

UIC PASSENGER DEPARTMENT  
**Customer Experience by Rail**  
**State of the Art and Best Practices**  
**with a Vision 2030 Case Study**

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INTERNATIONAL UNION  
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## **Customer Experience by Rail: State of the Art and Best Practices with a Vision 2030 Case Study**

Report produced by UIC Customer Experience Platform (CEMP) with the technical support of SENER.

### **Report Coordination**

Vanessa Pérez Miranda, Senior Advisor, Passenger Department, UIC

### **CEMP Main Report Contributors**

Jörg Ostwald, SBB CFF FFS SBB

Larissa Müller, SBB

Marijke Deroy SNCB

Agnes Orosz, MAV START

Sophie Lacour, CFL

Emmanuel Loffet, CFL

Luce Drouet, CFL

Andreas Schwinger, OEBB

Martin Cizek, ÖBB

Sarah Fessl, ÖBB

Tom Nickels, ÖBB

Yon Perez, EUSKOTREN

Iñaki Uriarte, EUSKOTREN

Joaquín Botella, SENER

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## 1 FOREWORDS

Dear Reader,

It is one of the stereotypes in the corporate world of our time that everything a company does must be subordinated to one goal in addition to pure business success: customer satisfaction or a positive customer experience. But what is the reality of such a specific service as mobility, especially by rail? What are the drivers, framework conditions, new developments? What levers exist to influence customer perception more positively? What will future customers expect, and what answers could the railways provide?

Seven railways from Europe have therefore joined forces under the umbrella of the UIC at the beginning of 2020 to delve into what they see as an essential topic for the success of a railway company, within the framework of a working group with the somewhat unwieldy name Customer Experience Management Platform (CEMP): the customer experience. Over the past two years, we have explored an interesting range of customer-relevant topics in depth, discussed them and made them public with webinars and workshops. It is always exciting to see and mutually stimulating to see what different approaches exist for certain topics and how you can integrate them into your own work. For me, the fact that other railways and organisations will join us in the subsequent CEMP II project, proves that this approach seems to work.

It is an honour for me to have been elected as Chairman of this working group. I would like to express my gratitude for the comprehensive, always motivated and energetic support of the UIC project leader, the colleagues from SENER that have supported all the process and the CEMP members involved all along these difficult years of pandemic when the Customer Experience have become even more important to reassure and attract our customers back on board

I wish you an interesting and enriching read!

Yours, Jörg Ostwald

Head Product, services and events

**SBB CFF FFS**

Swiss Federal Railways

Passenger Market Department | Main lines

Bern, Switzerland



## 2 EXECUTIVE SUMMARY

### 2.1 Objectives

Customer Experience is becoming a relevant element of differentiation and a must to become the first option among other modes of transport. The railway community is collaborating to improve their overall CX by laying the foundation for tools and measures for customer experience management.

The priorities of this document are to provide an overview on best practices on Customer Experience on a global scale, as well as making an analysis of future challenges, to provide a guide addressed to railway companies, to advise on how put the customer in the heart of the process.

A customer-centric approach means using service as a key differentiator; interacting with customers based on their needs and their value to the organization; adopting a fact-based approach to decisions using customer data as a primary source of insight; embracing new channels; and building a customer-focused culture.

The UIC Customer Experience Management Platform (CEMP) project's objective is to improve the overall Customer Experience knowledge in the railway sector and thus increasing its attractiveness and profitability with the final objective of fostering a seamless Customer Experience across railway operators and across different modes of transport answering to the vision of the Railway Sector Vision "Challenge 2050" regarding "Value for money Services".

Since 2020, the members of the UIC Customer Experience Platform have exchanged information about how they tackled different topics related to customer experience in regular meetings in which also experts have been invited to share their knowledge to look into specific matters as rolling stock or stations.

The vision and goals are all underpinned by the steps taken in the core rail system fields of policy (what needs to be done), technology (developing the tools to enable it to be done) and providing services (what the user perceives and receives when a customer of rail).

These apply across the whole vision, overlap and come together to enhance the overall attractiveness of rail to the customer.

Public transport is changing rapidly, and new forms of societal organisation and technologies are emerging, influence and redefine the needs and requirements of the modern customers of the public transport sector.

Railway transport sector has historically been more concentrated in the technological challenges inherent to the development of rail infrastructures and services than in the customer experience. Nevertheless, nowadays the World is facing environmental and health challenges that impale railways to improve their efforts in improving the perception of rail as a convenient way of travel in terms of safety and security as well as in terms of comfort.

This should give a base for a renewal of a sustainable economic growth of rail as backbone of short and long-distance public transport and customer experience is key to foster rail as pillar of sustainable mobility in the post-Covid-19 reality.

Public Transport is on the brink of a new era of "smart mobility" of interconnectivity which is affecting if not disrupting operations; social media and networks, mobile/smart phone applications, smart travel information systems, Open Data / Open Service, Big Data, real-time inter-modal journey planning, transport management centres or systems controlling multimodality and complexity, etc., are revolutionizing passenger experience and put the operators' and authorities' operations to a serious test.

### 2.2 The methodology

The methodology undertaken to achieve this objective is based in an integral and transversal benchmarking, considering several customer delivering services companies:

- Experience of several railway undertaking companies.
- Experience of other sectors (airlines, logistics, car-shared)

This analysis was completed by literature review to identify drivers of supply and demand and a workshop to identify additional factors that might impact future customers' needs and the development of sector solutions.

### 2.3 Customer Centric Culture

Building a customer-centric railway means offering passengers memorable and lasting experiences, harnessing customer insight, embracing new channels, and building a customer-focus culture.

To do this, Railway companies must follow the principles of IDIC as well as the airlines companies:

- Identify customers as unique, addressable individuals (Persona)
- Differentiate by value, behaviour, and needs
- Interact more cost-effectively and efficiently
- Customize some aspects of the company's behaviour, offerings, or communication

Very high levels of customer satisfaction reflect user contentment with high-quality, reliable, and good value services.

The customer's need can be classified into:

- Required – achieve minimum requirements and regulations
- Expected – intuitive and customized
- Value - Excellence (one step beyond)

Expectations can be described with the figure of a pyramid. In the bases of the pyramid there are the universal needs (main principles) and on the top cultural needs and tailor-based solutions. It is needed to understand each specific need to offer the most appropriated service in each case, regarding experience like safety, security, cleanliness, accessibility, wayfinding, ergonomic, entertainment, lighting, etc.

Additionally, nowadays it is important to surprise the customer with new ideas, to make the difference with the competition.

The customer care strategy should consider the customer's entire journey, starting this in the moment that this user plans to travel to somewhere, considering the railway as the mode of transport. In this moment the customer is in the picture.

All the elements with which the client interacts from the beginning to the end of his journey are to be evaluated.

### 2.4 Challenges

One of the challenges is to make railway companies ready for the near future (competitiveness) by:

- Responding to customer needs along the whole journey
- Creating a customer centric culture so all staff go all the way for their customer (internal/external)
- Sustainability has become a relevant subject for customers choice of the right transport mode. Railway Managers and undertakings need to take this challenge to satisfy this customer's requirement.

An important aspect for an excellent customer care is to develop a top-bottom customer care culture approach, starting with the whole management (including finance, planning, resources, etc.) and staff at stations and on-board in the delivery of a great customer service, in order to provide a continuity to the existing company culture, values, etc. The concept is an overall and integral approach to succeed.

### 2.5 Holistic Approach

The consideration of the customer experience as a whole, since the customer is considering planning a trip travel to somewhere, considering the railway as the mode of transport.

In this moment the customer is in the picture; then the first mile, arriving the station, staying there, the journey itself within the train, getting out the station, last mile, reaching destination and post-journey.



*Holistic approach to customer experience*

## 2.6 Customer Interaction

In addition to exploiting the typical communication channels like e-mail, hotline calls and written communications, the operators establish customer communication channels and ask for feedback from its customers through surveys.

CEMP focuses on railway transport phase. Customer's needs need to be reflected in the different elements with which customer interacts:

- Sales channels:
  - Online ticket shop
  - Mobile application
  - Online season tickets
  - One to one engagement
  - Omnichannel ticket distribution
  - Etc.
- Station elements:
  - Wayfinding
  - Different shops & Restaurants
  - Platforms
  - Parking store and other services
  - Passenger information on station
  - Inclusive and accessibility design
  - New technologies at station
- Rolling Stock:
  - Accessibility
  - Seat (comfortability)
  - On-board services (restaurants, catering, etc.)
  - On-board entertainment
  - Passenger information on-board
  - New technologies on board
- Post- sale:
  - Loyalty programs
  - Customer feedback
  - Key performance indicators
- Safety Measures
  - Hygienic/Contra-virus measures
  - Additional space (social distance)

Human interaction between staff/undertaking and customer will have more importance due to all these digital developments.

### 3 INTRODUCTION

#### 3.1 Context

*Customer Experience (CX) is the customer's perceptions and related feelings caused by the one-off and cumulative effect of interactions with a supplier's employees, systems, channels or products (Gartner).*

The experience is a matter of perception of the travel which is subjective and changes a lot depending on the context (country, background, etc.).

Public transport services address sustainable challenges to integrating environmental “eco-efficiency” and social sustainability with the inclusion of all stakeholders to provide better service and efficiency.

**Public Transport is all about “Customer Experience”:** the attraction, value and success of service, measured not just in users but on society, sustainability and environmental impact.

The challenge of creating a unique client experience is to integrate other dimensions of customer service, such as sensorial and emotional experiences, what the end users will feel when travelling, how we can reassure them at every touch point of their journey, etc.

Customer expectations are of the utmost importance. A good public railway service according to the customer expectations will encourage them to utilize more public transport.

#### Customer Experience a Plus to broaden Railway Attractive Appeal

Customers expect a safe, inclusive, profitable, and multimodal experience, offering personalised services. This global experience can be partly delivered leveraging on integrated and intelligent mobility tools, making the most out of digitalisation and data.

In the context of public transportation services, it is crucial to persuade customers to use public transport services, to attract them and reduce cars traffic, in order to achieve the Green Deal agreement and Sustainability objectives.

One possible solution lies in improving the quality of public transport services and to respect customer requirements, and this can be achieved only improving the functioning of the entire transport system, by means of a holistic approach.

The fact that the public transport sector has never really had a strong customer orientation has been an impediment to develop a deep understanding of the user of its services.

With the exception of reduced mobility groups, the attempts to understand the emerging needs of most transport customer segments have been rather scarce and fast obsolete.

The mobility of the future will be simple, personal and connected.



Public Transport is on the brink of a new era of “smart mobility” of interconnectivity which is affecting if not disrupting PT operation; social media and networks, mobile/smart phone applications, smart travel information systems, Open Data / Open Service, Big Data, real-time inter-modal journey planning, transport management centres or systems controlling multimodality and complexity, etc., are revolutionizing passenger experience and put the operators’ and authorities’ operations to a serious test.

It is time for railways to take a **customer-centric approach**, like airline companies have been doing in recent years. Doing so means using service as a key differentiator; interacting with customers based on their needs and their value to the organization; adopting a fact-based approach to decisions using customer data as a primary source of insight; embracing new channels; and building a customer-focused culture.

The airline sector's success is based on customer support brought about by consistently high-quality services and attractive pricing.

The goal is to provide services enabling passenger to experiment their travel time in a relaxed and pleasant way, in order that customers experience positive emotions and even be enthusiastic about the train useful journey time.

Customer Experience is a confluence of design, marketing and communication. It is not possible to have one without the others and you cannot do one without the others.

The railway undertaking must have a customer-oriented business culture. The attitude of staff, starting with the high management towards users and their ability to understand their doubts or travel needs must be a critical factor in making the service fully accessible and endowed with the best image.



**Current customer experience trends. Source: ALSTOM**

The quality of public transport services in passenger transport can be defined as a set of intangible variables, which can be assessed by four different approaches:

- The customer's point of view – according to research on passengers' perceived quality, passengers mostly appreciate total time, comfort and cleanliness, accessibility of the service, accessibility of the information, service organization, safety, the behaviour of transport company employees and conductors, and their costs.
- The operational efficiency – the assessment of technical-economic indicators describing the transport processes, including the assessment of indicators describing the work.
- The operation economics – business point of view performed by the carrier responsible for operation.
- The efficiency of usage of allocated resources by the responsible public authorities in charge of public transportation services – it is the point of view of the territorial administrative organs (municipalities, regions, Ministry of Transport).

EN 13816 defines a set of recommended criteria to measure the quality of public transport services. These are divided into eight categories:

- **Availability** – the extent of provided services in terms of geography, time and frequency.
- **Accessibility** – access to the public transportation system including the connection between different transport modes. Access for all.
- **Information** – systematic presenting of information and observations about the public passenger transportation system that help to plan and realize the journeys.
- **Time** – all time aspects important for planning and realizing journeys.
- **Customer care** – the service elements introduced in order to harmonize individual customer requirements and provided service standard.
- **Comfort** – the service elements introduced in order to make the public transport services usage comfortable and pleasant to passengers.
- **Safety and Security** – the feeling of personal safety truly perceived by passengers that arising from actual established measures and activities.

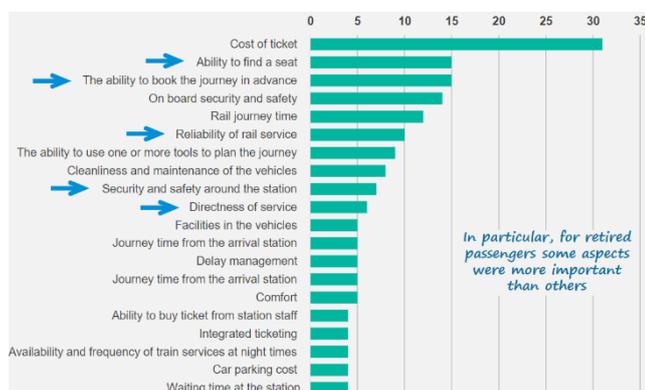
Customers need to feel safe and secure and that the rail company is taking care of them.

- **Sustainability** – the minimization of a negative impact, from an environmental, social and economic point of view.

Unlike air and road sectors where competition is well established over decades, rail passengers can choose the mode of transport to use, based on different criteria (e. g. Price, convenience, time etc.) but didn't have the choice – once opting for rail – to choose the service provider as a specific line is usually operated by the same operator which made the customer Experience (CX) not one of the top priorities for railway undertaking (RU).

However, once the rail market opened for competition, Customer Experience will become a key differentiator for passenger choice of the service provider, and it will even outweigh other criteria such as the product and the price (a recent Frost & Sullivan study showed).

According to Consumer survey (Shift2Rail SMARTE project, 2019), the relative levels of importance and satisfaction with quality-of-service attributes for rail vis-a-vis other modes are shown in graphic below.



**Levels of importance and satisfaction with quality-of-service attributes**

1. Cost of ticket
2. Ability to find a seat
3. The ability to book the journey in advance
4. On board security and safety
5. Rail journey time
6. Reliability of rail service

7. The ability to use one or more tools to plan the journey
8. Cleanliness and maintenance of the vehicles
9. Security and safety around the station
10. Directness of service
11. Facilities in the vehicles
12. Journey time from the arrival station
13. Delay management
14. Journey time from the arrival station
15. Comfort
16. Ability to buy ticket from station staff
17. Integrated ticketing
18. Availability and frequency of train services at night times
19. Car parking cost
20. Waiting time at the station

### 3.2 CEMP Objectives and Purpose

The CEMP project's objective is to improve the overall Customer Experience knowledge in the railway sector and thus increasing its attractiveness and profitability with the final objective of fostering a seamless customer experience across railway operators and across different modes of transport answering to the vision of the Railway Sector Vision "Challenge 2050" regarding "Value for money Services".

Customer Experience is relevant in the context of railways, and already active in an increasing number of railway companies (SBB, CFL, ÖBB, NS, EUSKOTREN, MAV-START, SNCB, etc.).

The railway community is collaborating in laying the foundation for tools and measures for customer experience management.

One of the challenges is to have railway companies ready for the near future (competitiveness) by:

- Responding to customer needs along the whole journey
- Creating a customer centric culture so all staff go all the way for their customer (internal/external)



**Traditional customer experience**



**Modern customer experience**

An important aspect for an excellent customer care is to develop a customer care culture, which influence the staff in the delivery of good customer service, in order to provide a continuity to the existing company culture, values, etc.

In addition to exploiting the typical communication channels like e-mail, hotline calls and written communications, operators establish customer communication channels and ask for feedback from its customers through surveys.

It is very helpful to know the customer’s opinion regarding the operating services including but not limited to:

- Customer Services Officer Staff (at stations and on board)
- Other Staff
- Passenger Helpdesk via free-phone, email and in writing
- Lost and Found services
- Assistance services?
- Website content, functionality and ease of use of information
- Customer service provided by the rail replacement transport service (normally by buses)
- Special events
- Awareness of ticketing / marketing strategy
- Passenger information points
- Security perception

Public transport is changing rapidly, and new forms of societal organisation and technologies are emerging, influence and redefine the needs and requirements of the modern customers of the public transport sector.

Building a customer-centric railway means offering passengers memorable and lasting experiences, harnessing customer insight, embracing new channels, and building a customer-focus culture, by means of providing a reliable service. To do this, Railway Companies must follow the principles of IDIC as well as the airline companies:

- **Identify customers** as unique, addressable individuals.  
By looking at the customer experience through the eyes of the customer, it can be understood the moments of truth that will define a consistent customer experience.
- The view of the interaction must be from end to end, across every single touchpoint, from a variety of instances, including service failure.
- **Differentiate** by value, behaviour, and needs  
Customers have different needs and values to the company; those needs, and values are fluid.

Fully understanding customers requires a comprehensive segmentation of needs, behaviour, and value.

Customer needs drive behaviour, which in turn creates value to the railway company.

➤ **Interact** more cost-effectively and efficiently.

Customer service is especially important because the service interaction is one of the few opportunities that companies have to personally interact with their customers. Service experiences allow a company to further understand a customer's needs.

By knowing the “moments of truth” that mean the most to the customer, you can get a better idea of what aspects of service are critical. But the real power is to take advantage of the ability to link these services with specific customer profiles and segments.

➤ **Customize** some aspects of the company's behaviour, offerings, or communication

Customer feedback is especially rich when it is collected immediately after an interaction, when both the memory and the emotion of the incident are fresh. Doing so typically elevates response rates significantly.

- Provide customized services based on distinct customer needs
- Make pricing easier to understand
- Develop an integrated social media strategy

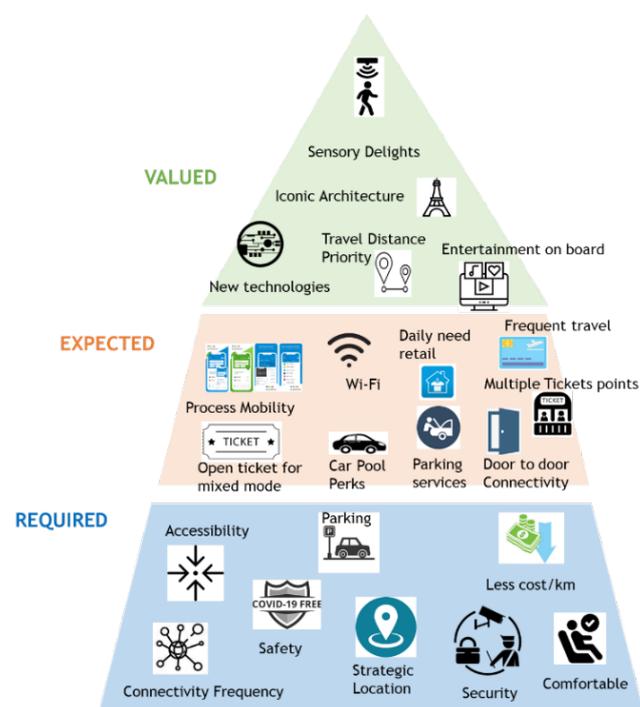
The vision and goals in Challenge 2050 are all underpinned by the steps taken in the core rail system fields of policy (what needs to be done), technology (developing the tools to enable it to be done) and providing services (what the user perceives and receives when a customer of rail).

These apply across the whole vision, overlap and come together to enhance the overall attractiveness of rail to the customer.

Very high levels of customer satisfaction reflect user contentment with high-quality, reliable and good value services.

The customer's need can be classified into:

- **Required** – achieve minimum requirements and regulations. Meeting physiological and functional needs. This means reliability, efficiency, security, etc. If not in place, the customer will experiment dissatisfaction.
- **Expected** – intuitive and customized. It is a kind of promise. This implies an improved service, enhanced experience, etc.
- **Valued - Excellence (one step beyond):** Excellent hospitality, outstanding design, surprising concepts, etc. Customers' expectations are exceeded



*Customer needs pyramid. Source: SENER*

Expectations can be described according to the pyramid figure below. In the bases of the pyramid there are the universal needs (main principles) and on the top cultural needs and tailor-based solutions. It is needed to understand each specific need to offer the most appropriated service in each case, regarding experience like safety, security, cleanliness, accessibility, wayfinding, ergonomic, entertainment, lighting, etc.

### 3.3 Customer journey

The customer care strategy needs to consider the customer's entire journey, starting this in the moment that this user plans to travel to somewhere, considering the railway as the mode of transport. In this moment the customer is in the picture.

All the elements with which the client interacts from the beginning to the end of his journey should be evaluated.

The following chart explains the different stages the client goes through and the elements he interacts with

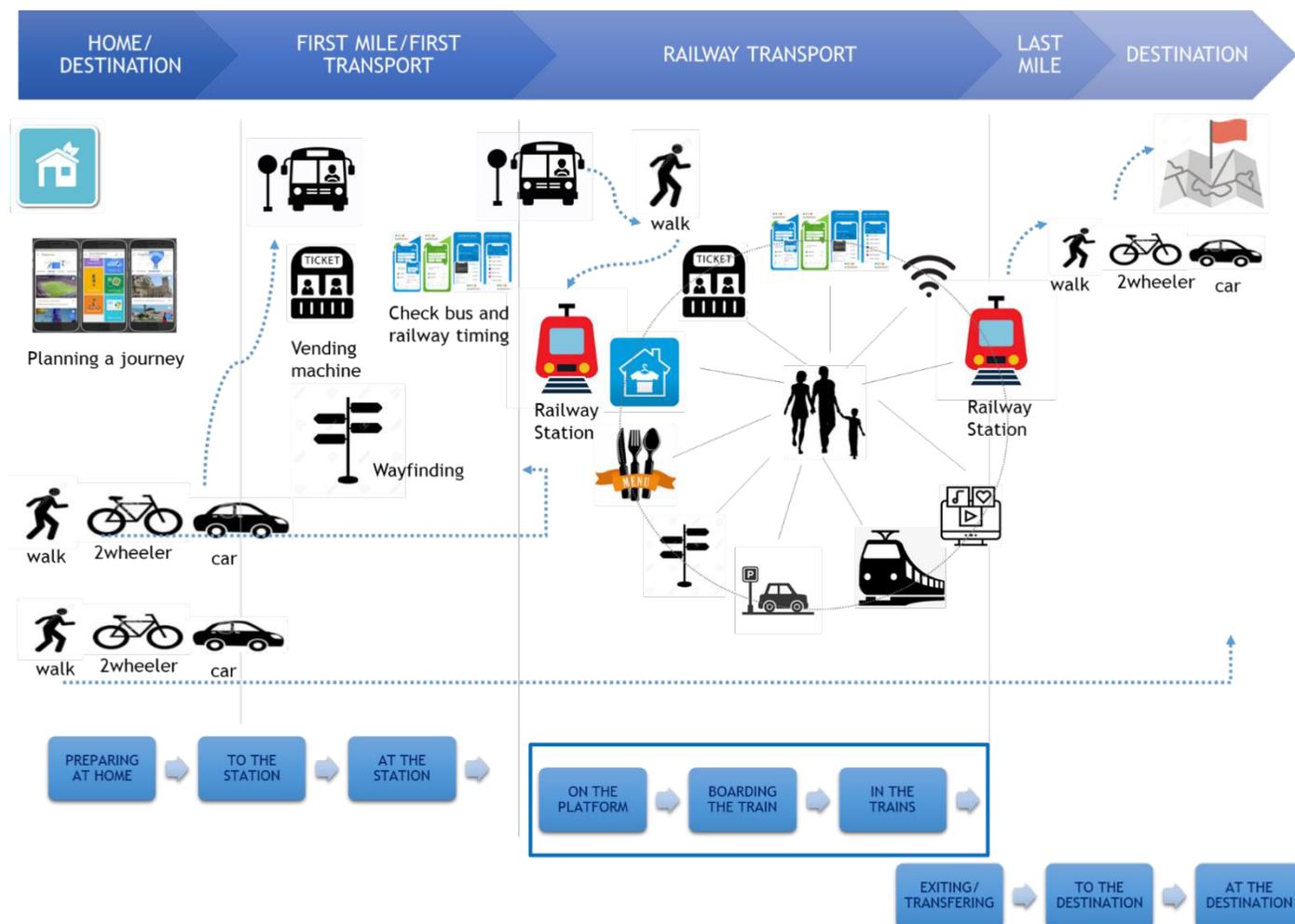
- Pre-Travel
  - Awareness and journey planning. The first step includes awareness of the brand and the service it provides.
  - Planning the journey itself.
  - The ticket. Purchase and collection of the ticket.
  - Preparation. Proactive reassurance and reminders ensuring you have everything you need before travelling.
- The Travel
  - To the station/stop. The customer goes to the station.
  - At the station/stop. The customer experience at the station includes any task they need to perform. Depends on how much time the passenger aims to spend to take advantage of the different amenities.
  - The platform. Preparation for the train.
  - Boarding the train and finding the seat. First feeling of the train coming and moving from platform to locating the seat.

- On board. Functions and features available to the customer in this stage of the trip, spending the time in the most productive way as the customer wishes.
- Arrival and interchange. Preparing to alight the train find the way to interchange or finish
- The Platform, exiting the train
- Information in case of disruption during the travel
- Interchange: going to the next platform for a connecting mode of transport
- Onward travel. Navigating to connect with a different transport mode.
- Destination
- Return Journey

- Post-travel.
  - Staying connected: Contact with the railway both immediate and long-term relationship.

In many countries, the management of the rail infrastructure, including the management and operation of the stations, is separate from the operation of the trains themselves (Railway Undertaking), so that the customer experience is also separate.

**It is necessary to ensure continuity and co-ordination of the customer experience through co-operation of the Infrastructure Manager and Railway Undertaking**



Customer journey. Source: SENER

Every customer journey progresses through a generally similar series of stages, as shown in the table below:

Journey Stage	Customer Decision	Information Required	Possible provisions
Journey Planning	Is there a suitable train?	When? Where? Journey Time? Interchanges? Fares and Seats? Accessible directly or with assistance?	Journey planners via websites/mobile application: Published route maps and timetables at stations Customer hot lines Assistance for PRM and disabled people service
	How can I get to the station?	Bus Taxi Park and ride Road conditions Assistance	Journey planners via website/mobile application: Bus routes and timetables by bus companies Customer hot line; call-centre Road conditions from the radio/mobile application Real time information Assistance for PRM and disabled people service
	When is the next train?	Real-time departure times	Real-time train service information via website/mobile application:

Journey Stage	Customer Decision	Information Required	Possible provisions
			Real-time train service information via WAP site for PDA/mobile phone Customer hot lines
In-route to station	Where is the station?	Which road to take	Road signs for pedestrians (very limited park and ride scheme in Hong Kong)
	Will I catch my train?	Train running information Next available service	Real-time train service information via WAP site for PDA/mobile phone
At Origin Station	Where to get a ticket? How do I change/cancel my ticket? I have a question/complaint Is the train on time? Which platform? Is it my train?	Station topology Station facilities Train destination Train running information	Station map and signage Customer Information Office Passenger Information System (PIS) at station Advice from staff Help points Train destination indicators
On train	Should I get ready to get off?	Train position Next station	On train route diagrams PIS on train PA announcements Platform signage
On interchange station	How do I catch the connection train?	Which platform to go? When is the next train?	Station signage PIS at station Advice from staff Help points
At Destination station	How do I get from here to my final destination?	Directions within station and the vicinity Bus and taxi connections Traffic conditions	Station internal and external signage Street neighbour map and pamphlet Advice from staff

Passenger Information Needs. Source: SENER

The document focuses on Railway transport phase. The customer's needs must be reflected in the different elements with which customer interacts during the whole trip:

➤ Sales channels:

- Online ticket shop
- Mobile application
- Online season tickets
- One to one engagement
- Omnichannel ticket distribution
- Etc.

➤ Station elements

- Wayfinding
- Different shops & Restaurants
- Platforms

- Parking store and other services
- Passenger information on station
- New technologies at station

➤ Rolling Stock

- Seat (accessible and comfortable)
- On-board services (restaurants, catering, etc.)
- On-board entertainment
- Passenger information on-board
- Wi-Fi
- New technologies on board

➤ Post- sale

- Loyalties programs
- Customer feedback
- Key performance indicators

## 4 MAIN PRINCIPLES

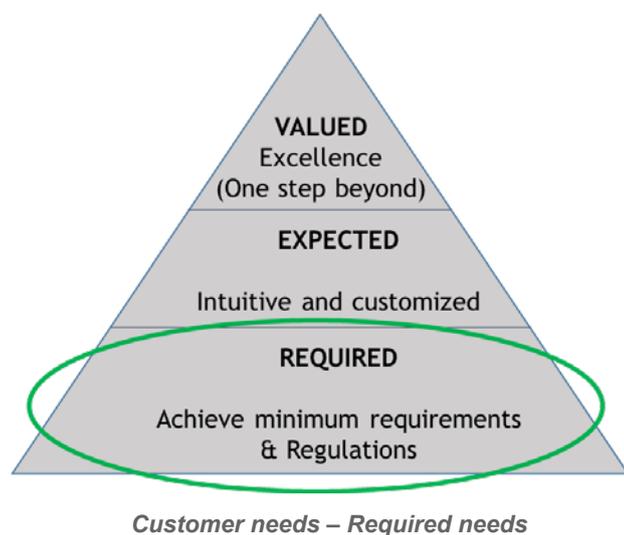
### 4.1 Introduction

Railway company needs to adopt a culture of service excellence to respond to the increasing and ever-changing needs and expectations of customers, while successfully providing them with a positive experience. They have to be the very heart of all the company activities.

This requires **the development of a customer-centric culture** and the provision of high-quality services all along the customer's trip, from the point of origin to the destination.

**The railway community have an important role in reaching the goal of making cities and human developments**

This chapter describes the basic strategic aspects that are assumed to be there, as a part of the whole journey, that are a “must” for customers, therefore, they have to be required for planning, implementation and operation.



This chapter will focus on the most important aspects and will show different ways of dealing with them depending on the different framework and network conditions:

- Customer Oriented Policy
- Accessibility

- Intermodality
- Sustainability
- Safety & security feeling
- Impact of Covid-19/Pandemics on customer experience

The “Forever Open” concept was originally generated for roads, has been extended also to other transport modes. The **“Forever Open Railway”** concept includes, in particular, the following features:

- Customer-oriented, adaptable control of the transportation process based on the use of information technologies, allowing to combine implementation of individual requirements of customers in terms of routes, transportation speed, etc. as well as ensuring high utilisation of infrastructure and rigid schedules.
- High level of automation on the basis of:
  - Sophisticated communication technologies between clients, sales departments and traffic control, staff and infrastructure services.
  - the use of “smart trains”, as well as application of “unmanned” automated systems, including self-propelled rolling stock operating in standalone mode. It is to be noted that some railway companies considered automated systems not so “customer friendly”.
- Ensuring a non-discriminatory access
- Fault tolerance and interoperability of traffic control in real time mode
- Organised, reliable, qualified staff, open for interaction with customers and partners, for the perception of innovation and capable of ensuring efficient operation of the railway system
- Elimination of language barriers as one of the basic requirements towards further improvement of traffic control system
- Development of techniques to improve communication skills between train employees, traffic operating departments and dispatch staff.

Likewise, the following statements are proposed as a part of the communication plan:

- Ensure customer loyalty and increase the frequency of use
- To provide the system with an excellent image, both in terms of the perception of the services and the personnel, so that an increase in travellers is achieved
- To contribute to the growth of modal share in public transport through specifically designed programmes and initiatives and services that meet customer needs
- Protecting and improving the integration and intermodality among different transport services
- Ensure full accessibility to the service and information by people with disabilities and with reduced mobility
- Reinforce the role of the transport network as an actor in the life of citizens, creating events and partnerships with key organizations, both public and private
- Convey the Company policies related to universal accessibility, inclusiveness, sustainability, environmental friendliness, to share with customers this way of understanding business

### 4.2 Customer Oriented Policy

The key to success in today's highly competitive marketplace is to adopt a customer-oriented business strategy.

Simply speaking, customer orientation puts the customer at the beginning, at the centre and the end of every transaction. It shifts the company's focus from the rail service to the customer.

This approach also means the organization must have a deep understanding of the customer's needs and expectations.

From delivery driver to CEO, it is important that every employee in the organization is completely committed to the strategy. Everyone has an important part to play when it comes to customer service and retention.

Organizations such as Ritz-Carlton, Zappos, Southwest Airlines and Disney are further examples of companies that benefit from the customer-oriented

approach. A well-executed customer orientation strategy has the potential to result in more sales, improved profitability and sustained competitive advantage.



*Customer Oriented Policy*

The development of the commercial and customer service skills of railway personnel is essential for attracting customers to use rail services.

- Create a Loyalty Plan proposition. Decide at board level the sum total of benefits which you as a vendor promise to deliver to the customer, in return for the customer's loyalty.
- Recruit customer-friendly people. Hire for attitude, train for skills is the mantra here. Empathy, good communication and problem-solving abilities are the qualities to look for.
- Treat the employees well. How employees feel at work has a much bigger impact on how they deal with customers than any training will.
- Train your team. Frontline as well as back-office staff must gain a full understanding of the customer, services they support. Coaching must also focus on the soft skills, communication and teamwork.
- Walk the talk. Leaders must fully embrace the customer service orientation process and take to the frontline from time to time. Companies that value a culture of servant leadership will excel in this area.

- Implement a CORE program. CORE is an acronym for: Customer Orientation, Referencing & Engagement. In this program cross-functional teams focus on the needs and behaviours of customers as well as internal procedures. An orientation is built around customer needs and the customer profile forms a reference point for the business.
- Listen to the Voice of the Customer. This can be achieved by conducting a formal customer satisfaction survey or by gathering and recording customer comments.
- Define Company standards. By analysing customer feedback and create a Balanced Scorecard to measure the performance and rectify any shortcomings.
- Empower the staff. Make sure the team has the authority to resolve most customer complaints without further escalation to a supervisor.
- Co-ordinate functions. Avoid silo mentality by encouraging different departments and functions to work closely together.
- Identify measures for customer retention and acquisition through Customer Experience improvement
- Establish strategies for Customer Experience Monitoring and Management

Another important aspect for an excellent customer care is to develop a customer care culture, which influence our staff in the delivery of good customer service, in order to provide a continuity to the existing company culture, values, etc.

Nevertheless, it is necessary to develop a training plan, which contemplates both the procedures, skills, attitudes and desired behaviours, all this from the theoretical and practical point of view, beyond the legal requirements.

It is recommended to start by the senior managers leading from the front. All line managers are expected to spend a proportion of their time visibly active within the operational part of the business, aiming to lead by example in providing good quality customer service.



By their actions, they address what is considered to be appropriate behaviours and techniques for delivering good quality customer service.

In addition, it is very positive to introduce a formal recognition system in place to support the development of an appropriate customer care culture within the company.

In this sense, it may be of interest to implement a quality system governed by constant improvement, monitored and even certified by an independent specialized entity. In this sense, periodic audits could be carried out in which the procedures, processes and results obtained are examined.

## 4.3 Sustainability

### 4.3.1 Introduction

Sustainability is a Customer Experience Issue

Sustainable transport is defined as “satisfying current transport and mobility needs without compromising the ability of future generations to meet these needs” (United Nations World Commission on Environment and Development (1987). *Our Common Future*, Oxford University Press, Oxford, England.

Railway has a central role to play in decarbonising transport. While representing 8% of global passenger and freight transport activity (in passenger km/tonne km), railway represents only 2% of the transport sector emissions.

Sustainable development is considered one of the main global challenges facing the world today and is an important aspect of transport development. UIC

and its members work continuously to demonstrate how rail can be part of the solution to the challenge of sustainable development.

Customers prefer sustainable and greener transport in the rail transport market according to The Business Research Company’s research report on the rail industry outlook 2021.

In this sense, the classic style of travelling is now having something of a revival, as travellers look for more environmentally friendly ways to see the world.

Sustainable development suggests that human societies must live and meet their needs without compromising the ability of future generations to meet their own needs. It implicates the development of three dimensions: environmental, economic, and social dimension. The social dimension implies creating equality for all, including persons with disabilities. This equality can be reached with accessible products and services.

A sustainable transport system should be affordable, efficient and support a competitive economy in the economic dimension; it should provide equitable and safe access for the public in the social dimension; and it should limit emissions, waste, noise and the land use in the environmental dimension.

The contribution of railways to sustainability is to provide efficient services, offering a real alternative to less sustainable transport modes. Rail is a vital part of the solution to the global challenge of climate change.



The European Railway sector provides an attractive and resource-efficient solution for sustainable mobility and transport and a significant contribution to reductions in greenhouse gas (GHG) emissions and dependency on oil.

- Developing the commercial and customer service skills of railway personnel is essential for attracting customers to use rail services.
- Continuing improvement, innovation and flexibility, combined with a long-term commitment to building on the skills of all those working in the sector has helped ensure a high-quality railway community, motivated by professional excellence.

A “circular economy” seeks to move away from ‘take-make-dispose’ and towards a system of designing out waste, keeping products and materials in use as long as possible, reusing, recycling and repurposing materials at the end of their life rather than throwing them away, and reducing the over-extraction of finite natural resources.

Sustainability is a Responsibility

**4.3.2 Sustainable stations**

The growing urgency around climate change and energy consumption has prompted a significant response from the rail industry over the past decade. It has responded with major initiatives around the globe. For example, in Germany, national rail company Deutsche Bahn has replaced tens of thousands of incandescent lights with LEDs. In the United Kingdom, rail managers have upgraded existing lines, like the HS1, to run entirely on renewable energy.

Railway companies should consider sustainability when building and managing railway stations. Solar panels can produce energy for lights, heaters, lifts and escalators. When building new stations, careful consideration should be always given to the choice of materials.



Kerpen-Horrem Station (Germany).  
Source: [DeutscheBahn.Com](https://www.deutschebahn.com)

Rail operators can meet the global goals of decarbonisation, reducing waste and supporting local plant and animal life with different kind of actions.

The three pillars of a sustainable building are:

- Inertia
- Ventilation
- Limited consumption

Sustainable stations include sustainable features, such as:

- Photovoltaic systems
- Geothermal system which heats and cools the building while solar thermal systems produce hot water
- Green roofs allow the building to harvest rainwater which is then used to service toilet facilities.
- To overcome the lack of light, many stations install glass cladding or roofs in order to bring light into the building and use the sunlight to produce heat.
- Green roofscape being aesthetically pleasing, also captures and filters rainwater
- Skylights allowing daylight into the building
- New lighting model uses both natural light and energy-saving LED light technologies
- Wildflower zones
- Electric vehicle charge points may be appearing at railway stations

Stations need to reflect a human-centric shift that focuses on the well-being of passengers, the public and those of the surrounding community. This includes embracing a range of requirements with an inclusive station, incorporating resting places, moving walkways and intuitive wayfinding.

In a world of growing customization and convenience, stations need to contribute customers to make the best use of their time. Passengers expect customized journeys with efficient connections and digital technology to allow them to flow through gateless stations.

