



INTERNATIONAL UNION
OF RAILWAYS

FIRST EUROPEAN MOBILITY WORKSHOP

**DIGITALISATION DRIVING CUSTOMER BENEFITS AS THE HEART OF
INTERMODALITY AND THE CHALLENGES OF INNOVATION**

**HOW DIGITALIZATION IN THROUGH TICKETING
CAN ENHANCE PASSENGER EXPERIENCE**

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UIC in 2019: 200 members: RUs, IMs ...



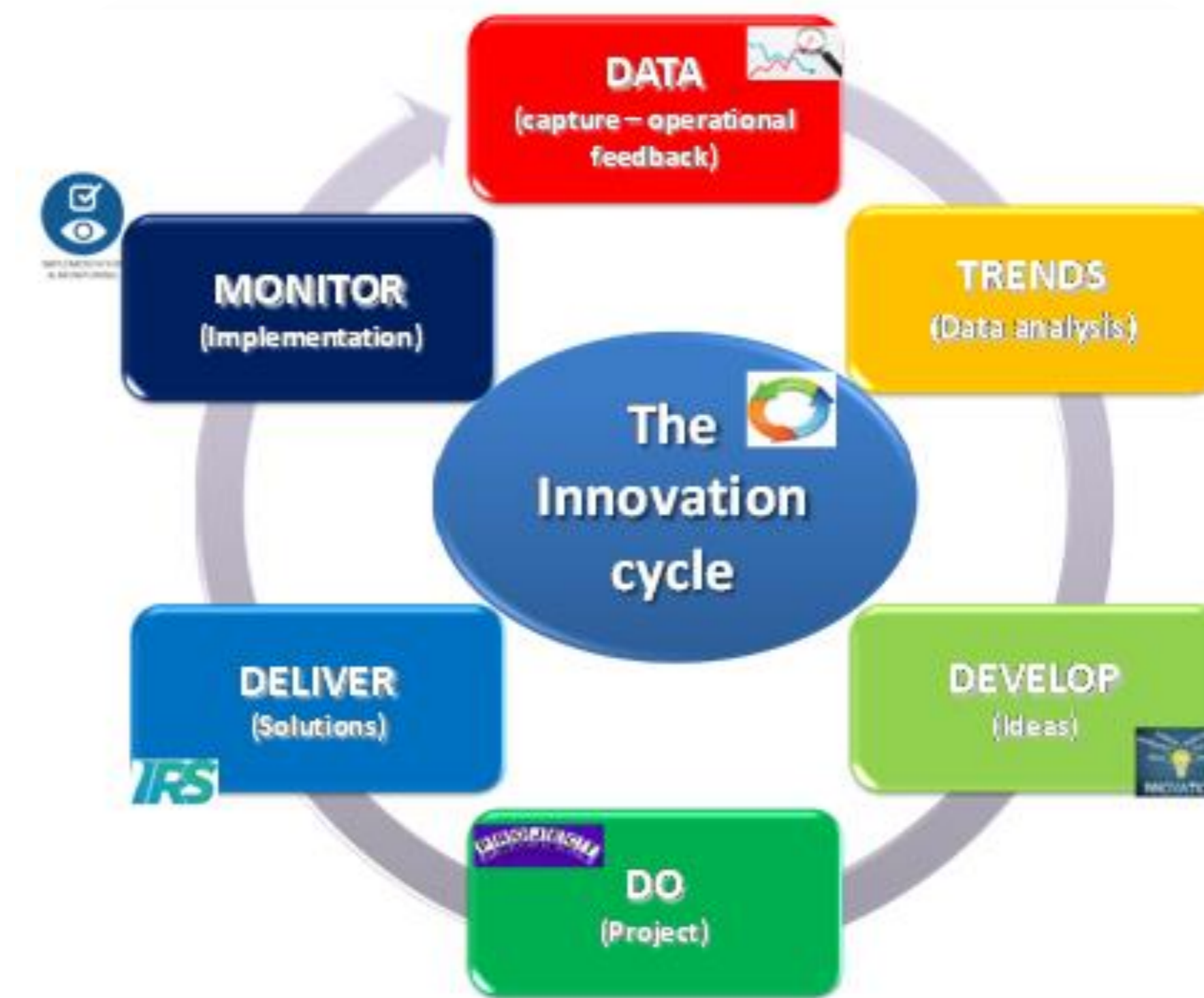
Plus a growing network of research bodies and universities

