

GTFS-Seats & GTFS-IMDF-Seats

bit.ly/gtfs-seats

This document is a collaborative working tool for a GTFS extension proposal. As a living document, content may evolve based on community feedback. Therefore, any implementation may have to be updated. The status color scheme [A1] tracks the stages at which the contents of the GTFS extension proposal evolve. If you have any questions, please reach out to specifications@mobilitydata.org.

GTFS-Seats

Goal

Transit agencies sometimes need to provide information about seats in their vehicles, mainly for providing seating information, seat capacity, and enabling seat booking.

Example: Is there still a seat available on that trip? Can I book a seat in a quiet zone, close to a window? Will I face someone while sitting? How much is a first-class ticket on that trip? How many riders in wheelchairs can board the vehicle? Is there a luggage rack close to where I will sit?

Requirements

Requires the [GTFS-Vehicles](#) extension, at least in its [core](#) version.

To provide seat pricing, the [GTFS-Fares](#) extension is required.

Files extended or added

File Name	State	Defines
<code>seats.txt</code>	Added	Provides information about seats within vehicles.
<code>seat_groups.txt</code>	Added	Defines seat groups within vehicles for fares.
<code>vehicle_categories.txt</code>	Extended	Defines seat groups within vehicles for fares.
<code>vehicle_amenities.txt</code>	Added	Defines amenities and features related to rider convenience within vehicles.
<code>fare_leg_rules.txt</code>	Extended	Defines fare rules for individual trip legs.

File Definitions

seats.txt (file added, optional)

This file defines vehicle seats and their attributes. A seat is considered as accommodating only one rider, and must be related to a vehicle category or a seat group. Seat amenities for rider convenience may be attributed using vehicle_amenities.txt.

Warning: Seat description must be exhaustive in a vehicle category. As a consequence, as soon as one seat is defined for a vehicle category, the vehicle category is assumed to have an exhaustive description of its seats.

Field Name	Details
seat_id	(ID, Required) Uniquely identifies a seat.
vehicle_category_id	(ID, Conditionally Required) Identifies the vehicle category to which that seat belongs. Fallback on the vehicle_category_id of the seat groups if undefined. Conditionally required: <ul style="list-style-type: none">- Required if seat_group_id is undefined.- Required if seat_group_id is defined, but the seat groups' vehicle_category_id is undefined.- Optional otherwise.
seat_group_id	(ID, Optional) Identifies the seat group to which that seat belongs. Multiple seat_id may have the same seat_group_id.
vehicle_amenity_id	(ID, Optional) Identifies an amenity or a set of amenities available to the rider occupying the seat.
ticketing_seat_id	(ID, Optional) Identifier that should be passed in the deep link. Doesn't have to be unique. This ticketing ID overrides for that seat the ticketing ID of the seat group or the vehicle category this seat belongs to. If this field is empty, the seat inherits the ticketing ID from its seat group, or from its vehicle category if its seat group has no ticketing ID.
seat_level_id	(ID, Optional) Identifies the level of the seat in the vehicle. If this field is empty, it inherits from `seat_groups.level_id`, or from `vehicle_categories.level_id` if `seat_groups.level_id` is also empty.

seat_code	<p>(Text, Optional) Short identifier of the seat. This code may be printed or displayed on the seat or close to it. If nothing is usually used to identify a seat, no values should be provided.</p> <p>Example: “7A”.</p>
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seat_groups.txt (file added, optional)

This file defines seat groups and their attributes. A seat group must be related to one vehicle category, either directly or through its seats. This file may be provided without providing seat information in `seats.txt`; in this case, `seat_groups.seat_group_capacity` is useful for providing the number of seats. Seat amenities for rider convenience may be attributed using `vehicle_amenities.txt`.