Incorporating natural landscaping in public areas and using natural light wherever possible is of the utmost importance to provide healthy, restorative spaces while contributing to sustainability goals, improving customer experience.

Stations have to play a larger part in supporting customers' productivity. Station spaces may include co-working and study spaces for travellers and students, drop-in clinics, pets care facilities, community and event spaces, etc.

And all this means that sustainability in stations will enhance customer experience.

#### 4.3.3 Rolling Stock

Customers Prefer Sustainable and Greener Transport In The Rail Transport Market According to The Business Research Company's research report on the rail industry outlook 2021.

Depending on the propulsion system, several kinds of trains maybe identified: diesel, electric, hybrid, hydrogen, etc.

Diesel trains are fast becoming a thing of the past, with a large-scale programme of electrification of main lines continuing and the use of bi-mode vehicles common.

In many countries, railways have already been declared as net zero in terms of greenhouse gas emissions and are running entirely on renewable energy.

- There are no diesel only trains running on electrified lines.
- Batteries charged on renewable energy and green hydrogen trains are well developed and are running passenger services in several countries.
- Non-diesel work trains and freight trains are also being developed.

Electric and hydrogen traction power are sustainable kinds of energy. Electric is well known, and hydrogen is relatively recent.

### Electricity

- Catenary
  - Mature, well proven and developed reliable technology
  - All manufactures can supply this technology
  - This technology provides better performance: higher capacity, speeds, acceleration rates
  - Energy regeneration
- Third Rail
  - Mainly used in metros and rapid transit systems, with segregated right of way
  - Has been falling into disuse due to its serious drawbacks
  - Presents risk of electrocution of humans and other animals, need to interrupt it at level crossings and track equipment.
  - Not possible to use in electrification with alternating current and greater sensitivity to atmospheric agents
- Energy storage on-board/ Batteries
  - Can operate services on non-electrified or partially electrified tracks, replacing diesel-powered vehicles
  - Charge at stations and depots. Autonomy of about one hundred and fifty kilometres on non-electrified roads
  - Limited manufactures of this technology for Regional Trains. Not yet fully mature. Under development

### Hydrogen

It refers to passenger train powered by a hydrogen fuel cell, which produces electrical power for traction. This zero-emission train emits low levels of noise, with exhaust being only steam and condensed water.



*Train propelled by Hydrogen cells. Source: Alstom*

Fuel cell trains will play a key role in the transition to a zero-emission economy. Hydrogen powered trains are poised to disrupt the rail industry as a cost-effective, high performing, zero-emission alternative to diesel. Advantages of Zero-Emission Rail Nearly any train route that is served by diesel trains can be served by a hyd rail train.

- Based on clean energy (green hydrogen).
- Efficiency is enhanced storing the energy generated by the fuel cells when not needed for traction, or that generated during the electric braking phase, providing backup energy during the acceleration phases.
- Performance equivalent to diesel units: maximum speed 140-160 km/h and same acceleration and braking rates
- Range of 1,000 kilometres. Current limited manufactures of this technology for Regional Trains
- In 2018, the Coradia iLint (Alstom) enters passenger service in Lower Saxony, Germany. Most key rolling stock suppliers are currently developing their own trains hydrogen propelled.

Train travel cannot become truly sustainable, without considering the whole customers' journeys and rolling stock is a key part.

Both logistics and passenger transport customers prefer the climate-friendly alternative, and the shift from road and air transport to rail is happening quickly.

## 4.4 Intermodality

### 4.4.1 Intermodality Challenges

Train travel should be easy, convenient, flexible, and fully integrated with other modes of transport, not only to build the multimodal transport system needed for developing a smart city, but also because operators need to look for new ways to attract current passengers by means of reducing travel time even in the case of using different transport systems.

Intermodality is based on the combination and integration of different means of travel to reach a destination. It is a further step in sustainable mobility, an advance that seeks to reduce people's mobility footprint and encourage the use of public transport.

Intermodal transport has the potential to contribute to a cleaner, smarter and more sustainable transport, shifting the mobility of passengers and goods from the road, making the optimal use of infrastructure and reducing costs.

Transport policy is closely aligned with economic development policies, given that an efficient, competitive and sustainable transport system is a prerequisite for the movement of people, and ultimately the efficient and competitive functioning of the economy.

Making interchanges as seamless as possible

Intermodality has its challenges, but it is also an opportunity to find alternative and accessible solutions within the PT network, e. g. buses, trams and commuter rail systems can act as alternative solutions to inaccessible metros in some cities.

The solution requires developing integrated transport, linking vehicles and infrastructure, and creating an interface between users and multimodal services.

Moreover, it requires promoting strategies for people and organizations to embrace the concept.

Multimodal passenger transport often centres on railway, to which low-speed options (such as bus, tram, or bicycle) connect at the beginning or end of the journey, called first or last mile.

Trains offer quick transit into a certain area, where passengers can choose a way to complete the trip. Most people use transport modes intermodally, for example, when taking the road or railway to an airport or inter-regional railway station. Air plus rail connexions is also important to foster an efficient European mobility network.



**Helensvale Rail Station Bus Interchange - Pensar.**  
Source: *The Infrastructure People*. [pensar.com.au](https://pensar.com.au)

Intermodal passenger transport provides more options to the traveller, is user-friendly, and adds to the overall efficiency of the transport system.

Many transport stakeholders need to cooperate closely for seamless multimodal travel, which is not evident in a system of increasing competition.

Some other intermodal examples are as follows:

- Many cities link their railway and bus network. This enables commuters to get to places often considered too far for walking and not serviced directly by rail (Train-Bus integration for better service delivery UITP).

- Although the conventional use of cars is as a single-mode form of transport, they are also present in a variety of mixed-mode scenarios, such as park-and ride and then access to a railway system.
- Bicycles are used all around the world to get to and from train and other public transport stations. Carrying bicycles on-board public transport or park then at stations.

**4.4.2 Intermodal Proposals**

Research has identified tools and support mechanisms to promote multimodal solutions:

- Multimodal infrastructure and vehicle equipment: effective multimodal transport requires linking infrastructures for transferring and operating vehicles on different modes.
- Interchanges in stations, integrated different transport modes (regional, metro, tram, bicycle, taxi, etc.) providing bicycle parking, park and ride parking, etc., as a solution for the last mile.
- Smart multimodal services that support users to prepare for trips involving different transport modes, and to adjust journeys based on real-time information.
- Introducing new routes serving the railway station and extending existing services to a new station contributed to an increase in the number of bus passenger journeys to and from the railway station.
- To increase the quality of the interchanges, real time information system could be installed
- Apply accessibility-based analysis, which recognizes the important roles that walking, cycling and public transportation (bus, light rail, train, etc.) can play in an efficient and equitable transport system, and contribute to mitigating negative environmental impacts and managing seasonal peaks.
- Suitable wayfinding. Passengers should have access to useful information and details of their routes in stations. These elements constitute the

information chain that includes every means of communication in the station: wayfinding, timetable screens, sound broadcasting system, information kiosk, maps, internet, mobile phone, etc.

- Wayfinding is a core service offered to passengers. It reflects a station or network’s image and identity. This is why wayfinding should always be consistent and rigorous in its application.
- One of the most important international references to Wayfinding definition is the UIC IRS 10181 *User Information in Railway Stations*. This leaflet describes the principles of wayfinding systems and provides instructions on how to operationalize such systems in order to inform and direct passengers.



*Pictogram indicating an exit (Source: UIC IRS 10181)*

- Timetable coordination between different public transport

**4.4.3 Improving Intermodality**

Improving intermodality is increasingly on the agenda of authorities across different countries, for reasons including customer demand, environmental factors and mobile technology.

The different intermodal measures such as travel planners, integrated tickets, could be applied if operators, public sector planners, and decision makers are to take them up.

It is desirable to have one-stop shop for intermodal travel planning. This should be a single-entry point that provides a minimum level of data, including timetables, travel times, basic fare/charge information and information about how to buy tickets in different languages



***Bike Rental Rack***

Most long-distance transport operators in Europe (in cooperation with urban and regional transport authorities and operators) should effectively market and offer simple combined long distance and urban travel tickets.

It is also important to have accepted standards for designing interchanges available, and local transport services such as shared taxis, car-sharing or bike rental should be joined up (at least in terms of ticket sales and information) with public transport.

Basic tariff and timetable information should obligatorily be made available by all passenger transport operators to authorities responsible for passenger transport information provision. This will enable better choice and efficiency in intermodal planning and ticket purchase because such information is not consistently available for long distance door-to-door trips and is currently a major barrier to multi/intermodal journey planning.

Additional, road operators should automatically provide or direct travellers to information comparing road and public transport options, including information on expected delays during planned events (such as roadworks and trade fairs). Finally, adjusting a number of national tax systems can incentivize sustainable travel behaviour.

#### 4.4.4 Mobility as a Service (MaaS)

**Mobility as a Service (MaaS)** represents an innovative way of thinking about transport.

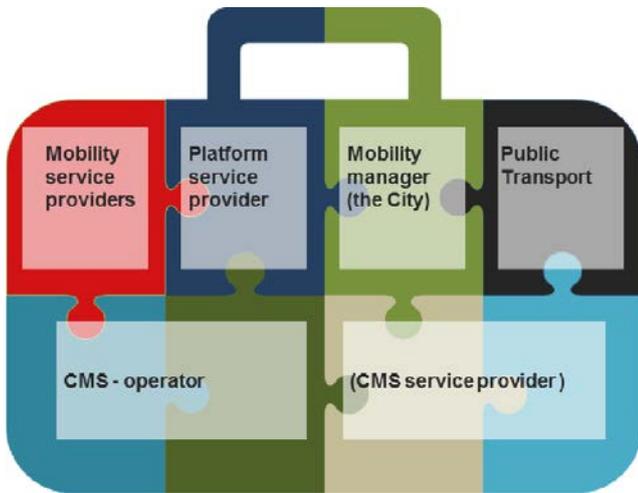
It has the potential to be the most significant innovation in transport since the advent of the automobile. It will allow to the public transport system to be competitive in flexibility and rational use of the system.

MaaS is the integration of, and access to, different transport services in one single digital mobility offer with active mobility and an efficient public transport system as its basis.

This tailor-made service suggests the most suitable solutions based on the user's travel needs. MaaS is available anytime and offers integrated planning, booking and payment, as well as route information to provide easy mobility and enable life without owning a car.

In a move away from dependence on privately owned cars or multiple transport apps, MaaS combines mobility services from public transport, taxis, car rental and car/bicycle sharing under a single platform that's accessible from a smart phone. Not only will a MaaS platform plan passengers' journey, but it will also allow customer to buy tickets from a range of service providers.

Rather than having to locate, book and pay for each mode of transportation separately, MaaS platforms let users plan and book door-to-door trips using a single app. By answering the question of how best to get individual users where they're going based on real-time conditions throughout the network, taking account of all the possible options and each user's own preferences (for example, time and convenience vs. cost), and facilitating seamless mobile payment, MaaS starts to move us toward a more user-centered mobility paradigm.



MAAS: describing the framework.  
Source: [Semanticscholar.org](http://Semanticscholar.org)

The most sophisticated service providers use the data they collect on consumer movement across the transportation network to understand travel patterns, optimize the network, and calibrate demand and supply.

RaaS, which stands for “Renfe as a Service” in analogy to the MaaS terminology for mobility, is Renfe’s (Spanish public railway undertaking) most recent innovation. It consists of a digital mobility platform that will revolutionise multimodal door-to-door journey planning. Initially, it will allow the planning and management of any journey by any mode of transport and in any mode in Spanish cities.

The initiative aims to integrate into a single platform a wide variety of mobility services available in the country in order to simplify the planning and purchasing process of any journey.

**4.4.5 Multimodal Evaluation**

The impact of transfer time on the travelling time is of the utmost importance.

- It is important to reduce the transfer time because it is an important penalty to use intermodal services. This transfer time depends on the age of the customer, carrying luggage, experienced, work or leisure, etc. An ideal transfer time is seen as 5 minutes.

- The frequency of connecting with the other mode has a major influence related the passenger experience.
- If the traveller has no guarantee of connection, the passenger experience decreased drastically.

Therefore, the railway companies should focus on actual transfer and also customer experience and the passengers’ expectation and desire.

**Case Study: Project Syn+Air - Synergies between transport modes and air transportation (<http://syn-air.eu/>)**



Collaboration is a concept that carries heavy weight when discussing multimodal trips of passengers. For Transport Service Providers (TSPs), it is a method to facilitate a seamless door-to-door (D2D) journey, which is a basic goal set out by the EU in the 2011 Transport White Paper.

However, collaboration is a very generic concept that is hard to define. For SYN+AIR, collaboration among modes of transport relates to data sharing among TSPs enabling passengers to enjoy a seamless door-to-door travel experience.

The main objective of SYN+AIR is to develop a Smart Contracts Framework, to tackle the aforementioned challenges.

Smart Contracts are agreements among TSPs that define data sharing criteria (scope, parties’ obligations, contract’s time span and fulfilment criteria).

This project will achieve this by generating common goals for Transport Service Providers (TSPs) that will justify data sharing, facilitating the user to execute a seamless D2D journey.

Customer journeys will be generated for the entire multimodal chain and SYN+AIR will analyse how those journeys can be facilitated through improved planning and operations activities (following the ATFCM phases: strategic, pre-tactical, tactical) powered by data sharing.



**SYN+AIR Project Brochure Pack**

For the analysis, air travelling is placed in the epicentre; all multimodal chains consider the usage of air travelling.

Furthermore, an extensive analysis of travel companions will be performed in order to enrich the Data Flow Model defined in the Smart Contracts Framework to improve the provision of information to the end user: the traveler.

Consequently, a “Smart Contracts Framework” will be generated based on a Business Process Model. Data generated by Travel Companion apps will also be analysed in the context of enriching the Smart Contracts Framework allowing TSPs to improve their activities and execute informed decisions.

Finally, SYN+AIR will determine what additional information can be provided, through Travel Companions, to assist the traveler at his multi-modal journey.

#### 4.4.6 Parking facilities

The Code of Practice sets a 5% minimum provision of accessible (Blue Badge) parking spaces for customers.

There is no single correct size for a parking space. The decision is a trade-off between:

- Efficiency (accommodating as many users as possible), particularly important with growing demand and overflowing car parks
- Customer-friendliness (the ease of driving into a space and exiting the car, or vice versa).

Park and Ride facilities can successfully encourage a mode shift away from the single occupancy vehicle if properly integrated into a comprehensive transport network.

Park and ride facilities are parking lots with public transport connections that allow commuters and other people heading to city centres to leave their vehicles and transfer to a bus, rail system (rapid transit, light rail, or commuter rail), or carpool for the remainder of the journey. The vehicle is left in the parking lot during the day and retrieved when the owner returns.

Park and Ride as a component of the railway planning strategy is a mean of increasing the accessibility of the transport network to a population that might not otherwise access the network through modes such as walking or cycling or bus transfer.

Park and Ride can strengthen the public transport system and support a more robust public transport network if implemented without compromising access for other modes of travel.

The key facilities and advantages of the Rail Park and Ride sites for users are:

- Cycle parking
- Pedestrian access to public transport services
- Operational requirements for public transport vehicles (taxis, buses, etc.) and ticketing systems; and
- Car passenger drop-off and pick-up facilities. Kiss & Rides zones



*Spital station Park and Ride. Source: [merseytravel.gov.uk](http://merseytravel.gov.uk)*

Kiss and Ride Zones should be designed at stations for quick entry and exit, these zones minimise congestion and risk when used properly. These zones operate under the same conditions as no parking zones, which means you may stop to drop off or pick up the person for a maximum of 2 minutes while you remain in or within 3 metres of your vehicle.

Park and rides can additionally offer, those services are expected needs of the customers:

- Ancillary services during the daytime, such as car servicing or washing
- Ancillary facilities such as mail-order parcel lockers or grocery collection on their journey home
- Reserved parking spaces
- Premium parking or valet-parking
- Energy supply plugs

The main policies and principles of Rail based Park and Ride facilities should include:

- The continuous improvement of rail accessibility and complementary parking controls in the area
- Improve rail accessibility without increasing road congestion
- Rail users only should use Park and Ride spaces, and may have to pay to use them
- Complementary parking controls in the areas around stations may be required
- Rail fares generally should not be increased to pay for Park and Ride

- Those who benefit from Park and Ride should contribute to the cost of it; and
- Rail service must be able to serve the demand generated by Park and Ride provision



*Park and Ride at Santa Justa station (Seville – Spain)*

Park and Ride will only be provided where it is cost effective and can provide efficient access to the public transport network.

However, it is important to recognise that car parks may involve all modes of travel and additional specialist uses. The interaction of these modes and users is an important factor in station car park planning and design. Cycle and motorcycle access shall be considered:

- Providing safe routes for pedestrians and cyclists at locations where the car park represents their access to the station
- Providing safe routes for pedestrians travelling to and from their parked cars
- Providing enough space for pick-up and drop-off so that it does not obstruct traffic flow.

The coherence among parking policy, public transport infrastructure and good park-and-ride facilities are essential to encourage the use of alternative transport modes. Intermodal measures often entail public-private cooperation.

Different options have been identified for park and ride fares:

- Some to Park-&-Rides are free to park
- Parking fees apply at some Park-n-Rides

Different structures are possible to pay the parking fares:

- Pay at station. Users can pay at station in the identified canopies.
- Pay on foot. 'Pay on foot' involves an entry ticket being validated for use as the exit ticket once the stay is paid for at a central pay-station. The major advantage for users, and why it is popular in shopping centre car parks, is that there is no need to pre-determine length of stay. 'Pay on foot' has traditionally been barrier-controlled, with tickets issued on entry and inserted on exit.
- Pay by mobile app. Payment by mobile app is essentially modern technology applied to the 'pay on foot' model. Users enter a parking location code into the app when they arrive and press a 'stop' button when they leave. Users register their vehicle and payment details with the third-party provider and are billed monthly
- Other services can be offered:
  - Reserved parking. Some parking facilities offer a monthly fee for reserved parking for arrival time between for example 5 a.m. and 10 a.m. labour days. Consider a reduced rate after the morning peak and/or at weekends. This is consistent with the generally cheaper pricing of rail journeys at these off-peak times and helps the parking product to support the fare strategy.
  - A discounted season ticket rate for environmentally friendly vehicles
  - Parking card, with discount on the parking fees.
  - Electric car charging. Charge and Go points for electric cars are available at station. Usually this service is free, so just plug in the vehicle in at one of the bays to charge while the user's vehicle is parked.



## 4.5 Safety & Security feeling

Passengers not only expect trains to be on time and to quickly reach their destination, but also to be cool, clean, comfortable, and of course safe and secure.

For clients, nothing should disturb their daily trips, and they expect both safety and security, and the rail company taking care of them.

### 4.5.1 Safety

Safety is an internal part of the railway system and has always been the first obligation, the first responsibility, the first goal of the railways and it can be said that rail is the safest or one of the safest modes of transport.

Safety is very normative. Each national Rail Safety Authority is responsible for providing the necessary safety certificates to operators.

The 2018 ERA Safety Report shows that 97% of safety-related incidents are due to suicide, trespassing or level crossings.

Focus on Safety must be performed by reducing the risks to passengers, staff and citizens.

UIC records descriptions of significant railway accidents in its Safety Database. All UIC members are invited to participate on a voluntary basis.

The UIC Safety Database contains information on more than 40,000 accidents in 33 countries <https://safetydb.uic.org>.

### 4.5.2 Security feeling

The customer shall feel secure and comfortable during the whole journey experience, both in stations and trains, as well as in the ways or routes until reaching the stations. Because of that, it is very important to

generate the feeling to the users that everything is under control with a safe and pleasant environmental.

The main challenges of the security policy are:

- Acceptability by the customers
- Level of security v/s feeling of security
- Balance between personal freedom and the need for collective security
- Cost benefit analysis

The achievement and the effect of the security measures depends on particular country-specific circumstances (state regulations, applicable laws, environment, and security culture). Especially the legal situation varies widely from country to country. Also, the implementation of security measures depends on the results of the risk assessment of each railway company, which systematically analysis potential threats to a specific target for different assets.

Reduce customer anxiety across the whole journey

#### 4.5.2.1 Technology oriented security solutions

Mobile applications may be used by both customers and staff on trains. It's a discreet mode, without attracting the attention of aggressors and a fast way to call for help. They require installation of a specific software on the phone (or tablet).

Some railway companies have introduced for passengers a special emergency number they can call in case of a security problem on railway premises.

Reinforcement of security culture is part of every company security strategy. The main idea is to encourage specific behaviours to be adopted on a daily basis.

There are five main behaviour related themes concerning staff awareness that tend to appear across all European railway company security strategies:

- Alerting the police if necessary
- Respecting procedures, which includes staff identification with the use of badges, keeping accesses to restricted areas closed, and following

operational security procedures (left luggage, station evacuation procedures, etc.)

- Remaining vigilant and alert: company security strategies call on staff to follow the principle of "see something, say something." Railway staff is in the position to be able to spot anything unusual from a security point of view and report it
- IT security: respecting rules on the use of equipment provided by the company
- Cybersecurity and personal data protection are already of particular importance today.
- Duty to respect confidentiality is an important notion that can help staff adopt the correct attitude when someone with malign intent tries to entice them into revealing information.

#### 4.5.2.2 Mobile applications with opportunity to call for emergency assistance in case of illegal actions and incidents

Mobile applications may be used by both customers and staff on trains. It's a discreet mode, without attracting the attention of aggressors and a fast way to call for help. They require installation of a specific software on the phone (or tablet).

Some potential kinds of alert that could be triggered via an application are reporting abandoned luggage inside trains, asking for medical assistance, reporting unusual and suspicious behaviour by individuals or situations (e. g. drone flying over the tracks), reporting crimes or antisocial behaviours by individuals (e. g. violence, theft, sexual harassment, graffiti vandalism), reporting damages or malfunctioning of railway equipment (e. g. damaged trash bins, lack of lighting in an underpass).



Some railway operators have developed applications for users to alert of incidences on the line or of non-civic behaviour. In this sense, FGC (Catalonian Railways) is a reference, reporting an average of 17 alerts/day.

An action plan needs to be defined by the operator in case of incoming information about emergency situations. Moreover, communication campaigns on the existence of such a tool would need to be organised.

For now, they are mainly designed for staff with the objective to increase their feeling of confidence and feeling of security, to potentially reduced response times and to lead to better event handling (also through positioning data about the user/caller).

#### 4.5.2.3 Special alert number

Some railway companies have introduced for passengers a special emergency number they can call in case of a security problem on railway premises.

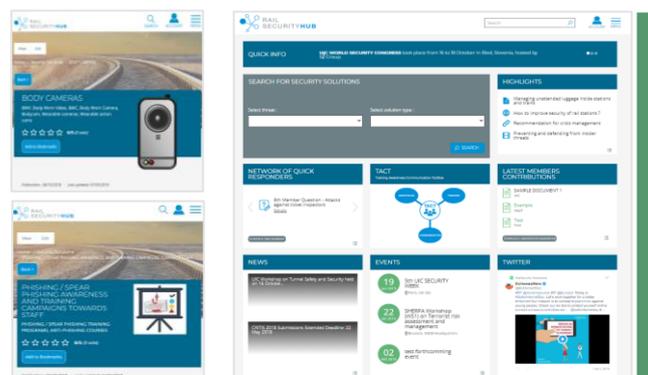


*Example of a dedicated, rail operator emergency number*

In most of the countries the hotline is just the local police emergency number or the national emergency number, for example in the USA, there is a unique emergency number (911).

For international emergencies we can mention the European Emergency number 112.

#### 4.5.2.4 UIC Rail Security Hub



*UIC Rail Security Hub*

More solutions are described in the UIC Rail security hub which is a web platform where registered users can:

- Easily FIND, ACCESS and SHARE SOLUTIONS to railway security issues via our comprehensive catalogue
- INTERACT with other rail professionals through comments, ratings and information sharing
- STAY INFORMED with permanent updates by UIC Security Division
- REGISTRATION is open to UIC members at <https://railsecurityhub.org/>

#### 4.5.3 Crime Prevention Through Environmental Design

**Crime prevention through environmental design (CPTED)** is an agenda for manipulating the built environment to create safer neighbourhoods. This concept can be applied to the railway system mainly stations, although “crime on public transport is relatively rare”.

CPTED is now a relatively common approach used to reduce crime and the fear of crime in and around railway stations. Patronage levels could be more than 10% higher if customers felt more secure when traveling and waiting at railway stations.

The seven main concepts to be considered are:

- Territoriality
- Surveillance
- Access control
- Image/maintenance
- Activity support
- Target hardening
- Geographical juxtaposition (the surrounding environment).

Applying all these strategies is key when trying to prevent crime. Some derived recommendations are as follows:

- Entry points should be designed so as to maximise surveillance opportunities
- Clear sightlines should be maintained between the development and the public domain, and around entries.
- Design should consider and seek to minimise potential concealment or entrapment areas.
- Blind bends and corners should be avoided in building corridors, walkways whenever possible. Where they cannot be avoided, surveillance can be enhanced through the use of vandal resistant mirrors, windows (where applicable) and lighting.
- There should be appropriate wayfinding and identification signage
- Landscaping should be used to enhance the appearance of the development and assist in reducing opportunities for vandalism
- A maintenance plan should be put in place to ensure ongoing

#### 4.5.4 Cyber-Security

Cyber-security is a set of processes and practices designed to safeguard endpoints, networks, applications and data from advanced threats and vulnerabilities.

Cyber-security solutions and services help organisations avert security attacks, data breaches and identity thefts, thereby enabling them to drive down business costs and enhance risk management capabilities.



Railway cyber-security refers to the body of technologies, processes and practices designed to protect networks, devices, programmes and data transferred within or outside a vehicle. Railway applications such as train tracking and monitoring, railway signalling systems and on-board control systems are prone to attacks, damages or unauthorised access from external entities. Railway cyber-security also refers to the security of railway by two types, namely, infrastructural and on-board.

4SECURail – a two-year Shift2Rail initiative aimed at delivering a co-designed process and tools for information sharing and cooperation for rail cyber-security at a European level and to support better interoperability of signalling systems for railway security, safety and efficiency as announced that it has achieved its mid-term objectives for the design of a Computer Security Incident Response Team (CSIRT) for joint EU-Rail cyber-security, and a Formal Methods Demonstrator for improved railway signalling systems.

## 4.6 Accessibility

### 4.6.1 Introduction

Historically, the railways were often not designed with accessibility in mind. Even if that is no longer the case, the challenges are two-fold:

- On the one hand, creating fully accessible facilities implies **significant costs**,
- On the other hand, the existing infrastructures and rolling stocks are not in compliance with the existing requirements.

Now accessibility should not be seen as special requirement but part of the general design, thinking accessible from the planning and design phase.

One of seven people worldwide presents a kind of disability or impairment. However, accessibility is not exclusively relevant for people with disabilities, but for everybody.

All travellers need accessible mobility options.

**Being mobile enables people**

Physical Aspects	Mental & Cognitive Aspects
<ul style="list-style-type: none"> <li>• Visual impairments</li> <li>• Hearing impairments</li> <li>• Mobility impairments</li> <li>• High-Risk med. patients</li> <li>• Pregnant women</li> <li>• Med conditions (general), e. g. digestive diseases</li> <li>• ...</li> </ul>	<ul style="list-style-type: none"> <li>• General mental disorders</li> <li>• Anxiety disorders &amp; trauma</li> <li>• Cognitive &amp; learning impairments (including dyslexia + dyscalculia)</li> <li>• ...</li> </ul>
Socio-Economic & Other Aspects	Situation-Specific Aspects
<ul style="list-style-type: none"> <li>• Age (children/seniors)</li> <li>• Residence (rural residents)</li> <li>• Financial (Low income)</li> <li>• Access to technology and own vehicles</li> <li>• Gender-specific requirements</li> <li>• Education/literacy</li> <li>• ...</li> </ul>	<ul style="list-style-type: none"> <li>• Travelers with young children</li> <li>• Travelers with extensive baggage</li> <li>• Foreign visitors (orientation, language)</li> <li>• People with temporary impairments/injuries</li> <li>• ...</li> </ul>

*Different kind of disabilities. Source: HAKON*

Therefore, accessibility must be provided in all frontends, including barrier-free routing and, of course, for all travel segments.

ACCESSIBLE FRONTENDS



BARRIER-FREE ROUTING



*Integral approach for accessibility. Source: HAKON*

**Engagement and Customer Experience:** Think like a passenger to assure them the possibility of an independent travel: predictable accessibility (provide information to plan their trip) and information during the trip, especially in case of disruption.

**Accessibility should not be seen as special requirement, but part of the general design**

4.6.2 Universal Design

Due to poor overall accessibility, the majority of disabled customers have to plan their journeys meticulously (e. g. travel at off-peak hours, book ahead, check that a station has necessary facilities etc.) in order to enjoy a better experience.

In a process of people’s mobility performed on a recurrent basis, transport is of the utmost importance. A growing number of people who are over 65, families with young children and people with disability require solving some specific problems in terms of accessibility.

Universal accessibility goal can be reached using Universal Design principles and this **can benefit to all customers**, not only to the passengers with disabilities. Universal design/Design for all should be key not only in the Design of new infrastructures but also in the contingency plans and communication with the customers and it fosters **cost-efficient solutions**.

The application of **Universal Design** concept enables solving accessibility to all kind of persons. Its basic principle, designed on solving barriers, has to be applied to railway transport, rolling stock and railway stations.



Universal Design

Universal Design is a worldwide movement promoting design concepts and principles to support an expanding demographics of people living with a wide array of disabilities, temporary or permanent, age-related limitations, and chronic health conditions.

There are seven principles of universal design:

- Equitability. The design is equally usable by anyone
- Flexibility. The design offers a high degree of freedom in use
- Simplicity. The design can be used easily and intuitively.
- Perceptibility. The necessary information is provided in a form that is readily understandable.
- Safety. The design is free from errors and hazards
- Sustainability. The design can comfortably be used without requiring unnatural posture and strong power.
- Spaciousness. The design has suitable size and space for approach and use.

Universal design/Design for all should be key not only in the Design of new infrastructures but also in the contingency plans and communication with the customers.

**PRM and people with disabilities to be involved in the decisions making process**

### 4.6.3 Inclusive Design

Public transport systems have to consider the needs of users with reduced mobility, including persons with impaired physical mobility, the elderly, children, and pregnant women.

To be noticed that disabilities can be temporal, impact everyone in concrete moment of their life and evolve with the time. So, accessibility affects every current and potential customer.



	<b>USING PUBLIC TRANSPORT</b> to all facilities (hotel, venues etc.)		<b>INCLUSION</b> with great experiences		<b>INDEPENDENT</b> from A to B
	<b>BARRIER-FREE</b> access, stops/stations, information etc.		<b>SIMPLE LANGUAGE</b> no genitive, no passive, no subjunctive and no foreign words		<b>GUIDANCE SYSTEM</b> analogue and digital
	<b>EASY OPERABILITY</b> easy understanding and intuitive App using		<b>EASY ORIENTATION</b> pictures, colors, simplified maps		<b>VISUAL LANGUAGE</b> pictograms etc.

**Needs of People with Intellectual Disabilities.**  
**Source: VBB**

Inclusive design:

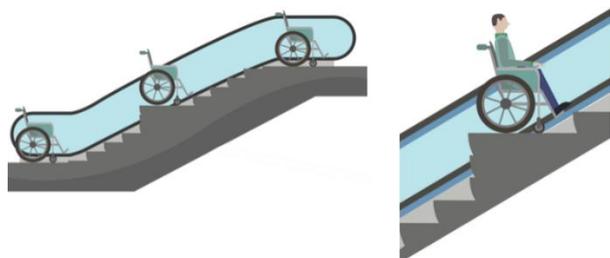
- puts people at the heart of the design process, ensuring they can use the railway safely, easily and with dignity
- acknowledges diversity and difference, and is responsive to people’s needs
- offers choice where a single design solution may not work for everyone
- provides for flexibility in use, offering more than one solution to help balance everyone’s needs: and
- provides buildings and environments that are convenient and enjoyable for everyone.
- Delivers an accessible-rail infrastructure to-all clients, such as providing podotactile pavements, tactile maps, ramps, braille control buttons at lifts, parking space for mobility impaired users, etc.

#### 4.6.3.1 Case Study: Escalators in Japan

Access in Japan has been made much easier with the introduction of escalators with integrated mobile platforms to allow people using wheelchairs to use them.

When required, three steps join together on the same plane to form a moving platform, which can take a wheelchair or large luggage.

It is possible therefore to make more escalators accessible by offering these moving platforms, which would help achieve the goal of allowing everyone, regardless of their level of mobility, to move seamlessly through a station.



**Accessible Escalator.** Source: <https://www.accessible-japan.com/no-elevator-no-problem/>

#### 4.6.4 Assisted Travel

A paramount service to be provided is the care of passengers with disabilities, mobility impairment or other special needs, like visual-impairment, hearing-impairment, mobility-impairment, or other forms of disability or special needs, such as parents with small children and buggies.

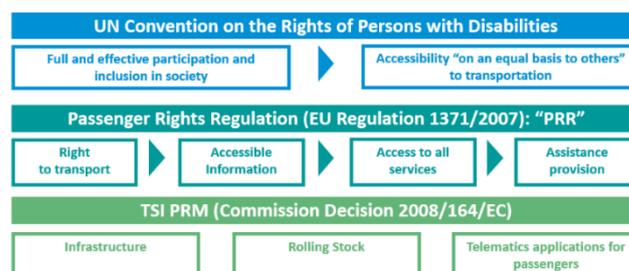
The principle of this service is that no person with a disability is left unattended and receives the required and requested assistance

The assistance service for disabled persons or persons with reduced mobility is normally provided at stations by the Infrastructure Manager to all railway undertakings and provided free of charge to customers.

This service facilitates accessibility for people with disabilities or reduced mobility at stations, assisting, informing and helping them in their transit through the

stations, and when boarding and alighting trains, either by mechanical means or personal accompaniment.

According to Regulation (EU) 1371/2007 of October 23rd, 2007 on Rail Passengers' Rights and Obligations, it is the responsibility of railway station managers to provide assistance free of charge to persons with reduced mobility on arrival at, transit through or departure from railway stations, so that the person can board the outbound train or disembark from the inbound train for which he/she has purchased a ticket. It also states that railway undertakings shall provide assistance on board the train and when boarding and alighting from the train.



**Convention on the Rights of Persons with Disabilities.** Source: United Nations

Besides legal improvements of PRM assistance, it is important to keep in mind that the aim stills being the provision of the possibility of independent travels of PRMs.

##### 4.6.4.1 At the Station

Several actions may be considered:

- Height-adjusted counters and ticket machines for wheelchair users
- Tactile signage/ buttons/ pathing
- Priority line for customer care centre

The service covers from the moment the passenger enters the station or is picked up at a meeting point within the station, until the person is accommodated on the train and, once at destination, from the moment he/she gets off the train until he/she leaves the station.

In the case of assistance on trains, the service includes help with boarding, seating and disembarking for passengers with disabilities and reduced mobility who request it.



**Passenger with Disabilities Assistance**

It is important that this service can be requested as soon as possible before the train departs.

In this type of service, attention can be paid to:

- Passengers' guide dogs, providing feeding and watering facilities at stations.
- A video-interpretation system in sign language will be available at stations.
- A special assistance service can be provided in the event of an incident.

**Associations of Persons with Disabilities should be involved in the design of such services.**

#### 4.6.4.2 On-Board

As a continuation, of passengers with disabilities support at stations, this section describes this support service on-board the trains.

- This service of assistance provided at stations continues on the train, including help with boarding, seating and disembarking for passengers with disabilities and reduced mobility who request it.
- In other sections, it has been described train accessibility, the space onboard available for PRM with wheelchairs or scooters. Also, the possibility of disposing assistance dogs on-board

- In those rail services where it could be difficult to stand, priority seats should be made available
- On-board staff may check on these persons periodically to attend to their needs. If there is meal service on board the train and assistance is needed, upon request and without delay, staff should help by opening packages, identifying food items and their location and cutting large food portions.



**Passengers with disabilities support on-board. Source: [thamelink.com](http://thamelink.com)**

- The railway undertaking may prepare a policy for Assisted Travel, and make it available for customers, to let them know how to proceed in advance.
- Other services provided are accessible toilets and gastronomy on the seat (when this kind of service is provided on board)

#### 4.6.5 UIC Passage Group of Experts

Since 2010 **PASSAGE** brings UIC members' experts together to address their obligations arising from Regulation covering the passenger rights of People with Reduced Mobility (PRM), including People with Disability.



Example of customers' needs analysis. Source: RENFE, Mormedi, ONCE

Main intent of PASSAGE working group is to extent cooperation among railways to enlarge opportunities to improve services for PRMs and passenger with disabilities in the most effective manner.

PASSAGE is a Network which supports members to share best experiences, learning from each other to deal with the complexity of rail services accessibility needs



**In 2021, the network Passage is composed by 20 rail companies**

All the best practice information was collected and published in UIC Leaflet 145, which provides a guide for the provision of accessibility services in railway companies and is periodically updated by members.

#### 4.6.6 PRM Assistance Booking tool

PRM Assistance Booking tool (ABT) is the UIC web-based tool for a booking of PRM assistance service for an international carriage.

The PRM booking tool is operated by call centre staff. This ensures 24 hours, seven days functionality, as well as operational parallel work with the national tool. The booking tool is adapted to many languages, so the schooling of new employees is easy.

PRM customers can ask for assistance via call centre, websites, or also in ticket office at the station. In case there are involved domestic trains, the call centre employee must make the request in the national tool and then, another request to the international booking tool, the ABT, through which the international carriers are informed about the request.

Two basic steps:

##### ➤ Availability

The call centre staff should indicate what kind of limitations the passenger has (in compliance with RGPD) and find the timetable (using "data MERITS", which are an updated database of UIC timetables delivered by each carrier). Then, they have to check the availability and to send the request abroad.

##### ➤ Confirmation

After receiving response from the foreign country or foreign operator, the service is confirmed to the passenger by email or by the call centre. The new function within ABT is the possibility for the call centre employee to add comments and feedbacks.

## 4.7 Impact of Covid-19 on customer experience

This section describes the state of the art related to the impact of Covid-19 on customer experience, describing best practices acquired so far.

### 4.7.1 UIC Guidance Documents

Covid-19 has impacted all aspects of customer journey:

- Planning and reservation
- Experience in stations
- Onboard services (customer & train attendant)
- Hygiene measures
- Feeling of safety

Rail operators have applied measures to maintain business continuity and customer confidence while respecting strict safety measures acting on:

- Reservation and ticketing
- Crowding and social distancing
- Passenger information
- Communication

UIC, as the technical platform for railway cooperation at world level, is the place of exchange for best practice, bringing together many networks of experts.

In the context of Covid-19, UIC launched the Covid-19 Task Force composed of UIC member companies, experts and other relevant stakeholders to give its members and partners the possibility to regularly exchange information in order to find ways to respond to this crisis that are adapted to the railway sector, as well as to provide them with concrete measures and guidelines.

Since then, and in the spirit of sharing current practices, UIC members and partner organisations have provided the Task Force with relevant information leading to the publication of a number of guidance documents and state-of the art papers.



#### **Example Railsilience guidance document. (Covid-19)**

These five guidance documents for Covid-19 management, they have been translated to different languages: French, Spanish, Portuguese, Russian, Japanese, Farsi, Serbian and some others.

