



Economic Commission for Europe**Inland Transport Committee****Working Party on Rail Transport****Group of Experts on International Railway Passenger Hubs****Second session**

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Item 3 of the provisional agenda

**Identification of stations on the AGC network to be defined
as an international passenger railway hub****Defining an international railway passenger hub****Submitted by the secretariat****I. Introduction**

1. This document should be read in conjunction with document ECE/TRANS/SC.2/HUBS/2021/9 “Identification of the technical and service parameters necessary for the definition of an international passenger railway hub”, which provides a proposal of a list of elements to consider as necessary for a hub.

A. The concept of hub in economic literature

2. The definition of a hub in the transportation sector is more related to the network design of a carrier. “Hubbing” was developed for the first time by Federal Express in Memphis and later it was developed in the air transport sector by full-service carriers which has developed into a hub and spoke system revolving around an airline.

3. There are several examples around the world of different hubs in the passenger and freight air sector. A key element here in relation to the connectivity of the hub is the “wave” system in an airport where the “wave” is related to the capacity of the network carrier operator and hub operations to connect is a short timespan international and domestic connections.

4. The use of a hub allows for an increase in the number of destinations served. In order for a hub to be effective it needs to ensure a high level of connectivity through:

- The nodal centrality of the hub (that is its connection to key points of demand and interconnection);
- The capacity of the infrastructure;
- High demand at the hub’s location both as an origin and a destination.

5. These elements are key drivers to the appropriate identification of stations on the AGC network as an international railway passenger hub. In this framework, it is also important to note that secondary hubs have also been identified in the aviation sector.

B. Railway networks

6. While the aviation sector is usually more associated with international traffic, the railways have historically developed more to serve regional and national traffic, often with little integration at an international level. Consequently, international connections are limited in comparison with domestic and regional connections. Given this, it is important to understand what a station hub is before identifying international passenger railway hubs.

II. International Passengers Railway hubs

7. Due to the specificities of the railway market, the definition of international railway hub must reflect different parameters from a supply as well as demand side. Supply side parameters are mainly linked to the infrastructure capacity and facilities for the railway undertakings to serve passengers while demand side parameters focus on the development of the traffic and the attractiveness of railways as a mode of transport for international journeys and the level of accessibility of the hub to users. In this analysis, the number of passengers (both current and potential future passenger numbers) as a key parameter to be considered in the definition of a hub.

8. Equally important, connectivity between countries is a key element of development of traffic and many countries are reviewing the use of the railways to increase the quality of connections. At the same time, connectivity is not only about links with other rail connections, but also with other transport modes and their accessibility in hubs.

A. Demand side drivers

9. A Hub is defined as such when it provides connections between long distance routes but also with short distance routes and with other modes including aviation, inland waterways, maritime and urban transport. While international rail traffic can be long distance as well as regional (commuter) cross-border traffic, a hub can best be identified when it serves long distance international rail traffic.

10. Furthermore, it will be necessary to ensure that there is a minimum level of long-distance international traffic for the station to be defined as a hub. For example, a single service a day may not provide enough traffic to consider the station an international railway passenger hub. However, current traffic alone cannot be the only identifier as an expectation of significant future traffic could provide a signal of future hub status. With this in mind, it may be that over time that stations are added or removed as international railway passenger hubs as traffic changes.

11. Finally, the definition of only one type of international railway passenger hub may not be enough with some stations having constant and significant international flows while others having fewer (but more than one return service) In this case, a “primary” hub and a “secondary” hub could be identified which would offer different levels of service with a smaller or larger selection of parameters as set out in document ECE/TRANS/SC.2/HUBS/2021/9.

12. In this context the different types of international railway passenger hubs would need to consider a number of defining criteria. A first selection of potential criteria is listed below for discussion between experts:

- The number of annual passengers passing through the station: with a particular focus on the last four to five years. For a “primary” hub at least twenty million passengers per year would be necessary.

- The number of annual international passengers passing through the station over the last four to five years. For a “primary” hub at least 500,000 passengers per year would be necessary.
- The share of total international passengers passing through the station: For a “primary” hub at least 10 per cent of all international railway passenger traffic through the country would need to pass through the hub
- The number of annual international passengers transiting through the station to a national or local service over the last four to five years: For a “primary” hub at least 200,000 passengers per year would be necessary.
- The total number of arriving and departing international trains: For a “secondary” hub at least 1,000 trains per year per direction.
- The total number of international destinations: For a “secondary” hub this should be more than two.

B. Supply-side drivers

13. As mentioned above though, supply side parameters are also fundamental for the definition of international railway passenger hubs. The following supply side factors should be considered as possible criteria for these hubs.

- The number of tracks and platforms for international passenger services: for a “primary” hub, it may be appropriate to consider a minimum of three tracks and platforms.
- The size of the station: It may be appropriate to define minimum station sizes for primary and secondary hubs. Delegates may wish to make proposals on what this size should be.
- Connectivity: “primary” hubs will need to have connections to other international services as well as to long-distance national and regional services. There should also be ample connections to local, urban public transport solutions as well as related services such as taxi, parking and shared mobility solutions.