Field Name	Details
seat_group_id	(ID, Required) Identifies uniquely a seat group.
vehicle_category_id	<p>(ID referencing <code>vehicle_categories.vehicle_category_id</code>, Conditionally Required) Identifies the vehicle category to which that seat group belongs.</p> <p>Conditionally Required:</p> <ul style="list-style-type: none"> - Required if at least one of the seats of the group doesn't have a <code>vehicle_category_id</code> defined. - Optional otherwise.
vehicle_amenity_id	(ID, Optional) Identifies an amenity or a set of amenities available to the riders occupying a seat belonging to the seat group.
ticketing_seat_group_id	<p>(ID, Optional) Identifier that should be passed in the deep link. Doesn't have to be unique.</p> <p>This ticketing ID overrides for that seat group the ticketing ID of the vehicle category this seat group belongs to. The ticketing ID of a seat group may be overridden by the one of a seat. If this field is empty, the seat group inherits the ticketing ID from its vehicle category.</p>
seat_level_id	<p>(ID, Optional) Identifies the level of all seats in the vehicle belonging to the seat group.</p> <p>If all seats belonging to the seat group are not located on the same level, this field must be empty and <code>`seats.level_id`</code> should be populated instead. If this field is empty, it inherits from <code>`vehicle_categories.level_id`</code>.</p>

seat_group_code	<p>(Text, Optional) Short identifier of the seat group. This code may be printed or displayed on seats, vehicles, or screens. If nothing is usually used to identify seat groups, no values should be provided.</p> <p>Example: "A".</p>
seat_group_name	<p>(Text, Optional) Name used to easily identify the seat group. This name may be printed or displayed on seats, vehicles, or screens. If nothing is usually used to identify seat groups, no values should be provided.</p> <p>Example: "Panorama" vs "Classic", or "Standard" vs "Standard Area Silenzio" vs "Premium"...</p>
capacity	<p>(Non-negative integer, Optional) Number of seats dedicated to riders, including empty spots dedicated to riders in wheelchairs. A seat is considered as accommodating only one rider.</p> <p>If seat description is made in <code>seats.txt</code> for this seat group, the number of seats described must be equivalent to the value of that field.</p>

vehicle_categories.txt (file extended)

Field Name	Details
vehicle_amenity_id	(ID, Optional) Identifies an amenity or a set of amenities available to all riders in the vehicle category.
ticketing_vehicle_id	<p>(ID, Optional) Identifier that should be passed in the deep link. Doesn't have to be unique.</p> <p>The ticketing ID of a vehicle category may be overridden by the ones of a seat or a seat group.</p>
seat_level_id	<p>(ID, Optional) Identifies the level of all seats in the vehicle.</p> <p>If all seats in the vehicle are not located on the same level, this field must be empty and <code>`seats.level_id`</code> or <code>`seat_groups.level_id`</code> should be populated instead.</p>

vehicle_amenities.txt (file added)

This file defines amenities and features related to rider convenience within vehicles. All the amenities can be attributed to a seat in ``seats.txt``, a seat group in ``seat_groups.txt``, or a vehicle category in ``vehicle_categories.txt``.

In case of conflicts, the amenity attributed to a seat overrides the amenity attributed to the seat group or to the vehicle category the seat belongs to. In the same way, the amenity attributed to a seat group overrides the amenity attributed to the vehicle category the seat group belongs to.

When a seat has no amenities attributed, it inherits the amenities from its seat group, or from its vehicle category if the seat group has no amenities attributed. In the same way, when a seat group has no amenities attributed, it inherits the amenities of its vehicle category.

For the amenities available to riders at their seat (most of the fields starting with `seat_`), both the enum `2 - Available at some seats` and `3 - Available at all seats` mean “Available at *the* seat” when the amenity is attributed to a single seat.

Field Name	Details
vehicle_amenity_id	(ID, Required) Identifies uniquely an amenity or a set of amenities.
class	(Enum, Optional) Defines the class of the seat: 0 or empty - Unknown 1 - First class 2 - Second class 3 - Third class 4 - Business 5 - Premium Economy 6 - Economy
quietness	(Enum, Optional) Defines the quietness of the seat: 0 or empty - Unknown 1 - Quiet zone 2 - Phone-allowed zone 3 - Family zone
ac_availability	(Enum, Optional) Defines if air conditioning is available. 0 or empty - Unknown 1 - Not available 2 - Partially available 3 - Available anywhere, anytime
ac_temperature	(Float, Optional) Denotes the maintained temperature when air conditioning is available. Temperature must be in degrees Celsius.
wifi_availability	(Enum, Optional) Defines if Wi-Fi Internet access is available.