- Management of COVID-19 – Guidance for Railway Stakeholders (March 2020)
- Potential measures to restore confidence in rail travel following the Covid-19 pandemic (April 2020)
- RAILSilience- How the rail sector fought Covid-19 during lockdowns (May 2020)
- RAILSilience- Back on the track (June 2020)
- First estimation of the economic impact of Covid-19 on rail transport (July 2020)

Two papers have been carried out of the state of the art of Covid-19:

- RailSilience- Masks, ventilation and social distancing (July 2020)
- Thermographic cameras for temperature measurement of people to combat Covid-19 (September 2020)
- RAILSilience - Contamination Rates on Trains (December 2020)

## 4.7.2 UITP Recommendations

The UITP released a report called In Back Passengers. Facts, Figures and the New Normal (November 2021). The results of this assessment show that the common backbone of measures implemented since March 2020 is generally seen as having a positive immediate effect.

To address the long-term changes in mobility patterns in the post-Covid era, it seems clear that the New normal will include an acceleration of the public transport sector's digitalisation, reinforced cleaning operations as well as increased and targeted communication to passengers.



<https://www.uitp.org/publications/win-back-passengers-facts-figures-and-the-new-normal/>

Besides these core measures intended to win back passengers, specific measures aiming at protecting public transport workers will remain, such as plexiglass screen in the driving cab or reinforced cleaning of stations desk and driving cabs.

From a financial perspective, public transport operators and authorities have largely chosen to let the ticket prices unchanged, in line with the public transport sector's values of inclusiveness and affordability. However, this affects the economic equilibrium of public service contracts, shedding a light

on the importance of financial support at both national and European levels.

Considering the above, in order to make the transition to the New Normal a success for public transport, UITP strongly encourages to:

- Place public transport at the heart of any urban mobility initiative
- Involve the public transport sector in any decision impacting their services
- Continue investing in public transport
- Support the public transport sector's resilience with research and its operational deployment
- Ensure legal security.

## 4.7.3 Measures to be maintained

### 4.7.3.1 Social distance & ticket reservation

Maintain social distancing through reservation.

- Cap the train capacity to safer levels. Depends on the country and on the Covid-19 situation, a reduced allowed capacity on board has been considered (30 per cent of all places – standing or seats or alternative –
- 50% seats rooms on the board)
- Make seat reservation layout that guarantees a safe minimum distance



**Trenitalia seat reservation layout for minimum exposure. Source: Trenitalia**

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82	88	84
91	93	97
92	98	94
101	103	107
102	108	104

TrainOSE smart reservation system à 50% capacity

### Crowd management

Analysing the human traffic in different locations: trains, platforms, stations is part of understanding and managing the services, such as:

- Understanding peak times
- Heavy traffic routes
- Customer shopping habits
- Real time occupancy monitoring
  - Identification of customer characteristics
  - Alerting when limits are approached
  - Historic reports for analysis

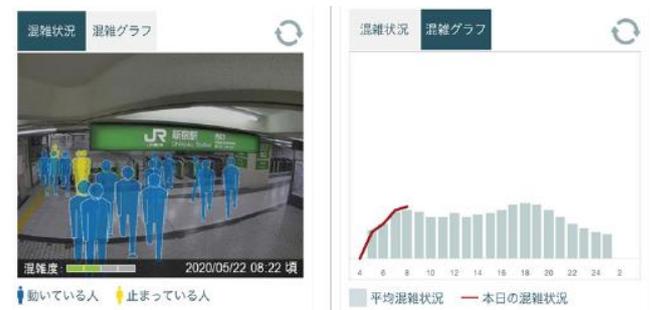
SCNB has implemented a procedure to ensure the safety of passengers, SNCB had issued measures at railroad stations.

Among other things, the "Stop & Go" procedure was implemented. Here, railroad employees make sure that no additional passengers board trains that are already full.

To do this, they cordon off platforms as needed and direct passengers to following trains.

### 4.7.3.2 Real time monitoring

- Provides real time information about suburban trains crowding to assist passenger decide whether to use the train
- Helps passengers plan their future travel based on occupancy predictions
- Uses weight data originally used for calculating break length to derive the occupancy rate
- Uses a machine-learning powered model to enhance the accuracy of future predictions
- Congestion monitoring at stations



JR-East uses video analyses at stations. Source: JR East

### 4.7.3.3 Dedicated communication campaigns to restore customers' confidence in rail

- Increasing the visibility of the preventive measures taken by rail companies
- Conducting and disseminating research on the likelihood of contamination on trains
- The use of mainstream digital media and press
- Incentives and gamification
- The Lithuanian campaign provides social media followers with virtual travel from the driver's seat of a previously filmed routes.

#### How to travel safely



1. Book in advance on our app or website to save time  
Avoid buying tickets at the station on the day.



2. Go contactless with digital tickets on your phone  
Bypass ticket machines or queuing. Digital tickets are available on most UK routes.



3. Seat reservations are always available with us when needed  
Some train operators won't allow you to travel without a seat reservation.



4. Download our app for up to date journey info  
Check times before you travel and on the go. Timetables may change as services return to normal.



5. Avoid travel during peak hours  
Buy times may vary.



6. Protect yourself and others  
Wear a face covering to travel and download the NHS App.

How to travel safely. Source: Trainline



Lithuanian Railways “For those who missed travel” campaign

#### 4.7.3.4 Hygiene measures

In general, hygiene measures increase:

- Campaign distribution of disinfectant and sweets
- Sale of disinfectant and mask protection
- Implementation of disinfection dispensers in day and night trains
- Temperature screening
- Temperature aleatory checks
- Increase of the cleaning cycle, especially for interior space



Sanitization process

- Catering
  - Wipeable menus
  - Use of recyclable and non-returnable dishes, cutlery and mugs
  - Disinfection of tables after every use
- Automatic door openings

#### 4.7.3.5 Train & attendant

Train attendant is an important tool to guarantee the COVID-19 rules on board:

- Regular announcements in the train (mouth-nose protection, distance)
- Check of mouth-nose protection (mask)
- Additional security staff
  - Assurance of passengers’ feeling of security
  - Security staff & technologies to manage crowds
- Contactless ticket control
- Cease of newspaper offer in the first and business class
- New protocol to deal with potential cases
- Due to airborne contamination one of the main measures is based in ventilation (new filters or just open windows) Avoid talking on board is also effective

#### 4.7.3.6 Initiatives

Different initiatives have been developed in the environment of pandemic control:

- New applications
- Informs on occupation
- Based on input Train managers & historical data



Movesafe: SNCB application

4.7.4 Impact on mobility

4.7.4.1 Austrian Case

The introduction of the COVID-19 lockdown measures led to significant changes in people's mobility behaviour.

In Austria, the lockdown measures were imposed in a very concentrated form in a short period of time. The lockdown regulation led to a massive reduction in people's journeys.

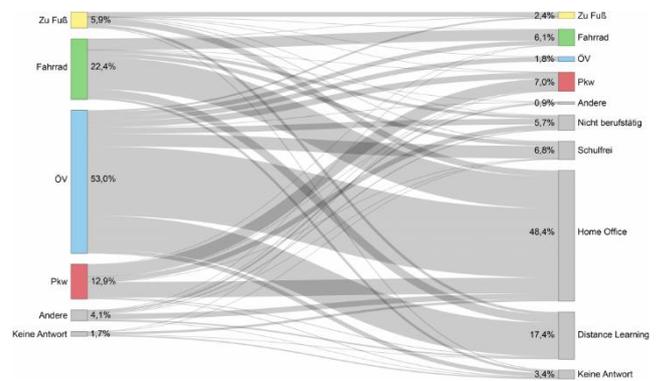
In order to document the changes in the area of everyday commutes (work, training and shopping trips) of Austrians, online survey was developed from march,2020.

The Sankey diagrams show the change in mobility behaviour before lockdown to behaviour during lockdown as volume flows (from left to right), separated for urban and rural regions.

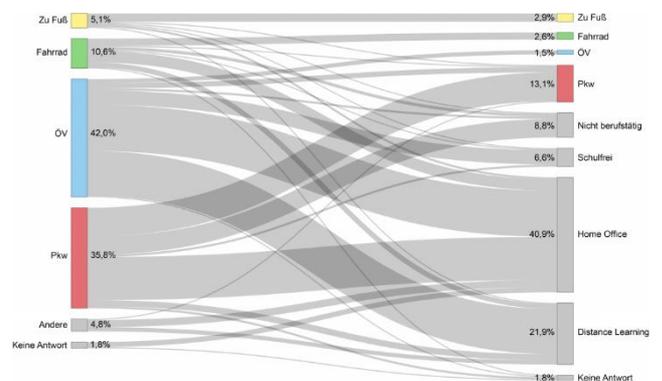
Note: "Car" includes the answer options car driver, car with family and carpool; "Others" includes e-scooters, e-bikes, motorcycles, park and ride, bike and ride, kiss and ride and different.

In the pre-corona values (left in each case), the above-average share of public transport and cycling is striking, while walking and car journeys are likely to be underrepresented. With the changes caused by Corona, the drastic effects on mobility behaviour become obvious: over 3/4 of the original work and training paths are no longer home office, distance learning, school-free or unemployment (not working).

Massive shifts away from public transport can be observed in the choice of means of transport. The modal split shifts towards the car. The findings are consistent with media reports that reported declines in public transport of up to 80%, while motor vehicle traffic at the Viennese counting stations fell by 50% and at the wheel counting stations by around 20%, but with large fluctuations depending on the location of the counting station (in the case of bicycle counting stations on leisure routes, significant increases were even found).



Change of modal split in urban space before vs during lockdown in Austrians. Source: ÖBB



Change of modal split in rural areas before vs during lockdown in Austrians. Source: ÖBB

The feedback from our survey shows that around 6% (city) and 9% (rural) of the respondents have lost their jobs due to COVID-19. For comparison, the AMS recorded an increase in the unemployment rate of 4.7 percentage points from 8.1% to 12.8% between the end of February and the end of April.

The changes in commuting to and from work according to the type of workplace reveal the extent to which certain industries can be relocated to the home office: while employees from hospitals and nursing homes as well as from production companies or warehouses usually travelled to work equally often or less often, activities in offices and classrooms could often go to home office can be relocated, sometimes also in companies with customer traffic.

Changes in commuting by type of job for Austria as a whole in percent. The sum of the table columns is 100%.

When it comes to shopping behaviour for groceries, there was a trend towards less frequent, more local buying of larger quantities and longer-lasting products. Eating away from home was drastically restricted, food delivery was sometimes more frequent and sometimes less than before Corona.

When choosing the means of transport for shopping, the walk predominates before and during Corona (over 50% each). Shopping trips by car increased slightly, those by bike decreased slightly. Approx. 5% of those surveyed stated that they did not go shopping during Corona.

This study provides a non-representative snapshot of the changes in mobility behaviour during the corona restrictions. The next task of transport research will be to examine the sustainability of the changed mobility behaviour, the loss of confidence in public transport, the switch to cars and bikes.

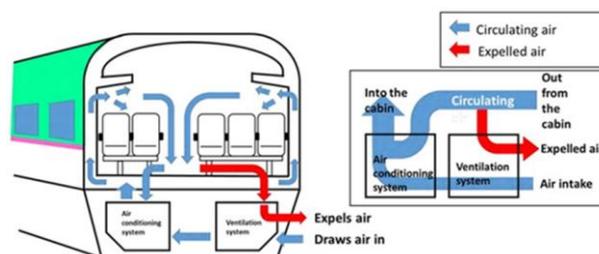
#### 4.7.4.2 Potential measures to restore confidence in rail travel

According to experts the image of public transport has declined and needs to be reinforced after Covid-19.

The potential customers require new measures after the Covid-19 pandemic:

- Increased need for information and sense of security before and after journey
- Changes to and increased expectations regarding jobs to be done

- Handling of COVID-19 and subsequent changes in cautiousness, needs and behaviour not among existing persona-boundaries (e. g. young student extremely strict, older pensioner less worried)



**Ventilation measures campaign. Source: SCNF**

Potential measures for restore customer confidence in rail travel include:

- Specific measures that limit the risk of infection from:
  - Person to person
    - Temperature checks
    - Questionnaires
    - Masks
    - Sanitation gel
    - Social distancing
    - Ventilation
  - Object to person
    - Cleaning/disinfection
    - Tickets (paperless)
    - Waste disposal
- Communication about said measures – Research demonstrates that crisis communication reduces anxiety.

### 4.7.5 Back to New Normal

In the framework of the Covid-19 Taskforce, UIC issued a “white paper” concerning the conditions and recommendations for the new normal, that means the period post Covid-19. Within this White Paper, UIC proposed some high-level recommendations for all the railway actors: Railway Undertakings, Infrastructure Managers, Transport Authorities, Railway Suppliers and Station Managers.

Key proposals are as follows:

- **Customer experience enhancement** by adapting to new mobility and consumption behaviours and leveraging the advantages of rail vs other modes is crucial to be back to normal.
- **Innovate** both in terms of customer service (e. g. addition of new services, improvement of marketing capability) and in terms of production enhancement (e. g. improvement of service reliability), to also gain more agility in a context of uncertain changes in customer habits.
- **Invest in infrastructure** in order to increase capacity where and when needed and ensure service quality, reliability and smooth connections between travel legs (e. g. new long-distance lines).
- **Foster “coopetition” with other modes:** competition when they are in rail's domain of relevance, but cooperation when areas of relevance overlap (e. g. when rail and air need to be combined for a specific route) to enable a “door-to-door” offering.
- Optimise use of infrastructure, e. g. through maintenance optimisation to increase infrastructure availability overnight or development of long-distance, high-speed freight trains (particularly in order to support ecommerce growth) where relevant
- Invest for greater resilience against natural hazards as more climate events due to global warming are expected
- Adapt tariffs and fares on high-speed, commuter and regional railways to account for new mobility behaviours
- Adapt long-haul and regional rail offerings to address evolving customer expectations and compete with other modes in their own domains of relevance (e. g. night trains, mid-speed trains). Improve travel times
- Develop onboard services emphasising natural competitive advantage: for business and leisure. Offer high quality customer experience
- Leverage digital capabilities to fluidify information to passengers (e. g. applications providing real-time information)
- Improve conditions for intermodality: infrastructure (soft modes, flow management) and services (luggage, ticketing, etc.)
- Develop eco-friendly stations (energy, materials, etc.)
- Reshape spaces in stations to account for new mobility behaviours (e. g. co-working spaces)-

## 5 THE CUSTOMER

### 5.1 Introduction. What do passengers want from rail?

Building a long-term relationship with passengers/customers by understanding their needs and preferences opens up the opportunity to offer a more personalized experience.

Every year around the world, billions of people travel by rail. As passenger numbers continue to grow, and the expectations of passengers continue to be more demanding, the pressure on rail organisations to deliver high-quality passenger journeys also increases.

What do passengers want from rail? What are the trends and challenges facing passengers, and how is the industry moving forward to deliver better services?



*Moment of Truth*

By looking at the customer experience through the eyes of the customer, railway can understand the **moments of truth** that will define a consistent customer experience.

**Identify customer as unique, addressable individuals**

The view of the interaction must be from end to end, across every single touchpoint, from a variety of instances, including service failure.

With this view, railway can see how the customer interacts across the various service channels and, as a result, can map the customer journey and identify the sequence of key customer-company interactions that illustrate the path from “need/find,” to “buy/get,” to “use/support,” to “loyalty/profits”.

A passenger’s decision to travel is based on numerous factors beyond price and schedule. These factors are influenced by past experiences and perceptions about what they expect from their next experience.

Consequently, railway undertaking must continually meet or exceed customers’ expectations to retain their loyalty over time. To do so railway companies must understand the nature of changes in each customer’s transaction history.

Getting to the root cause of changes in activity is key, and it is vital to learn why a customer might stray. The reason may be as simple as competitive pricing, but it may also be something more complex like changes in life events, alterations in a company’s travel policy, or a new job. These changes should be tracked through analytics because they could help win back customers or maintain the relationship for the future when situations change.

### 5.2 Customer Segmentation

Customer segmentation analysis allows Railway Undertaking (RU) to identify, categorize, and analyse the most profitable and effective customer segments in the market, identifying group of customers with similar characteristics and needs together.

Customer segmentation analysis not only helps RU gain a better understanding of their customers, but it also helps them evaluate their own performance.

Market segmentation analysis is the process of segmenting customers into smaller groups based on their unique characteristics including age, income, requirements, behaviour, needs and purchasing patterns.

Market segmentation helps marketing professionals to personalize marketing and promotional activities for each segment to gain maximum traction. This also enhances customers response rate for products and services.

Market segmentation allows Transport Authorities and RU to approach different segments of customers in an effective manner by better satisfying the customers' needs.

- Geographic segmentation (location, density, accessibility etc.)
- Demographic segmentation (age, gender, ethnicity etc.)
- Socio-economic segmentation (income, education, occupation etc.)
- Behavioural segmentation (user status, loyalty, frequency etc.)
- Psychographic segmentation (personal characteristics, attitudes and beliefs, lifestyles etc.)

### 5.2.1 Geographic segmentation

Geographic segmentation is splitting up a market based on geographic variables such as location, density, land-use mix, accessibility, etc.

Timeline and reliability are desired across all the users. Cost effectiveness also is identified as an important factor in mode choice, especially in the extreme user segments.

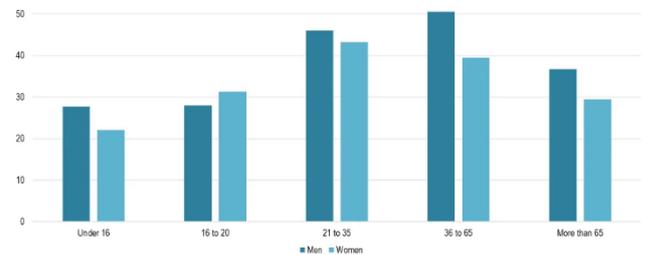
Transport companies need to address differences among the users segments not only in terms of service, but also in terms of access and waiting in service points, for example. Consider “first/last mile” and waiting time issues. They also need to take advantages of the opportunities that are offered by new technologies tools in providing large scale information services.

In Europe, the transport companies need to improve services in terms of urban-suburban connection, comfort and reliability, and find ways to motivate residents of suburban areas of medium or low degree of land-use mix to shift towards public transport, possibility by offering competitive price schemes, quality last mile facilities, flexible tickets and personalized campaigns.

### 5.2.2 Demographic segmentation

Demographic segmentation is dividing the market into groups based on demographic variables. This information is useful to link back to demographic characteristics in order to estimate the size of the market and the media that the Railway Undertaking should use to reach it efficiently.

Daily Person Miles of Travel per Person by Age and Gender in USA



*Daily Person Miles of Travel per Person by Age and Gender, 2017. Source: US DOT, FHWA (2011) National Household Travel Survey*

- There are mobility gaps according to age and gender.
- The peak mobility age is around 40 years when individuals tend to be in their most productive years and fully employed.
- Males tend to travel further than females, a gap that can be linked to vocational differences, income differences as well as a more conventional role assumed by women in several households.
- This gap is however less acute among younger age groups where women travel longer distances than men during college years.

The group of people with disabilities needs to be included to find a proper overview of the market.

### 5.2.3 Socio-economic segmentation

Socio-economic segmentation is splitting up a market based on social and economic aspects of the population.

The highest proportion of passengers that benefit from free travel is observed from the poor socio-economic clusters, whereas the lowest proportion is found in high-income, lower density areas of the cities.

- The highest demand for public transportation seems to come mainly from low-income individuals and medium income individuals living in medium and high-density areas.
- The lowest demand is registered for high-income individuals and medium income living in low-density areas.

There is an increasing need for flexible working hours and working on location.

## 5.2.4 Behavioural segmentation

### 5.2.4.1 Frequency of use

Behavioural segmentation of public transport users based on the frequency of usage is a very common practice in market segmentation.

Whereas heavy users constitute a relatively small customer segment, they account for a high percentage of total consumption and thus it is important to keep these customers happy.

On the other hand, a basic strategy for RU to increase ridership is to focus on less frequent users and convince them to use it more often. Interestingly, both regular and irregular customers agree on the most important issues: access, availability and price.

Price is slightly less important for the most frequent customer group. Safety is also important, but its importance decreases as the frequency of use increase.

### 5.2.4.2 Purpose of use

When addressing the needs of the people who travel to work or for medical purposes. Recreational trips are on the rise, especially among young people and elderly people.

The most common types of mobility types are:

- Pendulum movements. These are obligatory movements involving commuting between locations of residence and work. They are highly cyclical since they are predictable and recurring regularly, most of the time a daily occurrence, thus the term pendulum.

- Professional movements. These are movements linked to professional, work-based activities such as meetings, repair, maintenance, and customer services, dominantly taking place during work hours.
- Personal movements. These are voluntary movements linked to the location of commercial activities, which includes shopping and recreation.
- Touristic movements. Important for areas having historical and recreational features. They involve interactions between landmarks and amenities such as hotels and restaurants and tend to be seasonal or occurring at specific moments. Major sports events such as the World Cup or the Olympics are important generators of urban movements during their occurrence.

## 5.2.5 Psychographic segmentation

There seems to be some relationship between the lifestyles of the segments and their attitude towards and/or contribution to innovation, technological developments, sustainability-consciousness and individual empowerment.

Technological advancements trends in the last few years are affecting a variety of fields including economy and transport. Innovative and affordable technologies (internet of things, sensor networks) are very important in our daily life.

The increase of connectivity is changing our daily life. Public transport customers prefer less time needed for travelling to work or for other purposes.

There are also other needs that make their life easier: ITS solutions can help reach some of customer's needs (customer and information services, connectivity and cashless payments), for example smart ticketing and real-time, customized, multimodal travel information. Customers can buy their ticket online or through smartphone apps. Offering one ticket for all transport modes, including bikes, and cars, sharing would be a great innovation service.

### 5.3 Potential or missing customers

COVID-19 swept across the globe in a matter of months, jeopardizing lives, upending businesses, and setting off a worldwide economic slump.

For example, SBB identified the customer that they are losing due to COVID-19:

- Travelers afraid of getting infected in public transport
- Home office workers
- People that do not have any occasion for travel
- With COVID-19, reduced demand for public transport due to the obligation for use the mask and also the international travellers due to travel restrictions.



**Missing customers. Source: SBB Passenger Department (November 2020)**

Customers are currently intensely focused on health and have altered many long-standing habits and preferences to avoid infection.

Within the mobility sector, this means that many passengers favour transport modes perceived as safer and more hygienic.

- Suddenly, private cars were in and shared rides seem to be out.
- Working from home is on the rise, again with the goal of preserving safety, while business travel and all the mobility services attached to it—flying, taxis, e-hailing—are in low demand.
- Co-working is also increasing.
- It may seem that the acceleration of future mobility has come to a halt.

These preliminary conclusions overlook recent developments that will have a tremendous impact on mobility's future:

- Some cities have redefined car lanes to create more space for bikes and scooters as people began to avoid public transportation.
- Government incentives to help the automotive industry have encouraged the use of carbon-neutral solutions and stimulated the development of electric vehicles (EVs).
- Consumers are increasingly turning to digital channels—from convenient food deliveries to streaming services, and they now expect mobility players to expand their online offerings.

Such fundamental changes, along with other recent developments, are prompting mobility leaders to reimagine the future of mobility.

The following shifts are likely to persist long after COVID-19 is controlled and thus deserve particular attention.

#### 5.3.1 Customer preferences

- Emphasis on safety and health in order to reduce risk of infection. Recent hygiene improvements in public transport are perceived as effective
- In addition to safety, customers are becoming more focused on digital channels and sustainability issues.
- In addition to exploring new products and mobility options, consumers are interested in new services.

#### 5.3.2 Technology

- The pace of change will continue to accelerate in all areas, including connectivity, autonomous driving, and urban transport.
- Emerging technologies could transform mobility

#### 5.3.3 Regulations

- Regulators may become even more active within the mobility sphere. Many, for instance, are tightening CO2 regulations for vehicles as they attempt to reduce climate change.

- Cities redesign
- Electric modes of transport

### 5.4 Customer Needs assessment

A customer satisfaction analysis to identify how well the client’s products and services satisfied the changing needs and demands of customers.

The first step when a RU decides to promote innovation in public transport is to explore and understand the main market and societal trends that are at play, and then investigate the needs of the different parties involved.

The classification of passengers into groups, as well as the identification of their needs per customer group is one of the crucial parameters for mapping the public transport situation.

Particular attention should be paid to the special needs of vulnerable groups, including not only people with mobility and sensory restrictions, but also people affected by social, financial or gender issues.

This classification can be developed during the customer identification phase. Surveys serve to understand customers on a personal level (their needs, wishes and motivations). For example:

- What expectations does a particular persona have a new product?
- What inspires them?
- What annoys them?

The analysis of customer needs is a valuable method to identify the gaps between supply and demand and facilitate the generation of solutions to bridge customers’ and authorities’/operators’ need.



**Customer Needs assessment**

Customers demand the following information:

- Punctuality & reliability
- First and last mile solution
  - Seamless transport Interchanges
- Accessibility
- Perceived safety & security
- Technological development and On-board facilities (WIFI and connection)
- Comfort (connectivity)
- Clear and integrated information provision
- Real time information during journey

Additional information that customers require:

- Fares and special discounts
- Length of the train entering the station to the users who are on the platform (Double or single units).
- Amenities
- Information about:
  - Stops out of service
  - Stops without occasional service
  - Escalators and lifts out of service

Passengers enjoy seamless journeys in a comfortable, safe and secure environment, reassured by the availability of real-time traffic and whole-journey information that keeps them a breast of their varying journey options should problems arise with inter-connection with another mode.



Customer's crucial needs. Source: SENER

## 5.5 Personas

### 5.5.1 Introduction

Rail Passengers = Humans

Personas are fictional characters, which can be created based upon your research in order to represent the different user types that might use a certain service, product, site, or brand in a similar way.



This Personas methodology tool can be used in many ways:

- Design of trains and infrastructure
- Develop service concepts
- Design sales channels
- Execution of advertising campaigns

Creating personas will help to understand our users' needs, experiences, behaviours and goals.

Personas serve to understand customers on a personal level - their needs, wishes and motivations. In this sense, personas are often used for product and strategy development.

The personas or stereotypes help customer experience managers to better know their customers and to reflect what are they needs, what inspires them, what bothers them and what are their main interests.

Therefore, instead of designing services with an abstract user in mind, understanding customers' needs becomes more straightforward when creating imaginary personalities, or personas, because it is easier to get a handle on their emotion-driven requirements.

In the field of passenger transport, it is particularly important to have clear insights into customer groups, their characteristics and their user behaviour in order to cater to them properly.

With this information a strategy for new products adapted to different kind of customer can be created.

### 5.5.2 Definition

For each persona, a profile can be developed with facts (age, work, earnings, interests) and some background and behaviour.

Missing customers can be identified, meaning people that are not taking the trains now to make them come back: anxious people, afraid of getting infected, international traveller, home office workers, "coach potatoes", mask refusers ...

The persona is defined as a fictitious character that portrays a targeted group of customers. A customer persona represents a group of individuals who share common goals, needs, and behaviour.

From a practical approach, the customer persona method is used by designers, planners, and developers to identify, and later target, key customer segments. The persona method facilitates two major questions:

- First, who are we planning for?
- Second, who are we not planning for?

The method has been successfully implemented in understanding the actual goals of the targeted customers, prevention of self-referential design, and structuring research data in a more vivid form compared to raw data.

### 5.5.3 Personas Profile Proposal

Personas proposal are not the same all over the UIC World. They can change depending on the country, environment, services to be provided, etc.

The proposal included in this section intends to be an initial thinking, that each company could develop according to its own needs, country, experience and culture.



**SNCB Personas Profile Proposal**

For the purpose of this document, six personas have been identified. These personas are deemed to best describe the key groups of the targeted railway market.

The personas definition was developed based on four main characteristics:

- Travel behaviour
- Employment status
- Geographical distribution
- Ease of Use of Public Transport (UPT), which represents how easy/difficult travellers perceive transit use.

Each persona portrays a typical group who are current or potential railway users covering the different kinds of people who use public transport.

Each persona comes with its own fictional biography that describes how the person lives their life and what technological aids they use.

- **Business traveller-The Resilient:** Roger Thornhill often takes trips to see his customers, and he wants to be able to work in peace of mind on trains. He travels almost every week and uses his time on trains for work. He knows how to stay informed and uses his electronic devices to source news about connections or possible delays. This profile considers that: "Using public transit is a positive experience for me. It's my own time. I can read my emails, and no one bothers me". They are willing to pay more than their current fare to get better experiences in the areas of safety, sanitization, comfort and convenience.

- This group considers to be useful: Frequency of service, Connection between different lines, Updated information on service incidents in real time.
- As selection criteria they value: Speed of service, Low price and Predictability.
- In terms of service satisfaction criteria, they value: Loyalty cards, sanitization (it should be noted that this "group of travellers" has been asked little about these aspects).

- **Commuter** – Jean Doe travels every day to work. She likes to get to work quickly and comfortably, trying to make good use of the travel time; she needs a quiet journey. Knows timetable by heart. Needs reliable information in case of incident to find an alternative way. She is member of the loyalty programme.

- **Student** Sidney Bristow is a budget traveller who wants to know how she can get the best-value mobility deals. Sidney relies on public transit as her primary mode of travel and are more likely to have a positive transit UPT and live-in urban areas.

- **Retired** Jessica Fletcher is a silver traveller and an experienced one. She makes frequent use of local transport services and is member of the loyalty programme. She is a retired primary school teacher. If confronted with an unfamiliar situation, she can get flustered easily, so she relies on service staff at stations.

- This group considers the following to be useful: Frequency of service, Connection between different lines, Updated information on service incidents in real time.
- As selection criteria they value: Speed of service, Low price, Seat reservation and Predictability.
- In terms of service satisfaction criteria, they value: Loyalty cards, sanitization.
- **Family travellers** Kate and Peter McAllister are who undertake journeys with up to three children.
  - Reach destination comfortably
  - This group considers the following to be useful: Frequency of service, Connection between different lines, Free choice of train and Updated information on incidents.
  - As selection criteria they value: Comfort, Seat reservation and Low price.
  - As criteria for service satisfaction, they value: Friendliness and helpfulness of the staff, sanitization and storage in cars and Space between seats.
- **Modern urban travellers** Ilsa Lund and Rick Blaine use public transport, rental bicycles and Car and scooters sharing services.
- **Leisure travellers / Tourist / Foreigners** – Toshi Lee (Japan) is the Reflective: “I don’t need to travel daily. Although it’s not a necessity, I enjoy it and need it for leisure purposes. I’m looking forward to wherever my next trip will take me”.
- The path forward for winning over reflective riders is two-fold; agencies and operators will need to build trust throughout the customer journey, and then highlight new intents to travel, including new

destinations. To do so, operators could explore partnerships with local travel and hospitality sectors and offer leisure travel routes on weekends. Furthermore, operators should start to think about marketing transit as the vehicle for adventure and offer deals around transportation to local sports events and festivals – anything to make public transit an all-around more compelling proposition. Hand-in-hand with making the experience as seamless as possible would be fare integration with regional transit providers and rideshare services, as well as within the network, such as simplified fare structure.

- This group considers the following to be useful: Information and Assistance Free choice of train, Connection between different lines.
- As selection criteria they value: Comfort, Seat reservation, Low price and Accessibility.
- In service satisfaction criteria they value: Friendliness and helpfulness of the staff, Hygiene and Storage in cars, Wifi and existence of transport App.

According to DB studies on Personas, they conclude that people with disabilities (visual, mobility) are not travellers of this type of service, or it is very occasionally.

When developing similarly customised service offerings (be they services or ticket types) for every group of travellers, personas help generate a precise image of each specific group’s needs. This customer-focused approach lets developers get inside the heads of prospective users when designing services and solutions, thereby seeing how the public might use the products.

## 6 CUSTOMER INTERACTION

### 6.1 Introduction

Communication with Customers is a key element to assure quality and safety, and key to customer experience. This responds to the needs that every organisation, particularly railway organisations, have in terms of **attention, information and relationship** with their customers.

Customer experience needs to be measured using the customer journey to identify touchpoints and brand interactions where the company can have an impact.

Customer service is especially important because service interaction is one of the few opportunities for the companies to have a personally interact with their customers.

In the case of railway undertaking companies, this need is even greater, since passengers need constant attention to the various aspects of their journey, from timetable to actual performance. In this sense, is important to be able to provide the mobile phone confirmation of timetables, from online information to reality (offline).

The company needs to adopt a culture of service excellence to respond to the increasing and ever-changing needs and expectations of customers, while successfully providing a positive experience. Customers have to be the very heart of all the company activities.



This requires the development of a customer-centric culture and the provision of high-quality services all along the customer's trip, from the point of origin to the final destination.

Likewise, the following statements are proposed as a part of the communication strategy:

- Ensure customer loyalty and increase the frequency of use

- Provide an excellent image, both in terms of the perception of the services and staff, so that an increase in travellers is achieved
- Contribute to the growth of modal share in public transport through specifically designed programmes and initiatives and services that meet customer needs
- Protecting and improving the integration and intermodality of different transport services
- Ensure full accessibility to the service and information by people with disabilities
- Reinforce the role of the transport network as an actor in the life of citizens, creating events and partnerships with key organizations, both public and private
- Convey the Company policies related to universal accessibility, inclusiveness, sustainability, environmental friendliness, to share with customers this way of understanding business.
- Flexible passenger attendance

Both the information system and customer care and service promotion will be based on the greatest possible knowledge of the customers, which is a critical factor in proposing an adequate and effective service and developing attractive marketing offers.

To ensure the proximity to travellers, it is needed:

- An ambitious orientation of all the staff towards customer service and, a significant presence in the railway system with the passengers. The orientation towards "customer service" is the basis for defining the most appropriate strategy for the railway system.
- A set of actions to collect all possible data on travellers' concerns and mobility: "recurrent traveller" programme, sales and complaints analysis, quality system, frequent satisfaction surveys, origin/destination, fraud, etc.
- A constant analysis of the mobility and concerns of its travellers in order to develop offers of services adapted to the reality and needs of them

On the other hand, customers do expect to be kept informed, and that problems will be resolved promptly and professionally, and besides, with courtesy and compassion.

It is important to make easy for customers to voice a complaint and have a complaint management process in place to address the concerns. If handled well, a resolved complaint can actually increase a customer's loyalty.

Service experience enables a company to better understand customer's needs. By knowing the "moments of truth", that mean the most to the customer, it is possible to have a better idea of what aspects of service are critical. But the real power lies in harnessing the ability to link these services to specific customer profiles and segments.

For example, if a certain segment of business travellers often voices complaints about an overly complex ticket-change process, the railway undertaking could streamline the fare process for this segment by perhaps offering a new online service or handheld application, or even just a change in fare rules.

Employees must also be accountable to the clearly established KPIs around customer service standards—and empowered to respond appropriately to meet them.

The information to the users of urban public transport can be divided in three distinct phases:

- Before (pre-sale)
- During (sale)
- After the end of the ride (post-sale)

Communication world is continuously evolving and the relationship with Customers cannot be supported only with traditional elements like loudspeakers and systems of remote information, for instance.

To this end, operators have to deploy several means of communication to inform their users (offers, schedule changes, incidents, service interruptions, alternative services or routes, etc.).

Due to the increasing use of internet connected devices and user of these services, rail operators need to implement new communication channels and ways to reach their customers, such as websites, apps and social media, for selling tickets, offers, alerts, schedules, routes and in the opposite sense receiving direct communications from users.

The key performance outcome for the railway business is the fulfilment of the operating requirements. In addition to meeting the operational requirements, the operators develop and publish the Customer Charter.



*Customer Charter Example. Source: Shannon Airport (Ireland)*

The **Customer Charter** lets passengers better understand the service level that companies are delivering. It is the commitment that operators publicly acquire with their users through the compliance of a number of key performance indicators on their service provided and that are periodically measured and published (via web or other public information channels).

Some of these indicators can be the compliance of punctuality, comfort, security and accessibility of the services provided.

## 6.2 Integrated Information

It is proposed to develop a strategy of attention and information to clients with a double objective:

- Provide sufficient information to the customers about the service, both in normal regimes, and in case of incidents, to make its use comfortable and attractive.
- Centralise and analyse complaints made by line users, with a view to continuously improve the service.

The aim is to ensure that customers use the rail transport service as comfortably as possible, obtaining a high level of satisfaction, which at the end will lead to a greater use of the service and a high level of loyalty, resulting in an increase in the share of railway mode within the overall mobility.



***Integrated information***

In order to meet these needs, the operator must develop a comprehensive high-level passenger service system with the following components

- A brand image that creates a positive public feeling towards the railway
- A business culture strongly oriented towards customer service
- A complete and attractive information supply system
- A set of actions for the attention and service to the customer, to ensure their satisfaction and loyalty.

## 6.3 Customer Service

The corporate culture of "customer service" will seek to unite the potential and actual expectations of users. The ability of the staff to deal with the customer, both on arrival at the railway line and in resolving any problems or queries, is fundamental to the success of the overall marketing strategy envisaged.

Customer service staff should be actively involved in local promotions and information sessions, giving them the opportunity to interact and better serve customers. They should wear visible uniforms so that they can be clearly identified by customers.

Through this approach, customers will perceive high levels of staffing throughout the network. An additional advantage is that staff plays a more interested and active role.

The returns that customer service receives directly from passengers will have to be carefully monitored. Problems that are detected needs to be immediately passed on to those responsible so that they can be solved as quickly as possible.

Customer service will also produce documents on user perceptions in the form of monthly and daily reports. When necessary, tailored plans will be prepared and formulated according to areas where, for some reason, it is not possible to provide a 100% quality service to customers, for their correction.



***Customer Care Staff. Source: MTR***

Staff in contact with the client will be available and trained to understand and address the needs of customers with disabilities. They will also be fully trained to provide all the information required by users about multimodal travel.

All visual indications, pictograms and safety messages issued to passengers or operating instructions, especially those that are pre-programmed, must be enshrined in the languages most commonly used in each country or region.

### 6.3.1 Customer Service Manual

The operator needs to develop a program to explain to the staff how to deliver an efficient and customer-oriented service; one of the elements of which will be the development of a **Customer Service Manual**.

The following are some of the aspects to be included in the Customer Service Manual most of them focused on the customer experience:

- Ensuring that stations and trains have the level of comfort and service that customers are entitled to demand
- Report graffiti and vandalism as soon as possible
- If something is not working or there is a problem, report it immediately
- When something doesn't work, place identification stickers so that the customer can detect it and the maintenance staff can locate it
- If anything is discovered that could cause harm to customers, make sure it is removed
- Prioritise all safety related risks: report and take action to eliminate or mitigate such risks immediately
- Acting calmly when dealing with problems related to public order
- If there is a threatening situation for the staff, return to the driver's cabin, the staff room and alert the control
- If a customer feels unsafe or need help of any kind with law enforcement problems, advise to contact the Control Centre
- When talking to users, it should be done loudly and clearly
- Everyone who addresses the company should be greeted
- Remember that, when wearing the uniform, customers see this person as the representative of the company
- All customers who are sold a transport document or provided with some information should be thanked
- When selling tickets, after a customer has given the destination data, type of ticket, etc., this information should be repeated to reduce the risk of misunderstanding
- Remember to be polite, even when using a foreign language
- Never show anger towards customers
- When talking to clients, attention should be focused on the client (look at the face)
- When talking on the phone, put the handset aside when attending to a client
- When there are several employees working in a station or on board the train, staying or moving around in a group should be avoided whenever possible
- When working in a group, show initiative, but always consult or keep others informed
- Be tolerant and understanding of the lack of customer knowledge
- By all means, help customers with information, if it can facilitate their journey
- Keep the workplace clean and tidy

### 6.3.2 Commercial Offices

It is suggested that commercial offices be established in the main stations, which are the ones with the most traffic. These offices will be open during office hours.

