PROCEEDINGS

November 2017

An Intermodal Approach towards Airport Access

ARC
AIRPORT REGIONS CONFERENCE

The cover was prepared using graphics from www.freevector.com

An Intermodal Approach towards Airport Access

About Airport Regions Conference

Airport Regions Conference (ARC) is an association of regional and local authorities across Europe with an international airport situated within or near their territory.

ARC brings together a wide range of expertise at the interface of air transport and local and regional policies. A common concern is to balance the economic benefits generated by the airports against their environmental impact, notably the effect on the quality of life of local residents.

The members exchange best practices through ARC network and reflect together on policy challenges ahead. As such the ARC also serves as a platform to express members interests to the European Institutions.

Welcome Words

Dear reader,

It was a true honour having professionals from all over the world with us during the successful ARC-GARA Airport Access Conference in November 2017.

Improving surface access to airports is a crucial aspect on handling expected air traffic growth that will put much pressure on Europe's airports and the transport network that links the airports with city centres and their hinterland. It became clear that including the grievances of residents living nearby gateways is key. Combining an improved public acceptance with seamless travel and a good passenger experience will most definitely contribute to the preservation of the wider European integration project.

We are the best placed organisation to ensure sustainable future aviation policy. The voice of airport regions must be heard and taken into account. Involving all stakeholders is the only guarantee that all parties, can benefit from aviation activities. We would be happy to see our contributed expertise and feedback being translated into actions by airport operators and governments involved in the exploitation of airports. The ARC approach is built-up with local touches from our members coming from all over Europe. This shows that all Europeans can efficiently contribute to the wider definition of policies.

I would like to thank all speakers and attendees for their essential, but wonderful, contributions. A special thank you goes to our colleagues at GARA for the smooth cooperation which in our view is worth repeating.

Sergi Alegre Calero,
ARC President

Arja Lukin

Arja Lukin is the Project Director of Airport City Aviapolis in the City of Vantaa, Finland. Arja, who leads the development and growth of Aviapolis, will discuss how the Ring Rail Line and the Smart & Clean Ideas foundation will boost the growth of Aviapolis.

Opened in July 2015, the Ring Rail Line connected Aviapolis, an expanding area in Helsinki metropolitan region, with the international airport and the city centre. 20.000 additional residences and 40.000 extra work places will be created in the area, bringing business opportunities and mobility challenges. Aviapolis intends to evolve in to a desirable place where to live and work. The Smart & Clean Ideas foundation has turned Helsinki into a test platform for clean and smart solutions.

Vantaa Aviapolis

The vision of Vantaa Aviapolis for the future is “to become a tempting and sustainable airport city full of opportunities and alive around the clock”. Aviapolis must become a place where walking is preferable and public transport the most attractive option for commuting to work.

The importance of Helsinki-Vantaa Airport and Aviapolis

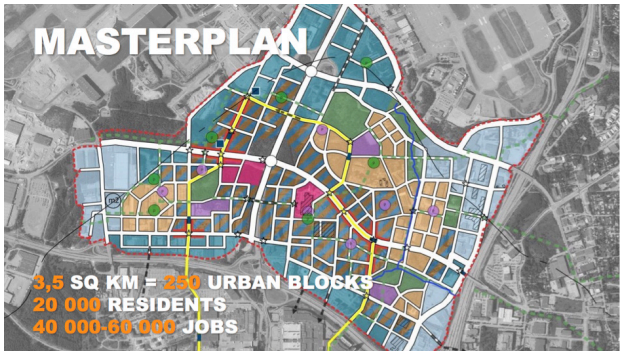
With over 20.000 residents and 40.000 to 60.000 jobs, Aviapolis should become a city between Helsinki’s city centre and the Vantaa airport. With over 18 million passengers carried, Helsinki-Vantaa Airport covers 90% of Finland’s air traffic. This catalyst has helped to develop Aviapolis to become an important part of the Finnish economic chain.

HEL as a hub between Europe and Asia (Aviapolis)

The airport is ideally located between Europe and Asia and offers the shortest routes between many destinations on both continents. 17 long haul destinations to Asia are being served out of Helsinki.