III. International hubs on the AGC network

14. Based on the information set out above an initial list of potential international railway passenger hubs has been identified in annex I.

IV. Next steps

15. Experts may wish to consider this criteria and the list of stations in annex I and discuss this further at the session.

Annex I**Potential international railway passenger hubs on the AGC network**

<i>Country</i>	<i>City</i>	<i>Station</i>	<i>E-railways</i>	<i>Connections available</i>
Armenia	Yerevan	Central railway Station	E693	(International, Regional, Long distance domestic, Urban public transport, airport/port, etc. To be defined and inserted for each of the stations)
Austria	Wien	Hauptbahnhof	E63, E65, E50	
Azerbaijan	Baku	Central railway Station	E595, E694, E60	
Belarus	Minsk	Pasazyrski	E20, E20/3,	
Belgium	Bruxelles	South	E15, E25, E20, E10	
Belgium	Antwerpen	Centraal	E15	
Bosnia-Herzegovina	Sarajevo	Central railway Station	E771	
Bulgaria	Sofia	Central railway Station	E855, E680	
Croatia	Zagreb	Glavni kolodvor	E751, E753, E71, E70	
Czech Republic	Praha	Hlavni nadrazi	E55, E551, E61, E40	
Denmark	Kobenhavn	Central railway Station	E45	
Estonia	Tallinn	Baltic Station	E751, E753	
Finland	Helsinki	Central railway Station	E10	
France	Paris	Gare du Nord	E09, E051, E15	
France	Paris	Gare de l'Est	E40, E42	
France	Paris	Gare de Lyon	E50, E70	
France	Marseille	Saint-Charles	E15, E90,	
France	Lille	Europe	E09	
Georgia	Tbilisi	Central railway Station	E60, E692	
Germany	Koln	Hauptbahnhof	E35, E43, E10, E20	
Germany	Frankfurt Main	Hauptbahnhof	E43, E32, E40, E46,	

<i>Country</i>	<i>City</i>	<i>Station</i>	<i>E-railways</i>	<i>Connections available</i>
Germany	Munchen	Hauptbahnhof	E43, E45	
Germany	Berlin	Hauptbahnhof	E51, E451, E55, E61, E18	
Germany	Dresden	Hauptbahnhof	E30, E32, E55, E61	
Greece	Thessaloniki	New Thessaloniki railway Station	E85, E855	
Greece	Athens	Larissa	E85	
Hungary	Budapest	Keleti	E69, E71, E85, E50, E52, E56	
Ireland	Dublin	Connolly	E03	
Italy	Milan	Centrale	E25, E35	
Italy	Rome	Termini	E35, E90	
Kazakhstan	Almaty	Almaty-1	E50	
Latvia	Riga	Central railway Station	E14, E75	
Lithuania	Kaunas	Central railway Station	E75, E20/3	
Lithuania	Vilnius	Central railway Station	E20/3	
Luxembourg	Luxembourg	Central railway Station	E25, E27	
Moldova	Chinisau	Central railway Station	E95	
Netherlands	Amsterdam	Centraal	E15, E35	
Netherlands	Rotterdam	Centraal	E15, E16	
Montenegro	Podgorica	Central railway Station	E79	
North Macedonia	Skopje	Central railway Station	E85	
Norway	Oslo	Central Station	E45	
Poland	Warszawa	Central railway Station	E65, E75, E20	
Poland	Poznan	Glowny Railway station	E20, E59	
Portugal	Lisboa	Santa Apolonia	E05, E90	
Republic of Moldova	Chinisau	Central railway Station	E95	
Romania	Bucuresti	Gara de Nord	E95, E54, E56, E562	
Russian Federation	Moskva	Leningradsky	E10	
Russian Federation	Moskva	Belorussky	E12, E20	
Russian Federation	Moskva	Kazansky	E24, E20	
Russian Federation	Moskva	Paveletsky	E50	

<i>Country</i>	<i>City</i>	<i>Station</i>	<i>E-railways</i>	<i>Connections available</i>
Russian Federation	St. Petersburg	Vitelbsky	E10	
Russian Federation	Kaliningrad	South	E20/3	
Serbia	Beograd	Central railway Station	E79, E85, E66, E70	
Slovakia	Bratislava	Main Railway Station	E61, E63, E52	
Slovenia	Ljubljana	Central railway Station	E65, E69, E70	
Spain	Madrid	Atocha	E07, E053, E90	
Spain	Barcelona	Sants	E90	
Sweden	Stockholm	Central Station	E55, E61	
Sweden	Malmo	Central Station	E55, E61	
Switzerland	Geneve	Cornavin	E50	
Switzerland	Zurich	Hauptbahnhof	E50	
Switzerland	Basel	Banhof	E25, E35	
Turkey	Istanbul	Haydarpasa	E70	
Turkey	Ankara	Gari	E70	
Turkmenistan	Ashgabat	Central railway Station	E60	
United Kingdom	London	St.Pancras	E03, E16	
Ukraine	Kiev	Pasazhyrskyi	E30, E95	
Ukraine	Lvov	Holovnyi	E851, E30, E50	
Uzbekistan	Tashkent	Northern	E60, E696	