The following services, among others, may be provided at these offices:

- Provide users with real-time information on the status of the service at all times and the interconnection with other modes of transport
- Provide also guides and plans of the line, as well as any other specific documentation
- Sell specific tickets
- Penalty payment



**Commercial Office. Source: SBB**

- Resolution of doubts and suggestions that clients may have
- They will function as a lost and found office
- Make suggestions, complaints and claims to the operating company, either directly to the office staff or through a suggestion box located in the stations

### **6.3.2.1 Commercial Office Employees Training**

All staff, regardless of their position, should receive general training common to all roles, regardless of the function performed.

This general training covers the following aspects:

- Basic Training in Occupational Risk Prevention
- Fire Prevention and Extinction Training
- First Aid Training
- Occupational risk training in the workplace

In addition to this general training, sales and information agents will receive specific training:

- Basic customer relationship formulas
- Face-to-face relationship with the client
- Help for people with reduced mobility
- Speed up customer waiting time
- Information capacity
- In-depth knowledge of the transmission network
- In-depth knowledge of the services offered

- In-depth knowledge of the different tariffs
- Knowledge of the different dossiers available
- Management of complaints and suggestions
- Lost and Found

### **6.3.3 Telephone Assistance System**

#### **6.3.3.1 Calling Protocol**

The goal in every call will be to listen carefully to the customer, not to convince them that all the company's staff is perfect.

The call centre staff should admit errors in the service offered, and not try to deceptively cover up any flaws.

#### **6.3.3.2 Types of Questions Asked**

- Timetables
- Rates
- How to use the service
- Problems encountered by travellers
- Lost and Found
- Additional information

As much information as possible shall be provided on the services of other rail transport operators.

- Contacts will be made with the other operators to ensure that up-to-date information is available to redirect the customer to them.
- Also, offer information about the railway line to the other operators so that they can also offer it in their services.

Customer service personnel should use the telephone customer information and support service if they cannot answer a passenger's question.

#### **6.3.3.3 Transmission of Complaints and Positive Feedback**

Current trends in quality manuals concerning commercial service are to insist on the recording and transmission of complaints, but also of positive feedback.

All feedback (positive and negative) made will be recorded and compiled by means of monthly and annual reports that will be collected:

- The number of feedback
- Type and description
- Form and content of replies
- Responses and actions to be taken in each case
- Statistical control

The detail of each and every one of these records, and their final protocol, will be established with the client.

### 6.3.4 Web page

In these times it is unthinkable that an operator does not have a web page where the customer can be offered the possibility of managing the purchase of a ticket as well as all the formalities associated with that ticket, such as changes.

A web page will be developed so that users can carry out the different procedures online, without the need to go to the commercial offices. Among the different procedures to be carried out on the web would be:

- Route consultation
- Train schedules
- Purchase of tickets
- Changes and Cancellations
- Claims
- Request for special services

Operator's website is primarily consulted:

- Timetables, outward and return
- Journey time
- Stations

This information must be kept active and accessible online during the trip, either through captures or with the web/app access itself.

In order to avoid digital gap, a non-digital solution to obtain information and assistance should be always possible.

### 6.3.5 Lost & Found

It is common for passengers to forget personal belongings on trains or in stations.

In general terms:

- Objects are found by drivers, inspectors in service or maintenance staff during the inspection or cleaning of the train or stations
- Customer requests are received by office customer service staff, drivers, inspectors, control centre operators
- Lost and found by inspectors or others
- Arrangement of a cabinet where to store all the objects



*Lost & found office (London)*

#### 6.3.5.1 Collection of Objects

If an inspector or company staff collects objects during their service or they are given to them by other passengers on the train:

- They shall notify the Control Centre and follow its instructions which will normally be to keep it in the cabin locker
- When the service is finished at the destination station, the driver shall give the inspector all the objects in the cab locker. He shall indicate the train and service number

Objects collected by the inspectors themselves or through drivers or other persons:

- Store them and deliver them to the destination station, or put them in the cabin locker
- If they are left in the cabin, I notify the Control Centre
- If they have met at a station, note the name of the station

If the object is considered suspicious, the corresponding security procedures will be followed.

Objects found by maintenance staff shall be given to the operating staff for classification, noting the unit number.

In general, the objects will be treated as follows:

- Label with station or train number, line and direction or service record number
- All these data, together with a brief description, will be recorded in the lost and found register
- The object will be kept in the cabinet for this purpose

In the case of objects with documentation, the person will be notified the next morning to pick it up.

### 6.3.5.2 Removal of Objects

The call from the people can come from different ways, Control Centre, inspectors, etc. The person will be attended, and it will be checked if the object claimed corresponds to any of the existing ones. The method of collection will be agreed upon in the event of a positive finding.

The date of withdrawal will be noted, and the data and signature of the person who makes it.

Lost property will be checked periodically. All those that have been missing for more than a month and have not been claimed will be taken to the police or local authorities, depending on where they are, or to the place, they indicate.

### 6.3.5.3 Lost and Found virtual office

A virtual Lost and Found office enables this service to be adapted to the increase in demand and new technologies, and to optimise its provision and passenger satisfaction.

It also makes it possible to adapt it to the entry of new railway companies in the context of the liberalisation of rail passenger transport.

It can be made available to passengers and users both via the website and a mobile app. In this way, permanent attention (24 hours a day, 365 days a year) of this service and an updated real-time tracking of lost objects will be guaranteed.



**Lost and Found Objects**

With the virtual office, when a passenger loses an object at a station or on a train, they will only have to access the application via their mobile or computer and register the lost object, or search for and retrieve objects they have lost in stations or on trains.

Once the lost object has been registered, the application, thanks to an internal process of algorithms, will compare it and detect matches with those that have been found on trains and in stations, as these will also be uploaded to the application by authorised Railway Manager staff.

When there is a match between lost and found objects, and this is confirmed at the station where the lost object is stored, the system will send the passenger an email informing them that their object has been found and will offer them different alternatives for collection: pick it up personally, authorise a third party or contract the delivery with a courier company.

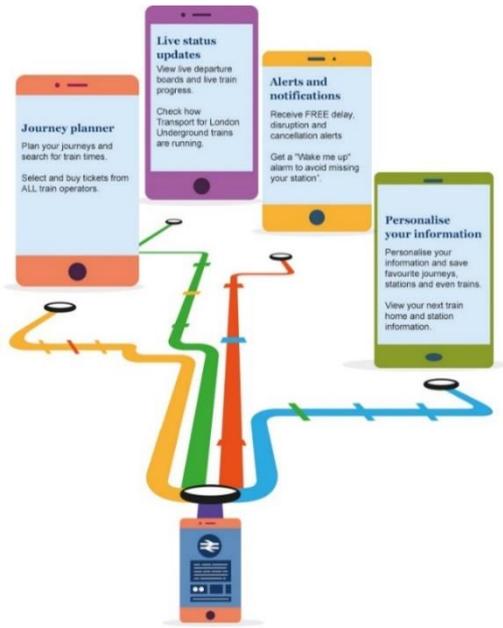
### 6.3.6 Payments

The customer who buys online is looking for ease and security in payment. The main advantages of a payment system should be:

- Universality, and being available at any time
- Accept different types of media, including digital and smartphones
- Convenience
- Fast transactions
- Security and confidence derived from compliance with current payment regulations.

### 6.3.7 APPs

One of the most widely accepted utilities among users of new technologies are mobile applications on smartphone (Apps).



Information provided on app

They can inform users of where a person is located, where the station they need is located, how to get there and how long they will have to wait for the next train to take them to their destination, at which stop they get off and how to get to the requested address.

In the case of railway service, the application must inform and notify the user of the existence of news related to public transport:

- Changes in the service
- Strikes
- Festivities
- Works
- Route changes
- Others.

The application should allow to buy and validate tickets, so that the rates and promotions can be adapted to the mobility needs of the users, allowing buying at any time and in any place always under a totally secure payment platform.

When clients are registered in the application, they will receive in real time the incidents information that could be arising in the network.

### 6.4 Customize the services

Company’s behaviour, offerings, or communication customization is highly recommended.

#### 6.4.1 Season and Special Event Services

In order to provide a better transport service, railway operators may consider reinforcing the routes that are going to present a higher demand either due to the beginning of vacation seasons, such as summer, Christmas season, etc., or on the occasion of extraordinary events, such as sporting events, musical concerts, etc.

To this end, the service can be reinforced by increasing the number of seats with double trains while maintaining the normal schedule, or by adding additional trains to the nominal schedule.

#### 6.4.2 Customized Fares

##### 6.4.2.1 Season tickets

- Annual Season tickets give you 52 weeks’ travel for the price of 40 Weekly Season tickets
- Monthly Season tickets cost less than four Weekly Season tickets, and are valid for a full calendar month
- Weekly Season tickets cost less than five Anytime Return daily tickets, and are valid for seven days in a row
- With the new teleworking trends, a review of these tariffs is necessary to adapt them to the new post-covid reality.



*Rail Season Tickets*

#### 6.4.2.2 Special fares

- Senior tickets
- Flexi-season tickets
- Students' tickets
- Family tickets

#### 6.4.2.3 Fare Payment as a Service

A better way to deliver fare payment services:

- Platform for all sizes of agencies to use
- Agencies sign up on a pay as you go basis
- Configured to suit each agency (multi-tenant, not multi-instance)
- Fast, low risk deployment of trusted Automatic Fare Collection (AFC) functionality
- Regular updates with security & new functionality as market need develops

To successfully accomplish MaaS, fare systems must be flexible to change, open to integration, multi-client capable, and experience refined.

SBB designed a programme called Swiss Pass to buy train tickets, but also is a key to mobility and leisure with 250+ Swiss companies have joined forces, providing multiple advantages: unlock the Mobility car activate turnstile in ski areas, and enjoy numerous special offers.



*Swiss Pass SBB*

#### 6.4.3 Loyalty Plans

**Brand loyalty is of the utmost importance nowadays**

Consideration should be given to introducing a Loyalty Plan or a "frequent Traveller" program, linked to a customer database and newsletter. This is one way to establish a continuous relationship with customers, with a lot of different possibilities.

Once the customer has developed a relationship with the system, it is easier to maintain that relationship. Experience shows that it costs about 10 times more to attract a new traveller than to maintain a good relationship with an existing user.

The "frequent traveller" program encourages increased awareness of the system and establishes the loyalty of existing and new customers by offering them additional benefits.

By building up the profiles of frequent customers, both the railway operator and the passengers can benefit from the exchange of information.

The characteristics and benefits of such a frequent programme have to be defined together with the administrations involved.

Some rail operators have already implemented loyalty programs and their offerings are continuously improving. Most are based on point accumulation, which may result in ticket discounting.



**Loyalty Plan +RENFE**

Some other loyalty programs offer privileges, like enhanced services (newspapers, meals, access to lounge areas, seat upgrades etc.) as a result of frequent travel.

It is critical for companies to transform customer insights into innovative services to create a relevant customer experience and thereby solidify loyalty along the entire customer lifecycle.

When developing a loyalty program, focus on these four key elements should be paid:

- Continually keep the overall customer experience in top of mind
  - A loyalty program should engage and enhance the customer’s experience
  - Add real value
  - Provide personalized communications and offers.
- Utilize a multichannel approach
  - Don’t limit the customer experience; consider communication opportunities across all marketing channels.
- Capture loyalty touch points across the following communication types:
  - Enrolment Communications: touch points that promote and propel joining the loyalty program
  - Lifecycle Communications: touch points that address the loyalty program lifecycle – welcome, early activation and life events

- Base Promotional Communications: on-going loyalty promotional opportunities based on a promotional calendar
  - Status Communications: touch points focused on loyalty member status
  - Usage & Balance Communications: touch points that encompass loyalty reward usage and reminders
  - Earnings & Redemptions: touch points that address loyalty reward earnings and redemptions
- Highlight opportunities to leverage customer data
- Plan to incorporate personalized and dynamic loyalty offers and touch points (even as a future consideration).
  - A thoughtful customer-centric vision, combined with actionable data, can provide insight into the opportunities and communications for launching or optimizing a brand’s loyalty program.
  - This framework can be the cornerstone for implementation and planning efforts, to ensure your business builds a truly robust customer driven loyalty program.

It is critical for companies to transform customer insights into innovative services to create a relevant customer experience and thereby solidify loyalty along the entire customer lifecycle.



**BahnBonus-Programme Germain Rail DB**

BahnBonus is a bonus system of Deutsche Bahn. Participants can collect bonus points for the DB or other partners, that can be redeemed for rewards, or for environment, such as trees for the mountain forest project.



- Information through social networks for registered users
- Information through Apps on mobile phones (smartphones)

As regards the general public, general information will be shared on the transport service offered and its qualities, so customer may consider using the railway for their journeys when making their modal choice.

This information should include data about service lines and their routes, service timetables, customer service points, ticket sales points, etc., and about the qualities of the service, emphasising the personalised treatment and attention offered, the quality of the rolling stock fleet, the comfort of the journey, regularity and punctuality and journey times, and in general all those aspects that provide comfort to passengers.

In addition to this information for the public, the system's customers will be informed of the characteristics of the service with data on:

- Itinerary and timetable guides.
- Transport tickets and current fares.
- Customer service offices and sale of transport tickets.
- Advice on how to use the service.
- Etc.

The service will also be able to provide information on a timely basis, through the publication and distribution of brochures and informative documents, on new developments in the service or on some foreseeable incidents, such as:

- Modifications to the service for various reasons (holidays, special events, strikes, pandemics, etc.)
- Changes to the timetable throughout the year (summer-winter)
- Social information of interest
- Etc.

As far as the Internet is concerned, information on the transport service and its possible modifications or foreseeable incidents will be maintained.

### 6.5.2 Corporate Identity

The image of the rail system must reflect the values of the population it serves and the level of service the citizens expect. It is essential that the populations where the line runs to have a positive feeling towards the railway line.

The nomenclature of the system will be of great importance so that people and all groups can identify it properly and build relationships of mutual trust.



**Corporate Identities of UK railway companies**

A brand that conveys positive associations to customers improves customer loyalty, and loyalty is the key to a successful transport system, whether it is due to the day-to-day trust of regular customers or occasional travellers.

Creating an image that contains these values is essential to attract new users and turn them into regular customers.

The planned corporate image can be disseminated and adapted to all the fundamental elements of the system: stations, accesses, vehicles, and other

elements that will contribute decisively to reinforcing the image of modernity and integration in the city: signage, uniformity, anagrams, information and ticket design, interior furniture, ticket distributors and access control systems, style of communication with customers, etc.

The railway operator should consider its staff as the best transmitter of the image of the railway line.

It should be borne in mind that a modern, attractive image that takes care of all the resources and means of a railway undertaking will contribute decisively to achieving greater satisfaction of the system's customers and will make the service offer more attractive to potential customers of the system.

Particular attention should be paid to the following elements:

- Human resources:
  - Uniformity of staff.
  - Attitude and dealings with the public.
- Material resources:
  - Trains (external appearance).
  - Corporate image.
  - Signage.
  - Pictograms
  - Internal traveller information.
  - Information in stations.
  - Trip tickets.

Staff shall be properly uniformed, especially those members of staff who are in contact with the public. The image of all material means must be unified in a common project.

## Uniformity

The uniform is an essential element that allows customers to identify the company that serves them. Uniform shapes and colours characterise the external appearance.

One of the objectives of corporate uniformity is to offer an impeccable image of a modern, sustainable and quality company to customers, as well as to offer comfortable, functional and quality garments to the staff.

The uniform must meet a series of objectives, among which are the identification of the uniform with the image and values of the brand, easy recognition by clients, transmitting professionalism and a feeling of teamwork and union, comfort, adaptability to different times of the year and climates, safety and confidence.



**RENFE Staff Uniformity. Source: RENFE**

Sometimes high fashion designers are used to design, manufacture and supply uniforms: e. g.: Balenciaga for Air France, Jesus del Pozo for Renfe.

The company can use a questionnaire for each group of workers: driving, inspection and stations, to find out their uniform needs and preferences.

### 6.5.3 Information and customer service plan

The information and customer service plans should include the following points:

- Achievement of the objective of informing the user through the different processes of interaction with the client (pre-sale, sale and post-sale)
- Contact channels that can be used to reach customers at each of these stages (web, commercial offices, online inspectors, social networks, intercom in stations, static and dynamic information supports in trains and stations, mass advertising media, etc.), as well as the administrative processes involved in "back office"
- Material and human resources better suited to coordinate customer contact processes and customer service channels.

To establish the Information Service Plan, the processes or stages that are necessary for the customer to have the best experience of using the service can be considered first.

In this sense, a distinction can be made between direct commercial operation processes, i.e. those involving personal or visual contact with the customer, and commercial operation support or indirect processes (administrative processes such as complaint management, management of payments made to customers as a result of their complaints, delivery of administrative documentation to public bodies or the analysis and "reporting" of information obtained from ticketing systems (sales and validations).

Information to customers should not be only focused only on sales. It is recommended to share company plans, policies, etc., such as:

- Future rail lines
- New or modified services
- Special conditions to use the rail system in case of extraordinary situations (pandemics, special events, etc.)
- Social information
- Etc.

With regard to the direct commercial operation processes, three key processes or stages can be considered in which the customer is contacted, and which may influence his experience of use and the very image of the railway company.

- Pre-sales process
- Sales process
- After-sales process

**6.5.3.1 The Pre-Sales process**

At this stage, it can be grouped all contacts with the customer before he uses the rail service. It is a stage with a basically informative content that seeks to attract the customer.

In this stage, the corporate image is transmitted, the service and the most appropriate travel tickets for each customer profile are promoted, information on timetables and frequencies is provided and the contactless card personalization activity itself is carried out.

**6.5.3.2 The sales process**

At this stage, all the purchase and recharging processes come into play (tickets and means of payment), as well as the customer information elements on the service both inside and outside the trains, either through dynamic supports (waiting times for the next service) or through static supports (maps, transit times, etc.).



*Railway ticket*

**6.5.3.3 The After-Sales Process**

The after-sales process takes place once the customer has been transported. The customer can make suggestions regarding the service received, although the normal procedure is to process a complaint, which should always be taken as an opportunity to improve the company.

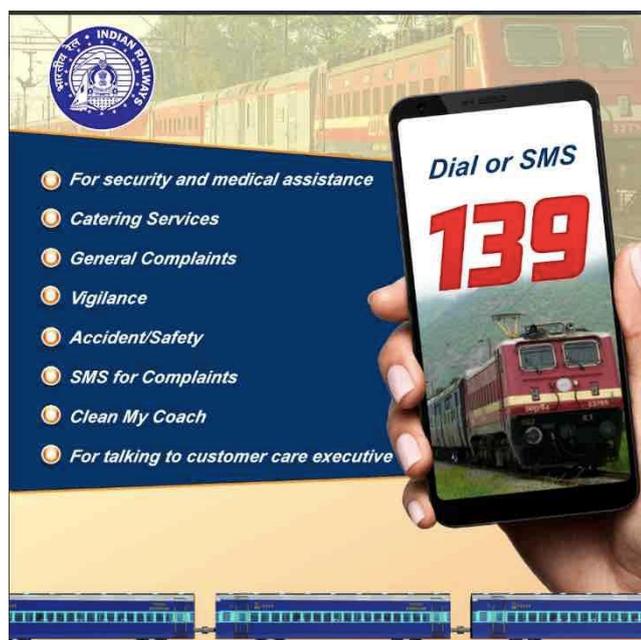
In the case of some railway undertakings, it is sometimes not even necessary to make a formal complaint. For example, at the beginning of the high-speed AVE service (operated by RENFE, Spain), if a particular service arrived more than 5 minutes late at its destination, the customer was compensated automatically without even requesting for it. This is a good example of service excellence.

Some railway undertakings in case of a service arriving late, provide the customer with information on how to proceed to manage the claim.

Claims need to be recorded in a system based on the complaints book. Telematic models must be implemented allowing users a more agile and rapid means of raising complaints with railway undertakings and infrastructure managers.

Claims or suggestions may be made through the following channels:

- Web page
- Commercial Agencies
- Phone
- E-mail or postal mail



*Suggestions and Complain Channel. Indian Railways*

## 6.6 Commercial Communications

The channels for commercial communications used by the operators usually are:

- Information Systems in **stations and platforms**: Panels Information Systems (PIS), Speakers, Communication staff.

- Information Systems **on board**: Panels Information Systems (PIS), Speakers, Communication staff.
- Internet: website, apps, social media (Twitter, Facebook, Blogs, YouTube Channels, Instagram, LinkedIn)

Due to the increasing use of internet connected devices, operators are implementing new communication channels to reach their customers, such as websites, apps, and social media.

Main railway operators use all these channels to be in contact with their customers.

- Website: ticket sales channel, mean of information (direct information on possible changes or incidents in the trips), ticket management (such as changes).
- Apps: The use of applications on mobile phones and tablets has become more frequent and prevails over the use of computers and portable PCs. Usually present the same functionalities as websites but adapted to mobile phone and/or tablet screens
- Social Media. some several current examples are shown below (Data based on year 2021):
  - **Twitter**: This network already has over 340 million active users and is excellent for generating conversations between companies and users. The information can be given very quickly, directly and concisely (less than 140 characters) about the operation of the service, incidents, offers. With *Twitter* it is possible to have an assessment of the impact of the messages launched and for the management of the services performance, so that the company can know the topics that have had the greatest impact on twitter users.
  - **Facebook**: this social network has over 2,4 billion active users, women and men in similar proportions, and reaches not only younger generations but also older audiences.

- **Instagram:** Instagram is a social network with 1 billion active users that companies can use to strengthen their brand (branding) and bring it closer to the audience. Some studies have shown that *Instagram* is more emotional than *Facebook*. Its power lies in the fact that images with visual potential can be shared quickly and easily.
- **LinkedIn.** This social network is oriented to professional groups with 660 million of active users has also had an important growth in the last time and has evolved in the last years from being a social media recruitment channel to one where value added information from different professions is shared. *LinkedIn* is another social media channel that is necessary for all companies that want to use social networks as a communication and marketing channel.
- **Tik Tok.** This Chinese social network focused on very short videos about music and dance can be used, as the company OUI of the SCNF or SCNB group started to do in 2021, to promote its services or campaigns with great success.



Spanish OUIGO Facebook Channel in Spain

It is recommended that the **community manager** to be located at the control centre to be able to inform customers in real time, channelling the incidents that occur on the line and that reach the control centre to the different information channels.

### 6.7 Case of Incidence

Railway operators generally have a customer service office, responsible to provide the information to customers in case of planned or unplanned closure (fully or partially) and incidents or emergencies in the service.

In the event of incidents, one of the main objectives is to attend the instructions of the onboard staff and convey the instructions to the auxiliary personnel, if necessary.

If onboard staff is incapacitated or cannot get in contact, the customer service office will take the most appropriate measures, depending on the circumstances.



*WhatsApp assistance. Source Seville Metro (Spain)*

To support the communication offered by their staff, operators employ social networks, apps and websites to report incidents and changes in service in real time, to help their customers to manage route changes and alternative services.

All these information channels, both traditional and digital, should be centralized in only one department (Communication and Customer Service) to provide a unified information to the user and always working in coordination with the operational control centre.

## 6.8 Human Factor

The Communication department and the customer service team work under the same guidelines, organizing and managing all the information channels, both traditional and digital, in order to provide users

with a single piece of information. They also must work in coordination with the operational control center.

The customer service staff needs to differentiate traditional and digital communication, so that the team handling social media must have a high knowledge of them, and use a language previously defined by the companies (Stylebook) adapted to the social network in question.

A **Stylebook** is the bedrock of customer communications for any company that does customer communications. It lays out a set of rules and writing standards that ensure the user recognizes the brand in various formats across all channels.

All customer-facing staff must have excellent communication and customer-oriented skills, so that they will express themselves in a positive and clear manner and being able to convey information to others in a simple and unambiguous way.

- **Emotional Intelligence** is the ability to understand and manage the emotions and communicate effectively, avoiding stress, overcome challenges and empathise with others.
- **Cohesion and Clarity** communicating messages clearly and concisely.
- **Tone of Voice** adequate, using a right tone for a better communication.
- **Confidence**, it will give customers faith in the operator's abilities to deliver what they need
- **Empathy**. The goal here is to understand where the other person or customer is coming from and respect their views and opinions even if they are very different from the operator's.
- **Respect**. If the communication staff respect the ideas and opinions of users, they will be more likely to communicate with them.
- **Listening**. Good communication is all about listening effectively.
- **Open-Mindedness**. Strong communications require an open mind and a commitment to understanding other people's points of view.

➤ **Asking Good Questions.** Good questions can help conversations flow and improve the outcome.

### 6.9 Customers Lifecycle

Business is about much more than merely closing a one-time deal. Companies build mutually beneficial relationships with customers that equate to a higher customer lifetime value: **customers should stick around for a while.**

Brand loyalty is of the utmost importance today. However, loyalty is only the final step in the customer lifecycle. There are several steps preceding it, essential to build long-term customer relationships.

The customer lifecycle outlines the steps taken by a customer as they progress through the marketing and sales funnel. It gives marketing, sales and customer service teams a complete picture of the customer’s journey and highlights areas for improvement.

Customer lifecycle management is the process of assigning different stages of the customer lifecycle to different measurable metrics.

Most customers follow a similar set of steps when it comes to choosing a brand’s product or service and, eventually, becoming loyal to that brand. Rather than leaving that to chance and hoping that customers will choose one’s brand, the company may try to guide them in the direction that is needed.

A company can plan the best way to strategically lead “strangers” to their business.

Customer lifecycle marketing is used to improve customer experience throughout the buyer’s journey. Beginning with brand discovery, marketing teams capitalize on opportunities to educate customers, encourage purchase decisions, and optimize customer delight. This fosters long-lasting customer relationships and advocacy for the brand.



Customer Lifecycle

#### 6.9.1 Awareness

Customer becomes consciously or unconsciously aware of a travel need via one or several channels of communication.

A customer begins searching for a product (travel). The customer will compare products across competitor brands, as well as reading customer

reviews. Eventually, the customer will reach out to a certain brand with questions and concerns.

Before customers discover the company, it is needed to determine the target. Rather than marketing to everyone, identifying a specific target audience helps to create content relevant to customers.

By placing out lots of useful, engaging, search-engine-optimized content, a company will pop up more frequently when customers are searching for related topics. Content can include original blog posts offering industry information, templates for email, infographics. The idea is to give the customers a reason to trust before they invest

When customers are looking for certain products or services, **the company must be the first that comes to mind against other competitors.**

This is the basis of the inbound marketing methodology.

To make a customer become aware of a travel need could be make using emotions, preference or big data to trigger this need.

The next step could be "Orientation": the customer is inspired by a certain content and is able to virtually experience travel destinations.

This inspiration could be pushed by:

- Human assistance: community feedback, personal travel assistants or a travel experience centre.
- Self-discovery, where channels have to work digital platforms, dynamic online content, digital travel assistant, etc. These channels will support in a way Awareness.

### 6.9.2 Consideration

The brand must respond to the customer's questions and concerns, as well as inquire for more information on the customer's needs.

Following that, the brand needs to offer the best products or services to satisfy the customer's needs, as well as educate the customer on the uses of those products or services.

Customers' lives can be made easier by offering as much information as possible that limits their need to reach out to the customer service team.

Customers like to handle as much of the purchasing process on their own, so providing them with means to educate themselves will further attract them to the brand.

Rather than relying solely on self-service tools, the customer success team should be working proactively as well. They should be reaching out to leads and offering them trials or demos of a kind, that help familiarize customers with one's products. This not only promotes the product line, but it also establishes a personal relationship with the customer.



*Understanding customer's buying process*

### 6.9.3 Purchase

Having gained all necessary information, the customer makes a purchasing travel plan decision.

Build a simple, online ordering system that ensures the most difficult part of the purchasing process is a simple action by having the customer write out their credit card number.

In this sense, the easier it is to add items to the cart, add shipping and card information, and press "submit", the more likely it is that a customer will make a purchase.

The purchase stage can be a high-stress moment for the customer. No one wants to have buyer's remorse, and this fear of regret can act as a major point of friction during the customer experience.

To make it a simple process, several stages may be considered:

- Preparation should be kept to a minimum
- Automated user profile authentication and risk assessment
- No forms to be required
- Automatic payment by banks

One way to counteract this is to provide support options during the purchase stage.

For example, it is possible to add live chat on the website that links to a support rep. That way, customers can easily contact the support team when they have questions while shopping. Instead of navigating away from the page, it is possible to contact the chat widget, ask a question, and return to their purchase.

**6.9.4 Travel**

The objective is that the customer travels to destination, experiencing fast and seamless transportation:

- Modern trains and taxi service, including smart cabins
- Automated border control
- Advanced navigation systems, in case of self-travel

**6.9.5 Assistance**

Customer needs to have available travel support tools, in case of questions or issues for immediate help, on a 24/ support basis.

**6.9.6 Retention. Post-Purchase Engagement**

The company checks in with the customer later, asking how their experience is with their new product or service.

Using information directly from customers, as well as social media engagement, the company continuously makes improvements to their products, services, and customer service experience.

The customer needs to feel just as cared for post-purchase as they are pre-purchase. Set up an automated email system that immediately thanks customers for their orders. Alternatively, it is possible to reach out personally after their product has been shipped or downloaded to ensure they got exactly what they wanted and are happy with their purchase.



Personalizing the post-purchase engagement is easy when the customer support team only works with a limited quantity of customers. As the customer base grows, it is needed to scale the efforts accordingly to keep pace with customer demand.

This is where marketing automation tools come into play. Pairing them with the contacts base and CRM allows to quickly access user information and turn it into personalized content.

For example, it is possible to set up a workflow to automatically send customers an email whenever a new product or service is released. This keeps the steady communication with customers and helps maintain an active relationship with them.

**6.9.7 Customer Feedback**

It is very important to know the customer’s opinion or feedback regarding the operating services including but not limited to:

- Customer Services Officer Staff (at stations and on board)
- Other Staff
- Passenger helpdesk via free-phone, email and in writing
- Lost and found service
- Website content, functionality and ease of use of information
- Customer service provided by the rail replacement transport service (normally by buses)
- Special events
- Awareness of ticketing / marketing strategy
- Passenger information points

➤ Security perception

Customer feedback is especially rich when it is collected immediately after an interaction, when both the memory and the emotion of the incident are fresh. Doing so typically elevates response rates significantly.

Two ways to do this are by asking customers to stay on the line for a survey at the end of a call to the contact centre or by sending an email containing a survey when a support ticket is closed.

Beyond assessing satisfaction, the survey can also solicit information that aids in understanding the customers' needs and propensity to engage in beneficial behaviours.

In addition, railway can take advantage of the many touchpoints along the journey to give customers opportunities to interact.



*Customer feedback*

Many social media applications allow for real-time feedback. While much of the feedback is now shared just among users, railway should track this data as part of their customer feedback processes and encourage customers to link their online profiles.

Once railway company know what the distinct needs of their customer segments are, they can provide customized and relevant services to meet those needs.

From the operational perspective, a good example of a customized service would be an automated re-accommodation process for best customers. Currently, automated systems exist that can execute this, but it's done without taking into account the

passenger's specific needs and past history; the next generation system would take into account the customer's preferences for alternate destinations and preferred routing.

Quality Measure		Customer Evaluation contribute to:
<b>Customer Survey:</b> - Overall satisfaction - Staff	<b>Satisfaction</b>	Staff training Customer care training Customer care culture within the organisation Recognition for good service Develop Customer Service Standards Manual
<b>Customer Survey:</b> -Safety & security	<b>Satisfaction</b>	High visible present of staff on the System Continuous CCTV monitoring Dedicated Security and Revenue Team
<b>Customer Survey:</b> -Service Information	<b>Satisfaction</b>	Formation of Passenger Information Committee Clear information dissemination principles Robust information dissemination mechanism
<b>Customer Survey:</b> -Service performance	<b>Satisfaction</b>	Frequency of train services Punctuality of train services Handling of delays on the System
<b>Passenger Information</b>		Sufficient staff provision Sufficient channels Staff training
<b>Website or Mobile Applications</b>		Failover facility to ensure continuous operations of the website or mobile applications

As the adoption of social media grows, travel is destined to become the industry most transformed by it. Travel is information intensive, emotional, and a topic people love to talk about. Often, they are looking for inspiration for their next trip, and will take advice from people in their network. Social media will ultimately drive increasing receptiveness to ideas for new experiences that can be tied to travel.

It is also crucial to collect customer experience data throughout the end-to-end customer journey and not just at the time of onboarding a new customer.

Companies need to understand predictively how changes to the customer experience will impact financial metrics.

Only contextual predictive analysis can deliver this depth of insight.

- Machine learning can help illuminate trends that human data analysts may not have thought to look for. Having these insights delivered in product empowers all stakeholders to make the right decisions around customer experience.
- Businesses move fast, and only machine learning analysis can deliver insights as quickly as leaders need them.

Artificial Intelligence (AI), Machine Learning (ML), Deep Learning, Big Data, etc. are trending technologies that can help Railway Undertakings improve their feedback collection and evaluation methods for getting accurate and useful insights.

Customers give feedback via multiple platforms such as calls, online chat, face-to-face meetings, surveys, social media channels, etc.

But it is difficult to handle and analyse huge amounts of data which a company receives in the form of feedback. AI-powered platforms and automated tech tools have simplified this process.

Artificial intelligence (AI) automates many processes that were once run solely by people. While some view this as a negative change, the reality is that AI can help reduce the workload of multiple staff members-and can often do it faster and more accurately.

Artificial intelligence and technology are changing the face of customer service and customer relationship management.

### 6.9.8 Advocacy

The customer feels like an important asset to the brand and makes additional future purchases with the brand. In addition, to help influence others, the customer posts on social media about their

experiences with the brand and writes their own product reviews, which later inform a future customer in their discovery phase.

A customer will need that final push to encourage going above and beyond for the brand. Encourage happy customers to share their experiences by making it simple to do so. Email them brief surveys, link them to different Reviews sites, and offer discounts or compensation for referring friends.

A good example of connection with the brand is Apple, that has been able to convert their clients in real “fans/supporters” of the brand.

### 6.10 Key Performance Indicators (KPIs)

#### *You Can't Manage What You Can't Measure*

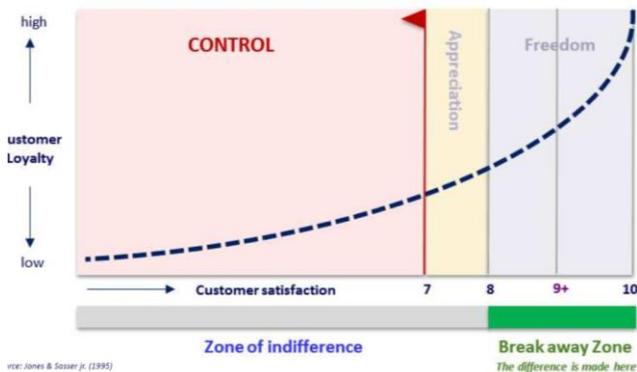
It is crucial to deliver a good transport performance persistently and build up a favourable perception in the mind of the passengers.

Therefore, customer who use the service on a regular basis will become more entrenched while encouraging potential new users who have not yet used the service before, so it would increase the demand and revenues.

As long as the favourable perception exists in the mind of passengers, they would tend to tolerate an occasional bout of a sub-standard service. The users would remain confident regarding the overall performance and would continue using the infrastructure.

Investments in improving customer experience is supposed to increase the number of passengers in trains and consequently to gain more profitable revenues.

On the contrary, if the performance is persistently below expectations, passengers would soon develop an unfavourable feeling and would look for other available alternatives, and it would be hard to encourage new passengers. Together a drop-in patronage and revenue is expected in the long run.



**Higher scores, more loyalty, more revenue. Source: Jones & Sasser jr. (1995). Mark van Hagen.**

Once as unfavourable perception is developed, it may be hard to remove it. Even though a good performance is delivered, passengers may perceive this done by chance. Nevertheless, as long as the good performance is maintained, passengers would not be forced to look for other alternatives immediately.

The principles that underpin the performance measurement framework are:

- Measures should be meaningful and relevant to management of key processes and strategic objectives
- Targets and performance review levels should be clearly derived from a balanced consideration of expectations of all stakeholders and philosophy of continuous improvement
- The right people should have measurement information at the right time
- Management information must be assured and controlled to ensure integrity, validity and consistency

The target levels should be based on an understanding of:

- Customer requirements
- Strategic objectives for excellence
- Current performance
- Past performance trends
- Resource availability
- Planned improvement activities

- Benchmarked world class performance levels
- Review of measures and targets
- introduction of new measures or deletion of measures as and when processes are changed
- formal reviews of key processes
- changes resulting from improvement projects and other regular audits
- formal change control to the register of organisational measures.

Artificial Intelligence could use advanced algorithms to analyse customer reviews and comments. Using dependency relations, proprietary industry-specific tagging, complex grammar and syntactic rules, cognitive/pragmatic rules, and other resources that analyses reviews and identifies feelings and opinions.



**Example of analytics dashboard**

Happy customers are loyal customers, that's why it's so important to be able to measure how your customers feel about railway service.

### 6.10.1 Key Performance indicators examples

- Net Promoter Score (NPS)

Few performance indicators are more brutally revealing than whether or not the customers would recommend services, and support experiences to others. This is precisely what NPS will reveal.

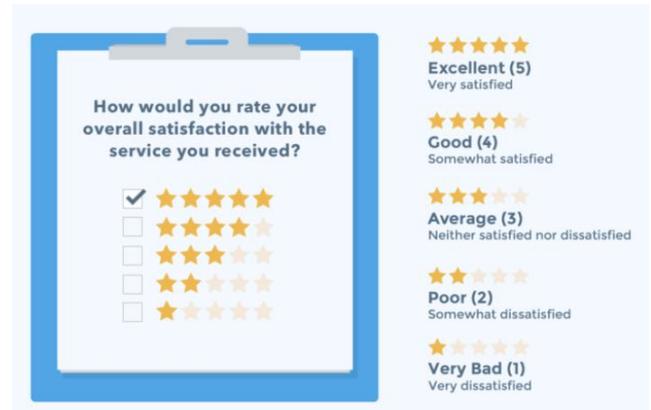
➤ Customer Satisfaction (CSAT)

A good or bad support experience can make or break a particular customer journey. CSAT surveys help measure customer contentedness before, during, and after those interactions.

➤ Customer effort score (CES)

Customer Effort Score is the third most popular customer experience metric that involves the customer’s input. CES is a pure transactional metric and it typically assesses the simplicity of a single solution.

CES typically answers “how easy was it to solve your problem with today?” and has a 5- or 7-point scale system. Below, there are some examples of CES implementation.



➤ Comfort

Comfort during the journey is important for transit users, both the physical comfort regarding vehicles and comfort regarding ambient conditions on board or at stations.

Comfort on board means having soft and clean seats, comfortable temperature, not many people on board, smoothness of the bus ride, low levels of noise and vibrations, not nasty odors.

Comfort at stations can be considered as a function of the passenger amenities provided at the stations. Amenities include shelters, benches, vending machines, trash receptacles, lighting, phone booths, and so on.

➤ Cleanliness.

The indicators regarding cleanliness refer to the physical condition of trains and facilities. In this sense, aspects like air quality and cleaning have become very important for customers after Covid-19 pandemic.

**Net Promoter Score (NPS®)**



$$NPS^{\circledR} = \% \text{ of } \text{Promoters} - \% \text{ of } \text{Detractors}$$

*Net Promoter Score Calculation*



*What is a good NPS score?*

**6.10.2 Airline NPS example**

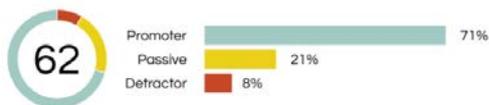
Airline companies have identified the industry and relationship drivers for the industry. For example, industry drivers for aviation are more specific, like, the attitude of staff, seat comfort, flight-entertainment, etc.

