Travelers

- Seamless door-to-door travel experience
- Simplified ticketing and traveling
- Access to combined offers and promotions
- Better real-time management of journey

UIC actions should be aimed at three main goals

1

Facilitate **partnerships between member rail companies and other surface transport providers** by removing technical obstacles and providing accelerators for developing integrated offerings

2

Facilitate **development of digital integrated mobility solutions** by member rail companies helping them to evolve from pure transport operators to providers of door-to-door mobility to their customer

3

Facilitate **development of an ecosystem and marketplace of digital integrated mobility services** by allowing 3rd party developers to create innovative travel applications and services bringing value to the services offered by member rail companies

D2D 2019-2020 Activities

1

Strategy (2019)

2

Design (2020)

Objectives

Provide a clear strategic vision based on analysis of context, trends and scenarios

Provide stakeholders with technical guidelines and standards for implementing intermodal solutions

Key activities

- ▶ Analysis of relevant industry and technology market trends, that may influence future D2D integration
- ▶ Assessment of key barriers for intermodal transportation
- ▶ Gap analysis of current protocols and standards with respect to potential integration needs
- ▶ Analysis of legal and regulatory framework
- ▶ Identification of key D2D integration areas
- ▶ Proposed action roadmap to implement strategy

- ▶ Define guidelines and formats for the exchange of real time data
- ▶ Define solution templates for token-based electronic ticketing
- ▶ Define guidelines for token-based electronic ticketing

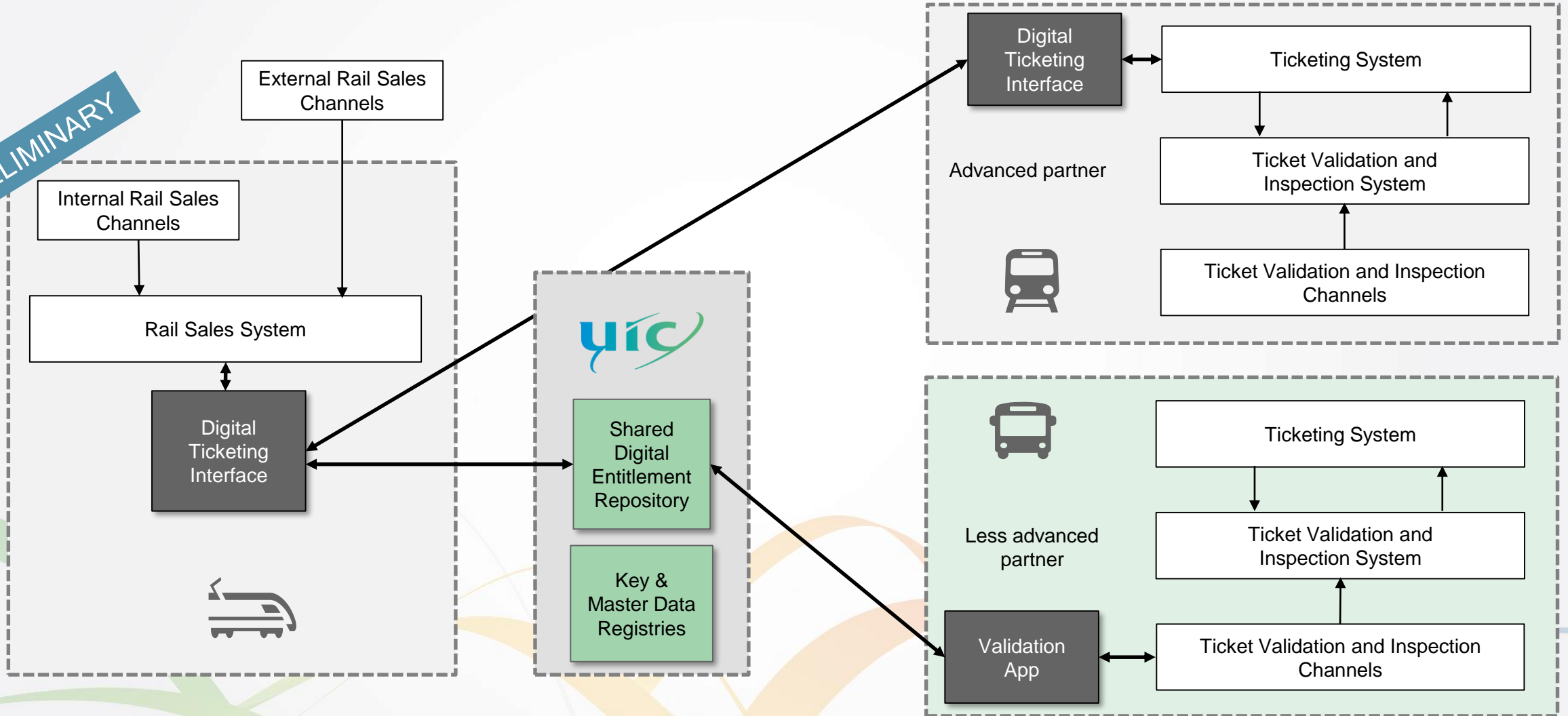
Deliverables

Position paper

Technical Interoperability Guidelines

Envisaged integration architecture for D2D

PRELIMINARY



Thank you!
for your kind attention

