



# IT2Rail



This project has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement No: 636078



# Information technologies for Shift to rail

## D5.2 – Travel Companion Specification

### Annex 3: Audit & Best practices



This project has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement No: 636078

|   |       |
|---|-------|
| 1. Journey needs compared to the screens in HaCon applications .....                                | p. 4  |
| 2. Journey needs in association with functions for the Travel Companion .....                       | p. 9  |
| 3. Functional perimeter of the Travel Companion compared to the screens in HaCon applications ..... | p. 13 |
| 4. Benchmark & recommendations for the Travel Companion .....                                       | p. 17 |



# 1 - Journey needs compared to the screens in Hacon applications



This project has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement No: 636078



# 1 - Journey needs compared to the screens in Hacon applications

Hacon application base :



## - Dynamo demo version 28 :

Planning tool running on a test environment



## - HaCon Standard Navigator :

HaCon has developed several standard functionalities which independently can be linked to an individual application. For analysis at hand several of these individual applications has been taken into consideration.



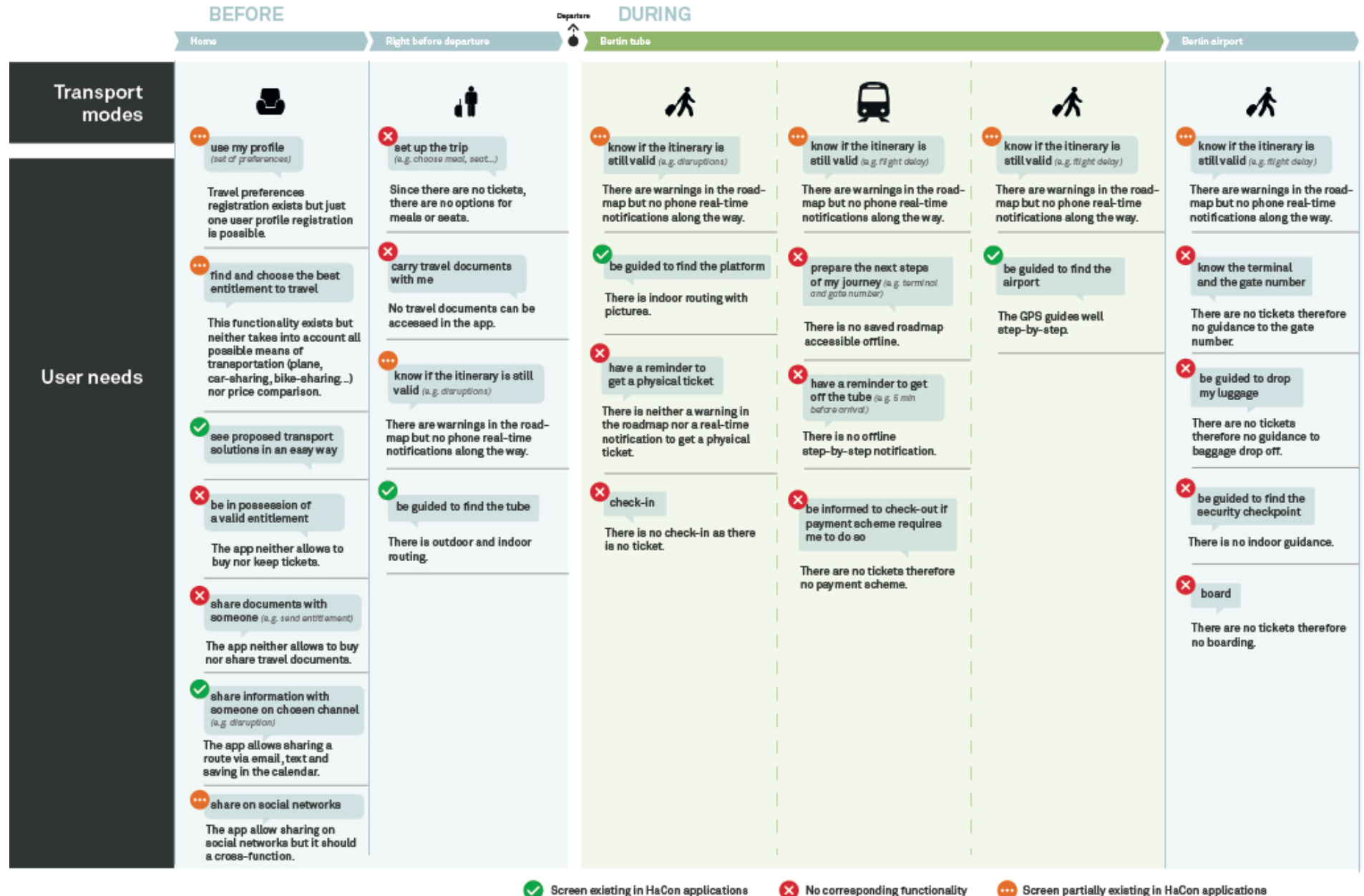
## - BVG FahrInfo Plus for Berlin :

BVG is the network-wide timetable information and the mobile ticket sales of the Berlin Transport Authority (BVG) for public transport.










This project has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement No: 636078

# 1 - Journey needs compared to the screens in HaCon applications



# 1 - Journey needs compared to the screens in HaCon applications

| Plane   | Madrid airport   | Madrid tube  |   |  | Madrid train station   | Train   |
|---|--|--|---|--|--|---|
|  <p>... prepare the next steps of my journey (a.g. interchange delays)</p> <p>There are warnings in the road-map but no phone real-time notifications along the way.</p> |  <p>... know if the itinerary is still valid (a.g. disruptions)</p> <p>There are warnings in the road-map but no phone real-time notifications along the way.</p> <p>✗ be guided to get my luggage</p> <p>There are no tickets therefore no guidance to baggage pick up.</p> <p>✓ be guided to find the tube</p> <p>The outdoor GPS guides well step-by-step.</p> |  <p>... know if the itinerary is still valid (a.g. disruptions)</p> <p>There are warnings in the road-map but no phone real-time notifications along the way.</p> <p>✓ be guided to find the platform</p> <p>There is indoor guidance with pictures.</p> <p>✗ have a reminder to get a physical ticket</p> <p>There is neither a warning in the roadmap nor a real-time notification to get a physical ticket.</p> <p>✗ check-in</p> <p>There is no check-in as there is no ticket.</p> |  <p>... know if the itinerary is still valid (a.g. disruptions)</p> <p>There are warnings in the road-map but no phone real-time notifications along the way.</p> <p>✗ prepare the next steps of my journey (a.g. train platform)</p> <p>There is no saved roadmap accessible offline and no ticket booking so no guidance to the train platform.</p> <p>✗ have a reminder to get off the train (a.g. 5 min before arrival)</p> <p>There is no offline step-by-step notification.</p> |  <p>... know if the itinerary is still valid (a.g. train delay)</p> <p>There are warnings in the road-map but no phone real-time notifications along the way.</p> <p>✓ be guided to find the train station</p> <p>The outdoor GPS guides well step-by-step.</p> |  <p>... know if the itinerary is still valid (a.g. train delay)</p> <p>There are warnings in the road-map but no phone real-time notifications along the way.</p> <p>✗ know the train platform</p> <p>There is no information as there is no ticket.</p> <p>✗ be guided to find the train</p> <p>There is no information as there is no ticket.</p> <p>✗ board</p> <p>There are no tickets therefore no boarding.</p> |  <p>... know if the itinerary is still valid (a.g. delays)</p> <p>There are warnings in the road-map but no phone real-time notifications along the way.</p> <p>✗ prepare the next steps of my journey (a.g. find the bus)</p> <p>There is no saved roadmap accessible offline and no ticket booking so no guidance to the bus.</p> <p>✗ have a reminder to get off the train (a.g. 5 min before arrival)</p> <p>There is no offline step-by-step notification.</p> <p>✗ be informed to check-out if payment scheme requires me to do so</p> <p>There are no tickets therefore no payment scheme specifications.</p> |