On the other hand, relationship drivers are more generic, like, the reliability of services, value for money, online experience, etc.

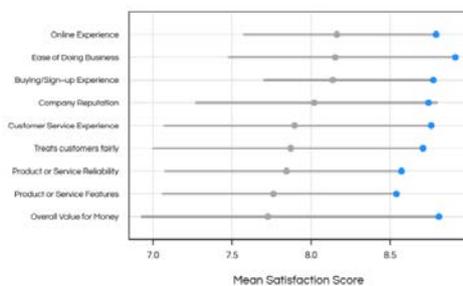
Once the drivers are identified, they are mapped against the mean satisfaction score.

Once the quadrants have been plotted, it becomes simple to understand which factors are pivotal to customer satisfaction. For instance, drivers that fall in the “high importance, low performance” section should be prioritized, as they deliver maximum impact on LTR score, and are one of the top reasons for customer dissatisfaction.

1<sup>st</sup>: Southwest



Competitive Performance: Relationship Drivers



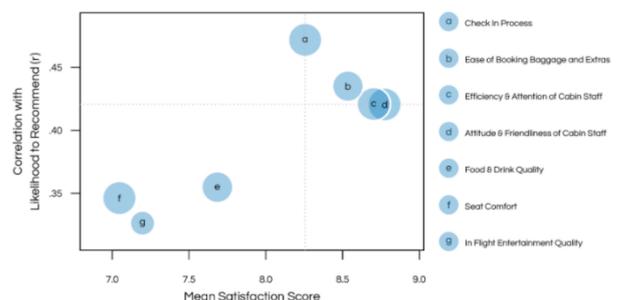
**Example of Relations drivers (Airline industry).** Source: <https://www.customerexperienceupdate.com/airlines/metrics>

Similarly, drivers in the “high performance, high importance” quadrant should be leveraged effectively, as they are the reasons that matter the most to the customer, and the reasons why they are happy with the business.

- Relation drivers:
  - Online Experience
  - Ease of doing business
  - Buying/Sign-up experience
  - Company regulation
  - Customer service Experience
  - Treats customer fairly
  - Product of service reliability
  - Product of service features
  - Overall value for money

- Industry drivers
  - Attitude & friendliness of cabin staff
  - Efficiency & Attention of Cabin staff
  - Check in process
  - Easy of booking baggage and extras
  - Food & Drink quality
  - In-flight entertainment quality
  - Seat comfort

Importance-Performance Plots: Industry Drivers



Satmetrix NPS Benchmarks Airlines | Southwest

**Example of Performance Plots (Airline industry).** Source:

<https://www.customerexperienceupdate.com/airlines/metrics>

Plotting NPS score on the importance-performance graph helps businesses discover hidden bottlenecks and improve the overall customer experience.

## 7 SERVICES TO BE PROVIDED

This section will highlight main services to be provided:

- Information to Customers and Information Channels
- Services at stations
- On-board services
- Luggage
- Bicycles/Bikes
- Pets
- Awareness Campaigns

### 7.1 Information

#### 7.1.1 Introduction

Information should be readily available to customers so that they can make informed decisions on how and when to travel. Without this information, customers cannot be expected to know the current situation of the transport system or the specific vehicle that they should take.

It is important to use a simple language to share the information: not use the expert railway language.

All types of information should be provided to customers to allow them to be completely autonomous, to anticipate and to find the way without in case of disruptions of the service.

**Multimodal support** is closely linked with notion of providing information to the passengers, because multimodal service will be more important if passengers have enough information.

For example, places for bicycles should be clearly indicated. There are many people using bicycles, especially in the urban mobility, and conflicts with the use of the space on board could arise. It is important to permit to everybody to be safe and comfortable, providing adapted spaces and adequate information.

Information could be delivered as follows:

- Digital Services
  - Web Portal
  - WIFI, meeting customer expectations. Wi-Fi could be developed by the railway undertaking itself, or use customer own Wi-Fi, enhanced with repeaters on-board, but tourist will not have unlimited data contracts
  - Intercom with Customer care services
  - Smart services
  - Planning travel and interchanges
- Passenger Information Services
  - Visual displays, with real time dynamic information, about delays, schedule, connection with other services, current time, speed, destination, time of arrival, temperature at destination, next stops, connection with other means of transport, air quality inside the train, etc.
  - Public Address (coordinated with visual info)
  - Reservation and occupancy detection (seats, bikes, wheelchairs, etc.)
  - Integral Journey App
- Signage and Wayfinding

Making information available to travellers via internet enables new strategies to be employed to facilitate multimodal mobility.

Ticketing and real-time information have been the two main fields of innovation for intermodal mobility over the last few years.



*Information on-board the train*

The channels that can be used to convey information related the transport system and the type of information to be provided are described below.

- General service information and documentation
- Information and documentation of specific aspects of the service
- Telephone information - Internet
- Information in stations
- Information on board

**7.1.2 Station information channels**

Stations are a fast and reliable information hub.

Customers should have access to useful information and details of their routes in stations. These elements constitute the information chain.

This information chain includes every means of communication in the station: wayfinding, timetable screens sound broadcasting system, information kiosk, maps, internet, mobile phone, etc.

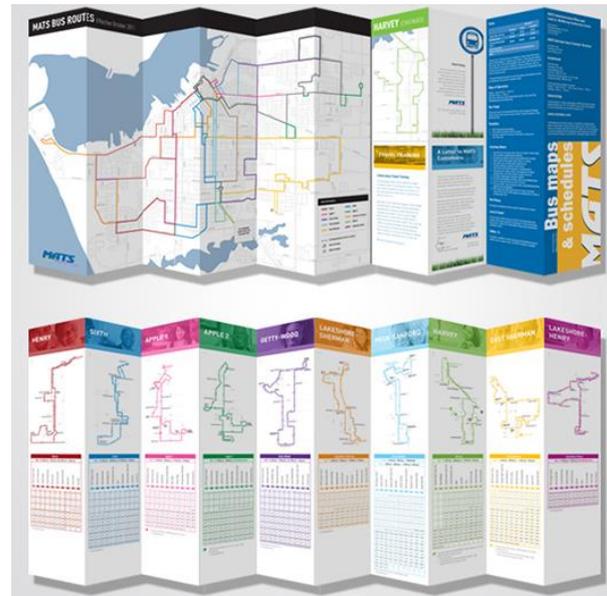
Information Channels should be defined attending to:

- Visual Information. Signage
  - Information signs
  - Direction or wayfinding signs
  - Directional reassurance signs
  - Identification or naming signs
  - Visitor information nodes
  - Electro-visual displays
  - Statutory & warning signs
- Audible Information
  - PA system
  - Pre-recorded information
  - Background music
  - Talking Signs for blind
- Tactile Information
  - Pavement warning strips
  - Signals in relief
  - Maps in relief
  - Models

**7.1.3 Handouts to customers**

**7.1.3.1 Pocket guides and brochures**

The following handouts can be supplied to the client in hardcopy format and will also be available on the website for downloading.



*Pocket guides with lines*

The following information is available:

- Schematic plan of the network
- Pocket plans with the rail and public transport networks
- Tourism-oriented plans, including the railway network. For example, SBB published a tourist map that was a handkerchief to wipe your glasses.

**7.1.3.2 Other documents**

The main objective is to keep the client informed about everything related to the transport system, so it is suggested to distribute other documents to facilitate the trip.

These documents could be:

- Accessibility on the network.
- Passenger regulations.
- Specific advertising campaigns to promote the use of transport.
- Annual reports.

## Guidelines for travellers

Passengers must wear masks at entry and during travel

 No linen, blankets and curtains will be provided in special trains

 Need to carry their own food and drinking water

 No food stalls on platforms and no train side vending permitted

 Following of physical distance must while boarding train and during travel

 Passengers should reach station 90 minutes prior to boarding

 Advance reservation period for e-tickets is maximum of 7 days

### SCR CAUTIONS

-  Do not trespass railway tracks at stations or in mid-section
-  Do not walk on tracks and avoid using mobiles while boarding/alighting trains
-  Do not gather or indulge in any activity in the vicinity of railway tracks
-  Trespassing of railway tracks is unlawful under Section 147 of Railways Act, 1989

 Passengers advised to download and use Aarogya Setu app

### Covid-19 campaign on Indian Railway

As a complement to the general information of the service, brochures of the following types can be prepared:

- One-off campaigns: aimed at both the service's regular customers and the general public
- Different campaigns to share with customers the Company policies related to universal accessibility, inclusiveness, sustainability, environmental friendliness, etc.
- Campaigns to inform customer about planned railway lines and/or services
- Information on specific aspects of the service, such as:
  - Special services
  - Travel advice, including a series of recommendations, for collective benefit.
  - Information on changes to the service.

#### 7.1.4 Measures to improve and standardize customer treatment and information

Staff in contact with customers have a great responsibility, and it is largely up to them whether the customer will use the transport system again. To improve the quality of customer service, the following keys should be considered:

- Provide information at any moment of travel
- Increase reliability in terms of departure/ arrival time
- Real-time journey information and disruption planning.
- In case of traffic disruption: inform the customer about an alternative to the final destination, and not only a notification of the train delayed
- Treatment should not be distant or indifferent, it is important that this staff is polite and pleasant.
- Attention should be efficient. If the employee is assisting someone else, he/she should let them know that he/she will be available as soon as possible and give them the address in case the situation is delayed.
- In the case of commercial offices, if the staff is doing administrative work, they should leave it to attend to the customer immediately.
- Special care will be taken in the external appearance, and all customer service personnel must be uniformed, giving a formal and professional appearance. At the same time, care will be taken to ensure that the commercial offices are clean.
- The customer service/information personnel will have to provide the information that the customer needs, for which they will rely on the documents that are available in the commercial offices.
- The staff need to be kept informed of all the news/incidents that are occurring in the service, so that they are able to answer all the questions that the customer makes.
- Complaints and suggestions should be considered as an opportunity to improve, so statistics will be made of the elements that give rise to the greatest number of complaints and action will be taken on them.

#### 7.1.5 Information and telephone service

The objective should be to manage all customer communications in a professional and centralized manner.

The key goal of the telephone attention is to solve any doubt to clients in reference to the transport systems (schedules, tariffs, possible routes), and at the same time complaints can be presented.

The main duties of the customer service:

- Inform the customer of the transport system and any doubts that may arise.
- Advise and present with the best option available, nearest stations, interchanges with public transport, etc.
- Clarify doubts and objections. Handling complaints in accordance with the complaints handling procedure detailed below
- Make statistics on the points that generate the greatest number of complaints
- To provide continuity and follow-up to the relationship with the customer, both in terms of suggestions about the transport system and improvements

- Information through station agents
- Information through the commercial offices
- Information through hotels and tourist centres
- Website, social networks (Facebook, Twitter, etc...)
- Apps on mobile phones
- Contact phone number that will work 365 days a year, 24 hours a day
- SMS to mobile phones and e-mail of registered users
- Passengers could receive personalised information

This information should be complemented as soon as possible, together with alternative solution or compensation, if any.

The information about the incident should always be given in the clearest and quickest way possible so that the customer can make the decision to take an alternative transport, if he wishes.

Also, customers can get more information regarding connections and other transport services in the vicinity – and perhaps, even, request a cab from the train, as can be done with Thalys.

Also, real time information about capacity on board for commuter and regional trains with a non-reservation ticket system provide information about the occupation of the different coaches, as the Catalonian railways (Spain) FGC do.

Focus has always been on infrastructure and facilities, but in the 21st century, it increasingly needs to be on improving the features within the train and what passengers can do to relax and enjoy the journey.

As rail operators begin to provide customers with greater value for their money – through the inclusion of great on-board services – customer retention and acquisition will improve, resulting in greater revenue and customer satisfaction, which are excellent prospects for the business.



Integration of Railway Helpline Numbers. Source: [irctchelp.in](http://irctchelp.in)

### 7.1.6 Real-time information and updates

It is important the way in which modifications to the service due to fortuitous causes (accidents, incidents) or programmed causes are communicated to the customer, through all available means:

- Dynamic information in stations/trains
- Information through the loudspeaker at stations/trains
- Replication of loudspeaker messages on smartphone



**Train display panel in two languages (Arabic and French). Marrakech railway station (Morocco)**

Using a modern infotainment system can enhance and transform the customer experience on public transport.

**7.1.7 Availability of occupancy information**

Information should be readily available to passengers so that they can make informed decisions on how and when to travel. Without this information, passengers cannot be expected to know the current situation of the transport system or the specific vehicle that they should take. This can be done by putting additional information such as the occupancy of the next vehicles on existing passenger information screens/panels.

Situations of using occupancy information:

- Real-time (Dynamic): when a passenger would like to get information about current occupancy
- Statistical (Static): for trip planning when a passenger can check occupancy for a certain day of the week or time and make a decision about his/her trip time.

**7.1.7.1 Station infrastructure**

The infrastructure that already exists in stations, platforms can be used in monitoring occupancy and examples include CCTV, using load devices on escalators, the repurposing of data from entrance/exit systems or turnstiles, ticket validators and Infrared temperature measurement (where implemented).

Ticket validator systems are not accurate as they count the number of passengers within the fare zone and some of them are providing information as to the number of passengers in a particular vehicle.

Ad hoc information can be displayed at stops/stations using the current customer information display infrastructure, allowing passengers to choose the following vehicle if it is less busy.

**7.1.7.2 Rolling stock**

As with stations existing the data from hardware can be used to measure occupancy. Onboard computers can be used either with data from the driver manually inputting data (low accuracy) or with data from Automatic Passenger Counting Systems (APCS). CCTV systems in the vehicles is another opportunity for occupancy tracking.

**7.1.7.3 Data from phones**

Mobile phones can be a source of information in various ways each with their limitations. Wi-Fi/WLAN (which has an accuracy of 85%-90%) and Bluetooth options require these services to be turned on, and applications need to be installed.

Mobile phone signals are another option, though this can be affected by those outside the vehicle unless the route/system is isolated.

**7.1.7.4 Journey planning at home**

With a forecasted occupancy rate, it is possible to inform passengers of alternatives to avoid busy vehicles and ensure that the passenger is not greatly inconvenienced by having to wait too long at the stop or station.

**7.1.7.5 Alternatives/Guiding passengers to other options**

The journey planners should provide options to guide passengers away from the busiest vehicles and busiest times.

**7.1.8 Ticketing**

Ticketing systems need to be adapted to attractive ticket systems after covid situation.

Today, rail passengers are active consumers: they themselves select the best and most efficient route they want.

A smartphone can be used as a paperless ticket. Tickets in electronic format are easy to carry around.

Online ticketing information can help the passengers make a more informed decision on how to manage their journey.

This will also help with monitoring passenger flows as it can be assumed that the passenger is likely to buy a ticket for the journey they have just searched for.



Occupancy rates

### 7.1.9 Mobile devices and new technologies

New technologies have radically changed the way information is consumed and interaction of people. Internet has substantially changed the information landscape, forcing all kinds of companies and institutions to rethink their communication strategy.

The specific objectives of on-line communication, which complement those already in place and determine the actions proposed in the new digital environment:

- Promote new information channels with the aim of communicating any event, news or activity of interest to travellers
- Establish a direct, two-way communication channel that meets the needs and requests of customers
- Manage efficiently and quickly any type of request or comment sent by a user, favouring a listening attitude and facilitating clarifying and conciliatory responses.

The key to communication and information to the customer is not so much in the number of media, but in updating the live content, in analysing what is working and what is not working with the customer

information, receive/listen and attend the messages received by the customers.

#### 7.1.9.1 Service Apps

Apps are the ideal means to mainstream paperless transport. They also allow passengers to access real time information about arrival time, and where they will stop on the platform.

Customers therefore have easy access to station information.

Refer to section 4.4.7.

#### 7.1.9.2 Information through social networks

This kind of channels not only informs about corporate news but also allows to warn customers about timetables and frequencies, to solve doubts or to provide real time information about incidents that may occur online and estimated response times.

It is a tool that, once it has achieved a solid base of followers, allows to reach thousands of people without having to pay for advertisements to external entities (advertising agencies, newspapers, etc.).

Examples:

- Facebook
- LinkedIn
- Twitter
- Instagram
- Tik-Tok

Social networks are intended to be used to perform:

- Pre-sales service: Useful to launch campaigns, promote transport tickets, etc.
- After-sales service and customer service, such as responding to problems with vending machines, doubts with the Via-mobile application, etc.
- Incident management: report any incident, breakdown, or problem on the tram lines, as well as on any of the systems, and all of this instantly.
- Loyalty. Actions aimed at keeping the railway in the minds of consumers, by means of season tickets, ticket raffles, discounts, etc.

- Civility. Promoting campaigns of civic use that encourage the correct use of the public service by customers



### 7.1.9.3 Other information

Channels through mobile devices and new technologies are:

- YouTube Channel
- WhatsApp
- Blog
- E-mail
- SMS
- Instant messaging services (Telegram, etc.)

## 7.2 Services at stations

### 7.2.1 Introduction

Stations are key environments within the rail transport system, where the needs of passengers and the people who come to meet them must be met.

Requirements such as accessibility, the adequacy of its different spaces and the provision of railway services (information, ticket sales and customer service).

Beyond railway services, Stations should be spaces at the service of citizens and, therefore, facilitate and support the development of multiple activities related to culture, art and social awareness campaigns or simply as spaces for integrating citizen activity in its commercial areas.

### 7.2.2 Customer Services

Travel habits are expected to change following the Covid-19 pandemic, which saw a major rise in the number of people working from home during lockdowns.

Services provided at stations by the Customer Service Office have to be oriented to help users, providing a favourable perception to the customers.

These services could be:

- **Lost Property office**, where identify and register luggage, personal effects or other items lost or abandoned on the system. The Customer Service Office is responsible to custody them, try to contact the owner, if possible, and keep them until the owner appears.
- **Rail service replacement** by road transport in case of interruption, in order to minimise the disturbance to passengers. Operators often provide the implementation of a replacement of road transport services such as buses or taxis.  
In the event of an unplanned total or partial closure, customer service managers are responsible for directing passengers to the replacement road transport service or to alternative rail and bus services operating in the vicinity.
- Signage and warning of unavailability of vertical transportation.
- Guidebook, which identifies the needs of passengers, step-by-step via graphics and texts, for the use of the Local Control Room and Passenger Helpdesk to facilitate communication with hearing-impaired or speech-impaired passengers.
- Infopoints
- Departure/arrivals time board and screens
- Analog info displays
- Ticket sales counters
- Ticket vending machines
- Special tariffs for certain social groups, according to the Authority policies.

- Special discounts due to seasonality.
- Passengers already travelling on an annual pass can change to the teleworking or flexible annual long-distance pass.
- Local transport discounts included in the train ticket
- Website, giving the information on time of the lines, providing optimum travel planning details, tariffs, ticket purchase.



*ÖBB Lounge Service*



*Marrakech train station ticket office and travellers waiting in front.*

**7.2.3 Other services at stations**

**7.2.3.1 Lounge services.**

Railway Undertakings may consider by to offer lounge services and priority lines to customers travelling in “premium” classes at selected stations:

- Comfortable waiting room
- Drinks and selected snacks
- Free WIFI & Power outlets
- Selection of newspapers and magazines
- Personal service by employees
- Priority line at ticket offices at the station

**7.2.3.2 Prams renting**

Some Railway Undertakings rent prams at stations. For example, JR East), in order to meet the needs of families who want to avoid having to carry their own prams on the train.

Unlike other rental services offered only for station shops, this kind of service could allow customers to use the prams both inside and outside the stations.

**7.2.3.3 Personal first last-mile vehicles**

The aim is to make it easier for rail customers to combine their train journeys with personal electric mobility vehicles (scooters, bicycles, etc.).

For this purpose, rail users can avail of various parking and even electric recharging points in the vicinity of the stations, and even benefit from discounts for being rail customers.

In this way, sustainable multimodality is promoted and the quality of life of citizens is improved, keeping the railroad as a benchmark for sustainable mobility in the city and metropolitan areas.

Stations need some areas that are well known, but important, that have an important impact on their customer experience:

- Waiting areas
- Toilet facilities
- Luggage lockers
- Travel agencies
- Shopping facilities

Stations need to provide bikes secure parking places at stations:

- Park & Ride
- Bike & Ride
- Chargers for electric bikes

**7.2.3.4 Other Services**

Different railway undertakings have different initiatives, for example, SNCB lends umbrellas to customers or printers with Belgian or France history.

**7.3 On board services**

**7.3.1 Introduction**

The different on-board services to be provided could change according to different factors: length of the route, the season, the level of traffic and the profile of frequent passengers, etc.



*Temporary rolling material adjustments. Source: SBB*

Different kind of services may be provided to customers:

- Welcome amenities, included in the 1st class ticket:
  - Local and international Newspapers, magazines
  - Drinks, refreshments
  - Sale of different travel items (earplugs, power banks, etc.)
- Environment
  - quality elements
  - working environment

- exclusive design
- maximum comfort
- Quiet zones for relaxed travelling
- Family zone



*Family zone/playground. Source: SBB*

- Catering on board
- Touristic/Special Events. Some railway undertakings sell other public transport tickets with touristic attractions in combi with train journey
  - Visits to attractions
  - Daytime / evening / night shows
  - Local gastronomy
  - Live shows on-board
  - Vintage trains



*Tourist/special events. Tren de Cervantes. Source: RENFE*

- Connectivity
  - Wi-Fi onboard
  - Entertainment portal (ePapers/eMagazines, movies/series, etc.)
  - Electrical sockets at the seat
  - Passenger Information System

- Night trains
  - Reclining seats (even better than airplanes ones)
  - Sitting coach
  - Beds and bank beds (1 to 3) / Shower
- Specific coaches for women
- Marketing campaigns



**RENFE alliance with the LEGO Group. Source: RENFE**

In general, other additional services can be offered on trains, however not all operators do. The main additional services provided are **luggage and bikes places**, as well as to allow the transport of pets.

About the transport of pets, luggage and bicycles, most operators usually have restrictions on the size of luggage, as well as on the size, period and manner of transporting pets.

In all cases, if it is decided to allow these elements is important to establish if this transport is allowed across the whole day or during off-peak hours. Another aspect to decide is the fare to request in each case.

### 7.3.2 Onboard Staff

Onboard staff should act as customer services representatives, rather than guards. They should be trained to offer a friendly and personalised service to each passenger similarly to a flight attendant. Each representative could dispose a tablet, which offers up-to-date journey information as well as information specific to a certain passenger.

This is particularly helpful to meet the needs of disabled passengers who need extra assistance including those without a visible disability, and the elderly, to make sure they are comfortable. and if they need help with their luggage, the staff should be there to help them.”

This staff could be recruited from within the rail industry as well as outside, airlines, retail and hospitality, gaining a high level of customer service skills.

### 7.3.3 Class differentiation factors

Usually, trains are composed by 1<sup>st</sup> class coaches + Restaurant (in the middle of the train) + 2<sup>nd</sup> class coaches.

The following classes and services for long distance trains could be offered:

- Sometimes, it is possible to find additionally business class.
  - This is the case of China Railways (with Business, 1<sup>st</sup> and 2<sup>nd</sup> classes)
  - JR East (Gran Class, Green Car and Standard), for example, offering 2+1, 2+2 and 2+3 seating options respectively.
  - In Europe, some Operators offer Extra-Class or Premium class that each day is more popular in Europe and some operators are starting to consider.

#### 7.3.3.1 Physical comfort (seat size, privacy)

There are two main distinguishable models of class differentiation:

- High quota of upper-class seats / Moderate pricing (including no differentiation or minimal extra services (newspapers, snacks etc.)
- Low quota of upper-class seats / High pricing (catering, staff assistance)
  - International and domestic long-distance service 25-35% first class down to about 5% in local services.
  - In average, the quota of first-class seats per train is about 15%
- A trend that some railway undertakings are following is to provide more train attendants, for information purposes, presence and safety, factors that passengers really appreciate.
  - Some railway undertakings have one train attendant on each train, regardless of the number of passengers.

- Some others prefer two (2) train managers on the train.

### 7.3.3.2 Premium / Extra Class



*MAV-START Premium Class*

- 2+1 seating arrangement throughout 1<sup>st</sup> class with small table
- Higher than the normal 1st class
- Quieter and spacious experience
- Very comfortable
- Adjustable seats
- Welcome drinks

### 7.3.3.3 First class

- 2+1 seating arrangement throughout 1<sup>st</sup> class with small table
- Seat with differentiated fabric
- Adjustable seats, with folding tables
- Extra legroom
- In some cases, 1st class seats permit to change the backrest inclination and the seat position.
- Catering zone (service at seat)
- Quiet Zone for relaxed travelling, in some trains
- Power sockets at every seat
- Wider tables, reading lamps
- Amplifiers for improved mobile phone reception and optimized data transfer
- One coach located at the 1st class at the end/beginning of the train

### 7.3.3.4 Second/2<sup>nd</sup> class

- 2+2 / 3+2 seating arrangement
- Power sockets
- Luggage rack
- Quiet zone
- Family zone

### 7.3.3.5 Sleeping coaches

Night train services are having a renaissance, thanks to renewed investment from operators, amid the need to fly less.

Night trains offer a comfortable way to travel by night. There are different travel options: from reclining seats to private sleeping cabins. It is possible to save precious travel time by moving from one destination to the next while sleeping.

- Ongoing refurbishment
- 1-3 bed
- Breakfast included
- Buffet available
- Public shower / coach

### 7.3.3.6 Couchette coaches

- Mainly refurbished
- 4-6 berths
- Breakfast with less choices
- Standard service (pillow & blanket)

### 7.3.3.7 Quiet Coach

In a quiet or silent coach electronic equipment must be used in silent mode and mobile telephone conversations are made in the vestibules at the ends of the coach.

This kind of coaches are normally signed asking not to use mobile phones, etc.

This could be a perfect environment to work while traveling.



*Quiet coach sign. Source: AMTRAK*



*Restaurant. Source SBB*

### 7.3.4 Gastronomy on board



*Restaurant on board Al-Andalus train (Source: RENFE)*

#### 7.3.4.1 Facilities

Different gastronomy possibilities may be found or provided on board:

- Fully serviced Restaurant
- Catering at seat: Restaurant/ Bistro
  - Full service in first class on the table, may be also in second class
  - It could be considered a Take-Away service for 2nd class
  - Food and drinks can be ordered at the seat (maybe through smart device) to be served at dedicated sections with high demand
  - Ordering from seats, s and the digital experience

- Cafeteria
  - Hot/cold beverages (sodas, beer, juices)
  - Meals and snacks
- Vending Machines
- Mobile bar
  - The items usually available from a mobile bar include soft drinks, hot drinks and cold dishes, aperitifs, sandwiches, snacks, etc.
  - While the customer stays in the seat, the-board staff comes round during the journey.

The Railway Undertaking's decision to provide a catering service in a restaurant or cafeteria or with seat service depends on several factors:

- Travel time or the type of rail service, which are basically related to:
  - Commuter or regional train services do not seem to require catering of any kind due to the limited travel time.
  - On night trains, on the other hand, it seems a must to have a restaurant service.
  - On long distance trains or on tourist or leisure trains it is an almost obligatory added value offered to the passenger.



**MAV-START bistro section on the IC+ coach**

- Catering on the seat
  - In-seat, catering may be appropriate on train services with a certain travel time where there is no space available for a restaurant, because the train's capacity is a priority. “Pasto a Bordo” service (Trenitalia) is an example: this service allows you to book your favourite menu on buying the train ticket two days before the departure of the train, only for journeys lasting more than one and a half hours.
  - In addition, in-seat service may be of interest for PRMs on trains that are not 100% accessible or that may even have problems with safety of movement.

#### **7.3.4.2 Catering provision**

There are several possibilities for food or meals that could be considered:

- Food concept could focus on regional freshness, quality and sustainability
- Special service experiences with well-known brands with special interiors to attract more customers
- It could be considered pre-booked meals from reputable high-street outlets partners. These meals could be delivered to the passenger's seat or picked up in the cafeteria car
- Street food

- Based on sustainability objectives, it can be considered to offer a more sustainable and environmentally friendly meal offer, served in containers with less plastic replaced by wood and cardboard.

Catering provision should be focused on future flexibility, due to the changing tastes of customers and the rise of mobile based apps for fresh food delivery offering customers increasing choice before they travel.

While there is a need for a comprehensive on-board catering at present, the core catering offer looks set to increasingly focus on the service of hot and cold beverages, as passengers are increasingly buying fresh food at the station before boarding.

As such, flexibility in the space available for catering provision would allow the space to be reduced over time towards a core shop offering.

The rise in food and beverage delivery apps and just in time delivery service such as Amazon is a future opportunity to explore in offering more choice to customers – picking up stocks at station calls.

A service that can be provided to customers in advance of boarding the train is whether on-board catering will be available, so that they can make an informed decision whether to bring food from outside or to purchase it on the train itself. Ideally, this information should be available on the information screens and even on a smartphone app.

SCNF already has this service available, and it is called Assured Catering.

#### **7.3.5 Digital on-board services**

It has been shown before that one current trend is the need for Wi-Fi and battery charging. Since we live in the era of the Internet of Things, it is expected to be connected constantly 24 hours a day, 7 days a week, and perhaps even more today than at any other time, when traveling we are glued to our mobiles and laptops, for leisure or business purposes.

The business traveller needs to charge the laptop, and the leisure traveller wants to share their travel experience on the social networks. Therefore, it is

necessary to make sure to provide electricity sockets to meet these needs and provide speedy Wi-Fi on the train and at stations. Some operators as SBB offer a Wi-Fi system that recognize you when embarking.

### **Connectivity is crucial for customers**

Connectivity is crucial for customers because transforms the “time” factor. Journey time became a useful time (and not a lost time) and provides the rail an advantage compared with other means of transport like the metro or the plane.



**AMTRAK Wi-Fi- Source: AMTRAK**

Having implemented Wi-Fi, the next step is to provide customers with personalised advertising based on their browsing habits.

Free Wi-Fi onboard trains will enable rail operators to quickly build a diverse portfolio of data which they can then analyse to determine how customers are using the service, e. g. if customers predominantly use the Wi-Fi service to watch movies or download content, a revenue generating avenue for the business would be on-board entertainment services.

Companies could even use this very same on-board entertainment service as a platform to generate revenue from advertising.

On the other hand, if customers use the Wi-Fi service for work-related activities, the next step would be improving the Wi-Fi's capacity and speed. Offering a high-quality Wi-Fi service at suitable prices, for example, selling data packages to passengers, could in turn generate further revenue for rail providers.

In addition, with the data available, rail operators can start to advertise more personalised services to its customers and team up with other brands to provide offers and discounts.

21st Century digital on-board services are cost effective and provide opportunities for new revenue streams for transport providers. By diverting passenger activity from the public Internet to digital on-board services, the cost reduction to transport providers can be significant by avoiding much of the data charges associated with mobile Internet access.

Other tangible opportunities include creating offers around premium content (the latest blockbuster movie or live sporting event) or enabling the pre-booking of hotels, rental cars, tourist trips and restaurants.

Targeted advertising using banner ads or pre-roll video all contribute to creating new revenue streams. Also, having access to passengers whilst on a journey is incredibly appealing to advertisers as it is one of the few times where an audience has a high dwell time and increased opportunity for engagement.

Digital on-board services provide transport providers with the chance to capture valuable customer data, which can then be used to drive further engagement and improve other aspects of the passenger experience.

### **7.3.6 Customer Service in Case of Disruptions/ Emergencies**

One of the responsibilities of the customer service is to provide support and information to the users in case of planned or unplanned closure (fully or partially) and incidents or emergencies in the service too.

In case of disturbance of the service, most of the operators inform passengers inside the trains and on the platforms using the Dynamic Passenger Information Systems, Public Address System, applications developed by the operator and through social media like Tweeter or WhatsApp.

In case of disruption, when a person with disabilities or with reduced mobility is exposed to the uncertainty, raises the fear of being left, isolated alone and vulnerable. This is worsened when platform changes

are notified with too short notice periods without letting enough time for a PRM passenger to make these changes.

This barrier to traveling can be addressed by staff training and by providing accurate information and access to information points onboard.

**7.3.7 Other Services provided**

In general, other additional services can be offered on trains, however not all operators do. Besides **luggage and bikes places**, other additional services provided are electric plugs for electronic devices

- On board services for all the classes:
  - Air condition
  - Ticket upgrade in the train (from 2nd to 1st class)
  - Baggage transport (door to door/ to the airport)
- Possibility to book tickets and reservation
- To a lesser extent, a few operators offer “on demand” stop service in those stations with low passenger demand, but in general is not practice of the most railway operators.



*SBB Luggage services Campaign*

**7.4 Luggage**

Luggage is a key aspect to be considered as important part of customer experience, that together with bicycles, are transversal, and need to be considered in stations, rolling stock, service to be offered by the railway undertaking, with success.



*Overhead racks*

- Information on board:
  - Reservation space for luggage
  - Occupancy detection
- Stations:
  - Lockers with additional security constraints
  - Karts to carry luggage of a certain size
  - Lifts and inclined moving walks to avoid barriers
- Train configuration/train capacity
  - Baggage racks
  - Depending on rolling stock (commuter, regional) there could be multifunctional zones for standing room, bicycle/stroller and luggage

Most operators may have restrictions on the size of pieces of luggage, and a certain fare could be requested in each case, depending on number of items.

- Articles exceeding (one metre) in any dimension that cannot be carried by the passenger and any large piece that cannot be carried without assistance.
- Motorcycles, mopeds, motor scooters and motorised cycles (excluding e-Scooters).
- Livestock (for example, pigs, sheep and goats).
- Any animal or article which, in the opinion of the train company staff, is causing or is likely to cause inconvenience to passengers due to its size or behaviour.

Usual prohibited items in luggage, mainly for safety reasons, are as follows:

- Sharp objects.
- Edged weapons
- Firearms
- Corrosive substances
- Inflammable substances
- Radioactive materials
- Explosives.

Railway low-cost services may request payment for luggage, according to the number of pieces and size.

Regarding baggage on board, there are several possibilities:

- Overhead racks, that normally are not prepared for bigger pieces than cabin luggage, in commuter trains
- For long distance trains additional luggage racks with multiple storage levels larger baggage
- “Raised seating concept” may be considered for new fleet.

Several operators allow to transport skies in certain trains for free. Usually it is allowed one pair of skis or snowboard per passenger.

Experience shows that travellers prefer storage areas where it is not necessary to lift the luggage (e. g. between seats).



*“Raised seating concept”. Source: ÖBB*

To enhance the customer experience in this sense, there are several possibilities that could be considered:

- Provide (generous) racks for luggage. Some trains have a special coach for luggage. A good level of storage space should be provided for customers whose requirements may change every time they travel
- Luggage on sight: Customers feel more comfortable if they can see their luggage all times. A range of storage options are available depending on the size of type of luggage. Customers can be seated within a reasonable distance from large luggage to feel confident of security.
- Almost all trains have no staff to assist with passenger’s luggage
- A reservation system working in tandem with baggage storage to deliver the best experience. Customer with bulky items could be able to pre—book space on board and will be assured that their equipment is safe and well looked after.
- Adaptable storage space that capacity to be optimised for every route profile and season of the year.



*Rack for larger luggage*

In order to provide customer, a better experience, some railway undertakings are analysing how to store luggage on the train secured in lockable racks.

## 7.5 Bicycles

A key objective of railways is to promote Public Transport as a sustainable mean to commute to the big cities: Transforming cities in low emission areas, promoting PT and the use of shared electric cars, bikes, and scooters for the last mile from the station to the final destination.

Bikes are the most environmentally friendly modes of transport and rail and bike go very well together. Railway helps to discover long distances that are beyond the reach of a cyclist and bicycles help reach the final destination in an eco-friendly way that trains never could.

Cycling is a great solution for the ultimate low-impact travels. Europe is largely bike-friendly with dedicated cycling lanes and routes.

Bicycles, as key transport modes in cities, are enjoying a resurgence worldwide. As a compact, flexible, healthy, inexpensive and pleasurable transport mode, bicycles are key contributors to urban objectives like sustainable mobility, social justice, accessibility, and quality of public spaces.

Bicycles are used all around the world to get to and from train and other public transport stations. Carrying bicycles on-board public transport or park them at stations.

Europeans are increasingly interested in combining bikes and trains in their travels. Both modes of transport are the most sustainable forms of travelling for commuting and also for leisure and tourism trips.

Key current customer's trend is to travel with their own bicycle, to use it in the last mile before and after the train. Some railway undertakings are foreseeing the possibility to remove seats to increase the place for bicycles.

Railway operators are adapting their strategy to the accelerated trend of using bikes. Cycling and leisure travels are the two main growing trends after Covid-19 while other use of trains, like commuting, is stable or decreasing.

There are challenges related to these needs and the use of trains for different purposes. There is the need to use train's capacity in an innovative way and to look into modular solutions for rolling stock to improve their flexibility by adapting them to different uses in different periods.

Therefore, there are capacity frictions between passenger capacity and space requirements for bicycles.

Some railway undertakings such as SCNB and SBB are analysing bicycle transport management policies, in order to better take into account, the needs of customers. They have organised specific workshops to try to come up with the most appropriate solutions.

MAV-START provides rail service to Lake Balaton (Hungary) which has an extensive network of cycle paths. In order to minimise a multitude of customers transporting their own bicycles to this area, and thus maximise the transport capacity of the trains, MAV-START is collaborating with local companies on the lake to rent bicycles already at the destination. MAV-START is collaborating with local companies on the lake for the rental of bicycles already at the destination.

Depending on the fleet, there are different concepts for bicycle storage. In commuter trains mainly integrated in multifunctional areas, in long-distance trains mainly on hooks



***Bicycle transport (Source: MAV-START)***

The types of bikes allowed on trains can vary:

- Fully folding bicycles are allowed on all trains without restrictions or reservation
- Special bikes/equipment (tandems or bike trailers) can only be transported on certain trains in special luggage compartments
- Reservations could be required for full-size bicycles on certain services, mainly in case of disposing of not a lot of capacity on-board

- There could be restrictions on peak-time travel, especially for services heading into busy commuter destinations.

It seems a must to customize the services:

- Provide space for bikes (depending on the train: HS, commuter, etc.). A possibility is multifunction coaches together with luggage
- Number of bicycle spaces adjusted according to season and demand: distinguishing mainly between winter (less bikes capacity) and summer (more capacity), and also between working days and week-ends
- There could be restrictions on the transport of bicycles (in number and whether they are foldable or not) and where to place them within the train.
- Reservation of space for bikes on certain trains
- Bicycle pump availability
- Battery charging option for e-bikes is currently problematic due to safety reasons: difficult approval procedure: unattended/risk of fire
- Issue of surveillance and handling of bikes due to increasing value, mainly with electric ones.

There could be some restrictions on the transport of bicycles (in number and whether they are foldable or not) and where to place them within the train.

It seems advisable that bicycle transport be coordinated with other modes of transport with which it has modal interchange.

This is the case of the Centre-Val de Loire region, which, in partnership with the SNCF, is innovating and offering its inhabitants and tourists more environmentally friendly transport. The train and bus company Rémi is going to offer reserved spaces for bicycles. In addition to the reserved spaces, SNCF employees will install the bicycles on the trains.



**One of Rémi's first 100% electric buses with space for bicycles in the rear. Source: [LaNouvelleRepublique.fr](https://www.lanouvellerepublique.fr)**

According to the report “Cyclists love trains” (2021) developed by the ECF<sup>1</sup>, European Cyclist Federation, railway operators should bear in mind the following aspects when it comes to offering good quality conditions for bicycle carriage:

- Acceptance of non-foldable and un-dismantled bicycles on all train services.
- A commitment to go above and beyond the recently mandated (recast EU Rail Passengers’ Rights and Obligations legislation, refer to next section) four dedicated bicycle spaces per train.
- Dedicated bicycle spaces which are accessible and easy to use for all types of passengers. It is also important the accessibility of platforms for passengers with bicycles.
- A commitment to investigate, and potentially invest in bicycle sharing schemes. Cost-effective bicycle tickets and reservations that can be acquired via multiple different booking and sales channels.
- The provision of clear and concise information on bicycle services, which is available in more than one language and provides information about the carriage of non-standard bicycles.
- A website that offers a bicycle connection search tool in its journey planner.