UIC, the mission

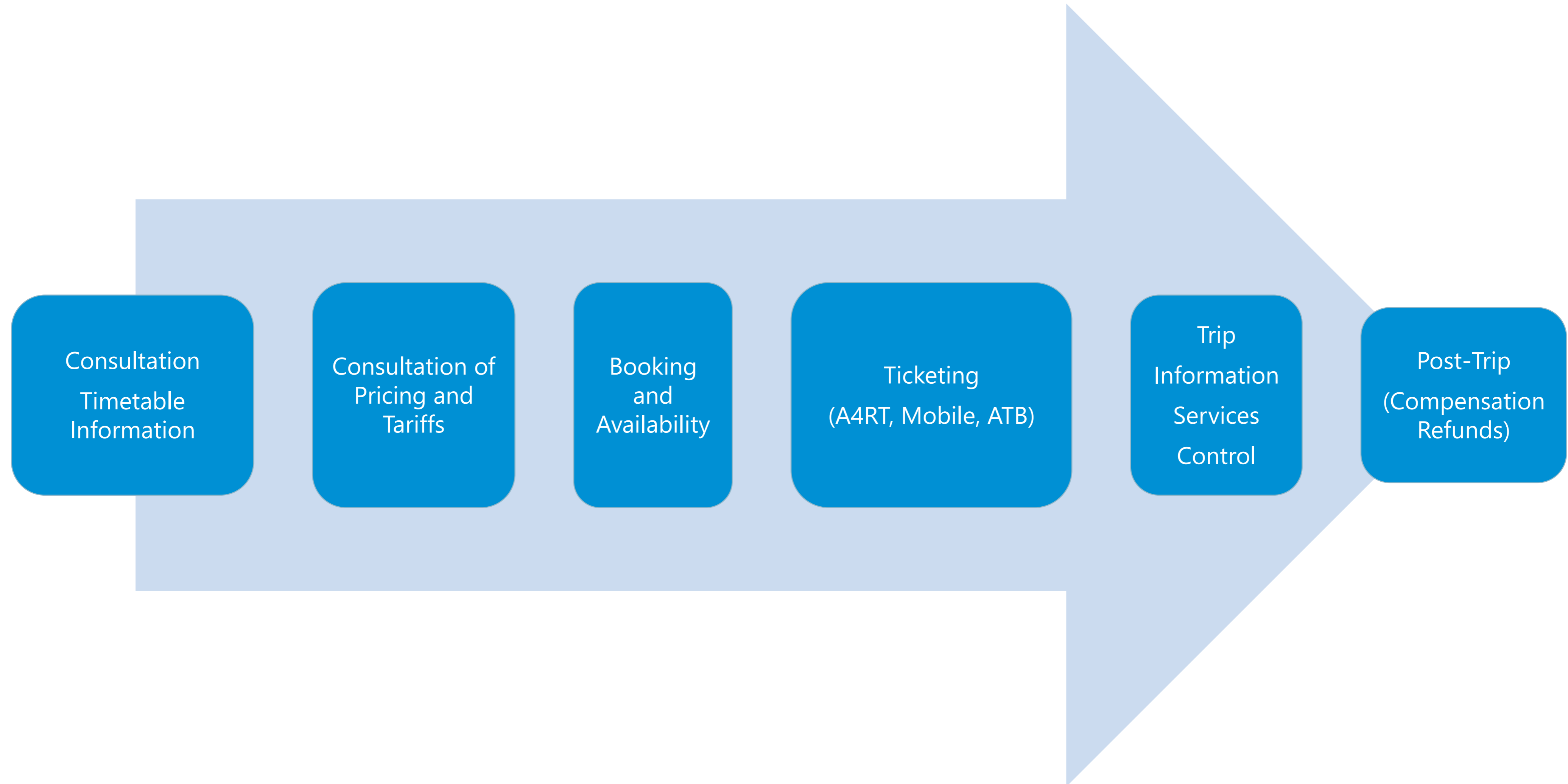
- Support the development of rail as the land transport mode of choice
- Promote rail as the backbone of societal mobility requirements in an efficient, sustainable and safe rail system of the future

Key Challenges in terms of:

**IDENTIFYING THE
BUSINESS AND
END-USER NEEDS**



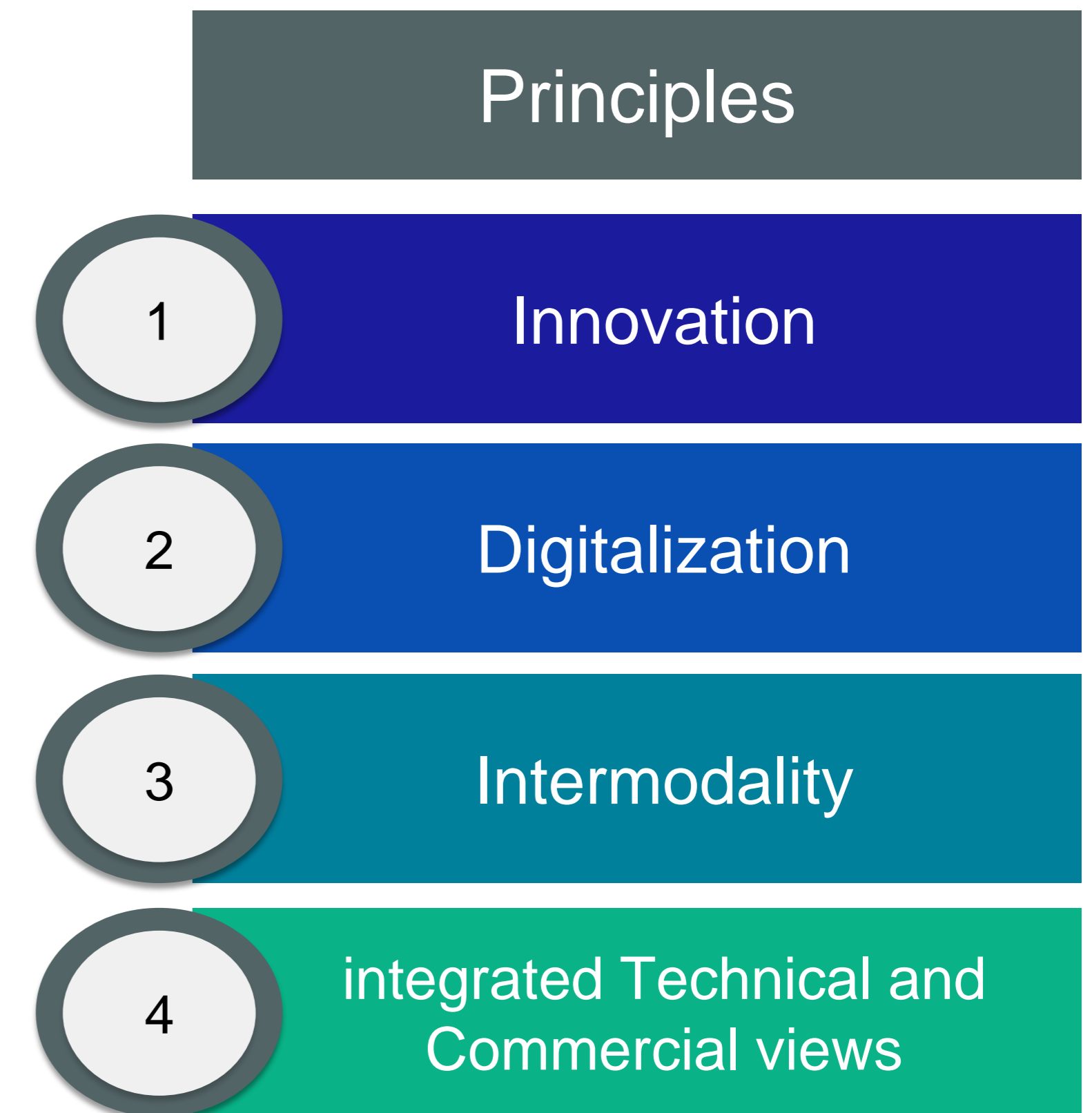
Rail Customer Experience Lifecycle



UIC Passenger Services Group (PSG)

Main innovative strategies

- To sustain through ticketing, in 2018 the UIC-PSG decided to start 3-year work program
- Pillars of the action were founded on the principles: 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 and innovation activities and new working methodology in place