Screen existing in HaCon applications

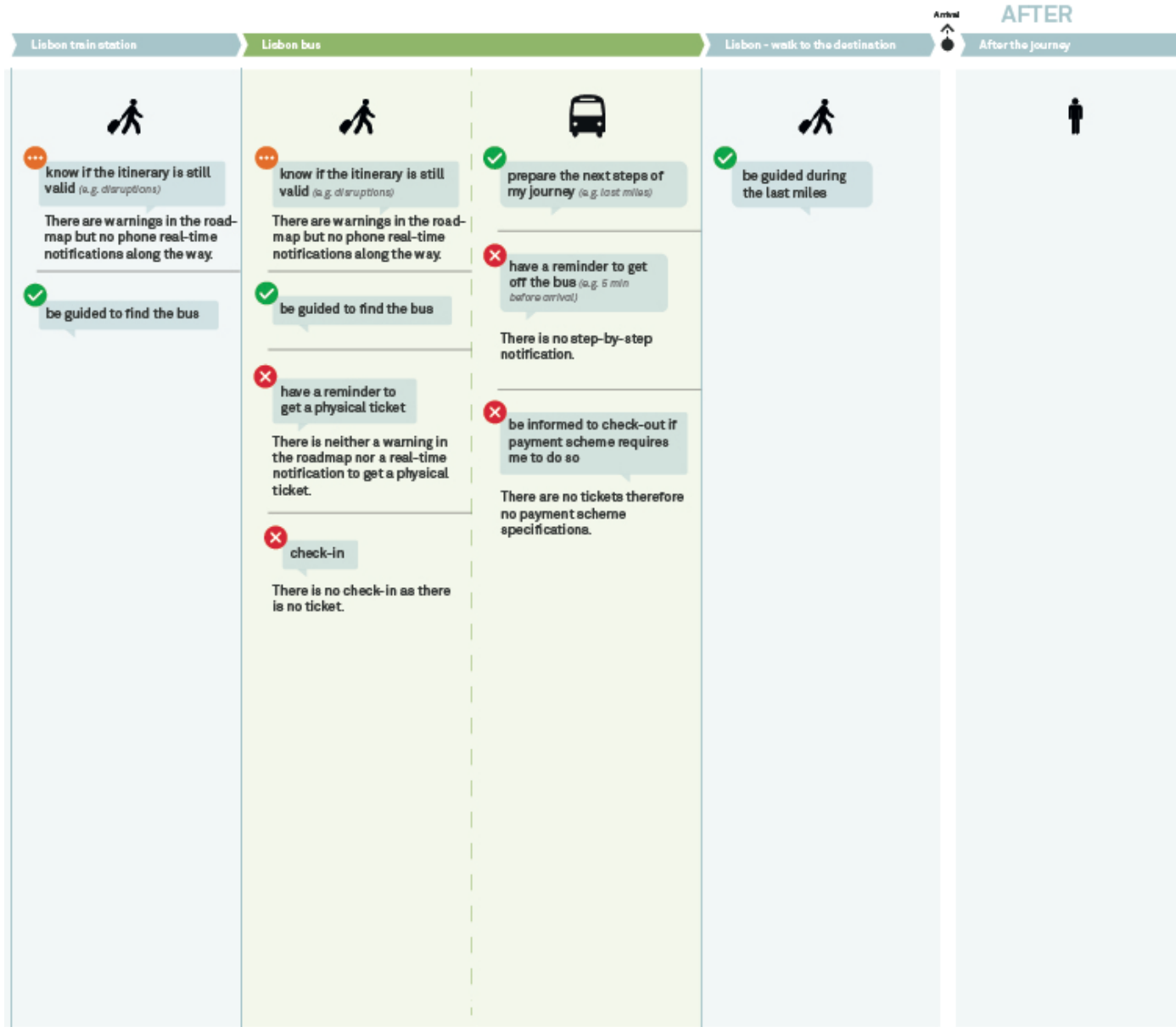


No corresponding functionality



Screen partially existing in HaCon applications

# 1 - Journey needs compared to the screens in HaCon applications



Screen existing in HaCon applications

No corresponding functionality

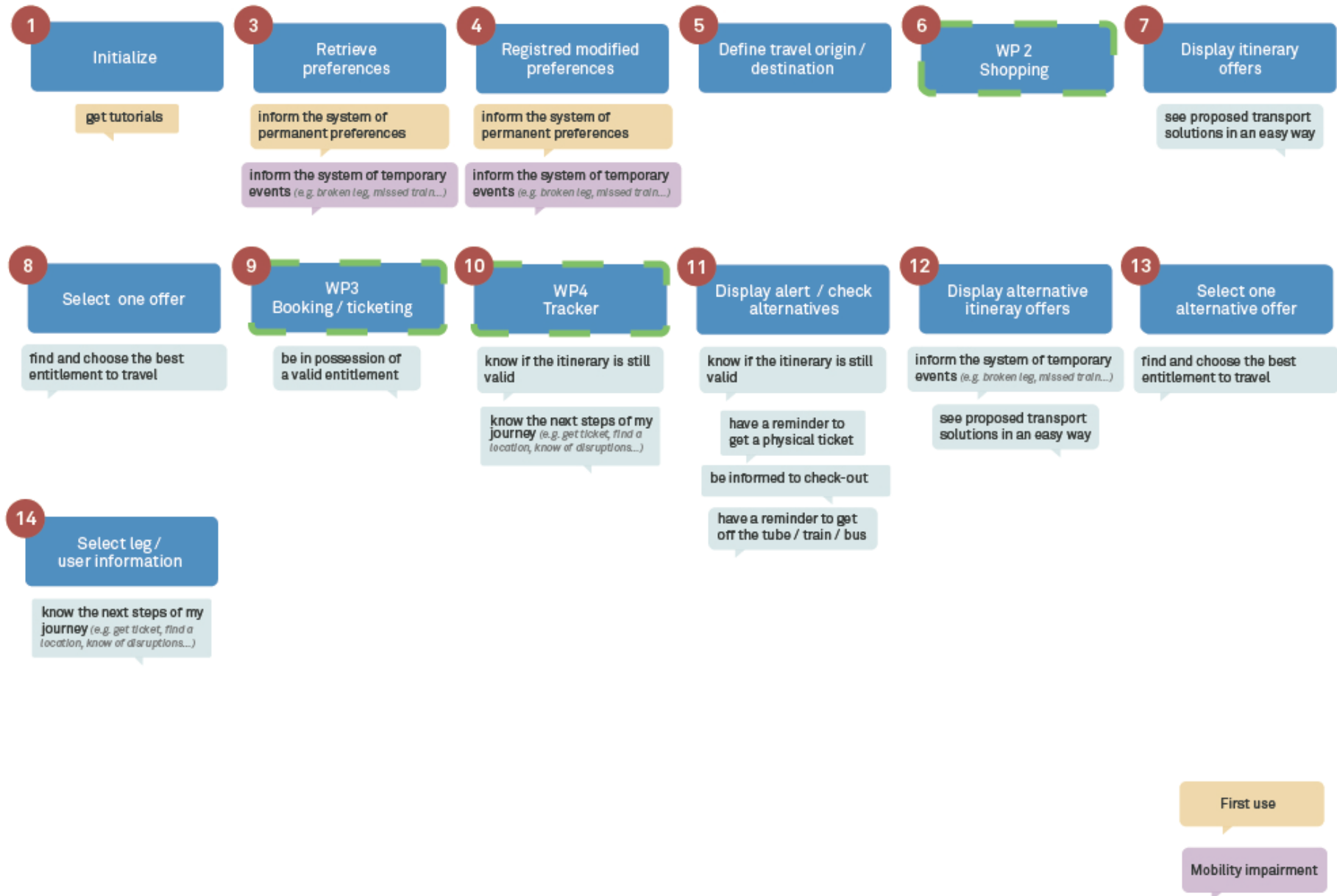
Screen partially existing in HaCon applications