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<sup>1</sup> The European Cyclists’ Federation (ECF) is the world's largest and best-known cyclists’ advocacy organisation.

- A pan-European journey planner and coordination of bicycle carriage rules in the face of the marketisation of European railways.
- Commitment to providing flexible reservation periods, which provide the maximum flexibility and ease of use for passengers.
- Ample, covered bicycle parking at stations, with provisions for non-standard bicycles, in addition to the provision of e-bike charging points. This kind of facilities support the last mile.

### 7.6 Bicycles Rights in Trains in the EU

A reform of EU rail passenger rights will strengthen the rights of all passengers, and in particular, those with disabilities or reduced mobility. It will also make it easier to transport bicycles on trains.

In the European policy there are smart mobility strategies, new urban strategies, multimodal transport, green transport. (e. g. PRR recast regarding real time information or the bike-friendly policy).

There is a need for clear and concise information (ex.: under which conditions the bike could be taken on-board). Carriers should provide info on the official languages of the countries where they operate.

Recommendations:

- Acceptance of bicycles on all train stations
- Bicycle sharing schemes
- Cost-effective tickets and easy-to-use booking systems
- The provision of clear and concise information (in different languages) on bicycle carriage

In accordance with the Green Deal European policy alternatives that will restrain the travellers to use the cars should be fostered. For example, smart services (digitalisation, automatization), enabling self-services to customers, integrated digital platforms with information on bike services.

There is a need to be flexible, by offering enough space on the train.

The way to offer enough capacity on the train:

- Having removable seats to increase the capacity
- Reinforcing the staff to accommodate the bikes in specific periods or destinations where there is a special demand to get the bikes on board.

Key aspects of this reform are as follows:

- Obligation to provide spaces for bicycles on trains, which normally are not able to offer door-to-door services. The integration of soft transport modes will improve passenger mobility and increase the attractiveness of railways.
- Railway undertakings will be obliged to install bicycle spaces, and passengers will be informed of available capacity. High speed service Thalys has already implemented this service.
- The general rule will be at least four spaces for bicycles on each train in regional and long-distance trains.
- Railway undertakings may decide to include a different number of spaces, based on the type of service, the size of the train and the foreseeable demand for carriage of bicycles
- Member states may also set this number higher if there is a greater demand for carrying bicycles. Bicycle space requirements will apply when a railway undertaking orders new rolling stock or when it performs a major upgrade of older rolling stock.

### 7.7 Pets

Many customers consider pets are family members and claim for them similar travel experience.

In this sense, some railway undertakings allow the transport of pets with certain restrictions.



Customers may take with them, subject to certain conditions, dogs, cats, ferrets and birds (not poultry) and other small animals (maximum per passenger (1 or 2) provided they do not endanger or inconvenience customers or staff.

Some railway undertakings require animals to have a ticket.

Of course, guiding dogs are excluded of these rules, but there is a new trend related to “emotional support animals” that causes problems of interpretation all around the world, e. g. In USA there have been cases of clients asking to bring with them little horses as “emotional support animal”. It seems that this kind of situations need to be regulated.

The weight of the animal may not exceed 10 kg and the animal must be carried in a crate or similar container that does not exceed 60 cm x 35 cm x 35 cm that allows waste to be contained and removed.

Different countries, different rules:

- Spain: Small animals are allowed. Pets over 10kg are not allowed in trains in Spain.
- France: Pets are allowed on board. There are small charges for dogs/other animals in cages. Larger dogs on leads pay half a standard class fare.
- Italy: Dogs and other pets are permitted on most trains. They're free in a carrier, and half the second-class fare if on a lead and muzzled.
- Germany: Small dogs and cats in containers travel free, while larger dogs pay the child rate.



## 7.8 Awareness Campaigns

A public awareness campaign is a marketing effort to build public recognition of a problem through media, messaging, and an organized set of communication tactics to generate specific outcomes or achieve pre-determined goals.

It is natural that advertising campaigns power would be employed in making a statement and raising awareness on important social issues and causes.

These campaigns can inform the community about a current problem by highlighting and drawing attention to it in such a way that the information and education provided can solicit action to make changes.

Railways have been always committed to society, and usually promotes different kind of awareness campaigns, such as how to stay safe on the railway, keeping coaches clean, healthy lifestyle, LGBTB+, COVID-19 measures, dangers of smoking, reading promotion, promotion of tourism and culture, etc.



*Stop. Trains Can't. Source: US Department of Transportation*



**Euskotren Sustainable Mobility Campaign**

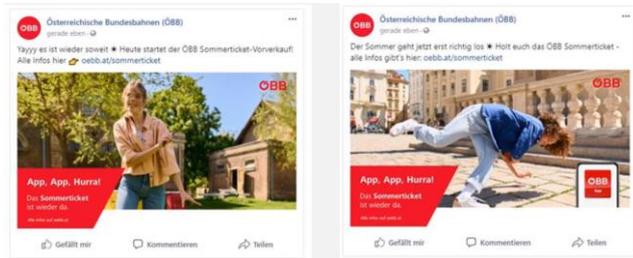
These campaigns could be disseminated in digital media and social networks. It could also have visibility in the operator's own media such as PDF tickets, dynamic digital signage in vending machines, self-sale screens, seat headboards of trains, in the free wifi and entertainment service onboard, applications and newsletter, and others.



**SBB Communication about services Campaign**



**SCNB railway use Campaign**



**ÖBB Summer Special for the Youth Campaign**

## 8 ROLLING STOCK

In this section are described those aspects of rolling stock directed related to customer experience.

### 8.1 Customer needs Identification

Customer experience related to rolling stock shall reflect a design that makes passengers feel safe, comfortable, and welcome.

Rolling stock has to be flexible in use and able to accommodate the needs of a diverse range of users including commuters, business users, families and those with luggage.

This also covers staff experience, welfare and provision, which is essential for providing and exceptional passenger experience:

- Different customers, different needs – Need to know our clients
- Staff on-board: train attendants + catering assistants
- Regulations to achieve
- Branding, Livery

The customer needs:

- Accessibility
- Ride Comfort
- Rapidity
- Healthy environment
- Safety & Security
- On Board Facilities
- Real Time Information
- Remarks:
  - Some characteristics may depend on the trip time
  - Rolling stock is a fixed asset (and expensive!)

Profiling and customization are priority topic. Each passenger is unique, and profiling allows being able to anticipate and to address different needs of different types of passengers. Universal design and accessibility of rolling stock for all are key aspects.

In the future, customers' seats and location could be chosen based on their travel history and any specific choices made for each journey. This means that Customers sitting immediately close to each other should have similar travel needs, creating organic zones of work, rest and play throughout the carriages.



Aus travel future: 400kmh trains. Source: [Stuff.co.nz](http://Stuff.co.nz)

### 8.2 Train Design

**Understand human factors to provide an ergonomic design**

These key aspects could be as follows:

- Safety. Travel to be performed with confidence
- Efficiency. The customer to receive best value for money
- Connected- The customer has to get the most during travel time
- Flow: The travel has to be performed easily, has to be intuitive, continuous and seamless
- Well-being, inclusive and enjoyable
- Customised. The travel to be tailored

The work can be based on interviews, analysis of the complains, analysis of competitors and other operators and travels to identify the problems of the existing trains.

Several railway undertakings have identified through complaints and surveys, that expectations are focused on toilets and HVAC (air conditioning), so the rolling stock design should pay special attention to these aspects, even on the way to facilitate predictive maintenance to minimize breakdowns.

A changing space for children is a must nowadays.

Another aspect for customers is the possibility to charge phones and computers, therefore, new trains should be designed with more power sockets and USB ports, almost in every seat.

Seat Comfort is especially important for long distance.

**Always, anticipate future needs.** rolling stock design life is about 30 years in Europe. The train designed and built today will be operating in 30 years, the future of today.

Lifecycle of rolling stock in the railway industry is longer than in the airline or automotive industry.

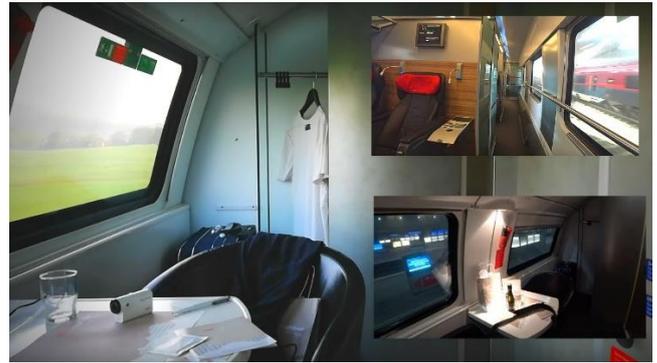
Although nowadays rolling stock lifecycle trend is about 30 years due to the expensive refurbishment, it is under discussion if it could be less in the future, considering different and recyclable materials, for example.

In this sense, rolling stock could be replaced to adapt to new needs that could come in the future.

Several aspects can be identified to be considered in future vehicles design:

- more privacy for passengers, new luggage solutions, etc.
- Interior design may consider local heritage (typical materials, colours, and patterns)
- Physical and digital design
- Integrate aesthetics within the technical performance requirements
- Provide a consistent design language across all elements of the train
- Mock-up testing in an early stage to be tried by customers focus groups.

In this sense, it is to be highlighted the efforts that ÖBB is making in the design of their new vehicles, for example the Night trains that are succeeding in the market. The Nightjet is the overnight train operated by ÖBB (Austrian Railways). On the Nightjet, depending on your comfort requirements, you can choose between the three comfort categories: Seating Carriage, Couchette and Sleeper Cabin. The passenger can travel with other passengers or with more privacy, in his/her own compartment.



*Nightjet train interior (Source: ÖBB)*

Once contracted, rolling stock takes some years to be operational, therefore it is of the utmost importance to make flexibility and future proofing of requirements.

In the future, it would be interesting that the industry could design rolling stock with interiors easy to change according with new needs like more mini suites instead of big cabins (if needed).

Boarding is a key phase in passenger experience where very often it is necessary to deal with different platform level with the same rolling stock. Even when train floor and platform are at the same levels, changes in the ballast, the concrete in the platform is not perfect and the low factor of the train can change.

Position of luggage storage has to be considered areas to improve passenger flow within the trains.



*IC2000 Modernisiert. Source: SBB*

In-train-design and flexibility for different use cases is going to be more important for customers.

The main generation of trains will be focus on capacity and modularity, meaning to be able to adapt to collective/individual needs and to evolution, being able of reconfiguring quickly and easily the train interior layout.

Modularity is linked with the need to improve the capability to regularly evaluate the needs and the demands of the passengers and adjust the services and spaces to them.

- An important trend and need are to react swiftly and in a flexible way to transport needs:
  - Flexibility for bikes and luggage spaces: Adaptable modular solutions to modify spaces throughout the years
  - Convertible luggage stowage according to the need of the seasons (ski, bikes, etc.)
  - Removable seats, to release space and make room for bulky equipment



- Regarding luggage trends:
  - Luggage on sight via app with surveillance and track on the mobile device
  - Luggage tracking
  - Handle the luggage. Door to door service, from customer home to the destination
  - Free luggage space indication
- Multifunctional compartments:
  - Reservation and occupancy detection of place at luggage and bikes racks

### 8.3 Dynamic ambience

Saloon, vestibules and at-seat ambience should be adjustable on the train, lighting, sound, scent and climate support wellbeing and enable market segmentation.

Enhances wellbeing and enables customer work, rest and play modes. It should be capable of being pre-set to different colours for moods and functions.

Improves informational functionality of interiors and supports differentiation for operator.

Dynamic lighting allows to adapt the ambience depending on the occupation, the moment of the journey (for example lighter in stations to find the luggage and the seat and less during the travel), or as informative elements for example to indicate the PRM door or evacuation ways. Lights under the seat can also improve the perception of cleanness.



*Dynamic Ambience Design Vision. Source: NS. <https://www.ns.nl/en/about-ns/tomorrows-journey/interior/train-interior-design-vision.html>*

### 8.4 Entertainment on board

Entertainment can improve passenger experience by providing an extensive library of premium media content, including:

- Movies
- TV series
- Documentaries
- Music
- eBooks, ePapers, eMagazines
- Internet connection

Transport operators can further enrich their passenger's experience by integrating their video-based media with their moving map. For example, this would allow them to play informative videos when they pass certain landmarks or destinations. This is the case of Eurostar when running across the Channel Tunnel.



**Channel Tunnel Informative videos**

As the majority of mobile phone users now have significant data usage quotas available, it was viewed that ensuring consistent and high-speed mobile reception in rolling stock is a higher priority than that of providing on-train Wi-Fi.

### 8.5 Accessibility

- Legislation to accomplish (Accessibility Acts, European TSI, North American ADA, etc.)
- Inclusive Design: for all customers, including impaired people. In this bullet is necessary to include the elderly as well.
  - Customer at the heart of the process
  - Acknowledges diversity and difference
  - Ergonomics
- Universal Accessibility
  - Physical access.
  - Wheelchairs. Even though train accesses could be TSI compliant, doors could be too narrow to pass through by wheelchairs, including electric ones. The compartment should be 850 mm.
  - Pram's storage space.
  - Tactile floor/surfaces/handrail

- Well signed
- Adapted toilets
- Public address
- Induction loops and reliable real-time information to ensure hearing-aid users receive safety announcements, updates on delays and platform alterations.
- Door closing lights indicators. Evenly distributed lighting helps
- Gap assessment
- Accessibility working groups with PRM associations, collaborating with all stakeholders involved.

### 8.6 Train configuration

Travel habits are changing, and it is needed to plan for the future. The morning rush hour is likely to be less acute, with more demand for off-peak services during the day, as people will space their journeys out.

Commuting patterns will be more flexible than the traditional nine-to-five for many of our passengers, and we want our trains to reflect that flexibility.

#### Interior Flexible Reconfiguration

Customer accommodation and utility areas should be reconfigured to meet the evolving needs of the customer whilst providing ability to drive revenue through differentiation

Rolling stock designed to enable cost-effective reconfigurations during the life of the fleet.

Train interior design should accommodate changed passenger requirements following the pandemic and with the ability to switch between 'commuter' and 'leisure' arrangements.

- Features include seats which can be extended or retracted at the push of a button by staff. This could enable operators to increase capacity by 40% in the peaks by providing more standing space, and then increase the number of seats for provide more comfortable journeys for off-peak travellers. This could also be used to tailor the amount of space for bicycles and pushchairs to better suit demand.



Source: DB Regio

- High-density perch seats could provide a more comfortable alternative to standing at the peak times, while multiflex seats could be switched between longitudinal and transverse arrangements according to need.
- Sliding armrests could allow seats to be switched from airline-style individual seats to communal benches for family groups.
- Neighbouring seats could be folded down at less busy times to provide additional surfaces for passengers' belongings, laptops or food and drink.
- Secure cabinets could be provided to store folding bicycles, with vertical racks at the end of coaches to hold full-size bikes.

Digital displays would show where seats are available, and under-seat storage areas could be created if future passengers carry more luggage.

Some coaches could have perch seats and benches to provide extra space for passengers to plug in and work on electronic devices, reflecting an increasing expectation that it should be possible to work or stay connected anywhere.



Flexibility without refurbishment

## Trends

Rolling Stock- Customer Needs in 2030 / Challenges for leisure travel, bike and luggage transportation

- Self-propelled/ Push-Pull
- Single/double deck trains
- “Green” traction: energy from renewables, Hydrogen trains
- European HS trains to accomplish RS TSI: Max-long 200 m
- Modulation
- First Class coaches at one side
- Restaurant/cafeteria in the middle of the train
- Seats: comfort especially important for long distance services, depending on country habitude, preferences could be different: hard/soft
- Space on board: perception of free movement and multifunctional areas
- PRM space
  - Minimum space and requirements regulated by Accessibility TSI
- Impacting configuration (space/length)
  - Seats per row
  - Baggage racks
  - Baggage transport (door-to-door, airport)
  - Bikes
- Pet space
- Pax/m2
  - Level of comfort

- In case of standing pax (not in HS trains): between 2-4 pax/m<sup>2</sup>
- Greater train Capacity
- Configuration depends on travel time

### Case Study: SBB Challenges regarding rolling stock

- Due to fixed allocation of rolling stock, it is needed:
  - To add more rolling stock at peak times
  - To differentiate the offer (capacity, classes, services) in function of different demand
- Example: The Romanshorn-Brig IC8 line, is completely overcrowded during the week, especially in first class. More or less business travellers, but long-distance commuters and soldiers, 2<sup>nd</sup> class is full. At weekends, it runs in first class nearly empty across the country, while 2<sup>nd</sup> class is full excursionists and people with bicycles.

The majority of the passenger's journey is at their seat, the environment around the seat should be the focus of any transformational development.

### Seat functionality

Passengers require a more personalised experience at seat, noting the potential to enhance the customer experience airline style if climate control, lighting preference and supportive headrests were provided.

It was noted that window blinds and/or curtains have proved unpopular for both passengers and the operators alike.

Passengers often felt uncomfortable closing blinds due to the impacts on others, whilst for operators they had extensive maintenance requirements. A dimming system, if deliverable, would be a preference akin to those used on the Boeing Dreamliner aircraft.

In terms of at seat functionality, the operators have identified the need for a plug and USB charging facilities – preferably both to allow a phone and laptop to be charged simultaneously.

Charge facilities should either be under seat, or like airlines, in the seatback immediately facing the passenger.

The present layout of power sockets being fitted to the side body of the unit was seen as sub-optimal for the customer experience, with customers often having to reach over each other for access.

### Seat Assurance

Service is all-seated under normal cooperating conditions with allocated seating only

Facilitate by an intuitive digital system which allows for last minutes changes

Higher average capacity utilisation is achieved.

A premium service could be created by the Operators to provide customer services with the digital app, for example: food on board, entertainment, newspapers, etc.

### Baggage storage areas

A good level of storage space should be provided for customers whose requirements may change every time they travel

A range of storage options are available depending on the size of type of luggage. Customers can be seated within a reasonable distance from large luggage to feel confident of security.

A reservation system that works in tandem with train storage to deliver the best experience. Customer with bikes or bulky items could be able to pre-book space on board and will be assured that their equipment is safe and well looked after

Adaptable storage space that capacity is optimised for every route profile.

### Bikes space

A focus on providing storage for bicycles, consideration is also required for accommodating child pushchairs / buggies, as well as mobility aids to ensure inclusivity.

## 8.7 Healthiness during the Trip

Rolling stock operation needs to consider sanitary measures to protect the passengers and the staff and restore confidence and prevent new crisis that could come in the future.

In this sense, it is important to provide this information to the passenger: air quality, when it was last cleaned, etc.



*Disinfecting trains*

Nowadays is common the installation of permanent hand sanitiser dispensers, antimicrobial finishes and touchless doors to reflect greater public awareness of hygiene.

- Antibacterial paints
- Air treatment and virus reduction air filters
- Anti-viral fabrics
- Contactless door opening
- Adapted handholds, handles and stanchions

## 8.8 Safety and Security Onboard

- Safety and Security Feeling during the whole journey
  - Nothing should disturb their daily trips, and they expect both safety and security
- CCTV
  - Video analytics
  - Front Forward CCTVs mounted at the front and rear of the train
  - Cab, pantograph, interior

- Intercom systems
  - Emergency calls
- Mobile apps
  - call for emergency assistance in case of illegal actions and incidents
  - Social media analysis
- Staff
  - Training on the Staff: Security culture
  - Passenger awareness
  - Information for passengers about security actions.
  - Pre-designed signage for evacuation
- Cybersecurity
- Security by design
  - Doors: number and width to evacuate in a certain limited time. Limit dwell time
  - Anti-graffiti coating
  - Vinyl to prevent graffiti and scratches
  - Avoid unauthorised entry
  - Passenger alarms
- Pandemics
  - Headcounters
  - Seat's occupancy
  - Ventilation
  - Materials

Refer to section 4.5.

## 8.9 Low Cost HS Services

On-rail, competition can lead to improvements in the attractiveness by providing passengers with a greater choice of services.

Operators have an incentive to offer a range of fares based on price, flexibility, time of day and quality since it allows them to capture some of the market's consumer surplus through price discrimination.

This surplus arises because, in a market with a single clearing price, some passengers would have been prepared to pay more than the single market price. Price discrimination therefore transfers some of this surplus from the passenger to the operator.

However, since in many cases the operator cannot distinguish between passenger types and cannot prevent those individuals with a high willingness-to-pay from obtaining the lower priced tickets, there are also opportunities for such passengers to realise windfall gains.

Operator similarities: Buy side

Cut cost



Minimize all cost

- Focus on cost drivers that are easiest to influence
- Minimize SG&A costs by conducting all face-to-customer activities through the internet
- Minimize *hardware and maintenance* costs by using standardized rolling stock/aircraft

Limit infrastructure investments

- Limit infrastructure costs (licensing charges) in one form or another by accessing less favorable tracks/routes or secondary stations/airports

Operator similarities: Sell side

Maximize (profitable) usage

- Maximize load factor by enhancing capacity
- Minimize idle time of rolling stock/airplanes
- Service high-frequency routes at times of high demand

Attract new customer segments

- Attract customer segments that might not have opted for the mode of transport otherwise (compete with car, ride-sharing, coach)

Up revenue



Source: Arthur D. Little

**Airline Low-cost-\* services. Cut cost & up revenues**

Moreover, some discounted tickets may be available at price lower than would be available in the absence of differential pricing.

Even though it is not well known yet the impact from low cost in rail, first moves have been made.



**AVLO. Spanish High-Speed Low-Cost services.**  
Source: RENFE

The operators mirror the airline LCC business model using the same means to cut costs and up revenue.

Trains are equipped with second-class seating, no buffet coaches and minimized storage space. Due to optimized departure and minimized turning times, as well as night-time maintenance.

Further distinguishing features include:

- Operating in a closed system, which means access to and from trains is granted by a special ticketing check.
- Standard pricing is far below average prices. Reservations, electrical sockets and large luggage allowances cost extra.
- Sales and customer service costs are kept to a minimum by conducting all activities over the internet.
- Labour costs are kept low by hiring young employees (lower HR costs) to perform a multitude of tasks and fulfil their statutory resting times in special resting rooms on board, rather than at destinations.
- Trains with greater capacity (20%)
- Double deck/single deck high-capacity trains
- Fewer staff
- Probably one class
- Tickets mainly via internet
- Strong digitalization
- Business initially based on low-cost airlines
- Vending machines on-board

## 9 STATIONS

### 9.1 Introduction

Stations represent a key element of the utmost importance in all passenger transport for different kind of customers (travellers, commuters, passing-by), the station is the only gateway to the railway system.

For many customers, including those that live in the communities around the Stations, this will be the first experience with the railway network. This impression will set the tone for *'what comes next'*, both for customers that are travelling on-board rail services, or those simply enjoying the Station as a destination for retail, business or just recreation.

Railway stations were once narrowly viewed by the industry as simply the 'gateway to the rail network'. However, the growing popularity of some larger stations as destinations for shopping and places to meet and do business has led to some challenges and complexity around their operation.



**Liège-Guillemins Station. Belgium**

Stations contribute to a positive journey experience: they are accessible, welcoming, secure, always comfortable, fit for purpose and fully adapted to the needs of users with reduced mobility.

Stations have the potential to become a community hub where people shop, work, meet, relax and live. As a result, they play an important role in adding to the economic prosperity and social wellbeing of the community.

Station buildings should have the following characteristics:

- Welcoming
- Safe to use

- Easy to navigate
- Contribute positively to the overall journey experience

The station design has to meet the needs and aspirations of all involved stakeholders. This compromise demands a clear differentiation and prioritization.



**Rotterdam Centraal station**

Main functions of a Station are as follows:

- The station protects the passenger against lousy weather
- The station offers ergonomics accessibility... and short paths in a closed set
- The station offers enough parking spaces and connections alternatives in a Mobility As a Service context
- The station has intuitive and logical flows
- The station has more disciplined flows

Railway undertakings need to be mindful of these challenges and requires the nature of its objectives to reflect the spectrum of customer and stakeholder needs.

This is critical to its success in ensuring compliance with service and operating standards. It strives to represent not only the right results for the stations, but also, crucially, that they are produced in the right way.

Travellers increasingly demand high levels of service and they no longer expect the station to be just a place to pass through. For many, the multimodal exchange hub should be a place where it is easy to find one's way in order to cross from one mode of transport to another as quickly as possible.

Better time management at these changeover points is therefore of vital importance in multimodal travel. Especially when the waiting time is longer, this period should be experienced in a positive way, especially since it is estimated that travellers spend about 30% of their travel time switching between modes of transport.

Stations represent an important business element and are essential element in city development, especially in the context of the new urban transformations.

Two different priorities should be considered:

- Spatial priorities
  - Spatial priorities are related to the physical design that need to be adapted to the user's needs and tasks.
  - In spatial terms, it is possible to split the station area in 3 different zones:
    - Access & interchange zone
    - Facilities zone
    - Platform zone
- Customer's priorities. Passengers expect the station to be:
  - Clean
  - Efficient (clear wayfinding, real time information)
  - Safe and secure
  - Providing reliable services

And three different users with different motivations, but the expectations towards the station are similar:

- Customers
- Station managers
- Operators
- Retailers, in some cases

The following seven principles of railway station usability are commonly accepted:

- Accessibility
- Easy to navigate
- Comfort and amenity
- Information
- Safety

- Local area integration
- Community ownership and activity

An ongoing challenge is how to create attractive entry points to the rail space, persuade people to come and experience shopping or restaurants – be it part of the journey or not at all.

Shops should therefore be compatible with the railway environment, and not sell items that are too large or too heavy to carry, or too fragile. There are two types of customer: passengers (railway service customers) and locals (who are attracted to the station for shopping).

### Access

- Should be easy for all the transport modes connected to the train station directly or not taking into account what train journeys aren't door-door as car journeys, efforts to transfer car drivers to cycling, walking or public transport

### information

- Scheduling and timetables, delays, prices and integration with other modes of transport

### Facilities

- Should incorporate activities and places to stay during waiting periods, basic needs, ability to communication

### Environment

- Safety, security, energy and green design



**Stations zones. Source: Mark van Hagen**

Even how we fulfil fundamental needs is likely to change significantly and frequently over 50 years. Being able to build flexible, modular, multi-purpose spaces will determine how successful we are in adapting to the future. This is a challenge, as we typically operate with pre-existing assets with no real flexibility for multiple rebuilds.

Recognising these limitations can teach us how to build better spaces and save future generations from facing the very same challenges.

The methods used to enhance the experience of passengers in stations can be very diverse. The architecture, immediate surroundings of the station, intermodality, management, local culture and customs may be harnessed to make the smart station a place where everyone can experience a sense of wellbeing.

## 9.2 Making Stations Environment More Pleasant

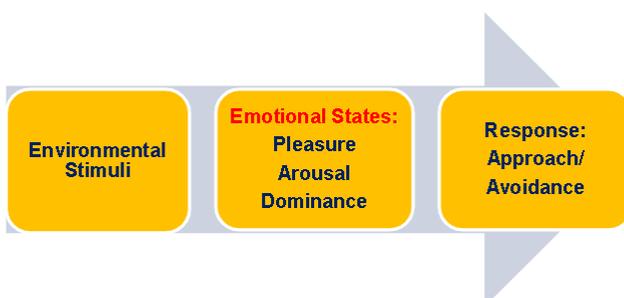


Top of "a place to stay", a station become more and more a destination on itself

### 9.2.1 Emotions are the Key

People’s behaviour is influenced by numerous stimuli in the environment, often unconsciously. Over 95% of environmental stimuli such as sound, temperature, colour and smell are experienced unconsciously, although they can significantly influence our emotions and therefore our behaviour.

The stimuli in the environment can lead to two types of behaviour: approach or avoidance.



**Stimulus-Organism-Response model. Source: Mark van Hagen**

Negative emotions lead to avoidance behaviour  
Positive emotions lead to approach behaviour.

- Avoidance behaviour is all the negative behaviour provoked by the environment, i. e. wanting to leave, not wanting to explore, lack of connection with the place and no desire to return.
- Approach behaviour is all the positive behaviour provoked by the environment, such as wanting to stay, setting out to explore the environment, feeling connected to the place, desire to spend money and to return.

Approach behaviour can be stimulated by consciously chosen design and deliberate addition of the right (intangible) stimuli to the environment. Think, for a moment, about colours, sounds and smells you might experience during a journey.

Lighting is a key support for emotion and feelings. Some studies show that blue-lighting-emitting-diode (LED) lamps on railway platforms and at railway crossings helped in reducing suicide rates in train stations.



**Blue LED lamps at Gatwick Airport station (UK)**

### 9.2.2 The Waiting Experience

Usually, waiting is considered a lost time. Several research have reached the conclusion that the waiting (subjective) experience is a good interpreter of customer satisfaction and how influential the waiting environment is on the time perception.

Time plays a centric role in the service process, as trains depart at a certain known time, and passengers have to be aware of time.

By making the waiting environment more pleasant, passengers will find waiting more enjoyable, not realize he/she is waiting. Then the duration of the wait will seem shorter, and therefore, the experience at the station will improve.

The idea is to make waiting experience more comfortable with extras like live performances, music and events (for example, giving the possibility to watch the football matches and to show the results on the screens).

It has to be noted that music is subjective: music can be considered as a distraction by some, but as noise by others.

Comfortability could be improved for example by creating workspaces, free water refill points and using architecture and design to create a cosy atmosphere (warm colours, natural materials in the waiting rooms).

Reactive and dynamic lights are essential, both for warm colours when the temperature is low and cold colours when the temperature is high during summertime.

Normally, occasional passengers at stations spend more time and are open to new experience than those who use the same service on a regular basis. The latter are accustomed to rail service and are more concerned with an efficient service process

It is accepted that time awareness is greater with functional services than with “pleasure” services. Since most customers of functional services are focused on efficiency, customers will give importance to have a kind of feel a sense of control over time (clocks, real-time information) and space (overview). A positive environment and waiting experience are created when the environment is reassuring and not overly stimulating.

In contrast, in a hedonic service, efficiency is less important to most customers; as enjoyment is paramount, the sense of control over time and space is secondary. In this case, a positive environmental and waiting experience is created when the environment is stimulating and distracting.



*Waiting could be a nice experience. Danish rest waiting room (DSB)*

Travelling by train might be functional but it can also be a pleasant experience. However, due to the scheduled departure, the time itself can never be completely abandoned and therefore remains a focus of attention for passengers.

### 9.2.3 Type of Passengers and Station Environment

According to the UIC International Railway Solution IRS 10181 User Information in Railway Stations, Stations are receiving increasing numbers of passengers with various profiles.

Wayfinding should take account of their needs. a classification for passengers could be as follows:

1. Foreign traveller / Tourist
2. Business traveller
3. Occasional traveller
4. Regular traveller / commuter
5. Family
6. Traveller with stroller
7. Traveller with luggage
8. Elderly people
9. Wheelchair user
10. Visually impaired people
11. Hearing-impaired people

Must and leisure passengers respond differently to environmental stimuli, often in combination with the degree of density.

Special routes should be considered, depending on the station's accessibility. Facilities should be adapted to different kinds of disabilities (audible signs, tactile paths, etc.).

During peak hours, more Must passengers travel and platforms are more crowded.

During off-peak hours, platforms are less crowded and a there can be found a more balanced mix of "must" and leisure passengers.

Therefore, measures to improve the waiting experience on the platform can logically be adapted to the needs of the passengers.

**Leisure passengers** feel better on a quiet platform with stimulating or fast-paced, dim lighting and warm colours, and prefer screens offering distractions, such as informative (rail-related, for example) programmes.

**Must passengers** find greater pleasure when they feel they are in control of their stay, i.e. not only that they can orient themselves, feel assured and have a grip on the time but also be distracted as little as possible by environmental stimuli.

Must passengers therefore favour cool colours, low lighting, relaxed/slow music and serious screen content such as news and current affairs.

Negative stimuli should be removed or neutralised before adding positive stimuli.

Adding the right environmental stimuli at the right time can increase the positive rating of the platform.

- Visual impressions: Negative visual stimuli, such as vandalism, graffiti, dirt and an unattractive view, should be avoided as much as possible.
- Colours: The negative grey colour of the platform could be broken here and there by adding colour or coloured light.
- Sound: Unwanted ambient sounds, such as noisy machines, traffic or other sources, should be avoided and replaced by music to soften the wait.

#### 9.2.4 Station Environment

Passengers who pay attention to time find the wait more tedious and longer. On average, in commuter or regional train services train passengers spend some minutes in a station, and 60% of which are spent waiting on the platform.

Some studies have concluded that the evaluation of the wait (short/long, pleasant/late) seems to determine satisfaction with the wait more than the estimated time.

Studies also elucidate the influence of the environment on the experience of waiting.

As with time, attention to the environment also plays a role, so that passengers do perceive the environment, albeit partly unconsciously.

The presence of other people provides further stimuli. Therefore, when platforms are busy, the number of stimuli in the environment should be minimised, but when they are quiet, stimuli can be added.

In both busy and quiet periods, the right balance of stimuli in the form of coloured light, music and infotainment can induce positive and affective reactions. As passengers do not seem to be receptive to additional stimuli on a busy platform, soft music, cool colours and a low level of lighting provide greater pleasure, better assessment of the platform and increased approach behaviour.

In contrast, passengers in quieter environments are receptive to stimuli and appreciate stimulating music, warm colours and low lighting.

Congruent visual stimuli provide optimal processing fluency, i.e. passengers on a congested platform need congruent visual input. In the case of infotainment, this means a fast screen change on a busy platform and a slower one on a quiet platform

## 9.3 Smart Stations

### 9.3.1 Vision

According to UIC, a smart station is designed to broaden its area of influence in a smart city, via the networks (transport, energy, digital).

A smart station should take into account how its railway business will tie in with not only with key societal but also important business-related issues of the future.

The three main pillars of a smart station are:

- **SMART MANAGEMENT.** The process of dealing with or controlling things or people with the new information and communication technology. The manager seeks constantly how improve his process, going beyond "classical" actions to create new opportunities and respond to new challenge.

- **SMART INFRASTRUCTURE.** Adding value, either through improved features, through for example better design or use of new technology.
- **SMART MOBILITY.** Using new technology to facilitate the flow of individuals and information in time and space, using smart information and communication infrastructure.

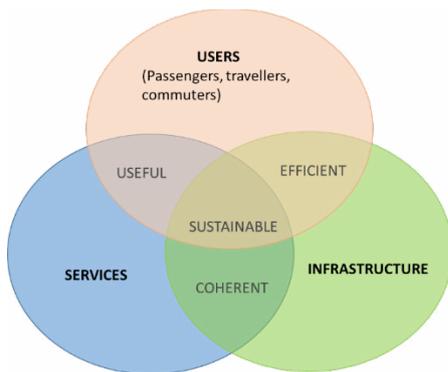
Smart stations should both be able to anticipate and respond systematically and quickly to conflicting uses. Smart stations do everything in their power to ensure the role they play in a city goes beyond being a simple transport hub. This means that stations should be a source of innovation, suited to local specificities, which can add extra value.

### 9.3.2 The Coming Future

There is a huge opportunity for stations to become bustling, multi-modal hubs that are at the centre of movement for people, support inclusive, sustainable and economic growth, and improve the wellbeing of the communities they serve.

Tomorrow stations should respond to those challenges:

- The centre of movement for people
- Supporting inclusive and sustainable growth
- The heart of healthy communities



**Smart Stations**

Passengers will expect an efficient mobility service, with a well-connected, easy-to-use station at its heart that enables them to control and make best use of their time. They do and increasingly will appreciate a high-quality environment. There is a growing focus on health and wellbeing, with customers keen to look after themselves, making more active transport choices and

demanding a journey that improves, rather than harms, their health.

Customers will appreciate stations that help to improve their physical and mental wellbeing by providing high-quality and healthy spaces where they would choose to spend time.

As well as beautiful public spaces, stations can be the core of a healthy network – where cycling and walking are easy and obvious choices – part of an active journey through a natural environment.

In the future, stations can focus less on simply being the entry point to the railway network. Instead, they could become the hub for our mobility experience, connecting multiple modes and services seamlessly. The station will be the natural, safe and lively touchpoint for people’s mobility needs.

- Customized movements

Personalised, real-time navigation paths through the station will make wayfinding easier, and alternative approaches to physical ticket barriers can be explored, improving accessibility, speeding up boarding and reducing congestion at the station.

### 9.3.3 Smart Information

All visual indications, pictograms and safety messages issued to passengers or operating instructions, especially those that are pre-programmed, must be enshrined in the languages most commonly used in each country or region.

- One e-tickets for all travel needs
- Digital information platforms
- Loyalty programmes
- Integrated data gathering and personalised mobility services
  - A hub for multi-modal connectivity with just-in-time interchange and personalised scheduling
  - An interchange for people and an interface for freight
  - Drone ports integrated into stations
  - Membership options that combine transport with other services such as shared workspaces

### 9.3.4 Sinergies

It refers to partnership and collaboration, to enhance user experience, sharing resources and skills

Stations should work in partnership with others to make the most of this new age of transport and share the rail industry's knowledge and expertise. Collaborating with local planners and other transport providers will create a better experience for passengers and support opportunities for local business

**Stations will become the heart of richer, more diverse and healthier communities**

Efficient buildings, systems and use of space will enable stations of the future to use their facilities to connect and engage people with their neighbourhoods.

### 9.3.5 A network of station public spaces

A future station will be designed as a living organism: sensing, adapting, efficient and continue their transformation while increase their porosity with cities: more services, real-time digital passengers.

Stations should be comfortable at all times, in busy periods but also during the late hours of the evening.

- Enlarged and improved public spaces around stations
- New infrastructure promoting active travel like cycling and walking
- More connected green infrastructure

As the environment within the station is changing during the day, the station needs to adapt. Lights, loudspeakers, passenger's information displays are controlled in real time to improve announcement intelligibility, improve passengers flow, safety.

### 9.3.6 Evolving community

Stations of the future could address the needs of both a more mobile workforce and an ageing population through co-working spaces, amenities for time-poor commuters, day care, drop-in clinics and community spaces.

By investing in and understanding a community's needs, the rail industry can help to build community ownership and enhance the experience of mobility customers, placing the station at the heart of an evolving community.

- Fully accessible facilities catering for people with diverse abilities and ages
- Integrated skills and training on offer
- Partnerships with educational institutions
- Community engagement.

Engaging local actors and communities is a good way to re-dynamize stations, surrounding and attracting people on train, to drive recovery and enable sustainable travel by rail.

Rail recovery could consider:

1. Recognise local communities as partners in developing rail and its place as the backbone of local sustainable transport networks
2. Draw on community rail's local knowledge and links, to aid place-based approaches that serve local needs, and to negotiate this challenging environment
3. Recognize rail's green and caring credentials, and focus on connections with bus, community transport, and active travel, to make rail more accessible, and reduce car dependency
4. Engage widely with communities, including hearing from the many people who do not travel by train
5. Treat stations not just as gateways but as vital local centres of social and economic activity, and potential beacons for sustainability.

Smart stations aim to engage users in a common experience, which can be achieved in different ways. This can be realised through music, or through dialogue. Music in stations is an effective means to reduce stress and brighten the sound environment. It helps cover unpleasant noises generated by the railway system.