	0 or empty - Unknown 1 - Not available 2 - Partially available 3 - Available anywhere, anytime
wifi_ fee	(Enum, Optional) Defines if fees must be paid for accessing the Wi-Fi Internet. 0 or empty - Unknown 1 - No fee payment required (free access) 2 - No fee payment required but optional fee possible 3 - Fee payment required
cctv_ availability	(Enum, Optional) Defines if a video-surveillance system for rider safety is available. 0 or empty - Unknown 1 - Not available 2 - Partially available 3 - Available anywhere, anytime
sos_ availability	(Enum, Optional) Defines if an emergency alert system for rider safety is available. 0 or empty - Unknown 1 - Not available 2 - Partially available 3 - Available anywhere, anytime
toilet_ availability	(Enum, Optional) Defines if a toilet is available. 0 or empty - Unknown 1 - Not available 2 - Partially available 3 - Available anywhere, anytime
gender_ accessibility	(Enum, Optional) Defines if gender restrictions apply. 0 or empty - Unknown 1 - No gender restrictions 2 - Restricted to women 3 - Restricted to women, children of any gender allowed 4 - Restricted to men 5 - Restricted to men, children of any gender allowed
seat_type	(Enum, Optional) Defines the type of seat: 0 or empty - Seat (not foldable, may be reclining)

	1 - Folding seat (cannot be a wheelchair spot when folded) 2 - Seat reclining to bed 3 - Fixed bed (cannot be reclined back as seat) 4 - Empty spot dedicated to rider in wheelchair 5 - Seat or bed convertible to wheelchair spot
seat_ horizontal_ layout	(Enum, Optional) Defines the horizontal location of the seat within the vehicle. This field is mostly useful when the seat layout is not provided in the IMDF format. 0 or empty - Unknown 1 - Aisle 2 - Middle 3 - Window 4 - Isle (one-seat row between aisle and window)
seat_ vertical_ layout	(Enum, Optional) Defines the vertical location of the seat within the vehicle. Applies mostly to bunk beds. This field is mostly useful when the seat layout is not provided in the IMDF format. 0 or empty - Unknown 1 - Lowermost 2 - Middle 3 - Uppermost
seat_ orientation	(Enum, Optional) Defines the orientation of the seat, based on the orientation of the vehicle in motion. 0 or empty - Unknown 1 - Forward 2 - Backward 3 - Sideways (left or right) 4 - Variable during the trip
seat_face_to	(Enum, Optional) Defines if the rider may face another rider while sitting. 0 or empty - Unknown 1 - Face-to-face seat (the rider may face another rider while seated) 2 - Not a face-to-face seat (the rider may not face another rider while seated)
seat_tilt_ angle	(non-negative integer, Optional) Defines the maximum tilt angle in degrees of the seatback if adjustable. Zero (0) is the default seatback position.
seat_table	(Enum, Optional) Defines if a fixed or folding table is available at seat.

	0 or empty - Unknown 1 - Not available 2 - Available at some seats 3 - Available at all seats
seat_lamp	(Enum, Optional) Defines if an individual reading lamp is available at seat. 0 or empty - Unknown 1 - Not available 2 - Available at some seats 3 - Available at all seats
seat_electric_plug	(Enum, Optional) Defines if an electric outlet (of any type) is available at seat. 0 or empty - Unknown 1 - Not available 2 - Available at some seats 3 - Available at all seats
seat_usb_plug	(Enum, Optional) Defines if an USB outlet (of any type) is available at seat. 0 or empty - Unknown 1 - Not available 2 - Available at some seats 3 - Available at all seats
seat_screen	(Enum, Optional) Defines if a screen displaying entertainment content is available at seat. 0 or empty - Unknown 1 - Not available 2 - Available at some seats 3 - Available at all seats
seat_blanket	(Enum, Optional) Defines if a blanket is available at seat. 0 or empty - Unknown 1 - Not available 2 - Available at some seats 3 - Available at all seats
seat_pillow	(Enum, Optional) Defines if a pillow is available at seat. 0 or empty - Unknown 1 - Not available