## 2 - Journey needs in association with functions for the Travel Companion

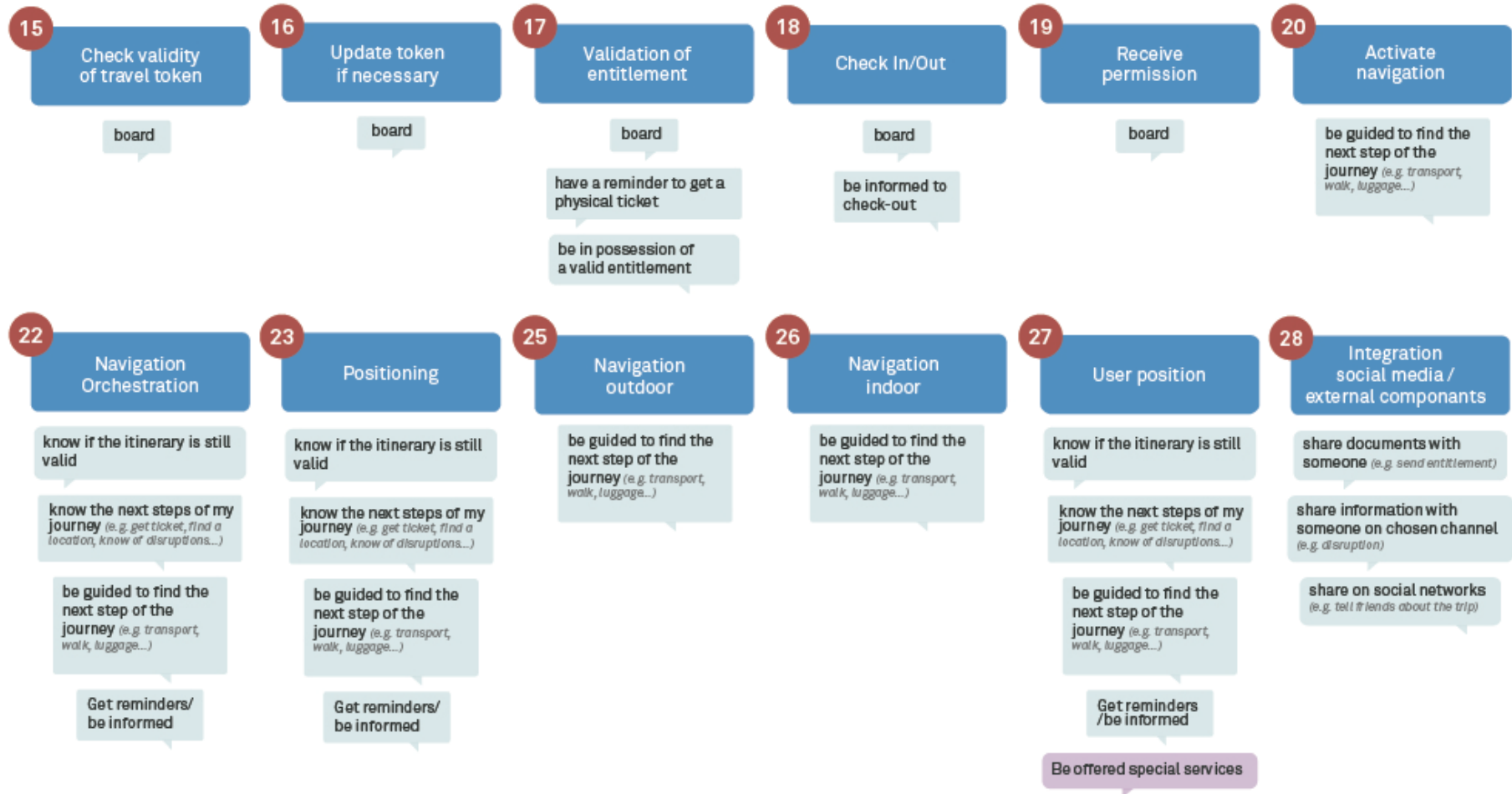


This project has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement No: 636078