### 9.4 Activities to Enjoy at Stations

➤ Service: Work at train stations



Work at train stations (Source: JR East, Japan)

➤ Leisure: Societal Activities

These solutions need to be mixed with the Community Manager solution and the promotion of the station as a brand.

With 750,000 visitors every day, Grand Central Terminal is one of the most-visited destinations in New York City (USA), second only to Times Square. During holidays, this number usually goes up to over 1,000,000.



“90 reasons to catch a later train” – Gran Central (NYC, USA)

In Grand Central, passengers are 55 percent male and 45 percent female and have a median age of 41. Therefore, they are mainly commuters with financial

capacity to spend their money in the retail shops of the station.

- Friendly Waiting Rooms
- Leisure: Sleeping at train stations
- A station is an ideal hub for picking up online pre-ordered goods
- Animation elements: expositions, small shows, infotainment, fashion runways, etc.
- Many other ideas:
  - Service areas: cash dispensers/ATM, a post office and even administrative services
  - Library
  - Vending machines distributing coffee and food products
  - Florists offer or small "lifestyle" gifts
  - Pharmacies and drugstores

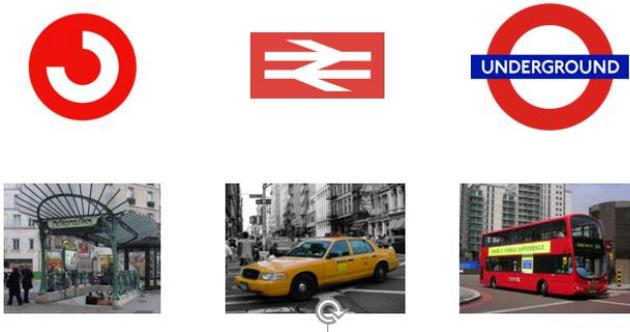


IRCTC to launch state-of-the-art sleeping pod facility at Mumbai Central Railway Station (Source: <https://www.knocksense.com/mumbai/sleeping-pods-in-mumbai>)

### 9.5 Brand Identity

Brands are an essential part of life, economy and culture of the global world. The essence of Branding is to create and develop solid and coherent identities, ensuring that development is consistent and coordinated in its entirety.

Transport is essential for the functionality of a large city. Their transport systems are also an essential part of their image, most large cities and metropolitan areas have among its most important symbolic values, icons of urban transport. As the New York yellow cabs, the red London buses or modernist Metro stations in Paris.

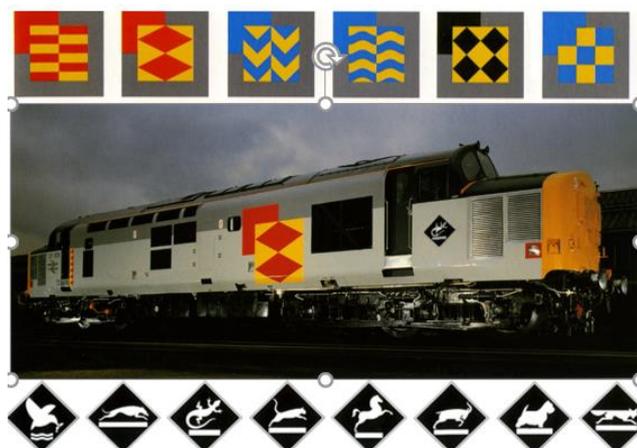


**Branding in Transportation**

Brands in the global world are giving increasing importance to the elements, being able to express beyond languages, cultures and alphabetic systems.

Brand Identity generates a conceptual, graphic language for the whole transport system's communications: about its stations, its vehicles, its maps and all of the signage and wayfinding elements, as well as the common components, as well as uniforms and workwear, stationery, marketing collateral and digital media.

Brand Identity achieves the consistence and the uniformity of the image, appearance, look and feel across of all public transport facilities, infrastructure and systems, in such a way to be easily identified-They need to be clearly perceived as being part of the same entity.



*Transport systems need Branding as essential part to its understanding for citizenship increasingly multilingual and diverse*

The Importance of Branding in transport systems is double: on one side, a Brand needs to be recognizable

and singular centrepiece, and on the other side, the system must be able to generate around the Brand a strong visual identity, consistent and functional system: in all elements of Signage and Wayfinding.

**9.6 Signage and Wayfinding**

A structural component of the information and orientation chain, wayfinding is a core service offered to passengers. It reflects a station or network's image and identity. This is why wayfinding should always be consistent and rigorous in its application.

The signing system will, through consistent application and presentation, provide a strong visual coordination of public transport services. It will help identify all public transport environments, vehicles, locations and facilities. The signing system will help passengers understand how the various modes of public transport work, instil confidence in using the public transport network and help ensure safety and security.

According to UIC IRS 10181 User Information in Railway Stations, Wayfinding is a means of spatial communication comprising a series of coordinated visual signs that that help passengers to understand a station: text, pictograms, arrows colours, etc. Together, these signs constitute a system that should enable passengers to understand and choose their routes in accordance with their own spatial awareness.



*Pictographic systems. Source: UIC*

Wayfinding is based on the following principles

- Prioritising and categorising information
- Staying simple and generic

- Developing a universal, understandable and appropriate wayfinding system for all users
- Legibility
- Providing a suitable location for panels
- Maintaining global consistency in terms of project scope (messages, media, etc.); Maintaining uniformity and consistency between stations
- Fairness in order to prevent discrimination against carriers, station owners, retailers, etc.

The wayfinding system will help passengers navigate their way through and between the different stations and public transport buildings, easily and efficiently. The signing graphics will reinforce the principles, vision and values of the brand identity.

Build and Design pictographic systems understandable and with visual language capacity is always a key in any process of Signage and Wayfinding. It should be considered using existing iconic systems.

The improvement of Customer Experience can be reached making interactive station plans accessible for all (including persons with disabilities) via operator's apps and via interactive screens and using ambient wayfinding with artworks, lights, colours and sound.

### 9.7 Sanitary Areas



A majority of travellers accept the concept of paying for toilets use, but the payment induces a clear expectation of service of a certain level.

- Include adapted toilets
- A wide range of payment methods is required, contactless to eliminate any access barrier

- A payment in exchange for a voucher could be considered to be used in the shops of the station
- Access to toilets through a shop does not seem to be a good idea (human factor / felt the obligation to purchase)
- Sanitary areas should be placed in more central places that are clearly visible (security feeling)
- Most actions to be contact less: Automatic toilets: barriers to entry (technology without control, wet interior, etc.)

Some trends:

- Implementing a changing space for children is a must nowadays.
- Shower
- Breastfeeding room
- Health check-up station with blood pressure, heart rate and blood oxygen saturation, weight and measurement and calculation of body mass index

### 9.8 Bicycles Alternative Parking

Bicycles are playing an increasingly important role in train travel, a trend that has accelerated with the Covid-19 crisis, and there is a clear demand for a more accessible and extensive offer of shared bikes.

There is a growing demand not only for more and easier-to-access bicycle parking facilities, but also for covered and secured parking facilities with an access control system.

### 9.9 Digital display

Stations should provide easy access to on-demand, real-time passenger information for:

- Journey planning
- Neighbourhood information
- Community / public notices
- Works / service interruption notices

For visitors, infrequent travellers, and people taking a new route for the first time, it's not always apparent which direction of a line is the right one to take. The results are often stress, missed connections, and frustration with the lack of clarity of the transit network's signage.

Digital signage offers the chance to take this confusion out of a passenger's day. By implementing interactive wayfinding terminals at transit shelters and stations, transit networks can put personalized directions in the hands of individual passengers who need to know.

A digital concierge could be provided at stations for travellers that could allow the instant booking of hotel rooms, attraction and show ticket ordering, table bookings and virtually anything that is available online at customer fingertips. These services and bookings could be used to generate an additional revenue stream for the Operators.

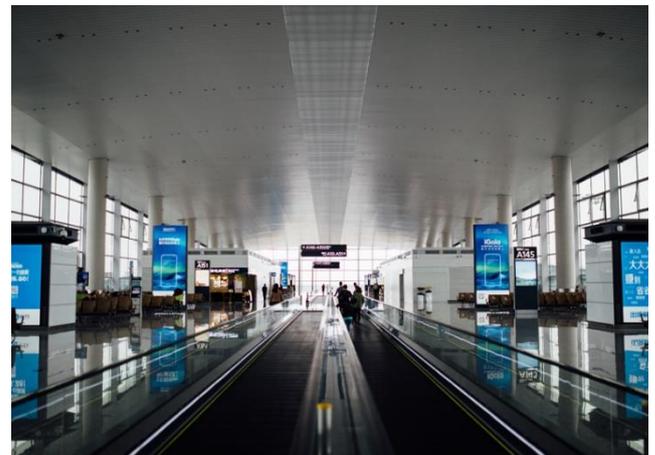
Interactive terminals are an invaluable source of information for passengers arriving in an unfamiliar station. This type of terminal should be intuitive and easily accessible (visible and accessible to all).



*Interactive information point*

## Information Display Systems

Inform customers and keep them well informed and updated about the arrival, departure, delays and schedules with digital signage displays in multiple areas. Usually, these displays are referred as Passenger Information System or Public display system. Digital signage screens play a pivotal role and is key for information dissemination in public transport stations



*Information displays points*

## Wayfinding maps

Show directional maps to inform the customers about the parking lot, restaurant, lounge, terminals, platforms etc.

## Visual Emergency Announcements

Update and keep the customers well informed and ensure their safety by publishing visual emergency alerts, safety instructions, weather forecast and other environmental information by integrating the emergency systems with the digital signage network.

## 10 DIGITALIZATION & DIGITAL CHALLENGES

### 10.1 Introduction

The power of digital technology as a tool to increase a company's competitiveness, creativity and enhance customer experience relies firstly on teams and managers within the company accepting and taking this type of technology on board, and then ultimately on incorporating digital technology into long term career development of all the company's human resources.

Digitalization involves more than transforming analogy channels to digital ones. Adding another channel without **reviewing/rebuilding the current processes and channels** would not meet customer expectations.

Moreover, digitalization creates opportunities to add value to existing processes and services, but without customer insights, many of them remain undiscovered. It's really important to go to the customer first, and that the customer is included into the entire process from research to development and to the testing of the end product.

The digital transformation of a company will have a deep impact: on the company's culture, management practices and communication between teams and individuals.

The key issue is:

#### ***How to improve the dissemination of information?***

The goal is to give users a completely new experience on one hand and facilitate station operation on the other.

**Digitalization should increase the reliability of information provided to customers**

Any new future combination of technologies and processes must consider allowing easier, more accessible and flexible options to the passenger, who has to be the focus in the transportation experience. The systems must be open and ready to easily support the new technologies of the future.

There will be a growth of BYOD (bring your own device) to purchase/carry the travel tickets. Railway services need to be prepared to integrate them.

Digitalization strategy usually is based on these main goals:

- Better and customized services
- More (Digital) sales – Various Digital Sales channels & partnerships
- More efficient customer interactions
- Offer better experience in different channels:
  - Professional newsletter
  - Optimisation digital marketing and experience
  - Contact strategy social media
- Digital customer care in order to offer good digital customer service
- Wayfinding and indoor navigation assistants (Voice assistance, solutions PRM assistance, indoor beacons etc.)
- Realtime services
  - Mobile applications (on-board passenger platforms, catering, timetables, bots and customer service etc.)
  - E-ticketing solutions (reservation and validation, e. g. Be-in-Be-Out, Check-in-Check-Out),
  - Telematics (Passenger information systems, etc.)
  - WIFI Connectivity & added services.
  - PAX information in stations (displays, train occupancy and coach numbering)
  - Connectivity solutions (on-board, stations, wifi, internet over beacon etc.)
- Innovation on Artificial Intelligence (AI), Big Data, etc. (Sensors and other digital technologies and infrastructure).
- Passenger counting & prognosis

Digital technology solutions have been proven to increase customer satisfaction, attract ridership, support revenue objectives and create operational efficiencies.

Digitalisation efforts in the railway sector have been focused on this most crucial aspect, followed closely by efficient management of resources and operations and improving the user experience.

Robust connectivity for uninterrupted services is absolutely essential for the signalling and telecommunication setup, or the 'heart' of the railway system. This is what controls the performance of the network, ensuring that there are no intra-train collisions or derailments.

It is no secret that digitalisation has improved this space by leaps and bounds today. With the expected introduction of 5G in the control command railway system, trains will have access to hi-tech capabilities – such as Internet of Things (IoT) and artificial intelligence (AI) applications – that will be able to transmit more data from trackside to control centres, enabling urban rail to manage critical infrastructure even more efficiently and increase safety for the overall sector.

Connectivity also helps passengers to feel more comfortable and safer on their train journeys. This feeling of safety is more from a psychological perspective of being in control should an emergency arise, knowing that they can get timely information updates, contact family members and so on.

**It is necessary to always remain aware that there is also a digital gap.**

**There should always be a backup solution for people who doesn't feel comfortable using with digital tools.**

## 10.2 Internet of things (IoT)

There is no doubt that Industrial Internet of Things (IIoT) is the Fourth Industrial revolution, and its impact across the railway sector is already transforming its operations for the better.

The significant amount of data sets and data growth can be harnessed to further embrace the changing dynamics of the rail sector. The stakeholders need to

realize they need to get out of the industrial age and transition to the information age.

IoT refers to the interconnection via the internet of computing device embedded in everyday objects, enabling them to receive, use and send data and thus increase their functionality.

## 10.3 Artificial intelligence

Artificial Intelligence (AI), Machine Learning (ML), Deep Learning, Big Data, etc. are trending technologies that can help these companies improve their feedback collection and evaluation methods for getting accurate and useful insights.

Along with acquiring new leads, it's equally important to nurture the existing customer base. To win their loyalty you have to provide them with quality customer support which can be achieved through careful analysis of the feedback.

It helps you to gain an idea of their pain points and requirements, based on which you can improvise your future strategies.

Customers give feedback via multiple platforms such as calls, online chat, face-to-face meetings, surveys, social media channels, etc.

But it is difficult to handle and analyse huge amounts of data which a company receives in the form of feedback. AI-powered platforms and automated tech tools have simplified this process.



Artificial intelligence (AI) automates many processes that were once run solely by people. While some view this as a negative change, the reality is that AI can help reduce the workload of multiple staff members-and can often do it faster and more accurately.

AI allows companies to deliver these smarter, more personalized and predictive experiences that customers, but the human touch is still table stakes for customer success.

Artificial intelligence and technology are changing the face of customer service and customer relationship management.

Companies can use AI to:

- Gain real-time insights across all customer contact channels.
- Optimize agent availability, wait times, and opportunities for proactive service delivery.
- Automatically escalate and classify cases using sensitivity and domain expertise predictive analytics.
- Power chatbots to deliver knowledge using automated workflows.
- Enable field agents to deliver service based on access to CRM data.
- Deliver personalized services anywhere.
- Optimize scheduling and routing using complete CRM data.

AI-enabled analytics and tools can work on massive datasets which are quite complex and tricky to interpret, with the help of seamless evaluation and useful insights generated through these tools.

Artificial intelligence takes data and uses it to identify the best available representative to address the customer’s needs. It then provides the representative with necessary background information before they interact with the customer.

Communication apps such as Facebook Messenger, WhatsApp, Slack, and others are digitizing the way people communicate, and soon nearly every method of communication will have AI advancements.

## 10.4 Machine Learning

Machine Learning (ML) and Natural Language Processing (NLP) are two of the most significant subsets of AI which helps in analyzing the feedback efficiently. Also, because of these advanced

technologies, the process of making data-based decisions become hassle-free.



AI-driven platforms can easily analyse customer interactions and perform text analytics for qualitative evaluation of customers’ thoughts and emotions. Also, these tools can grab the frequency of certain words and assess their emotions.

Sentiment analysis is the best method to gauge customer’s feelings towards your business. It can divide the feedback into positive, neutral, and negative categories based on the words as well as associated emotions.

Advanced AI solutions can classify tickets raised by customers in predefined categories and can solve them instantly or pass on to the customer support reps if the problem seems to be more complex.

These tools can easily identify irregularities with qualitative and quantitative analysis and let the concerned professional aware of the troubling issue.

## 10.5 New technologies

### 10.5.1 Introduction

With the rail industry may be 10 years behind developments compared to airport passenger experience, providing additional services whilst on-board will become of increasing importance in the battle to win the customer.

There are several fields under development: planning trip portals, augmented reality to provide information on the windows, dimmable windows according to sunlight (avoiding stores), transparent screen with information, accessibility enhancement, surveillance of luggage, ticket seat validation on board (to avoid the perception of rail staff as controllers but at the service of the client) or solutions to improve accessibility are some of the exploration fields that are under development.

Following sections describe some of these new and very interesting technologies.

### 10.5.2 Trip Planners

A trip planner, journey planner, or route planner is a specialized search engine used to find an optimal means of travelling between two or more given locations, sometimes using more than one transport mode.

Searches may be optimized on different criteria, for example fastest, shortest, fewest changes, cheapest. They may be constrained, for example, to leave or arrive at a certain time, to avoid certain waypoints, etc. A single journey may use a sequence of several modes of transport, meaning the system may know about public transport services as well as transport networks for private transportation.

Trip or journey planning makes use of at least one public transport mode which operates according to published schedules; given that public transport services only depart at specific times (unlike private transport which may leave at any time), an algorithm must therefore not only find a path to a destination but seek to optimize it so as to minimize the waiting time incurred for each leg.

Trip planners have been widely used in the travel industry since the 1970s, by booking agents. The growth of the Internet, the proliferation of geospatial data, and the development of information technologies generally has led to the rapid development of many self-service app or browser-based, on-line multimodal trip planners such as Citymapper, Door2Door or Google Maps.

Google Maps is one of the preferred options for designing a trip to an unusual destination, especially among younger travellers. Therefore, it is important to have a prominent positioning in these media.

Trip planners depend on a number of different types of data and the quality and extent of this data limits their capability.

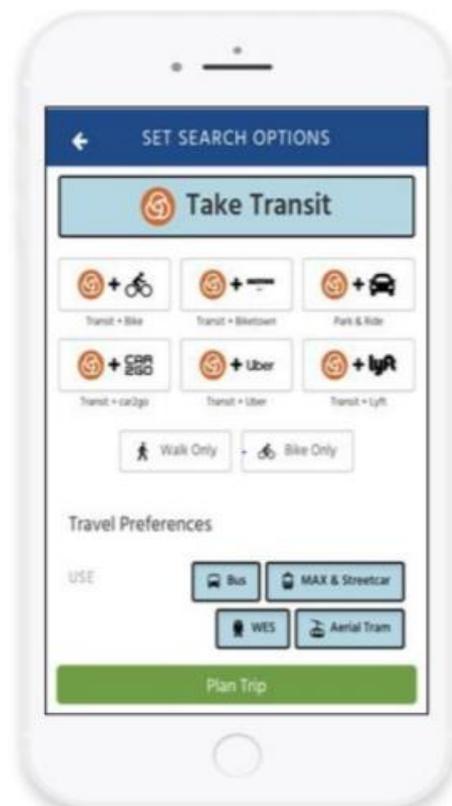
Some trip planners integrate many different kinds of data from numerous sources. Others may work with one mode only, such as flight itineraries between

airports, or using only addresses and the street network for driving directions.

A trip planner may be used in conjunction with ticketing and reservation systems.

#### 10.5.2.1 Case Study: Trimet

TriMet is the first US transit agency to release a multimodal trip planner that incorporates shared-use mobility providers, which is a fundamental first step towards providing their customers with convenient, personalized door-to-door travel options.



*TriMet app*

TriMet, formally known as the Tri-County Metropolitan Transportation District of Oregon (USA), is a public agency that operates mass transit in a region that spans most of the Portland metropolitan area in the U.S. state of Oregon.

TriMet's Online Trip Planner gives a step-by-step itinerary showing how to get to your destination using buses, MAX Light Rail, WES Commuter Rail and the Portland Streetcar—including transfers, walking directions and how much to pay.

The trip planner has been designed to be easily replicated by transit agencies in other cities. Because it uses open-source technology and open data, other transit agencies could quickly adjust the trip planner for their system.

TriMet can then benefit from improvements other agencies make and incorporate them into their trip planner. TriMet anticipates increased customer satisfaction and ridership.

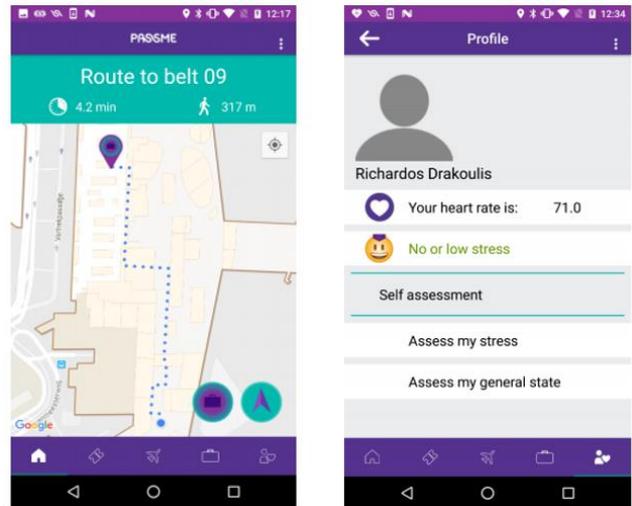
**10.5.2.2 Case Study: PASSME Personalised Device and Smartphone Application**

PASSME aims to deliver industry-driven, passenger-centric novel solutions for passengers, airports and airlines to address the anticipated increase in demand for commercial flights in Europe by 2050.

The goal is to reduce travel time by at least 60 minutes by integrating information between all stakeholders and transforming airport and aircraft operations and interiors to make the passenger journey time efficient, seamless, robust and accessible.

This requires significant breakthrough solutions, such as:

- A real-time passenger-centric system for managing passenger flows that use input from the airport and passenger to provide predictive analytics on passenger flows 20-30 minutes ahead of time
- A passenger independent system for managing luggage flows that reduce the time in arrival/departure airports by at least 30 minutes and increases the control passengers have over their luggage



*PASSME Personalised Device and Smartphone application*

- Radically redesigned passenger-centric airport and airplane processes and facilities that enable highly personalised and less stressful experience through key touch points (check-in and boarding)
- A personalised device and smartphone application that measures physiological/psychological state and links with airport/airline services to provide relevant and timely information to support the passenger in decision-making.
- Provides personalized information:
  - Personal travel information
  - Navigation through the airport
  - Estimated time of arrival to the gates
  - Congestion area (gates, checkpoints etc.)
  - Mood and stress assessment
  - Baggage tracking
  - Suggestion of potential area of interest

**10.5.3 Digital Travel Assistant**

Technology may allow travellers to locate and obtain goods and services in their area, warn them of any changes or obstacles on their trip, and provide travel tips.

Smart travel assistants use AI-systems, mainly machine learning algorithms, and human-machine interfaces, such as voice recognition and chats, to assist travellers along several steps of the customer journey.

Whilst some smart travel assistants offer services to both business and leisure travellers, others are specifically tailored toward specific traveller groups.

Today's smart travel assistants are mainly focused on the planning and booking phase of the traveller's customer journey.



**SBB App – Digital Travel Companion**

These apps are able to update the traveller during the journey with information about:

- delays
- platform changes
- cancellations
- Time to board, alight or change

#### 10.5.4 Chatbots

Chat bots are computer programs that mimic conversations with people using artificial intelligence (AI).

A chatbot allows the human-machine dialogue further. It is a dialogue agent with intelligence and ability to interact with humans through a messaging service. The chatbot is able to react to a request according to a predefined scenario up streamed by the human.

A conversational agent can act out multiple roles. It allows both to entertain and inform the user by solving problems or responding to queries. Some features also allow you to go further in the user experience, making purchases or reservations.

Chatbots are still known as tools with cold content, which have difficulty in creating a sense of proximity to users, as interactions rely on autonomous answers, thanks to databases created by humans.



**ÖBB Chat bot**

More evolved chatbots, using machine learning to increase their performance, are progressively emerging. The more they interact with users, the more information they get, and the better they learn to anticipate behaviour by adopting the right posture as they develop the ability to recognise user profiles.

Chat bots are used in social media applications like Skype or Facebook messenger and ideally for customer service purposes.

Chatbots present significant benefits for railways and travellers alike. Chatbots are there to inspire, search, book and provide after sales service.

#### 10.5.5 INOUI On board portal

TGV inOUI is SNCF's premium high-speed rail service. The smartphone may be used to buy or book tickets anytime from the OUI.sncf website or the OUI.sncf app in any mobile platforms.



**INOUI On board portal**

- Real time information on the trip
- Order food and beverages from the bar
- Car rental
- Information on the destination
- Assistance
- Chat with passengers connected to the portal
- Ask to borrow a charger
- Arrange a carpool

**10.5.6 Virtual glasses – Augmented reality**

Over the past few years, several sectors have been showing interest in using Augmented reality, which is now available in the entertainment realm – both in videogames and figurative arts – as well as the healthcare and military spheres.

The technology is also showing significant potential for rail applications, providing a much-needed three-dimensional approach to segments of the sector that have long been limited, such as maintenance and training.

Data glasses would be a new era and in the medium term would make displays on and in the train superfluous or at least greatly reduce them



**Augmented reality**

**10.5.7 Augmented Reality Train Windows**

One of the most exciting developments on the connected train horizon is augmented reality windows. When prompted they display translucent information about the journey such as progress, time, temperature or tourist attractions at upcoming stops in front of the rolling landscape.



**Augmented reality windows**

Digital foils on windows and doors can provide passenger information and highlight cycle and pushchair spaces. They can be turned off between stations so passengers can see out.

**10.5.7.1 Case Study: Beijing subway Windows project**

- Transparent LCD screen
- Being developed in Beijing Subway Line 6 (trial phase)
- Displays information about the journey
- Research to develop further application for the display



*Beijing subway Windows project*

### 10.5.8 High-speed biometric and microchip ticketing systems

A company called Cubic Transportation Systems presented a gateless entry system that uses a combination of Bluetooth and facial recognition software to help passengers quickly pay for their trip and get onto their train.

Swedish train operator SJ Railways, meanwhile, has already started using microchips to quickly allow rail passengers to validate their tickets.

### 10.5.9 Transforming rail carriages

British Rail Safety and Standards Board (RSSB) has been working on an innovative design that allows passenger seats to be stowed away, allowing the carriages to be used for freight during off-peak hours.

If rearrangeable carriages are going to be used, electronic elements will need to be able to move quickly and easily without breaking, which can be accomplished with the dynamically flexible circuit solutions, interconnects and components.

### 10.5.10 Accessibility Enhancement at Stations

The implementation of smart tags at stations to serve as a reference for distributing a wide range of content while improving accessibility for visually impaired people. In this way it is possible to interact digitally with customers using any mobile phone connected to the internet.

These labels can be located online identification signage and information panels, at entrances, lobbies, sales areas, ticket validators, escalators, lifts and platforms.

With an application on a mobile phone, the tags can be captured efficiently, without the need to know exactly where they are. Thus, using a voice assistant, visually impaired people can read the signage on public transport networks, both at bus stops and metro stations, receive warnings and other precise guidance to move around safely.

In a station, each space can be labelled with its description (access, lobby, sales area, toll line, stairs, lift, platform, intercom, etc.), but the application also relates the elements to each other and calculates distances from the user to allow visually impaired people to navigate independently.

#### 10.5.10.1 Case Study: SBB Inclusive – customer information for all passengers.

The SBB Inclusive app provides visual and digital customer information from stations and long-distance trains on your smartphone. It helps blind and visually impaired people travel more safely and independently.

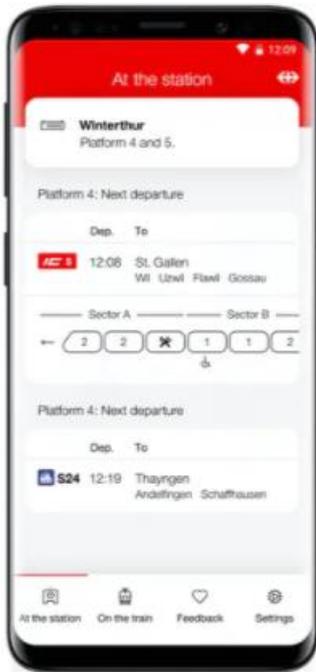
Relevant location-specific travel information is sent to the smartphone. Both at the station and on the train.

Depending on the needs, the information may be read aloud by voiceover, or displayed in dark mode or with an enlarged font (easy to read). The app is organised in a clear and user-friendly way

The app currently works at all Swiss railway stations and on all SBB long-distance trains.

The app will show next train departures. The information given for each platform is the same as that shown on the departure and platform display boards.

The information can be accessed on the smartphone anywhere in the station. Next departures, including train formations, from the selected platforms at your current station.



**SBB Inclusive – customer information for all passengers**

When onboard, the app shows which train you are on (train number, destination, coach number, class of travel, service zone, next stop). During the journey, you will be shown upcoming stops, connections and the side on which to exit the train. When changing coaches, the train information will be updated.

This means that blind and visually impaired people can find out exactly where they are on the train whenever they like and find out about their onward journey.

When getting on a train, it is received a push notification with the information relevant to the journey (train number, destination, coach number, class of travel, service zone, next stop). This message also gets updated on the lock screen.

**10.5.10.2 Case Study: Navilens (SNCB)**

Navilens is an example of digital customer experience. This is a service for the visually impaired.

Visually impaired people are not independent in unknown spaces because they cannot read the signage indications. The idea is to place an artificial marker on the signage to help visually impaired people to read it. The ordinary QR codes are not adapted to this issue, because it is not possible to read a QR code

from far away. Five years of intense research led to the development of the Navilens app based on a new artificial marker code with worldwide patent.

The proposed solution is easy: to access to the information the user should have the Navilens app and scan the codes placed in the public space. There is no need of being really close to the code, it can be scanned at 12 meters far away in only 0.03 seconds and without need to focus it. It is wide angled reading up to 160° degrees and it can be read in all light conditions (dark & bright). The code contains the real time actualised accessible information.

Improved QR codes will be placed at various points in stations to guide visually impaired customers to the right platform, the right facilities or appropriate assistance. The codes are intended to be scanned with an app and supply detailed information in real time.

This will ensure a smoother self-service experience for visually impaired customers.

- Could be an answer to a real need of autonomy or feeling of being in control in unknown environments
- Essential: track numbers, ticket counter, information point, toilets.
- All other locations in the station are a « plus »
- Participants much appreciated the initiative



**Navilens. Source: SNCB**

**10.5.11 Ticketing**

**10.5.11.1 Automated Ticketing (CICO)**

An integrated fare system needs to exist, along with an agreement among the service providers for ticket

revenue sharing (clearing), to avoid creating a barrier to the adoption of public transport, since users tend to be overwhelmed by many tickets and several purchase methods.

The state-of-the-art leads to identifying a solution, to combine the needs of both customers and providers, by developing a system to simplify customer experience, while at the same time collecting precious data for service monitoring and planning.

This will be achieved through a flexible ticket validation system which could make use of three different technologies (QR codes, GPS and Bluetooth).

The contributions are:

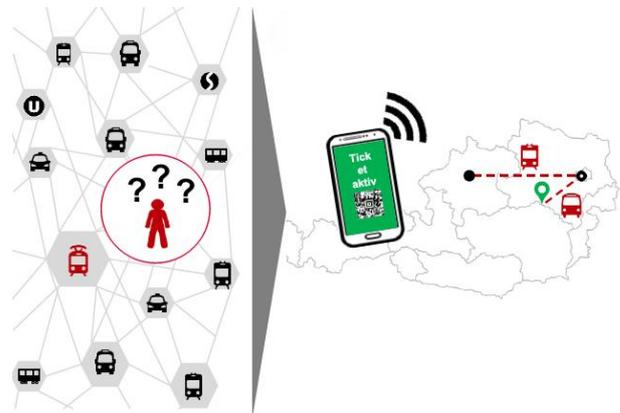
- Greater flexibility in ticket validation obtained by using multiple technologies
- The novelty of a gamification layer applied to mobile ticketing
- The identification of a method for obtaining clearing-related data.

The adoption of multiple technologies introduces different benefits: to the customers, who will be able to complete trips on multiple vehicles without worrying about ticket compatibility; and to the companies, who will be free to choose among the multiple options and will thus not be forced to adopt a single technological solution.

The main expected result is the collection of key validation related information, which will be exploited mainly for clearing purposes and possibly even in real time for optimizing fleet management.

Main advantages are as follows:

- Lowering barrier of entry to public transport
- Various sales channels
- Variety of transport companies and modes of transport
- Purchase decision between ticket variants
- Crediting existing discount cards, season tickets, etc.
- Transport network & county borders
- Suitable means of payment, change

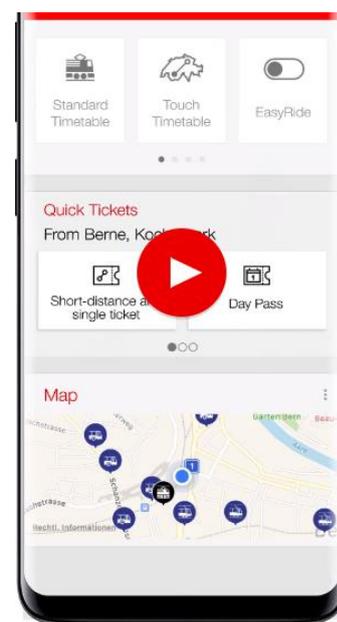


*Automated ticketing (CICO)*

### 10.5.11.2 Case Study: Easy Ride App (SBB)

Swiss Federal Railways (SBB) introduced the “EasyRide” automatic mobile ticket system across the entire Swiss network, allowing passengers to travel without buying a ticket before they commence their journey.

The EasyRide function allows passengers to swipe a button within the app at the start and end of their journey. The programme calculates the distance they have travelled and which modes of transport they have used, and what the lowest fare for the trip is. If a cheaper fare such as a day pass is available, the passenger will subsequently be charged the lower price.



*SBB EasyRide automatic ticketing system*

Passengers will also be notified if they forget to swipe off at the end of their journey.

The system has been designed to make travelling around Switzerland as simple as riding with the GA Travel Card, an annual pass that gives passengers unlimited travel on SBB trains and most other railways in Switzerland, as well as on boats, buses and trams, which EasyRide also covers.

### 10.5.12 Passenger Occupancy Apps

Passenger trains and station platforms are often unequally occupied, resulting in difficult passenger exchange and poor travelling conditions for some passengers.

Real-time train occupancy could influence passengers' behaviour to address less occupied areas (within trains or platform stations).

Therefore, comfort is enhanced, passenger exchange time is shortened, and operational reliability is improved.

This kind of information may be provided in the platforms with indication of occupancy at each carriage or via a mobile app, where information could be more complete:

- Facility information
  - Wheelchairs
  - Accessible toilets
  - Available spaces
  - Indication of family zones
- Accessible entry options
  - Wheelchair boarding
  - Stairs/no stairs
  - Etc.

This information may be based on real time information or in forecasts.

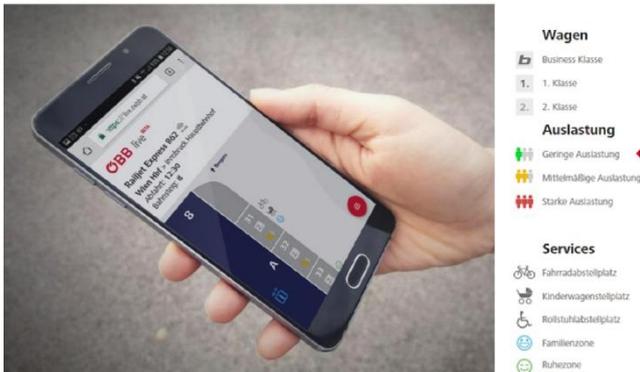


Zurich departure board. Source: SBB

### 10.5.12.1 Case Study: ÖBB Live

ÖBB live application provide different information to the customers:

- Train occupancy and coach numbering, as well as the expected occupancy per wagon
- Platform number
- Departure and destination stations
- Direction of travel
- Platform sectors and stairways
- Coach sequence and stopping point of the train.
- Data is a combination of historic data (various sources incl. anonymous tracking of mobile devices), reservations & wifi usage. Counting system
- Data is a combination of historic data (various sources incl. anonymous tracking of mobile devices), reservations & wifi usage
- Optimization possibilities:
  - Adaptation of the counting logic
  - Machine learning
  - Camera-based recording of occupancy



ÖBB Live app

### 10.5.13 Entertainment On-Board

Operators are under pressure to maintain a good customer experience; this includes delivery of fast, efficient on-board connectivity which enhances satisfaction and ridership.

With a growing number of passengers trying to connect to on-board Wi-Fi via mobile devices – and expecting the same level of connectivity as they receive at home or in the office – the service can at times not match such high expectations.

In order to resolve this problem many operators are taking a collaborative approach by investing in on-board “infotainment” solutions. “Infotainment” platforms are likely to become available on commuter services offering different types of content.

Future opportunities of the service may include the development of operator marketing strategies to build a platform that provides a personalised journey experience for the customer. This could be used to determine if the customer is a frequent traveller and provide bespoke on-board vouchers.

In recent years many railway operators have introduced technology to offer passengers onboard entertainment, allowing them to choose from a variety of films, games and magazines, or to track their journey in real time. From QR codes to enhance communication to a tailor-made connectivity system, here are some of the solutions rail operators are choosing to use.

Railway digitalisation will play a key role in maintaining the rail passenger experience.

Furthermore, operators will be able provide up-to-date information on rail services via the platform. This can be used to advise the passenger on the next leg of their journey helping to improve passenger experience and flow.

This type of service platform opens up a number of possibilities to the operator including video conferencing whilst on board. This is likely to benefit the business traveller.

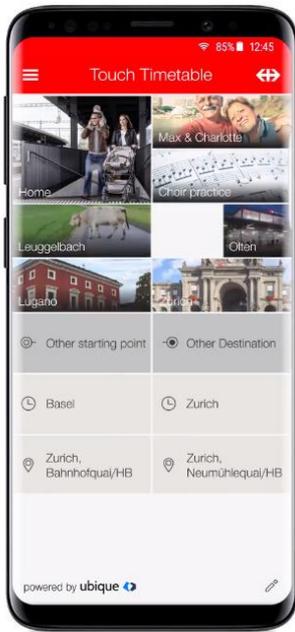
Live television is also expected to feature on future services.

This may be accomplished by upgrading the connectivity service and integrated media server. To overcome weak mobile signals, the system may combine signals of several mobile providers offering a single network to various applications and the passenger. This, together with a slight delay in transmission reduces ‘buffering’ of the service.

#### 10.5.13.1 Digital travel companion App

During the journey, the customer will be updated with information about:

- delays
- platform changes
- cancellations and notified when it's time to board, alight or change.
- Alert for one journey or for commuters



**SBB App – Digital Travel companion**

**10.5.13.2 Case Study: On board portal Railnet & railnet REGio (Cityjets) – ÖBB**

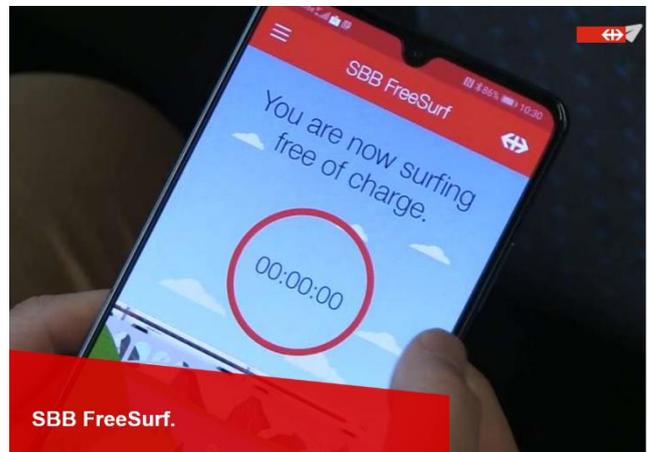
- Entertainment
  - Movies, Series, Documentaries (Focus on Austrian Productions)
  - ePapers & eMagazines (around 120 publications)
  - ORF TVthek (TV Mediacenter incl. Live Streaming of big events eg. Football Championships)
  - fidelio (classical productions, operas, concerts etc.)
- Info & Service
  - Travel preview and live map

- Services (all services on board, eg Quiet-/Family Zone, Restaurant menu etc.)
- Online Ordering of food and beverages (1st and Business Class only)
- Report defect (possibility for passengers to report defects at their seat or the toilet)
  - ÖBB TV (Marketing and employer brand videos)
  - Travel tips (Presentation of destinations in article form - Content-Marketing)

**10.5.13.3 Case Study: FreeSurf (SBB)**

Passengers from abroad will be able to surf the internet for free with a SIM card from a mobile phone provider participating in SBB FreeSurf.