Public transport is a must in Vantaa

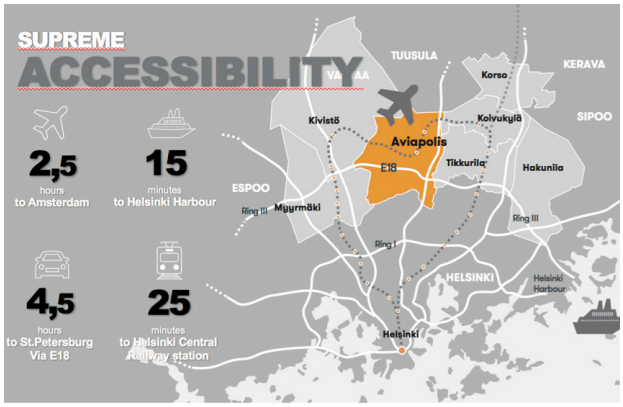
In Vantaa, over 75% of housing is concentrated around the railways, and the companies which are based in Aviapolis. Therefore, Vantaa serves as the intermodal hub for the whole of Finland and even for some neighbouring countries. The airport is well-located to access the Helsinki harbour, the main railway station, and the motorways leading to Russia and inland Finland.



Aviapolis Masterplan (Aviapolis)

A quantum leap for sustainable mobility

Aviapolis would like to keep growing in its role as an intermodal hub. Therefore, new projects are being planned. A new tunnel for rail traffic will connect Helsinki directly in 30 minutes with the Estonian capital Tallinn. This project should enter its final stage by 2050. The Helsinki Airport Rail will be part of the tunnel project to let Helsinki-Vantaa Airport be a crosspoint for traffic in Finland and to Estonia and Russia. While growing, Aviapolis makes sure that all stakeholders are involved in the planning phase of the projects. These stakeholders are the City of Vantaa, Finavia (the Finnish organisation responsible for maintaining and developing its 21 airports and the air navigation system), companies and inhabitants based/living in Aviapolis. Part of the vision is to make mobility emission-free by 2021.



Accessbility of Helsinki-Vantaa airport and the 2020-2040 strategy (Aviapolis)

István Hunyadi

István Hunyadi is the City Manager of Budapest District 18, Pestszentlőrinc-Pestszentimre Municipality. He is a civil engineer and an economist. Before joining District 18, he held executive and director positions with the National Transport Authority and later with the Transport Authority of Budapest.

Improving landside access to the Budapest Listz Ferenc International Airport

During recent years Budapest Liszt Ferenc International Airport has seen a major passenger traffic increase but, despite many ideas and plans discussed over the past two decades, the airport access infrastructure remains underdeveloped. Currently there are two major projects being considered – the reconstruction of a major road and the diversion of the existing main railway line, allowing IC trains to stop at the airport. District 18 also aims to decarbonize transport to and from the airport by encouraging behavioural change of passengers and employees.

Budapest Airport

Budapest is a focal city in Central Europe and its airport has seen significant growth during recent years from an annual 4.5 million passengers in 2001 to over 10 million in 2015 with an expected 13 million by the end of the year 2017. The number of served destinations has doubled during the same period (from 54 to 111 in 2016). The location of the airport within the city is clearly peripheral, however not far enough to promote city centre functions to settle here, like in many main hubs of Europe.

Urban development

Post 1989 developments first directed investments to the "western gateway" of the city, along the main motorway towards Vienna. Later commercial developments took over former industrial areas north to the city centre – contrary to other European cities where the major office and commercial corridor link the city centre with the airport. Here, dense residential neighbourhoods limited the development potential along the main transit route between the centre and the airport.