	2 - Available at some seats 3 - Available at all seats
seat_beverage	(Enum, Optional) Defines if a beverage service is available at seat. 0 or empty - Unknown 1 - Not available 2 - Available at some seats 3 - Available at all seats
seat_snack	(Enum, Optional) Defines if a snack service is available at seat. 0 or empty - Unknown 1 - Not available 2 - Available at some seats 3 - Available at all seats
seat_meal	(Enum, Optional) Defines if a meal service is available at seat. 0 or empty - Unknown 1 - Not available 2 - Available at some seats 3 - Available at all seats
vehicle_beverage	(Enum, Optional) Defines if beverage service is available in the vehicle, but not at seat. 0 or empty - Unknown 1 - Not available 2 - Available at a restaurant (table service) 3 - Available at a bar (counter service) 4 - Available at a vending machine (self service)
vehicle_snack	(Enum, Optional) Defines if snack service is available in the vehicle, but not at seat. 0 or empty - Unknown 1 - Not available 2 - Available at a restaurant (table service) 3 - Available at a bar (counter service) 4 - Available at a vending machine (self service)
vehicle_meal	(Enum, Optional) Defines if meal service is available in the vehicle, but not at seat. 0 or empty - Unknown 1 - Not available 2 - Available at a restaurant (table service)

	3 - Available at a bar (counter service) 4 - Available at a vending machine (self service)
vehicle_screen	(Enum, Optional) Defines if a non-individual screen displaying entertainment content is available in the vehicle. 0 or empty - Unknown 1 - Not available 2 - Available

fare_leg_rules.txt (file extended)

Field Name	Details
seat_group_id	(ID, Optional) The <code>seat_group_id</code> field allows filtering based on the seats (see <code>seat_groups.txt</code>) of the leg. If the field is empty, it will be assumed to match the leg.

GTFS-IMDF-Seats [Still Work in Progress]

Goal

Allow to show a map of the vehicle so that the rider can pick the vehicle she or he wants.

Requirements

Requires the GTFS-Seats extension.

Files extended or added

File Name	State	Defines
seats.txt	Extended	Link the GTFS seats with the IMDF seats.
vehicle_categories.txt	Extended	Link the GTFS vehicles with the IMDF [TBD].

File Definitions

seats.txt (file extended, optional)

Field Name	Details
imdf_seat_id	(ID, Required) Contains the “id” of an IMDF Amenity of the category “seat”.

vehicle_categories.txt (file extended, optional)

Field Name	Details
imdf_vehicle_categorie_id	(ID, Required) Contains the “id” of an IMDF [TBD].

Examples

Deutsche Bahn (Germany)

Coach

34

2

81

72

71

62

61

52

51

42

41

32

31

22

21

12

74

73

64

63

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45

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26

25

16

Direction of travel *

Your chosen seats: Coach 34 Seat 56

We regret that seats with the features you requested are no longer available. We can offer you the alternative seats shown here.