- The free internet access is based on good mobile phone reception
- Internet but not WIFI, based on signal boosters (Beacons)
- Rollout with the 5 biggest mobile providers for all



**FreeSurf application**

## 11 CASE STUDY: BASQUE Y A NEW HIGH SPEED SERVICE

### 11.1 Introduction

This section intends to apply all previous chapters to develop a Case Study relative to a new high-speed regional service in the Basque Country, at the North of Spain, to be operated by Euskotren, public Basque rail Undertaking.

This new high-speed network is already under construction during the preparation of this document.

Y Basque stations are not yet design by ETS, Basque railway manager. Euskotren will be the railway undertaking.

### 11.2 Description of the Y Basque Network

The Basque Y is part of the Priority Project No. 3 "High-speed railway axis of south-west Europe", (Essen Summit 1994) constituting a key project that guarantees the continuity of the Trans-European Railway Network in the Iberian Peninsula.

The project is a new High-Speed network that will connect the three main cities of a Country and will allow the link with international main cities.

The Trans-European Transport Network (TEN-T) is a planned set of priority transport networks designed to facilitate the communication of people and goods throughout the European Union.

The Atlantic Rail Corridor is part of one of the priority corridors of the Trans-European Transport Network RTE-T and the high-speed rail project of Basque Y, integrates the Basque regions cities in the Network, this new infrastructure is an essential element that enables, among others, the connection with France by the rail and electrical adaptation of the railway network of the Iberian Peninsula and specifically of the Basque region into the European standards and networks.

The actual implementation of the Infrastructure of the Basque Y, entrusted to both the national and the regional infrastructure managers (ADIF and ETS), has the European financial support of the INEA CEF programmed, to enhance interoperability, intermodally

and cross-border sections, It is planned to be completed by 2026 and connected to the French border rail infrastructure, in an initial phase by the incorporation of the third rail between San Sebastian and Irun and in a second phase by a new infrastructure connecting San Sebastian and the border (Biriadou) by 2032.



European High-Speed Rail Map. Basque Y



This intervention is an excellent opportunity for the Basque Country because it will enable, first of all, a new railway offers due to the commissioning of the Basque Y connecting the three Basque capitals, and subsequently the development of rail connections to

the North and South: it will also link the Basque Country with Madrid and it will allow the link with international main cities like Paris or Frankfurt.

The Basque Y is designed with European rail gauge (1,435 mm). It will connect Madrid via Valladolid and connect France via Irun.

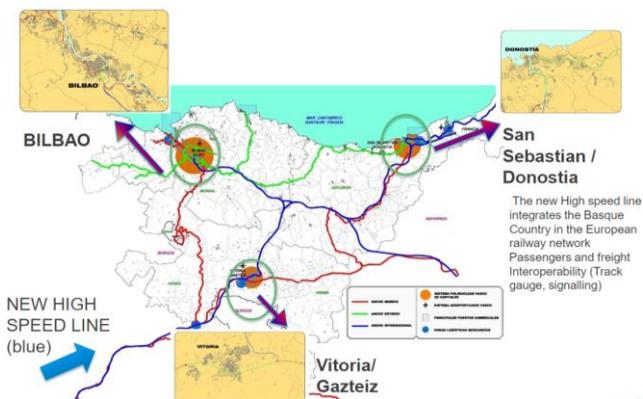
With a total length of about 172 km, 157 km are double track and another 15 km of single track in single track tunnels. Due to the orography, great constructive technical complexity, being the total length of the infrastructure of 171.9 km.

At the same time an opportunity to incorporate new rail services of intermodal freight such as the railway motorway between Júndiz and Paris/Dourges.

Basque Y is a mixed traffic high-speed rail network being built between the three capital cities of the Basque Country, at the North of Spain: Bilbao, Vitoria-Gasteiz and Donostia-San Sebastián.

The commissioning of this infrastructure will reduce travel time between the capital cities of the Basque Country:

- Vitoria-San Sebastián by 60%
- Bilbao-San Sebastian and Bilbao-Vitoria by 80%
- The current duration of the rail transport journey between capitals such as Bilbao and San Sebastian is just over 2 hours and 45 minutes for 108 km
- Between Bilbao and Vitoria is 2 hours 20 minutes for 80km by train exchange in Miranda de Ebro,
- Between Vitoria and San Sebastian with 1 hour and 40 minutes for 104 km



**Y Basque HSL network connects its three main cities**

These regional services will be operated by Euskotren, current Basque railway Undertaking.

Long distance travel times to Madrid or other European capital cities like Paris, Mannheim, etc. will be significantly reduced, causing healthy competition of the railway with air mode.

It will transport passengers and freight. Freight services will access directly with the standard gauge without travel disruption to the port of Bilbao, in Santurce (Bizkaia) to the port of Pasajes (Gipuzkoa), through an access from the intermodal Lezo logistic station.

Through the terminal of Júndiz, combined traffics of trucks and containers through rail motorway services are expected.

Future connections have been also planned to the future Cantabrian Axis (Cantabrian-Mediterranean Corridor) that would link it with Santander, and the Navarrese corridor that would link with Pamplona and Castejón with the Madrid – Barcelona-Figueras line.



**New Railway Basque Y route**

Three major stations (Bilbao, San Sebastian and Vitoria) and two siding loops are planned, one in the Vitoria – Bilbao section and one in the Vitoria – San Sebastian section in Ezkio-Itsaso (this one will also be a passenger station). These facilities will occupy a platform of 1500 m long, with a width of between 42 and 56 m, accommodating six or eight tracks.

The network will also include a connection to the Navarre Corridor, the high-speed line projected between Zaragoza and the capital of Navarre, Pamplona.

### 11.3 Technical Specifications

The main structural characteristics of the Basque line Y line are the following:

- 168,2 kilometres long, including San Sebastian – Irun border 15km branch
- 63% of its total length is along tunnels, 18 % viaduct and 19 % at grade embankment.
- Double-track tunnels with a maximum length up to 20 km
- 1,435 mm of track gauge
- Minimum radius of horizontal curves 3100 m, and 120 mm of maximum track superelevation
- 4.5 m of distance between track centres at tunnel and viaducts and 4,7 at grade
- 250 km/h of maximum design speed
- 15 thousandths of maximum gradient
  
- Stations:
  - Bilbao
  - Vitoria/Gasteiz
  - Donosti/San Sebastián
  - Ezkio is an intermediate station
  - Bilbao, Vitoria and San Sebastián are underground stations
  - It is considered to locate another station at Irun
- Freight terminals: two (Júndiz and Lezo)
- Voltage: Most section at 25kVac 50Hz 250 km/h; some sections at 3kVdc 100 km/h
- Signalling and Train Protection System: ERTMS Level 2 /Lateral Blocking Signalling System (ADIF)
- Train Positioning Detection system: Track circuits, axel counters/Balise / Eurocab

The main conditions of access and use of the mixed traffic HS line are:

- Passenger and freight trains are admitted if they comply with the TSIs of: Rolling Stock, Energy and Tunnels.
- 250 km/h, passenger train's expected speed,
- 120 km/h, freight train's maximum speed, equipped with ERTMS

- 400 m maximum passenger's train length.
- 750 m maximum freight's train length, including traction locomotives.
- Diesel trains are only allowed for rescue of high-speed trains.

Traffic forecasted for passenger trains is 90 trains per day and 25 for freight traffic.

### 11.4 Objectives

Most of the population live and work in the cities, the objective is to coordinate and implement sustainable rail and public transport and connect the 3 main cities.

- Transforming cities in low emission areas
- Avoiding people to take the car to the cities by promoting public transport
- Promote the use of shared electric cars, bikes, and scooters for the last mile from the station to the final destination.

The project deploys key principles in the implementation of the main stations:

- Stations have to be accessible for the people
- Connected with other public transport
- Interoperable
- Safe
- Neighbour engagement, representative city functions within walking distance to easily go to do their administrative centres
- Intermodal and pedestrian movement to be facilitated, easy arrival and departure flow.

Urban regeneration of the cities is in the benefit of social welfare, and will be carried out in order to promote and manage **Basque Y Stations**:

- Accessible for people
- Station's location should be able to accommodate demand
- Connected with other means of transport – Intermodal Hub
- Footprint considerable large
- Urban regeneration intention

## 11.5 Challenges

There are some challenges that need to be properly addressed:

- It is necessary to ensure continuity and co-ordination of the customer experience through co-operation of the Infrastructure Manager ADIF and Railway Undertaking Euskotren. All stakeholders with customer experience responsibilities need to work together.
- Noise and vibration, the existing operation services to continue during the works
- Capacity operation
- Protect historical façades, reduced construction site
- Possibilities of combining traffic to Iberian and international gauge must be addressed.
- Economical and Legal challenges:
  - Stakeholders' coordination: Council, local governance, utilities companies, train operators, rail managers
  - Great investments
  - Long term investments to be sustainable
  - Socioeconomic benefit intention
- Stations challenges:
  - Choosing a strategic location with variety of transportation modes
  - If possible vertical separation of the key railway infrastructure and services
  - Allocation of the operational and maintenance facilities
  - Combination of transportation hub characteristics with the city functions
  - Intensive use of station yard
  - Representative city functions within walking distance
  - A good train / metro/ tram connection is the essential modal combination
  - Multimodality and personal motorized transport
  - Multimodality and pedestrian movement
  - Arrival and departure flow organisation
  - Better quality of service and higher efficiency

## 11.6 Customer Centric Policy

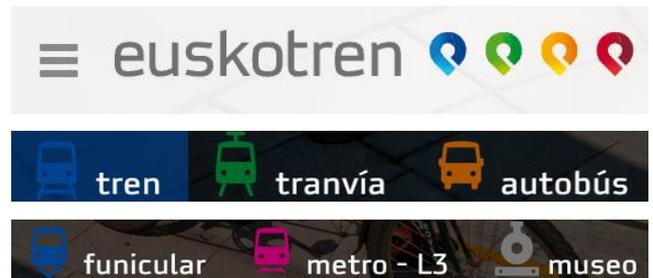
### 11.6.1 Focus on Customer

#### Basque Y Regional Services: A Customer focused transport system

The main idea is to plan the whole customer journey with timetable-offer, services at stations and on board, communication marketing/ sales/distribution for the Basque Y High speed network “from zero” as a Greenfield approach and learning from other similar projects (benchmark and best practices).

Euskotren considers of the utmost importance a **continuous information** on the customer's perception of the service.

Euskotren will provide a unique and distinct image of all public transport modes under its responsibility. The image for each transport mode will be different although all them based in the same pattern.



*Euskotren different transport modes patterns*

Euskotren will have to update all Customer Service manuals and protocols that currently are available for conventional rail operation. These manuals are fundamental to good service.

### 11.6.2 Customer Service Manual

Euskotren needs to update their service manuals and protocols to include the new generation high speed line, including coordination with the Infrastructure Managers (ADIF and ETS).

This is an opportunity to expand these manuals to all kind of services and modes of transport under Euskotren responsibilities: commuter, trams, buses, etc.

### 11.6.3 Information

Euskotren could consider providing Information to its customers in order to make informed decisions on how and when to travel.

Information could be delivered as follows:

- Digital Services
  - Web Portal
  - WIFI
  - Intercom with Customer care services
  - Smart services
  - Planning travel and interchanges
- Passenger Information Services
  - Visual displays, with real time dynamic information
  - Public Address (coordinated with visual info)
  - Reservation and occupancy detection (seats, bikes, wheelchairs, etc.)
  - Integral Journey App
- Signage and Wayfinding
- Information on-board the train

The channels that can be used to convey information related the transport system and the type of information to be provided are described below.

- General service information and documentation
- Information and documentation of specific aspects of the service
- Telephone information - Internet
- Information in stations
- Information on board

Euskotren will deploy the following information channels:

- Leaflets
- Information Offices
- Social Media
- WhatsApp
- Specifics Smart phones Apps
- Chatbots on the website
- etc.

### 11.6.4 Customer Offices

Commercial offices will be available in all new stations in the Y Basque railway network.

These commercial offices will be the point of contact of Euskotren with all its customers (all modes of Euskotren transports), and all services: information, lost & found, tickets purchase, etc.

### 11.6.5 Lost & Found

Lost & found is currently a centralized phone. It is envisaged to bring it to the main stations.

In this sense, time is saved for the customers to recover their Lost & Found belongings.

Euskotren could consider developing a virtual office for this Lost & Found service, to avoid having to go physically to the office until the object is found.

### 11.6.6 Web Page/APP

Euskotren could consider updating its web page and app so that customers can manage different procedures online, without the need to go to the commercial offices.

Among the different procedures to be carried out on the web would be:

- Route consultation
- Purchase of tickets
- Changes and Cancellations
- Claims
- Request for special services
- Timetables, outward and return
- Journey time
- Stations

This information must be kept active and accessible online during the trip, either through captures or with the web/app access itself.

In order to avoid digital gap, a non-digital solution to obtain information and assistance should be always possible.

### 11.6.7 Staff Training

All Euskotren staff, not only at commercial offices, but also personal on-board need to be trained according to the updated customer service manuals and policies taking into account the current and new customers' needs created by the new high speed offer.

### 11.6.8 Loyalty Program

Loyalty Program is not currently present in Euskotren. Euskotren shall consider the implementation of a loyalty system with the implementation of the new high-speed network to add value to its services and to gain customer loyalty.

### 11.6.9 Customers' Journey Description

Euskotren considers that the journey may be divided in the following phases:

- Phase 1: Planning the journey
  - Plan and choose how to go from A to B
  - What modes of transport customers need to take
  - How much time the journey will take
  - How much will it cost
- Phase 2: Booking / purchasing the ticket
  - Book and/or purchase the ticket/s for one or more modes of transport passengers will need for the journey
- Phase 3: Arrive at the departure station
  - Leave point of origin and take one or more modes of transport to reach the departure station
- Phase 4: Waiting at the departure station
  - Wait at the station the arrival of the train to take
- Phase 5: Rail journey
  - On board the train
- Phase 6: Arrive at the destination
  - Get off the train and leave the station to reach the final destination
  - Connections with other transport modes could be necessary

### 11.6.10 TouchPoints

- **Static:** e. g. timetable with departures/arrivals times
- **Interactive:** e. g. automatic ticket vending machines
- **Human:** e. g. infopoints
- **Interchange:** e. g. interchange from car to bus, from bus to metro

### 11.6.11 Euskotren Personas

EUSKOTREN know their customer operating several kinds of railway networks in the Basque Country. As a result of this knowledge, Euskotren has established the following PERSONAS that might be slightly adapted in the future according to the new services.

- Amaia's Journey, The creature of habit
- Eneko's Journey, The explorer Journey
- Ramon's Journey, The Retired
- Javier's Journey, The Optimist
- Susana's Journey, The adventurer

The description of this personas is as follows:

- "The creature of habit"
  - ID: Amaia Frequently uses public and non-public modes of transport to go to work, mainly car and bus and more rarely metro and train. In the past she used to take the bike to move around the city, but she stopped because of smog and pollution
  - Category: Commuter traveler, non-frequent rail user
  - Occupation: Employee
  - Age: 45
  - Personality: Demanding and thoughtful
  - Loves: Arriving as soon as possible to the destination
  - Hates: Breaking her journey routine due to unforeseen circumstances or strikes
- "The Explorer"
  - ID: Eneko Frequently uses public and non-public modes of transport to go to work, mainly metro because he is a commuter traveler,

otherwise he would not be able to arrive on time. To reach his workplace he has to take different modes of transport, both urban and extra-urban ones

- Category: Commuter traveler, frequent user
  - Occupation: Freelancer
  - Age: 32
  - Personality: Curious and messy
  - Loves: Trying new modes of transports or travel services both digital and non-digital
  - Hates: The lack of discounts / offers for those who often travel on the same routes
- “The Retired”
- ID: Since he retired, Ramon does not travel so often, especially by train. He moves mainly within the city by bus and more rarely by metro, but sometimes it happens that he wants to travel in other cities with his wife just for one or two days
  - Category: Non-commuter traveler, non-frequent user
  - Occupation: Retired
  - Age: 67
  - Personality: Tough and sarcastic
  - Loves: Finding polite and competent personnel on the train
  - Hates: The lack of maintenance and cleanliness of some stations or trains
- “The Optimist”
- ID: Javier usually travels by car and by train. Javier is a person with disability and avoids taking buses in his city because they are not properly equipped with wheelchair space, so he uses the car to commute to the office and to run errands, while he uses the train about once a week to visit his family who lives in another city
  - Category: Non-commuter traveler, frequent user
  - Occupation: Employee
  - Age: 38
  - Personality: Sunny and positive

- Loves: Looking at the scenery outside of the window during the whole train journey
- Hates: Travelling during peak hours because of overcrowding

➤ “The Adventurer”

- ID: Susana goes to her PhD college everyday by foot, as her house is located at a walking distance (indeed, she selected the house based on this criteria). During the week when meeting her friends or family she takes the metro and tram preferably. During the weekend she enjoys traveling to an unplanned city, selecting the destination on her way to the train station.
- Category: Non-commuter traveler, frequent user
- Occupation: Student
- Age: 21
- Personality: Adventurous and energetic
- Loves: Spending little to travel through new places
- Hates: Finding non-cheap travel solutions if she wants to book a journey with little advance

### 11.6.12 Customer Feedback

Problems and customer interfaces are analysed:

- knowledge of customers and non-users, asking how their trip from the beginning at home is
- how they interact with the website, ticket, app, at the station, posters, signage, etc.,
- timetable information, information is available, and it is only necessary to manage it.

Group dynamics to be with different sectors. Including non-users:

- What connects the customer with us?
  - Newsletter
  - Social media
  - Customer voice
- How can we bind the customer to us after the purchase?
  - Sending special/customized offers
  - Benefit programs

## 11.7 Accessibility

### Being mobile enables people

Accessibility is not exclusively relevant for people with disabilities, but for everybody. Accessibility refers to both physical and Mental & Cognitive aspects.

Therefore, all travellers need accessible mobility options.

The Y Basque will be fully accessible, according to:

- European Technical Specifications for Interoperability (TSI Accessibility, Rolling Stock, Infrastructure)
- Accessibility Basque law
- National Accessibility law

Accessibility must be provided in all frontends, including barrier-free routing and, of course, for all travel segments.

All these requirements are to be applied to:

- Stations
- Rolling stock



## 11.8 Intermodality

In their A to B journey, passengers try to navigate through a number of different transport systems or modes.

The solution requires developing integrated transport, linking vehicles and infrastructure, and creating an interface between customers and multimodal services.

Intermodal transport centres have to be coordinated around the railway, such as bus, tram, or bicycle, or

other railway services, connect at the beginning or end of the journey, called first or last mile.

Most people use transport modes intermodally, for example, when taking the road or railway to an airport or inter-regional railway station.

Multimodal passenger transport provides more options to the traveller, is user-friendly, and adds to the overall efficiency of the transport system.

Key Y Basque stations will be located together with other transport modes to ensure intermodality:

- Bilbao: metro, buses, tram, high speed services, regional railways, commuter railways, bicycles
- Vitoria/Gasteiz: buses, tram, high speed services, regional railways, bicycles
- Donosti/San Sebastián: metro, buses, high speed services, regional railways, commuter railways, bicycles



Intermodality with bicycles. Source: Euskotren

## 11.9 Safety and Security

For customers nothing should disturb their daily trips, and they expect both safety and security, and the rail company taking care of them.

### 11.9.1 Safety

Safety is very normative. In the case of the Y Basque railway network, Spanish national Rail Safety Authority (AESF: Agencia Estatal de Seguridad Ferroviaria) is responsible for providing the necessary safety certificates to operators.

The AESF is a Spanish State Agency responsible for railway safety, carrying out the management and supervision of the safety of all the elements of the railway system: infrastructure, rolling stock, railway personnel and railway operation.

As the largest Spanish railway authority, AESF carries out the functions related to the interoperability of the railway system of state competence. It is also responsible for granting, suspending and revoking the licenses of railway companies.

For safety purposes, the usual rail systems are foreseen to be implemented (as described before).

### 11.9.2 Security feeling

The customer shall feel secure and comfortable during the whole journey experience, both in stations and trains, as well as in the ways or routes until reaching the stations. Because of that, it is very important to generate the feeling to the users that everything is under control with a safe and pleasant environmental.

**Crime prevention through environmental design (CPTED)** is followed to create safer railway system, mainly stations, although crime on public transport is relatively rare.

CPTED is a relatively common approach used to reduce crime and the fear of crime in and around railway stations.

For security purposes, it is foreseen to dispose with regional Basque station control police.

Euskotren will have to develop:

- Management procedures
- Self-protection Plans
- Emergency plans (according to Railway Agency Security Act)
- Crowd management Plan

### 11.10 Services to be provided

At this stage of the project the different services to be provided to passengers (at stations or on board) are still to be designed. Nevertheless, the following points will be analysed.

#### 11.10.1 At station services

In stations, passenger services will be provided by the Spanish Infrastructure Manager (ADIF) which is the owner of the stations.

Euskotren will have several ticket vending machines at the stations.

It is being studied to implement virtual information management point in stations.

No other passenger services are foreseen so far at stations.



*Ticket vending machines at stations*

#### 11.10.2 On board services

- **Classes.** It is not foreseen to have different classes on board, due to the limited trip time (for equivalence with the conventional regional services that Euskotren operates). The final decision on classes can be re-planned.
- **Luggage.** Since the planned intercity services are mainly for commuting between the 3 Basque capitals (High Speed Commuting) and not to/from the airport, no specific racks for large luggage are foreseen, except for the overhead luggage racks above the seats. Luggage can be carried in the same way as on a conventional train.
- **Pets.** Euskotren will apply its pet policy and the regulations on force on this matter, unless otherwise provided by the infrastructure Manager, ADIF. According to European regulations, pets should be allowed with certain conditions (described in other sections of this document).

- **Bicycles** will be allowed on board, under certain conditions, in accordance with current legislation.
- Mobile phones recharging.
- No catering service on board is foreseen due to the short trip time (about 30 min trip).
- Other services on the train, as advance notice to seniors about stops, etc., will be decided after a process based on surveys is carried out.
- It is not foreseen to put wifi on board (for equivalence with the regional and metro services that Euskotren operates). The final decision on the wifi can be re-planned to depend on customer requests and the evolution of the cost of on-board equipment.

### 11.10.3 Assisted Travel

A paramount service to be provided is the care of passengers with disabilities, reduced mobility or other impairments or special needs, such as parents with small children and buggies.

The assistance service is to be provided at stations by the Infrastructure Manager to all railway undertakings and provided free of charge.

The service covers from the moment the passenger enters the station or is picked up at a meeting point within the station, until the person is accommodated on the train and, once at destination, from the moment he/she gets off the train until he/she leaves the station.

It is important to keep in mind that the aim stills being the provision of the possibility of independent travels of PRMs.

National or regional Associations of Persons with Reduced Mobility or with Disabilities (e. g. ONCE) should be involved in the design of such services.

Euskotren may prepare a policy for Assisted Travel, and make it available for customers, to let them know how to proceed in advance.

Several actions may be considered at the stations:

- Height-adjusted counters and ticket machines for wheelchair users
- Tactile signage/ buttons/ pathing
- Use of beacons to put in place wayfinding systems
- Priority line for customer care centre

In the case of assistance on trains, the service includes help with boarding, seating and disembarking for passengers with disabilities and reduced mobility who request it.

- Train accessibility: the space onboard available for PRM with wheelchairs or scooters. Also, the possibility of disposing assistance dogs on-board
- In those rail services where it could be difficult to stand, priority seats should be made available
- On-board staff, if any, may check on these persons periodically to attend to their needs
- Other services provided are adapted information (e.g.in braille), accessible toilets and gastronomy on the seat (when this kind of service is provided on board)

### 11.11 Stations

Stations will be underground and there will be a solution to provide services with 2 lines with two different tracks.

These stations are:

- Bilbao
- Vitoria/Gasteiz
- Donosti/San Sebastián
- Ezkio is an intermediate station
- It is considered to locate another station at Irun.

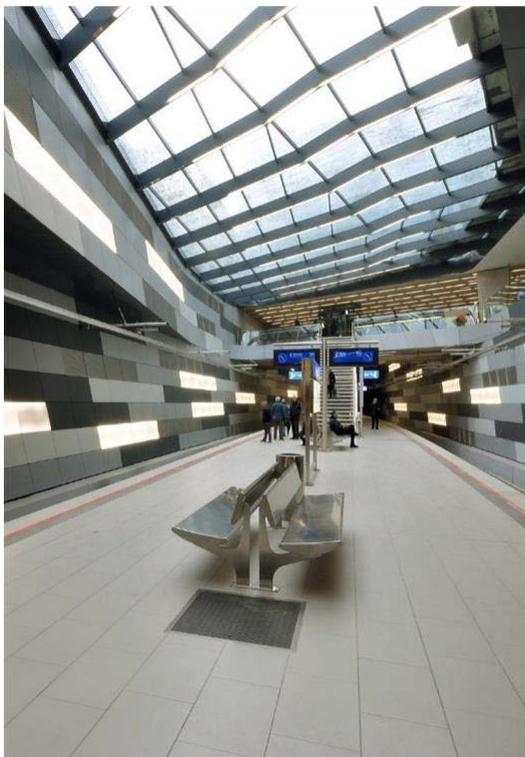
Linked to the Basque Y, there is a station at the French side Cross-border: Bayonne, and others.

Stations of Bilbao, Vitoria and San Sebastian will become Hubs for Intermodality. Railway services will arrive to the urban centers.

As discussed before, stations have to be accessible for people, connected with other PT modes, interoperable, safe, neighbour engagement, representative city functions within walking distance to easily go to do their administrative centres, intermodal and pedestrian movement to be facilitated, easy arrival and departure flow.

Main station characteristics (as previously described in this section) are as follows. It is reminded that Euskotren has no accountability on the stations' design, as it is the Railway Manager (national ADIF and Regional responsibility).

- Accessible for people, even step-free
- Underground stations, the swallower the more accessible they will be
- Station locations should be able to accommodate demand
- Connected with other means of transport
- Footprint considerable large
- Urban regeneration intention



### Key issues of station projects definition

- Choosing a strategic location with variety of transportation modes
- If possible, vertical separation of the key railway infrastructure and services
- Allocation of the operational and maintenance facilities
- Combination of transportation hub characteristics with the city functions
- Intensive use of station yard
- Representative city functions within walking distance
- A good train / metro/ tram connection is the essential modal combination
- Intermodality and personal motorized transport
- Intermodality and pedestrian movement
- Arrival and departure flow Organisation

### 11.12 Network Operation Model

**New HSR Line will be the backbone of Basque country door-to-door mobility system**

The implementation of the new HSL with convey a leverage effect for Basque Country: will enhance the internal mobility to leads to improved regional development.

Stations of Bilbao, Vitoria and San Sebastian will become Hubs for Intermodality.



**Stations of Bilbao, Vitoria and San Sebastian Hubs for Intermodality**

Inside the Basque Country, the new high-speed network will dramatically modify mobility. It is aimed to become the backbone of the full transportation system replacing other less eco-friendly means.

Euskotren could deal with the management of the "Intercity" service between the three Basque capitals.

The main rail service features:

- Direct and semi-direct rail services are foreseen.
- Frequency: 30 minutes at peak times and 60 minutes off-peak
- Maximum speed of 250 km/h
- Strict sizing rolling stock fleet of 15 high-speed trains type "Intercity" service.
- Public service at a competitive ticket price, between 10 and 15 euros.
- Fares according to sectors of the population. The occasional traveler will be penalized
- Reduced operation model in terms of staff and offices. With better communication, it is foreseen an additional 10% passage demand in the regional coverage
- Demand forecast: 3 to 4 million passengers a year
- Outsourcing of maintenance and overnight stay units
- Enhancing Internet sales
- Operation alternatives and offer
- Although it is not decided yet, probably no reservation will be allowed, due to the intercity services to be provided

2015 price Euros		BILBO - GASTEIZ	BILBO - DONOSTI	GASTEIZ - DONOSTI
<b>BUS</b>	time ( min)	75	70	70
	services/ day	39	28	17
	price 1-20 tickets	6,3	6,46	6,46
	ocasional ticket	6,3	11,75	11,75
	superior service	-	16,18	
<b>Conventional rail</b>	time ( min)	-	160	92
	services/ day	-	13	7
	price min.	-	4,6	12,45
	price máx.		5,8	20
			<b>EUSKOTREN</b>	<b>RENFE</b>
<b>private car without toll</b>	time ( min)	88	142	99
<b>private car with toll</b>	time ( min)	45	63	69
	toll price	5,5	9,85	11,15
<b>Existing offer</b>				
<b>HS Y VASCA</b>	time M. FOM (2015)	40	50	50
	optimized capital access ( 2030)	35	45	43
	services/ day	23	23	23

Public Transport price comparison

### 11.13 MaaS

Euskotren is developing several software applications to facilitate the travel door to door of its customers.

Euskotren has planned to develop a backoffice that will allow to offer personal tickets fares (account-based ticketing) in interoperability: own services (intercity, tram, commuter) and external concerted services: bicycles, metro Bilbao, regional bus system.

Customers will also be able to pay with the TSC of the different transport authorities of the Basque country as has been done up to now.



**Euskotren Trip Planner**

Euskotren could consider collaborating with local councils and other means of transport in order to improve the multimodal experience and favour the first and last mile by improving accessibility to stations.

### 11.14 Ticketing

The objective for 2026 is that each customer will have only one smart card for transportation in all Euskotren's services.

As result of Euskotren's surveys. Customers buy rail services:

- Website
- Ticket vending machines
- Smart phones Apps
- Counters Train stations/Airports



**Ticketing Interoperability**

#### 11.14.1 Ticketing interoperability

- Basque Country is divided in three zones (Vizcaya, Alava, Gipuzkoa), and each of them have their own smart travel card (Varik (Bizkaia), alabat (Álava), migi (Guipuzkoa))
- The goal is to customers have only one smart card for transportation in all the regional public transport services.
- High-speed services will be accessible with the same means of payment used for regional and commuter trains as well as metro and tramway.
- Validators compatible with all systems.
- Renfe card should be supported in the future.



**Smart-card Integration**

#### 11.14.2 Ticket Physical support

- Thermal ticket, linked to QR code
- Electronic purse (SIM, to link to mobile phones) or permanent users (retired, students), pay by cell phone (virtual cards).
- All contact-less
- Without technical barriers and MGC cards.

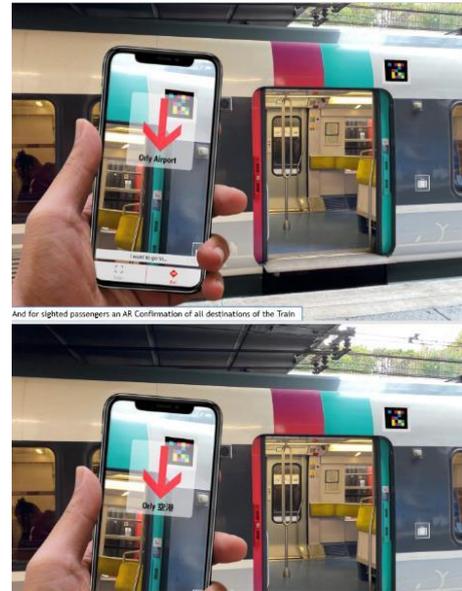
### 11.15 Rolling stock

Rail services to be provided by Euskotren across the Y Basque HSL will be **Intercity services**.



As such, this rolling stock will have the following key requirements:

- Trains of 66 pax\*3 cars (all seated)
- The seating arrangement is fixed (and not configurable)
- Luggage overhead racks
- There will be specific space for bicycles
- Working tables
- Lighting
- Mobile charging via usb connectors
- Train loading notice with colours
- Frequencies of 30 min
- Staff on board: Driver + Controller (who is a driver, due to Spanish Infrastructure Manager ADIF regulatory requirements)
- It is not yet decided whether on board the trains there will be toilets. Euskotren general policy is that in routes shorter than 1:30h toilets are not installed. This decision has not been agreed upon.



And for sighted passengers an AR Confirmation of all destinations of the Train

**Train loading with a color code. Source: Euskotren**

Following the case of other railway undertakings such as ÖBB, Euskotren could consider that the interior design of these regional trains should take into account aspects related to the culture, design, upholstery, finishes or materials of the Basque Country.

### 11.16 Sustainability

- Euskotren's power supply will be based in green certificate energy
- With the operation of HSR Y Basque, Euskotren will achieve car removal from highways
- Therefore, Euskotren supports decarbonization regional and national goals

Regarding rolling stock, Euskotren requires:

- Efficient energy use
- Lower operation and maintenance costs
- increased rolling stock material durability
- The use of renewable materials
- Asset management with higher profitability, asset renewal

### 11.17 Digitalization

Euskotren Basque regional railway undertaking is envisaging to use big data regarding:

- Customer information
- Manage weather risks
- Sport issues
- Casualties
- Natural disasters
- Fires
- Emergency plans
- Monitoring flows (crowd management purposes)

Euskotren plans to develop several actions based on artificial intelligence, internet of things, new technologies, etc., as the sector needs them.

#### 11.17.1 Planning Trip Portal

This app has received very positive initial assessment of the Euskotren application, highlighting the usefulness and usability of the application (selection of lines, updated timetables...).



Euskotren Planning Trip Portal

#### 11.17.2 Navilens App

It is a mobile application to guide visually impaired people through the stations. This solution is based on a QR-type signage that allows, through a mobile device with a camera and internet connection, the reading of the signs from a great distance and with any lighting conditions and reading angle.

The Navilens application works through the installation of specific signage that makes it possible to design itineraries, provide information on elements and even dynamic information, in the case of the tele-indicators, making any space accessible to people with visual disabilities, both blind and low vision. In a complementary way, the application can be used as a visual guide for people who can see, based on enriched visual information. In this sense, it eliminates language barriers because it displays the signage information in the language selected by the user on their mobile device.

Navilens is an information tool for guidance supported by technology, although it needs to coexist with other less technological means with demonstrated effectiveness, highlighting that Navilens is a complementary tool for perceiving signage, adding value to systems such as routing lines or information in Braille, and speeding up movement indoors.

### 11.18 International Services

There is a potential for a big affluence of international customers, that can come from different places via different modes of transport:

- By train
  - Regional with the direct connection provided directly by the Basque Y network.
  - National, connected from the Madrid-Burgos-Vitoria high-speed line, where they also connect the network with the northwest of Spain.
  - International, via France from the Irun-Hendaye railway connection.
- By Air: Bilbao Bilbao has the international airport of Loiu, which, if well connected (intermodality) with the Basque Y, can create very important synergies.

For these international services to be successful, it is vital to develop a set of operational importance to develop a set of unified operational processes.

For these international services, it could be considered crossing borders to France with the city of Hendaye as a destination. This could be considered as a regional train service or even a commuter one.

It could be considered Night Train services in the medium to long term with the improvement of the connection to the French high-speed network, thus reducing travel times to Paris or other countries such as Italy, connected to the French high-speed network. Night train services are having a renaissance, thanks to renewed investment from operators, amid the need to fly less.

### 11.19 Touristic Opportunities

Travelling on a train is a journey that will allow to discover different cities and places of great beauty, admire the landscape while you travel, taste the rich gastronomy of the area, go on excursions with accompanying guides or information, without the need to pack and unpack, it is the best way to travel.

It opens up a world of possibilities that the Basque Y connection can facilitate cultural activities, shows, events or visits to natural environments, for example.

As described above, Basque Y network has stations in the main cities of the Basque Country: Bilbao, Vitoria and San Sebastian.

These are cities that are very important from a tourist point of view, not only in Spain, but also internationally.

The **Bilbao** of today is a collage in which some of the world's leading figures in avant-garde architecture have participated. You can find the Guggenheim Museum Bilbao, designed by Frank Gehry, the Bilbao metro with its accesses and stations designed by Norman Foster, or the Isozaki Atea towers, by the Japanese architect Arata Isozaki, or Bilbao Airport itself, by Santiago Calatrava.



*Guggenheim Museum (Bilbao, Spain)*

Another of the city's attractions is the Arriaga Theatre where the old part of Bilbao is located.

**San Sebastian** is a modern city of services that in recent years has created proposals such as the Kursaal Centre, designed by Rafael Moneo, and avant-garde works such as the Wind Comb, by the sculptor Eduardo Chillida. In 2011 it was chosen as the Spanish city with the best gastronomy in Europe. The Parte Vieja is home to a large number of the pinchos bars that have made the city's miniature gastronomy famous.



*Kursaal Auditorium (San Sebastian Spain)*

The city is also famous for its cultural agenda, having been elected European Capital of Culture 2016. It is worth mentioning the International Film Festival in September, the Jazz Festival and the Musical Fortnight in the summer.

**Vitoria** stands out for its quality of life, thanks to a large number of pedestrian areas, and one of the highest rates of green spaces per citizen in Europe. Its old quarter with the Virgen Blanca (White Virgin) stands out.



*Virgen Blanca Square (Vitoria, Spain)*

As is evident, these are cities with a real tourist attraction, which, when linked by the new railway line, will have opportunities by favouring this connection, given that many of its customers are tourists who want to visit these cities and the whole region.

This tourist attraction capacity will entail different types of requirements to encourage the use of these railway services in the Basque Y:

- Availability of information in several languages, in addition to Spanish and Basque, especially in English (as an internationally widespread language), such as French for tourists from France, neighbours of this region.
- Opportunity to create tourism packages with stakeholders (other modes of transport like buses) or tourism promoters such as Destination Marketing Organisations (DMO), where very attractive arrangements can be made for customers.
- Adaptation and coordination with the various tourist services, from the point of view of the information to be provided and the timetables.
- Creation of complete tourist packages, given the attractiveness of all these cities (and in general all the cities of the region) for national and international tourism.

With all this, an attractive tourist product can be created with modern facilities adapted to the needs of today's visitors and national and international tourists, and they become essential centres of attraction in the areas where they are located.

### 11.20 Opportunities related to Gastronomy

Due to the fact that the services to be provided by Euskotren on the Basque Y will be regional, with journey times of around 30 minutes, there are no plans to provide a cafeteria or restaurant car, and probably no vending machines.

This type of service could be considered for night trains or long-distance trains when they come to operate in this high-speed network.

The gastronomic experience could be considered at stations, where the Basque gastronomic experience could be truly valued.

In this sense, gastronomic alliances could be made with Michelin-starred Basque restaurants, of which there are many, to offer these catering services in high-speed stations, together with the tourist packages mentioned in previous sections.

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INTERNATIONAL UNION OF RAILWAYS  
16, rue Jean Rey - 75015 Paris - France  
Tel. +33 (0)1 44 49 20 20  
Fax +33 (0)1 44 49 20 29  
E-mail: [info@uic.org](mailto:info@uic.org)

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