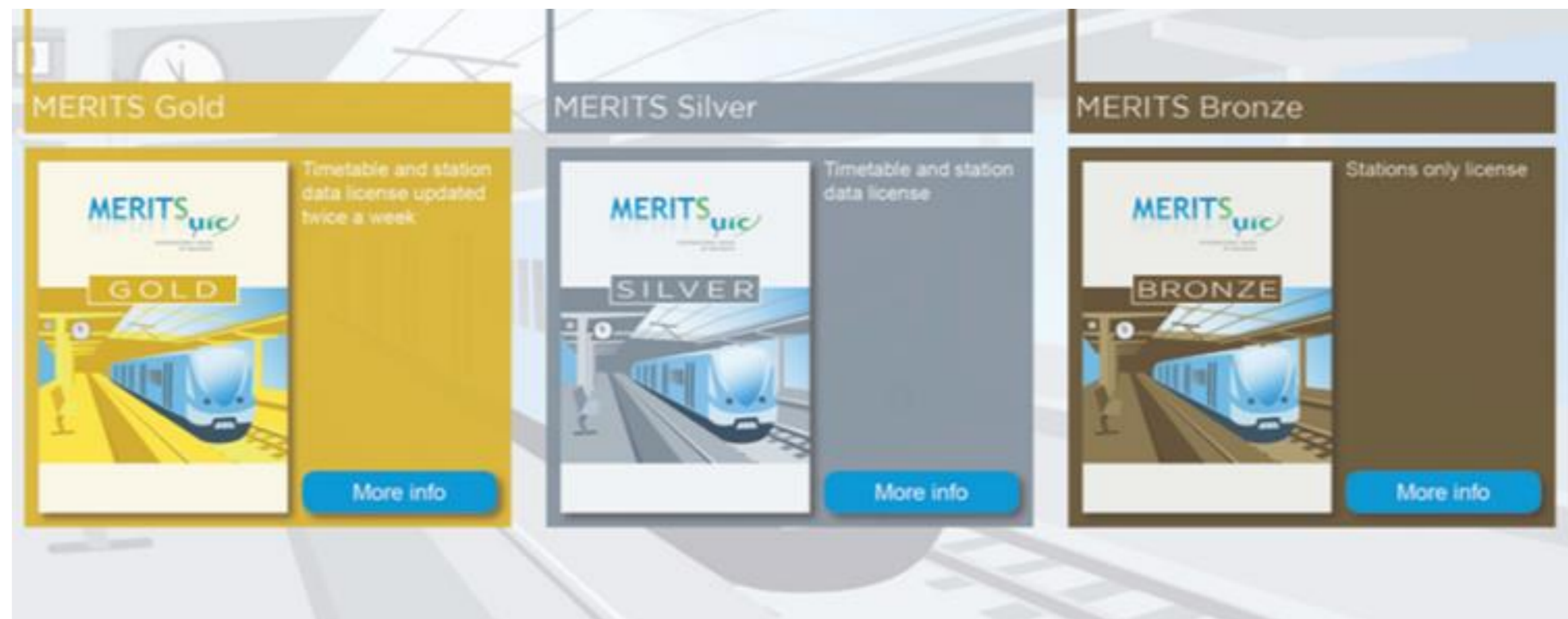
Timetables: MERITS

- MERITS is a UIC database containing the integrated timetable data of a few hundred railway undertakings from Large Europe including Russia, Turkey, Belarus... which are published twice a week
 - 600 000 Services including brand codes, timetables data, tariffs, classes, seats, couchettes, restaurant...
 - 70 000 Stations
- MERITS is a tool designed for users
 - Railway Companies,
 - Online Travel Agencies,
 - Global Distribution Systems,
 - App Developers... for:
 - Information to end customer
 - Journey planners
 - Booking
 - Fill-in Apps