## 2 - Journey needs in association with functions for the Travel Companion

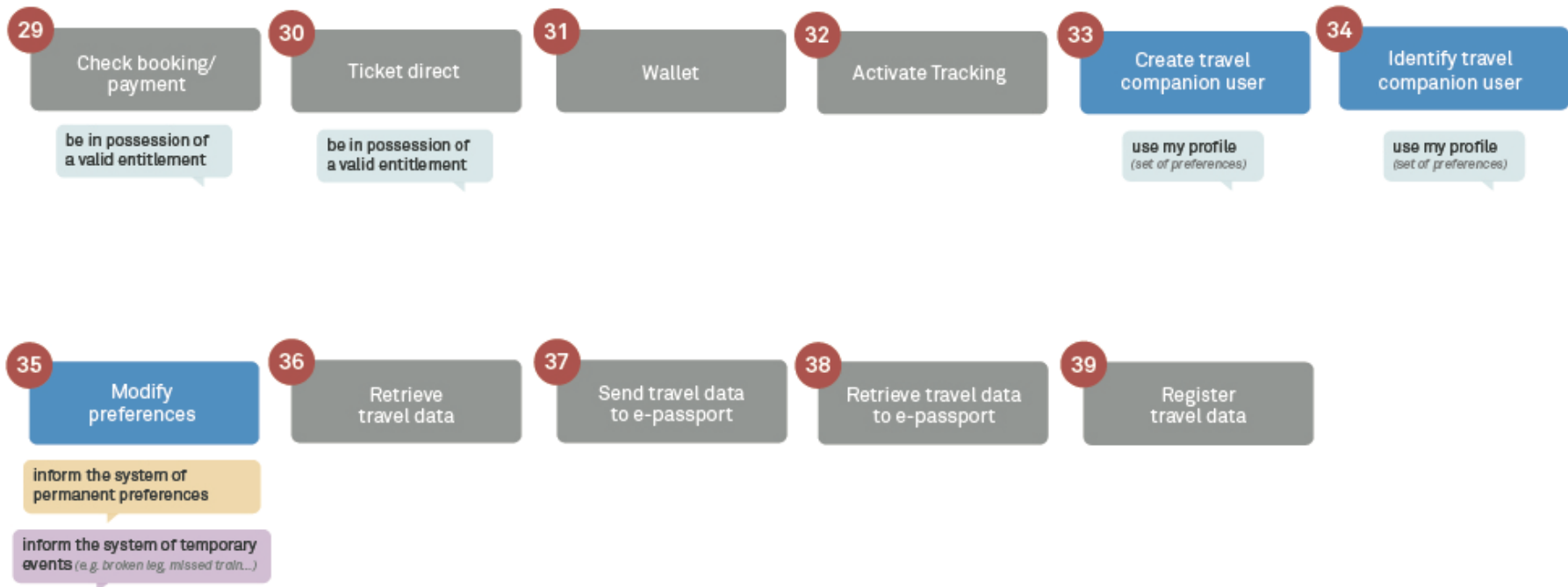


## 2 - Journey needs in association with functions for the Travel Companion





## 2 - Journey needs in association with functions for the Travel Companion



### Needs with no function associated

set up the trip  
(e.g. choose meal, seat...)

carry travel documents  
with me

First use

Mobility impairment





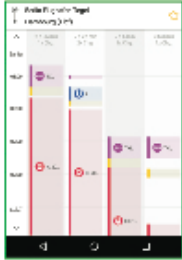



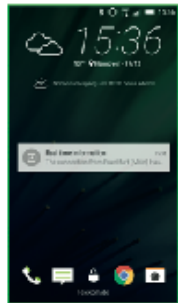





# 3 - Functional perimeter of the Travel Companion compared to the screens in HaCon applications



This project has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement No: 636078


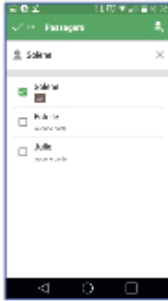

### 3 - Functional perimeter of the Travel Companion compared to the screens in HaCon applications

|   |   |  |  |   |   |  |
|---|---|--|--|---|---|--|
| <p><b>1 Initialize</b> <span style="color: red;">...</span></p> <p>After initialization, the tutorial (already existing) should run at the first login and then be accessible inside the burger menu but not in the options button in the header.</p>  | <p><b>2 IDLE</b></p> <p>No GUI screen</p>   | <p><b>3 Retrieve preferences</b> <span style="color: green;">✓</span></p> <p>The user is able to set up travel preferences.<br/>Increase visual affordance</p>  | <p><b>4 Registered modified preferences</b> <span style="color: green;">✓</span></p> <p>The word «profile» isn't appropriated for registered modified travel preferences and the saving action isn't clear.<br/>Change the word «profile» and reinforce the action awaited for saving</p>  | <p><b>5 Define travel origin / destination</b> <span style="color: green;">✓</span></p> <p>Auto completion and search history.</p>   | <p><b>6 WP 2 shopping</b> <span style="color: green;">✓</span></p> <p>The shopping process with time comparison in a vertical timetable is very visual and easy to use.<br/>Add comparison factors:<br/>• Price<br/>• Time<br/>• Walking time<br/>• Number of connexions...</p>  | <p><b>7 Display itinerary offers</b> <span style="color: green;">✓</span></p> <p>The possible routes are displayed in a step-by-step horizontal view or in a calendar view.<br/>The itineraries should also be shown on a map.</p>    |
| <p><b>8 Select one offer</b> <span style="color: green;">✓</span></p> <p>One tap to select.</p>   | <p><b>9 WP3 booking / ticketing</b> <span style="color: green;">✓</span></p> <p>Possibility to purchase ticket and use it on smartphone<br/>There should also be a possibility to import a ticket reference.</p>  | <p><b>10 WP4 Tracker</b></p> <p>No GUI screen</p>  | <p><b>11 Display alert / check alternatives</b> <span style="color: green;">✓</span></p> <p>Real-time notifications about travel. Warning during the shopping process and during the journey.</p>   | <p><b>12 Display alternative itinerary offers</b> <span style="color: green;">✓</span></p> <p>There is no alternative routes display once a route has been selected.<br/>Alternative routes need to be provided automatically.</p>  | <p><b>13 Select one alternative offer</b> <span style="color: green;">✓</span></p> <p>One needs to search again the same itinerary to display alternative routes.<br/>Alternative routes should be quickly selectable in case of disruption.</p>                                | <p><b>14 Select leg / user information</b> <span style="color: red;">...</span></p> <p>The line timetable and the map of the leg are provided as well as platform and travel duration.<br/>More specific information should be provided to address the passenger's needs (seat number, walking time...)</p>  |

### 3 - Functional perimeter of the Travel Companion compared to the screens in HaCon applications

|  |   |  |  |  |   |   |
|--|---|--|--|--|---|---|
| <p><b>15</b> Check validity of travel token </p> <p>There are not tickets so no validity check.</p> <p>▶ The system should include a tapping system.</p> | <p><b>16</b> Update token if necessary </p> <p>There is no possibility to purchase or update tokens.</p> <p>▶ If not up-to-date, the ticket should be replaceable by a valid one.</p> | <p><b>17</b> Validation of entitlement </p> <p>▶ There should be the possibility to validate an entitlement.</p> <p>▶ See In CaptainTrain</p>                                    | <p><b>18</b> Check in/out </p> <p>▶ There should be the possibility to check in and out.</p> <p>▶ See In EasyJet</p>   | <p><b>19</b> Receive permission </p> <p>There is no permission as there are no tickets.</p> <p>▶ The user should have feedback upon validation or help if permission hasn't been granted.</p>                      | <p><b>20</b> Activate navigation </p> <p>The activation of the navigation exist but there is not enough affordance.</p> <p>▶ Increase the visibility of the button.</p> | <p><b>22</b> Navigation Orchestration </p> <p>The leg information is precise but not sufficient.</p> <p>▶ Add user friendly information: map, tickets, car sharing opportunities, directions...</p> |
| <p><b>23</b> Positioning </p> <p>The position is automatically tracked and visible.</p>  | <p><b>25</b> Navigation outdoor </p> <p>There is an outdoor routing.</p>  | <p><b>26</b> Navigation indoor </p> <p>There is text and pictures indoor routing.</p> <p>▶ Provide more detailed information to better identify the path to gates/platforms.</p> | <p><b>27</b> User Position </p> <p>There could be more detailed information about the POIs nearby the user position.</p> <p>▶ Display POIs nearby the user position.</p> | <p><b>28</b> Integration social media / External components </p> <p>Sharing on Social media (Facebook and Twitter) is possible but only from the menu.</p> <p>▶ Social media sharing could be more contextual.</p> | <p><b>29</b> Check booking/ payment </p> <p>There is no booking or payment.</p> <p>▶ Check my tickets and bills.</p> <p>▶ See In CaptainTrain</p>                       | <p><b>30</b> Ticket direct </p> <p>There is no ticket direct.</p>   |