Location of BUD in Budapest
(Budapest Airport)

Economic growth and improving incomes have mobilized citizens and a major suburbanisation drive occured during the 1990s, almost until the breakout of the international financial crisis in 2008. New commercial investments, especially in retail and logistics, followed increased purchase power and established new peripheral centres (also helped by the new M0 motorway that was built). Since 2004, EU funding has helped the revival of the central city. However, all of these developments did not help the airport corridor to develop. There are limited and outdated transport connections to and from the city. There is a rather dangerous, protected highway leading to the airport. Plans are underway to rebuild this road in the near future enabling the redevelopment of obsolete residential and industrial land along the new corridor.

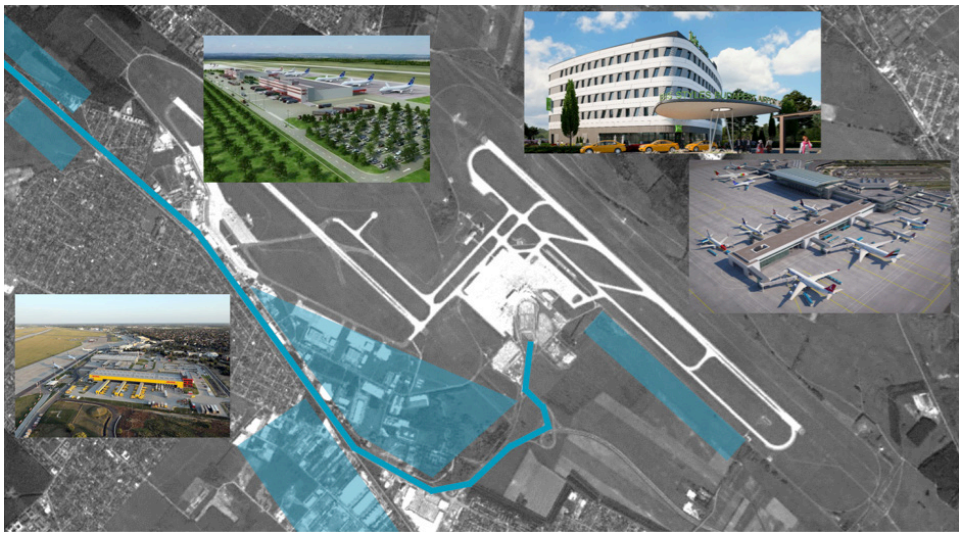
Future expansion

The areas along the high speed road are earmarked for future development. There are already several major developments underway or have been completed recently at the airport. DHL and TNT have moved to new facilities utilising brownfield land of the airport. Also, a new pier is under construction to increase capacity and enable servicing wide-body aircraft. A new hotel is to be opened later this year and there are plans to expand the cargo facilities during the coming years.

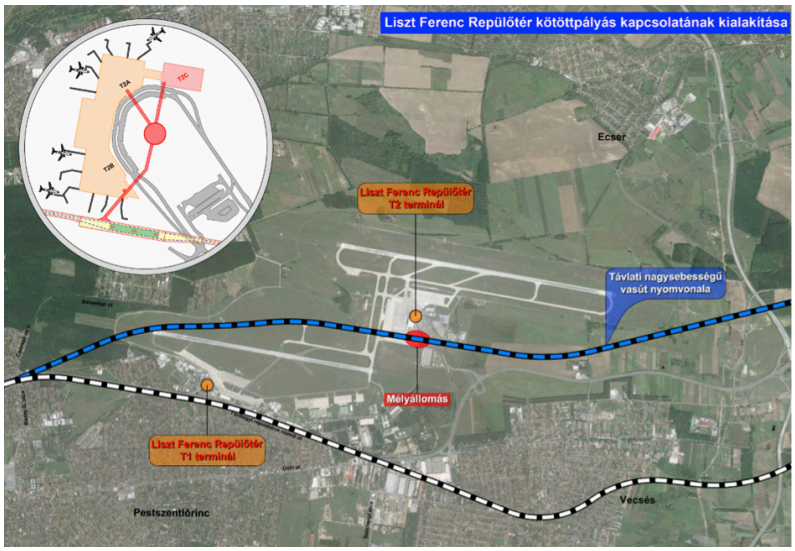
The most important decision was taken by the Hungarian government in 2015 to start planning of a new rail link that would connect not only Budapest but the rest of the country to the airport by rail. Since most earlier attempts to create a dedicated rail line between the inner city of Budapest with the airport or to extend the M2 underground proved unviable, the recent growth of traffic and a new idea to connect the InterCity trains from all regions (especially from the East and South-East) by diverting the existing 100a railway line to include a new underground station at the airport, and with check-in at the starting terminals.