MERITS enhancement

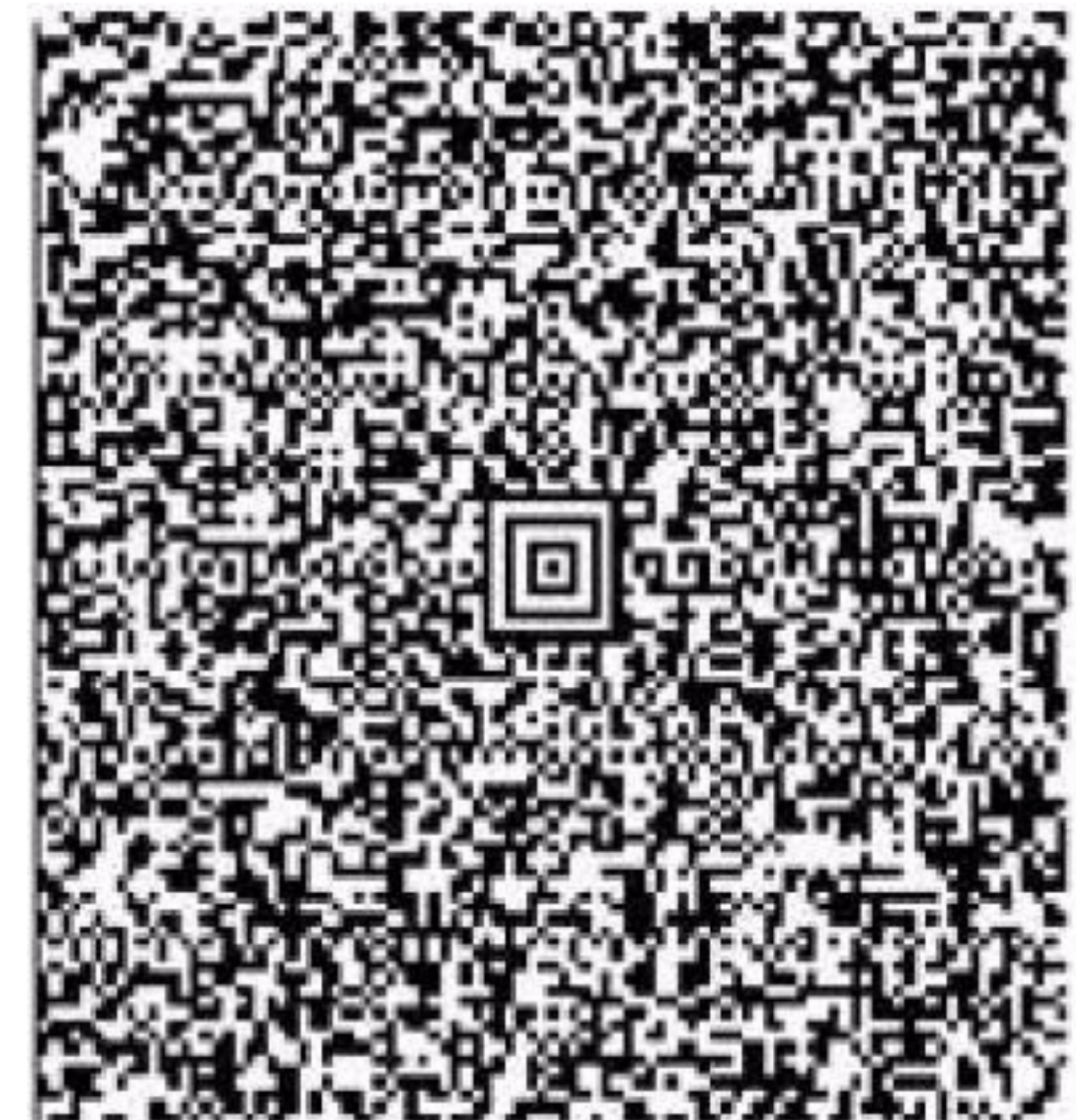
- March 2019: The MERITS system gives third parties access to timetable services and stations
 - <https://uic.org/merits-database>
 - <https://www.shop-ETF.com/fr/merits>



- Future enhancements are envisaged
 - More data formats
 - Multimodality is already possible

Issuing tickets with: FCB: Flexible Content Barcode

- “like XML” structured. Since the content is variable (depending on the kind of contract), the size of the barcode is variable too.
- Contains multiple rail products, multi modal possibility and ancillary services (parking code, meal, newspaper,...).
- FCB has a structure of 133 fields, has a header for backward compatibility with TLG Barcode, and an encrypted seal with Private-Public mechanism
- FCB is deployed between DB and PKP in April 2019 and in all Germany at the end of 2019
- Multimodality: A French Region asked to use the UIC FCB for its Regional Usage



UIC Public Key Management Website (PKMW)

```
<keys>  
- <key>  
  <issuerName>NS</issuerName>  
  <issuerCode>1184</issuerCode>  
  <versionType>UIC 918-3</versionType>  
  <signatureAlgorithm>SHA1withDSA(1024,160)</signatureAlgorithm>  
  <id>8</id>  
  <publicKey>2D2D2D2D2D424547494E205055424C4943204B45  
  <barcodeVersion>1</barcodeVersion>  
  <startDate>2019-05-22</startDate>  
  <endDate>2023-05-21</endDate>  
</key>  
</keys>
```

- To ensure that the barcodes cannot be counterfeited, they are digitally signed using keys based on the public-key cryptography model, also known as asymmetric cryptography. This model requires the distribution of public keys to ticket controlling organisations (TCOs)
- <https://railpublickey.uic.org/?l=fr>