> Originally selected seat

Accept

selected

available

not reservable

Wheelchair space

Parent-and-child compartment

Pushchair space

Family cabin

2nd class coach

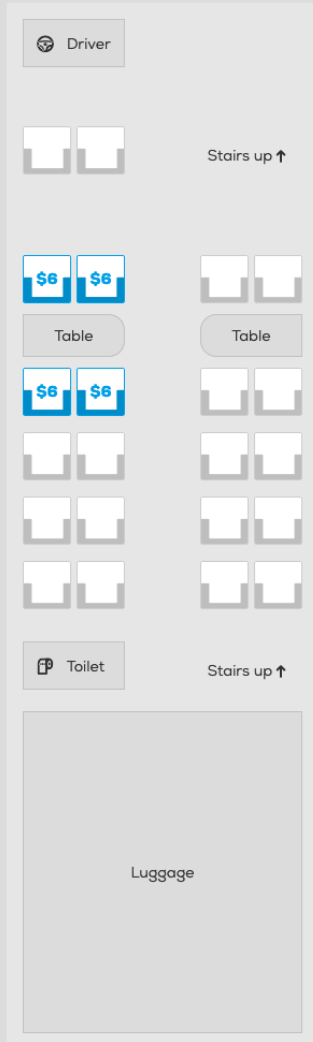
Mobile phone area

* Anticipated direction coach will be travelling when leaving departure station (not guaranteed). This could change in the course of the journey, e.g. if train calls at a terminal station.

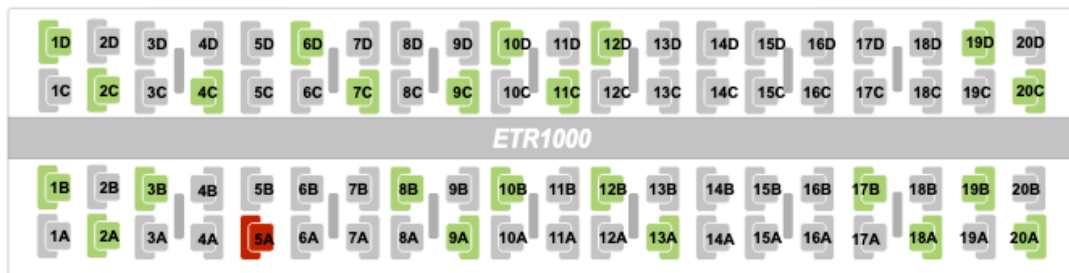
MegaBus (North America)

Lower deck seats

Upper deck seats



Trenitalia (Italy)



Selected seat



Available seat



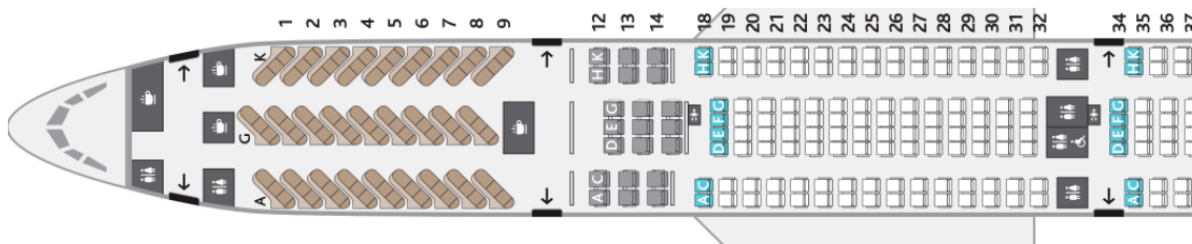
Not available seat



Frontal seats

AirCanada (Canada)

Not supported by GTFS, but can give an idea of the complexity of such description



Appendices

[A1] Status color scheme

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stages at which the contents of the GTFS extension proposal evolve. If you have any questions, please reach out to specifications@mobilitydata.org.

Working draft	<ul style="list-style-type: none">- This content has not yet been adopted or put to a GitHub pull request (PR) on google/transit.- It may evolve based on community feedback, and is therefore subject to change.- Any implementation may have to be updated with iterations or official adoption.
Proposal	<ul style="list-style-type: none">- This content is currently a GTFS extension proposal via a GitHub pull request (PR) on google/transit.- The hyperlinked to its relevant PR is embedded in the text.- The PR should serve as the sole venue for discussion and iteration.- Text of this color may no longer be up to date.
Adopted	<ul style="list-style-type: none">- This content has been put to a GitHub pull request (PR) on google/transit as a GTFS extension proposal, and has been officially adopted.- Text of this color may no longer be up to date.- Any references to this material must be made from the official reference.md.

[A2] Open questions

This proposal does not describe seat proximity in the GTFS. The rider can only book close seats based on the IMDF representation. Should we add fields related to x and y rows (e.g for seat 12A: row 12, seat A)?