### 3 - Functional perimeter of the Travel Companion compared to the screens in HaCon applications

|   |   |   |  |   |   |   |
|---|---|---|--|---|---|---|
| <p>31 Wallet</p> <p>No GUI screen</p>                               | <p>32 Activate tracking</p> <p>No GUI screen</p>    | <p>33 Create travel companion user</p> <p>There is no proper «profile»: the user can save contact information but no personal details related to his habits.<br/>                     ▶ Add more personal information: meals, physical strength...<br/>                     &gt; See in Quboxit</p>  | <p>34 Identify travel companion user</p> <p>There is no possibility to select a traveling profile.<br/>                     ▶ Different traveling profiles (personal, professional, etc) should be stored.<br/>                     &gt; See in Captain Train</p>  | <p>35 Modify preferences</p> <p>The user is able to modified travel preferences.<br/>                     ▶ There should be the possibility to save different travel preferences.</p>  | <p>36 Retrieve travel data</p> <p>No GUI screen</p> | <p>37 Send travel data to e-passport</p> <p>No GUI screen</p> |
| <p>38 Retrieve travel data from e-passport</p> <p>No GUI screen</p> | <p>39 Register travel data</p> <p>No GUI screen</p> |   |  |   |   |   |

✓ Screen existing in HaCon applications

✗ No corresponding functionality

⦿ Screen partially existing in HaCon applications

▶ Recommendation

# 4 - Benchmark & recommendations for the Travel Companion



This project has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement No: 636078

## 4 - Benchmark & recommendations for the Travel Companion

- Home
- Settings
- Menu
- Search
- Shopping
- Booking
- My trip



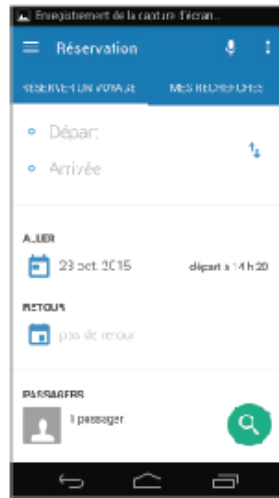
This project has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement No: 636078



## 4 - Benchmark & recommendations for the Travel Companion

### Good practices exemples for inspiration | Home page

The app could have a home page that welcomes the user and guides him/her through the functionalities and the things that can/should be done: book a trip or access my trips



Voyages SNCF

The home page is the journey planner directly.



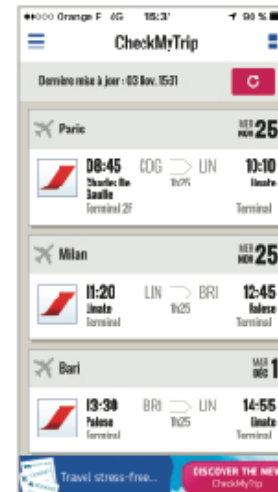
Via Navigo

The home page is the reduced journey planner + a shortcut to main functions.



EasyJet

The home page is a dashboard of my trips + a shortcut to main functions.



Check my trip

The home page is the list of my trips with:

- departure + arrival time
- origin + destination
- departure + arrival terminal
- trip duration time
- trip date

## 4 - Benchmark & recommendations for the Travel Companion

### Good practices exemples for inspiration | My settings

The user might be able to register different set of settings which should be clearly differentiate:

- his application settings;
- his user profile settings (long lasting settings);
- travel preferences related to his trips (possibly multiple profiles).

#### PROFILE

##### User profile

- Name
- Email
- Mobile
- Address
- Age

##### Payment profile

- Paypal
- Visa
- Miles

##### Preferences

- Food allergies
- disabilities

> Airfrance,  
Captain Train,  
City Mapper

#### APPLICATION SETTINGS

##### Language settings

##### GPS settings

##### Notification settings

- Means of communication (SMS, mail, phone notification, event in calendar...)
- Notification 2 hours before leaving
- Notification for when to check in

#### TRAVEL PREFERENCES

##### General

- Travel preference : duration, price and changes
- Default means of transportation

##### Per means of transport

- Walking speed and distance capacity
- Cycling equipment, speed and distance capacity
- Car equipment, cost, class, driving experience, motor, usable time
- Railway reduction card, age and preferred class
- Plane preferred class

> Quixxit

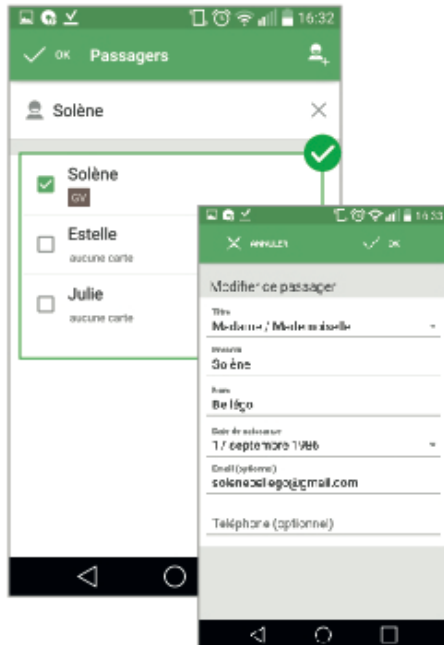
The screenshot shows the 'My Qixxit' app interface. At the top, there's a header 'My Qixxit' with a green checkmark icon. Below it, the 'My travel preferences' section includes sliders for 'Duration', 'Price', and 'Fewer changes', and a 'NOT IMPORTANT' to 'VERY IMPORTANT' scale. The 'My preferred means of transport' section features a grid of icons for various modes: Walk, Bike, Car, Bus, Underground / Tram, S-Bahn / R, Taxi, Ride share, Car rental, Car sharing, Rental bike, Long distance bus, Plane, and Railway / ICE / TGV. The 'My means of transportation' section at the bottom shows a slider for 'Walk' and a 'Maximum distance' of 1,0 km.

The screenshot shows two stacked settings screens. The top screen is for 'Bike' settings, featuring a 'I have a bike' checkbox, a 'SLOW' to 'FAST' slider, and a 'Maximum distance' of 5,0 km. The bottom screen is for 'Car' settings, featuring a 'I have a car' checkbox, 'Variable costs' for 'Cost', 'Lower middle class' for 'Class', 'Normal driver: Ø 15,000 km' for 'Driving performance', 'CAR Otto EJRO 5' for 'Motor', and a 'Usable time' of 10%. Below these are sections for 'Railway' (with 'BahnCard', 'Age', and 'Preferred fare class') and 'Plane' (with 'Preferred fare class'). At the bottom, there are 'Register and sync' and 'Cancel' buttons.