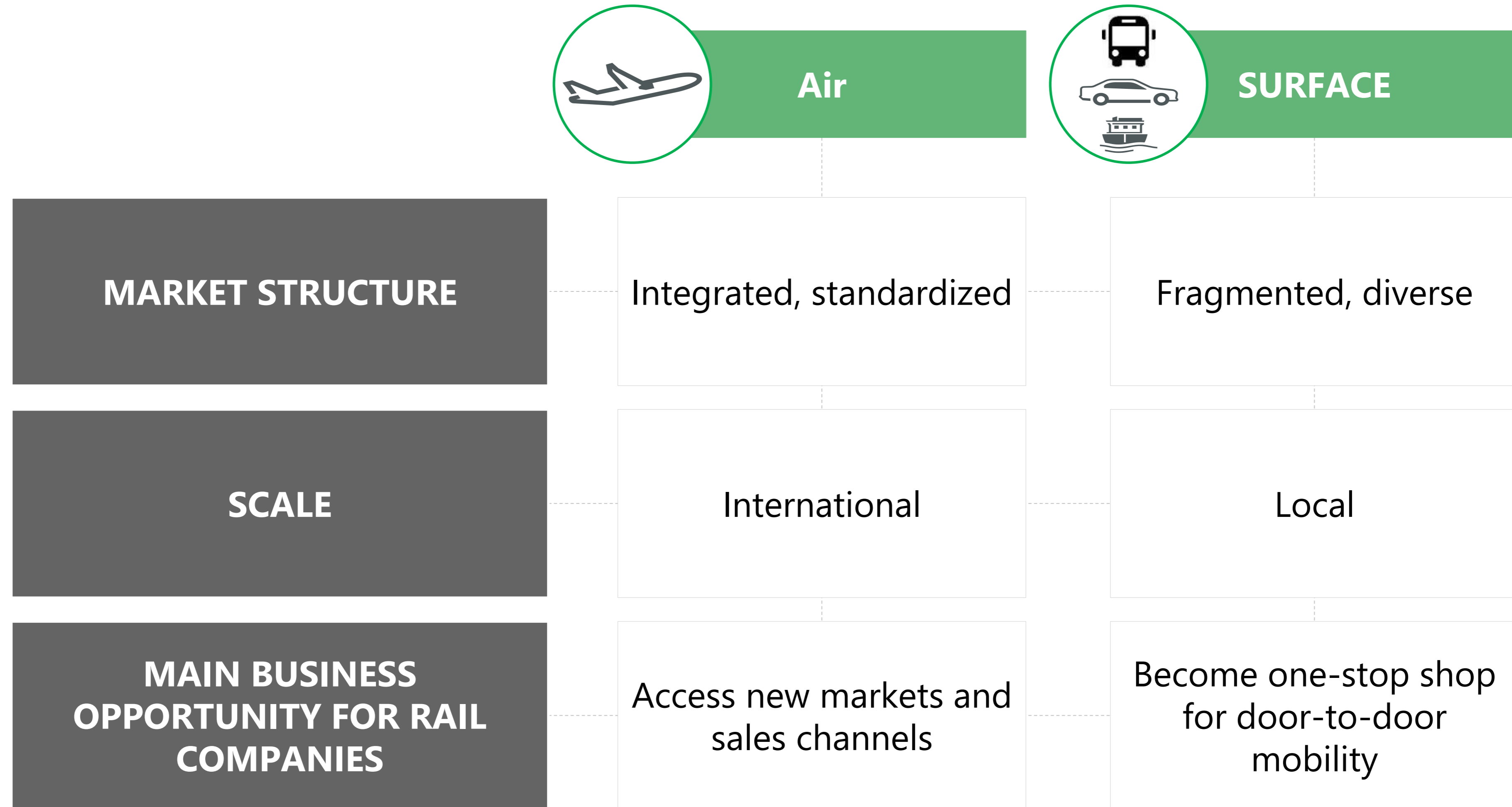
Enabling E-ticketing for Non-Reservation Ticket (UIC IRS 90-918-4) - eTC project

- NRT tickets can be created by multiple systems without connection with the carriers involved, and can be modified on the route (“open tickets”)
- Today, there is no follow-up for NRT tickets, which led to some restrictive measures from RUs to limit fraud (duration of validity, refund...)
- Challenges are as follows
 - Allow to travel with one reference to the contract (name...)
 - Enable control organization to securely change the ticket
 - Exclude the risk of fraud due to missing information on cancelled tickets, refunds due to missing information on ticket usage
 - Allow access to ticket data for control with multiple carriers
- UIC has currently established the electronic ticketing control database (ETCD). UIC is looking for a Software as a Service (SaaS) to provide the implementation of the ticket data exchange for control to support the implementation of the new e-ticketing control solution IRS 90918-4 (tender up to 22 July 2019)

nTM: new Tariff Model Objectives

- Create a new Tariff Model to enable carriers to offer customer-friendly and competitive prices for international travel
- Objective is to enable the operator to offer through tickets based on different condition ranges (fullflex, semiflex, non-flex, others)
- Focus on easy possibility online solutions to be implemented within the two next years taking into account upcoming requirements (new RICS codes...)
- Faring will include:
 - Yield Management,
 - Price Points
 - Multiprice approach
- One meeting per month from May 2019