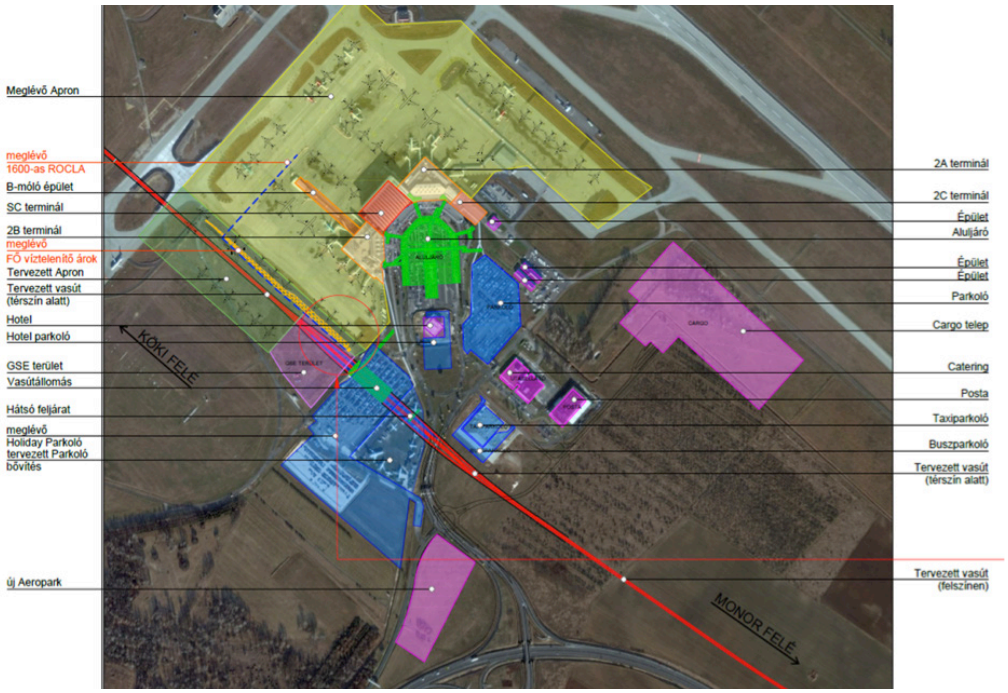
Trains could offer seamless connectivity from far away regions as well as the inner city of Budapest. The services may be developed to allow luggage check-in at the starting terminals.

The reconstruction of the road and railway link would allow new „city centre" functions to expand first near the terminal (practically between the railway and the airport terminals). Existing commercial areas would receive further investments as well as areas adjacent to the planned new cargo areas. There are further zones earmarked for development towards the East and the reconstruction of the high-speed road would enable a functional conversion of residential areas along it gradually.