## 4 - Benchmark & recommendations for the Travel Companion

### Good practices exemples for inspiration | My settings



Captain Train

PROFIL

- Different users can be registered
- Add fidelity cards is possible



AirFrance

PROFIL

- Centralization of all data account in one place (personal informations like name, birthday - Mean of payment - personal trip preferences...)
- Fidelity account



City Mapper

PROFIL

- Easy connexion via social network.



## 4 - Benchmark & recommendations for the Travel Companion

### Good practices exemples for inspiration | Menu wireframe

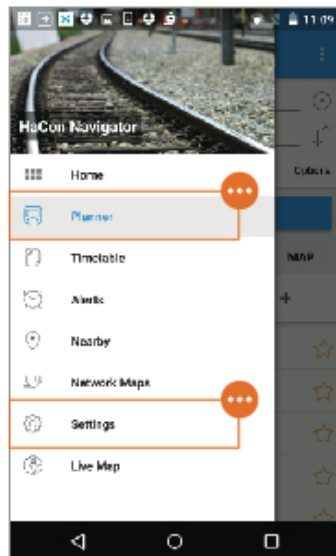
The menu should clearly state what the app is for:

- Shopping and booking new trips
- Being guided in detail throughout the trip

#### HaCon Navigator

2 existing functions are relevant for the Travel Companion:

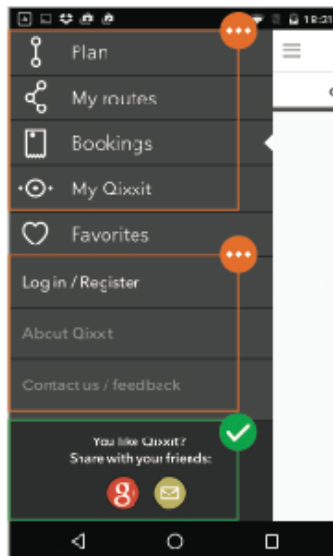
- Planner but it should include all possible means of transportation and allow purchase of tickets.
- Settings with the addition of my favorite means of transportation, reduction cards, meal preference...



#### Qixxit

8 existing functions are relevant for the Travel Companion but they should not all be presented as entry points.

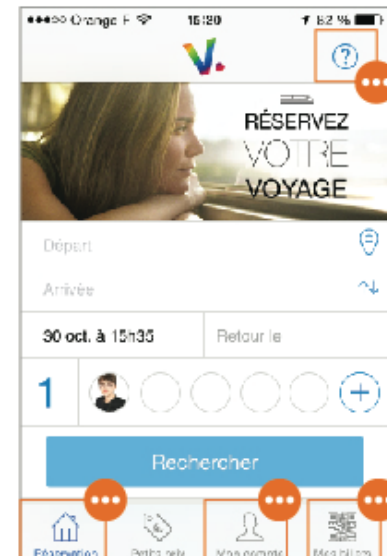
- Plan
- Bookings: tickets should be included in my Routes and can pop up automatically on the lock screen during the trip
- My Qixxit travel preferences
- Login, About, Contact are minor entries



#### Voyages SNCF

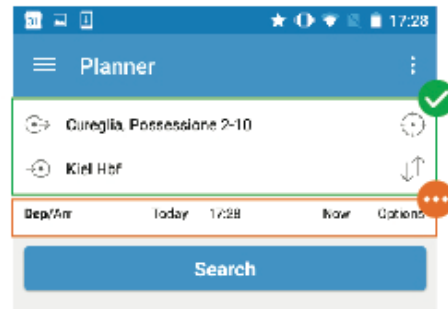
Good practice: reduced number of entries and relevant grouping of functions:

- Reservation: shopping and booking
- My account: my ID + preferences
- My tickets: my current + future trips
- Help: tutorial + contact info



## 4 - Benchmark & recommendations for the Travel Companion

### Good practices exemples for inspiration | Search for a new trip



#### HaCon Navigator

The HaCon planner does not allow 2 ways trips and does not include plane, car share, bike share or rentals.

The options are not visual enough: the size and the absence of pictograms makes the legibility harder.

The options are not user friendly as they ask for precise connexion time rather than relative values like in Qixxit.



#### AirFrance

The Air France app makes it easy to book for different profiles



#### Quixxit

Qixxit allows an easy preferred means of transport selection. All the entry fields offer sufficient affordance due to their size, position and colors.



#### Voyages SNCF

The position and size of the destination and user profile are well suited to a mobile use.



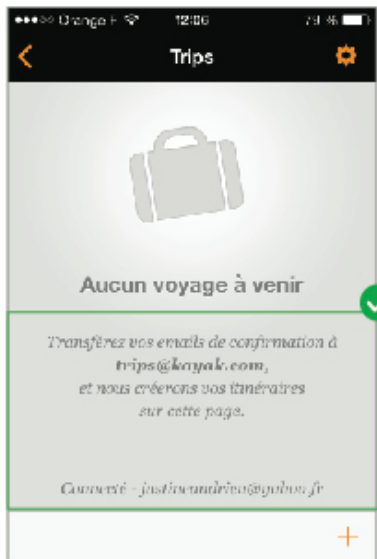
#### RATP

Easy to choose between:

- quickest
- less correspondances
- less walking

## 4 - Benchmark & recommendations for the Travel Companion

### Good practices exemples for inspiration | Search for a new trip



#### Kayak

Kayak allows the user to send his/her ticket to a kayak email address that will automatically load the ticket in the app and offer many options to the traveller.

There should be a way to copy/paste this email address.



#### Voyages SNCF

In the tickets section, the user can add tickets bought outside the app by entering reference numbers.



#### CheckMyTrip

The app allows the user to send his confirmation via email or to enter manually his ticket reference in order to store tickets and get door-to-door assistance.



## 4 - Benchmark & recommendations for the Travel Companion

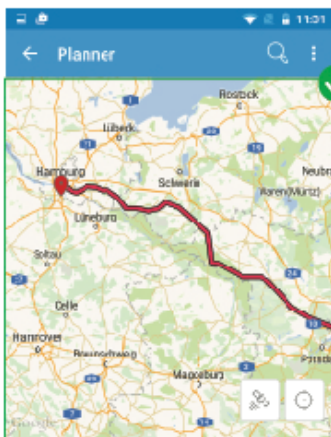
### Good practices exemples for inspiration | Shopping for a journey

#### Journey planners comparing journeys according to departure time, duration time and modes

##### HaCon Navigator

The shopping process visualisation is usable and clear. It does not include price comparison but only:

- total time
- number of changes
- departure and arrival times
- means of transportation



Swipe for preview >

##### Google Map

Google Map is similar to Hacon representation of horizontal journeys. It includes:

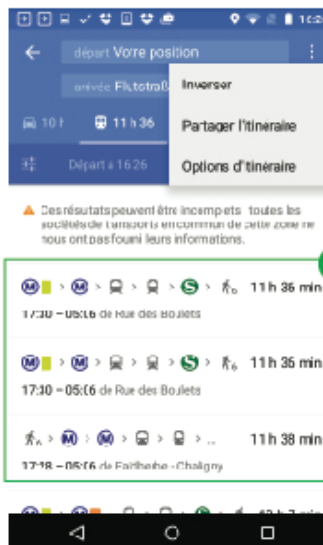
- departure and arrival times
- means of transportation
- total time
- walking time

A nice addition: the itineraries can be filtered by:

- preferred means of transportation

The itineraries can be sorted by:

- best itinerary
- less changes
- less walking time



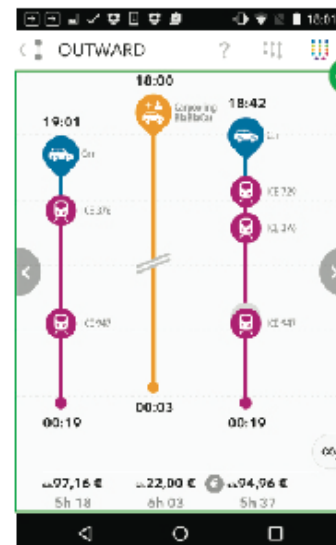
##### Qixxit

Qixxit is similar to Hacon for the vertical timetables. It includes:

- departure and arrival times
- means of transportation
- total time
- price
- CO2 emissions

A nice addition is that the itineraries can be sorted by:

- recommended
- price
- time



##### Voyages SNCF

The app shows in a list:

- departure and arrival times
- means of transportation
- total time
- number of changes
- class
- price



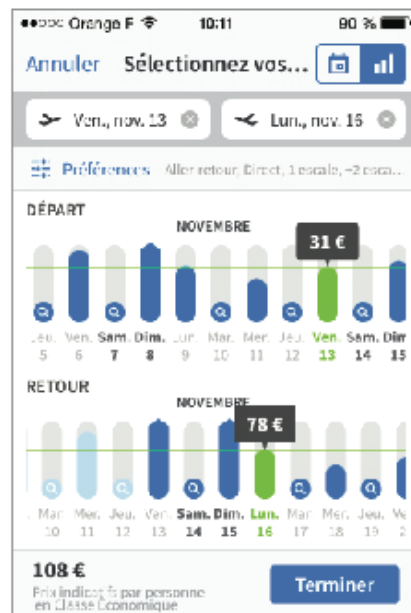
## 4 - Benchmark & recommendations for the Travel Companion

### Good practices exemples for inspiration | Shopping for a journey

Flight Booker comparing journeys according to departure time, duration time and price

#### Skyscanner

The shopping process visualisation displays price ranges according to different dates + a calendar view mode or a bar chart view mode.



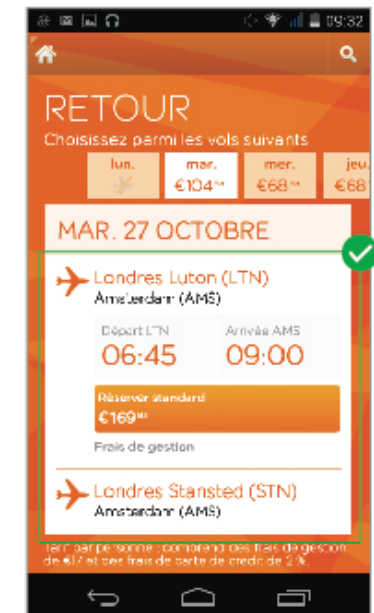
#### AirFrance

The shopping process visualisation is a carousel of dates and then a list of times and prices.



#### Easyjet

The shopping process visualisation is also a carousel of dates with a list of time and prices.





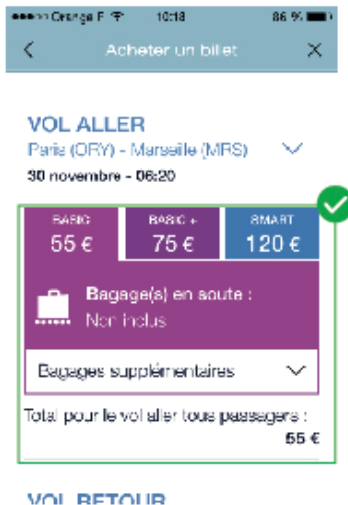
## 4 - Benchmark & recommendations for the Travel Companion

### Good practices exemples for inspiration | Booking & Ticketing

#### Booking / ticketing

##### CHOOSE CLASS

Preview all price class and associated options.



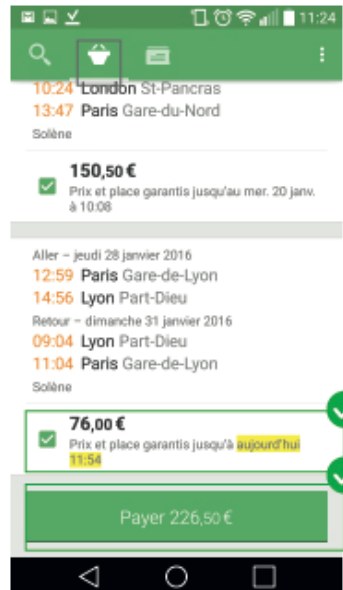
#### Booking / ticketing

##### BASKET OVERVIEW

Shopping basket with tickets overview and price for each.

Overall price must be unambiguous

When it's possible, tickets stay on the basket with place and price guaranteed until a significant change



#### Booking / ticketing

##### ADD PAYMENT MEAN

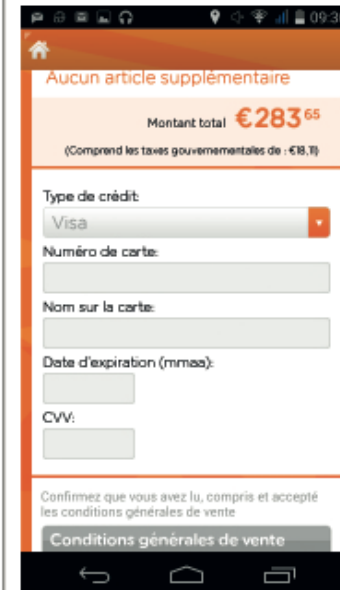
Choose payment mean in the list or add a new payment mean (first time, new credit card...).

This screen is in the tickets purchase process during the initial purchase and accessible at all times in My settings > Profil



#### Booking / ticketing

##### PAYMENT FORM



#### Booking / ticketing

##### CONFIRMATION AND TICKET ACCESS

The tickets are stored in the app with the possibility to delete, share or situate them on a map.