Intermodal Transportation Context



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



Air-Rail

cooperation which 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

Air+Rail as COMPLEMENTS

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



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



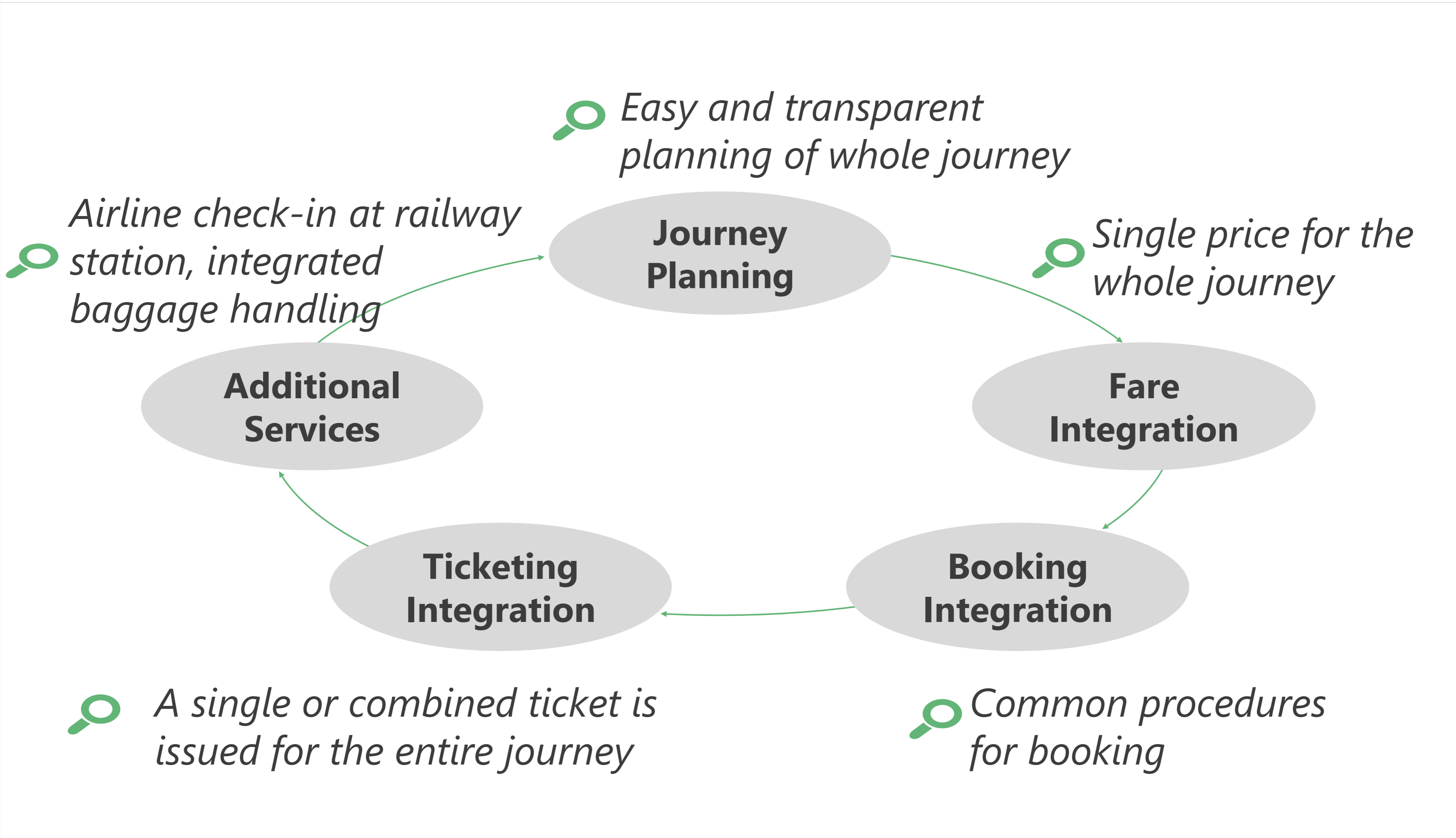
The passenger may have a separate contract with each operator or a single transport contract agreement with only one entity, which represents each of the operators participating in their journey