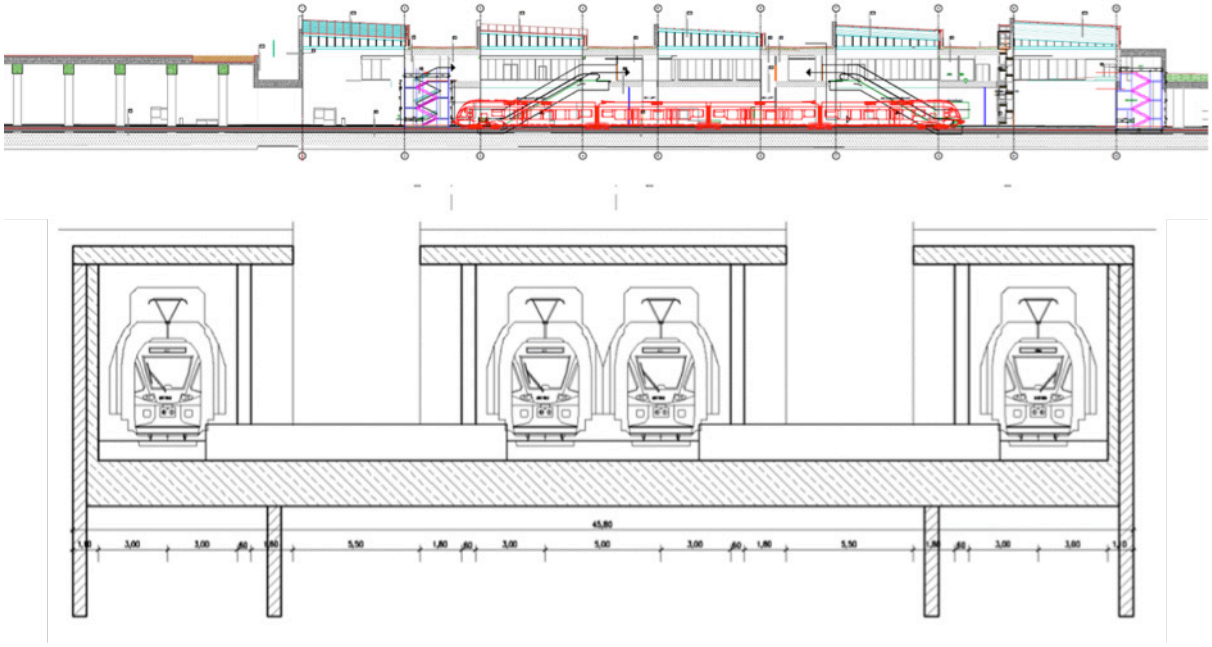


Future expansion of Budapest Airport (Budapest Airport)





Budapest Airport corridor (Budapest Airport)



Planned railway station under the surface of Budapest Airport (Budapest Airport)

Success through cooperation

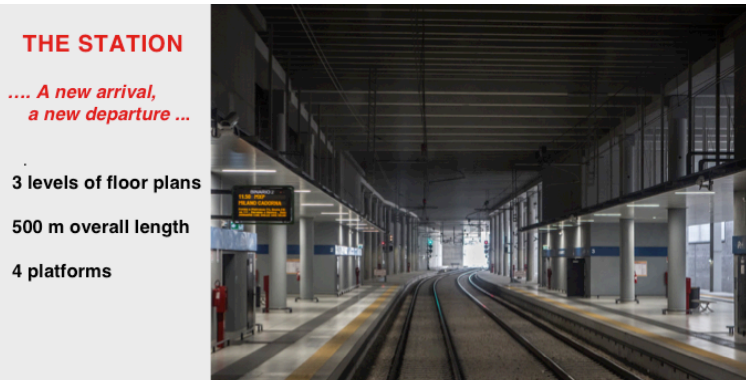
To facilitate this “airport city” development, the involved stakeholders (District 18, Vecsés, Budapest metropolitan government, Pest county, the airport operator and the air traffic controller organisation) together with the Hungarian Investment Promotion Agency have signed an agreement to work together in defining the Budapest Airport Region’s development strategy, align their interests and efforts and to promote the region as an investment zone. Currently, besides lobbying for the abovementioned infrastructural investments they are engaged in a number of “soft projects” that assist HR development in the region and influences passenger and employee behaviour promoting environmentally friendly modes of transport (LAirA, Interreg Central Europe programme funded project).

Massimo Corradi

Massimo Corradi is a TEN-T Projects Coordinator for SEA Milan Airports and has been in charge of securing EUR 29.7 million funding from the TEN-T Programme.

North Rail Access to Malpensa Airport

Phase 1 of the MXP North Rail Access project was completed in December 2016 connecting both Malpensa's terminals. Six months after the opening of the train station at Terminal 2, the airport saw a 30% increase in the number of rail passengers compared to the same period a year earlier. Phase 2 will further extend the rail line from Terminal 2, joining the Sempione and Gottardo international rail routes and final design is currently in progress. The project is a partnership between SEA Milan Airport and FERROVIENORD (the Lombardy Region rail infrastructure). The work was funded through four different EU grant schemes.