## 4 - Benchmark & recommendations for the Travel Companion

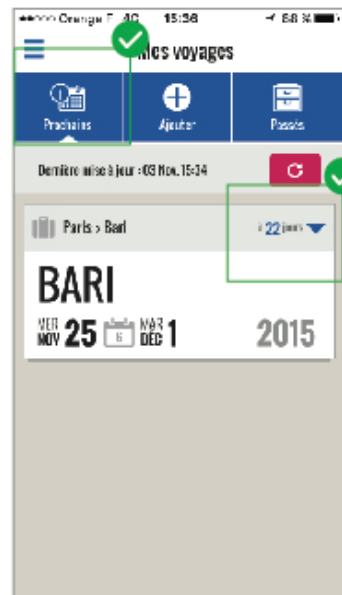
### Good practices exemples for inspiration | My trips

#### Check my trip

##### UPCOMING TRIPS

#### List of upcoming trips

- days remaining before the trip
- key actions like check-in



#### Check my trip

##### ADD A TICKET

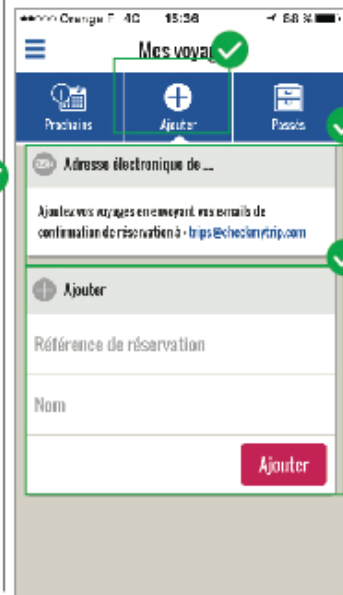
Tickets bought outside the app can be imported in the app in 2 different ways:

#### Add via mail

Send the reservation to the software and it will convert it automatically into a e.ticket

#### Add the reference

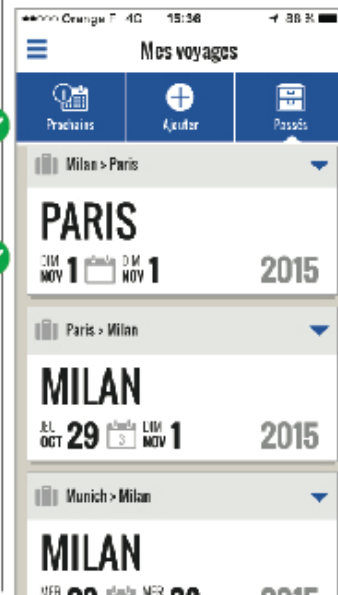
Manually enter the reference number.



#### Check my trip

##### PASSED TRIPS

An history of the past trips is available with all the information saved (picture of luggage...)

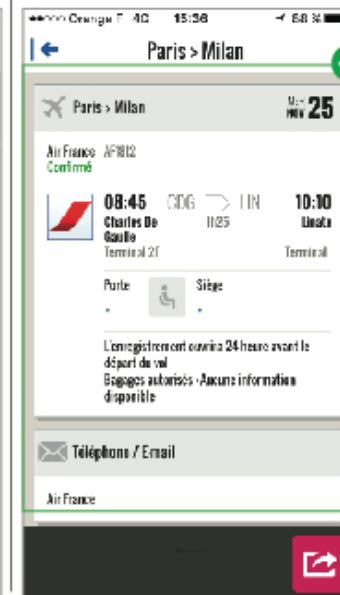


#### Check my trip

##### UPCOMING TRIPS

A lot of personal and real time info are available:

- destinations
- dates
- companies
- times
- durations
- terminals
- gates
- seat numbers
- times before boarding
- companies' contacts



#### Check my trip

##### TRIP TOOLS

A trip can be:

- shared
- the price can be converted in other currencies
- the trip can be added to the phone's calendar
- the local weather can be seen
- a trip map and itineraries can be accessed
- photos can be taken (i.e. the luggage before check-in)
- attached photos can be viewed





## 4 - Benchmark & recommendations for the Travel Companion

### Good practices exemples for inspiration | My trips

Mon compagnon de voyage  
> Mutuaide assistance

Provide access to safety  
infrastructure during the trip:

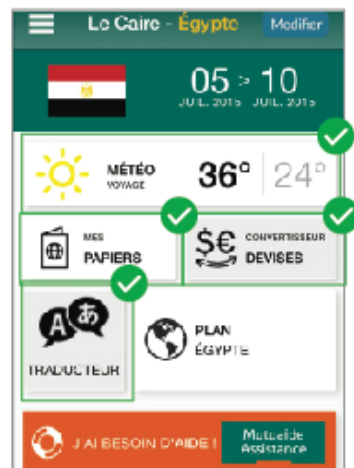
- medical structure
- consulat assistance
- local emergency number
- theft or loss of ID papers



Mon compagnon de voyage  
> Mutuaide assistance

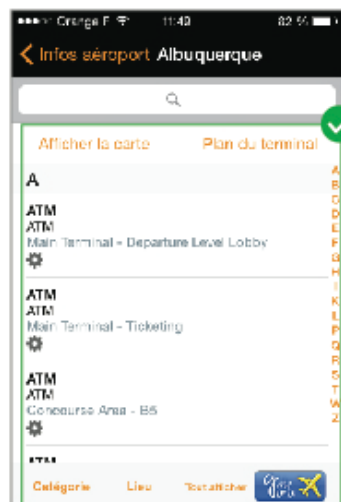
Provide access to information  
useful during the trip:

- weather
- ID papers required (passeport, visa...)
- currency convertor
- translator
- map



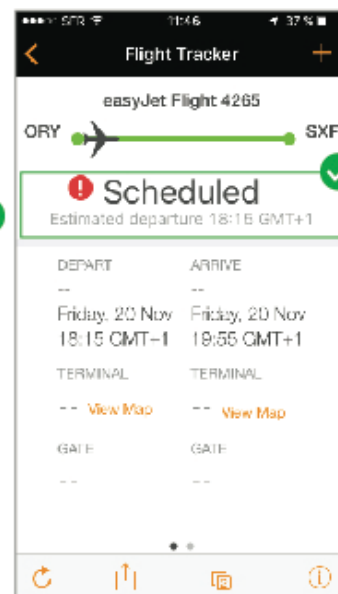
Kayak

Provide access to the list of  
infrastructures in all main  
airports



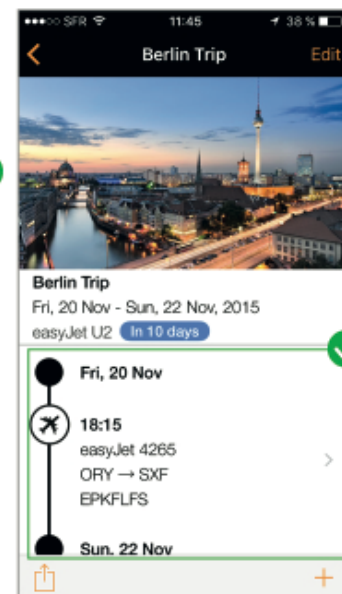
Kayak

Ticket with notification of  
potential delays



Kayak

Step-by-step itinerary





IT2Rail

Shopping  
Real time

Innovation

Open Interfaces

Door to Door

Seamless Travel

Business Analytics

Digital

Multimodal

Ticketing

Tracking

Web of Transportation

Travel Companion

One-stop Shop

Technical Enabler

Cloud

Re-accommodation

Attractive Railway  
Services

Interoperability



This project has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement No: 636078