INTEROPERABILITY IS KEY

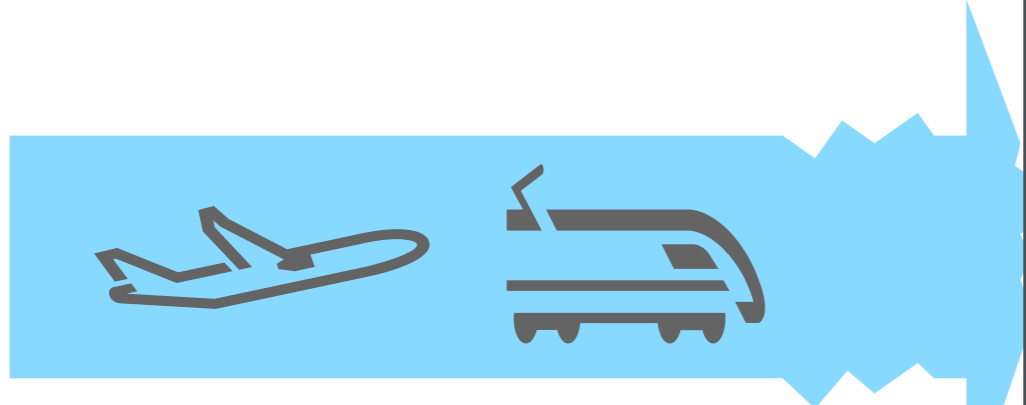


Better multi-modal experience requires interoperability among the business applications of the transport service providers that need to dialogue with each other

Air+Rail INTEGRATION



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

Cooperation between rail and other surface transportation modes can provide benefits to all parties 17



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			
<ul style="list-style-type: none">▶ Analyze relevant intermodal endeavors and identify key barriers▶ Establish joint UIC/UITP workgroup▶ Review industry protocols and standards▶ Analyze technology trends and industry scenarios▶ Develop strategy and detailed roadmap		<ul style="list-style-type: none">▶ 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	

Innovation workshops

Workshops cover topics with potentially high impact on the passenger rail business in the next years:
Blockchain, Intermodality, Digitalization and Artificial Intelligence.

1

Passenger Rail
Digitalization

2

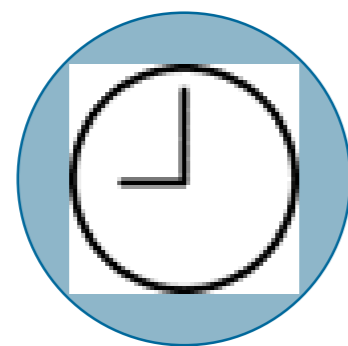
Blockchain

3

Intermodality

4

AI



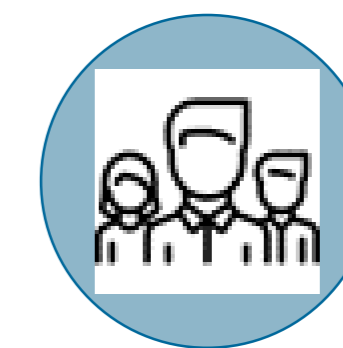
Timing

09:00am – 4:00pm



Venue

UIC Head Office in Paris



N° of participants

20 - 40

Innovation workshops - Blockchain

- Blockchain technology is a key factor in innovation and can open up new opportunities for rail sector, like a potential game-changer. Blockchain is the most hotly debated topic in the international business community at present.
- Blockchain offers a great deal of potential, particularly for railway sector. It facilitates direct coordination between parties involved,
- Using blockchain technology could mean a reduction of costly, railway-specific hardware infrastructure.
- Blockchain technology promises to cut out the middle man in financial transactions, improving efficiency for businesses around the world.
- This workshop will provide an overview of blockchain, potential benefits and challenges to deal with, and how to identify the possible fields of application of this new technology.

Overview

1

Passenger Rail
Digitalization

2

Blockchain

3

Intermodality

4

AI

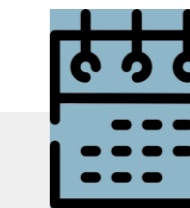
22

3

Intermodality

Agenda

- Integration between passenger rail and air transportation: case studies
- New Distribution Capability and transformation of airline distribution
- Update on technology developments and new opportunities for Air+Rail integration
- Integration between rail and other surface transportation modes: case studies
- Update on technology developments and new opportunities for integration with ground transportation
- The Mobility-as-a-Service paradigm
- Update on ongoing UIC initiatives
- Breakout session: attendees are invited to share their perspectives on current activities in their respective companies and potential ideas on initiatives at UIC level



WHEN

September 2019

(exact date TBD)

Summary of UIC Initiatives to enhance multimodality

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 PSG is currently engaged in the tendering and set up of a common sector architecture for the dematerialized E-ticketing control
3 Enabling E-ticketing NRT (UIC Leaflet 90-918-4)	Standardization is completed with the publication of the new IRS 90-918-4 that will be now implemented through centralized light components
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 position 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 position paper including the identification of candidate standards for integrated ticketing.
6 Innovation Workshops	Workshops run by subject matter experts involving attended by RUs to disseminate knowledge and generate ideas on how to leverage new technologies and future projects



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#UICrail

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Thank you for your kind attention.