New railway station in T2 at MXP (SEA Milan Airport)

MXP North Rail project (SEA Milan Airport)

MXP North Rail Access

The main needs addressed by the project are providing railway connections to all Malpensa airport operational areas, Terminal 2 included and to convert the airport railway stations into "passing through" stations (instead of terminus stations), to insert the airport service as a strength element on long-haul railway services (Basel, Zurich, Lugano – Milan – Genoa, Bologna, Venice). With the new link, Milan Airport also intends to expand the airport catchment area with environmentally friendly transport alternatives and serve the Milan metropolitan area. Another goal is to speed up the connections.

The project is a good example of how cooperation between an airport operator, SEA, and a rail infrastructure manager, FERROVIENORD, leads to successful results. Linking air and rail is a delicate operation, but by cooperating closely, finding a win-win solution is more opportune.

In the table below, one can find the details of both phases of the project.

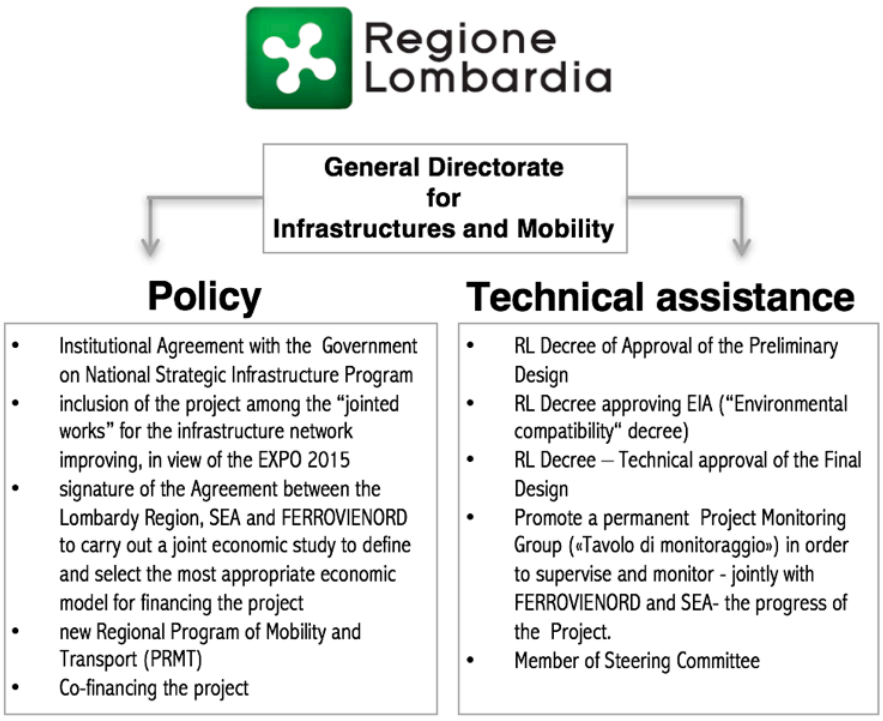
	Phase 1	Phase 2
Project type	Railway, connecting two airport terminals	Railway, extension of the railway line to the Simplon rail
Project size	3.4 km double track rail line interconnection T1-T1 + station at Terminal 2	4.6 km T2-Gallarate railway link (under study)
Stage of project	End of construction phase	Initiation phase
Ownership	Public	Public
Decision to build	2010	2014
Start of construction	September 2014	Expected in 2019
Delivery	October 2016	March 2018 (Final design) December 2023
Funding sources	€115.000.000	€4.132.000 (only study)
Type of contract	Design and Build	unknown

Key figures (SEA Milan Airport)

The role of the Lombardy region and the EU

Connecting Terminals 1 and 2 was the missing link to fully integrate Malpensa into the railway network. The Lombardy region played a crucial role in this as one of the main stakeholders. The region has been and still is the main actor for the development of Malpensa airport, and is seen as a strategic driver to support the regional economy. To reduce the dependence on road transport, the region is directly concerned by the enhancement of the core infrastructure network and in particular the regional railway system, within which the Malpensa branch line falls. Since 2002, once completed the process of transfer of administrative powers from the national level, Lombardy Region has taken over the powers of the Ministry for Infrastructure and Transport as the public Body entitled to grant the concession to manage the regional railway network (currently: FERROVIENORD).

Malpensa airport is included in the TEN-T Trans-European Transport Network and the implementation of the "MXP North Rail Access" represents its functional completion, in line with the guidance provided by the EU White Paper on Transport "Roadmap to a Single European Transport Area" (COM/2011/0144) where, among the "Ten goals for a competitive and resource efficient transport system" (point 2.5) is a set of benchmarks to deploy a "fully functional and EU-wide multimodal TEN-T core network by 2030" (goal 5) and to "connect by 2050 all core network airports to the rail network" (goal 6).



Lombardy Region as a stakeholder (SEA Milan Airport)

MXP North Rail Access, overview (SEA Milan Airport)

Piet Demunter

Piet Demunter is the Director Strategic Development at Brussels Airport Company. After 6 years working at Unilever, Piet Demunter joined Brussels Airport Company in 2008. As a Director Strategic Development, Piet is responsible for Strategic Planning, Project Management, the commercial relations with airlines and cargo & logistics clients, sustainable development and public affairs.

Brussels Airport Company (BAC) has developed its Strategic Vision 2040 that is supported by a long-term development plan for the airport. Improving accessibility of the airport will be a major enabler in order to realise this vision. By the year 2040, Brussels Airport has set itself a target that 50% of the passengers and the airport employees will come by public transport, bicycle or on foot, as compared with the current 30%. In order to achieve this Brussels Airport aims to further develop its role as an intermodal hub with a brand-new building that will welcome new rail and light rail connections. This will improve connectivity for the Airport and help to reduce traffic congestion in the region around the Airport.

Brussels Airport aims to be an advanced transportation hub by 2040. The challenge is to combine seamlessly different rail types (heavy & light rail) and aviation in order to serve the very different needs of passengers and employees in terms of surface access. Holiday travellers, for example, carry suitcases making it more difficult to board carriages. Where employees need transport subscriptions to answer their communing needs, for passengers it is important to have integrated air-ground transport tickets.

Planned new light rail access at BRU (BAC)

The airport growth perspective and how it affects the surface access

The efforts for promoting surface access go back to the World Expo in 1958 hosted by Brussels, when Brussels Airport was the first airport in Europe to introduce an air rail connection between a city centre and an airport. After the collapse of the Belgian flag carrier Sabena in 2001, it took BRU 14 years to gain the same traffic numbers again.

An important question to ask is “how do we bring all these people, both passengers and employees, to the airport”? Today, 70% of all people travelling to Brussels airport uses a car and only 30% uses public transportation, such as train or bus. The number of employees using public transport is even lower. This is due to the fact that employees often start their shifts very early or stop working very late. Very early and late in the day, there is not enough offer to reach the airport by public transport. Therefore, BAC wants to cooperate closer with public transportation companies. By 2040, 50% of all employees should go to work by bike or by public transportation.

To achieve this, BRU must become an intermodal hub that meets the needs of all kind of users of the airport. Today, BAC is already working on the improvement by planning a light-rail link (from the Heizel and NATO areas) and more (tram) bus services to and from the airport.

A programme to enable employees to come to the airport by e-bike is also being considered together with the improvement of cycling routes to the airport. To make flying seamless, it would be ideal if there could be a joint ticketing system allowing passengers to book their tickets to come to the airport together with their plane tickets. Better connections to international train stations in the Netherlands, France, the UK and Germany is therefore essential. The airport is already well-connected by train on a national level as 85 Belgian cities have a direct connection to the Brussels Airport.

The then state-of-the-art departure hall at Brussels Airport in 1958 (Photo P. Bastin)

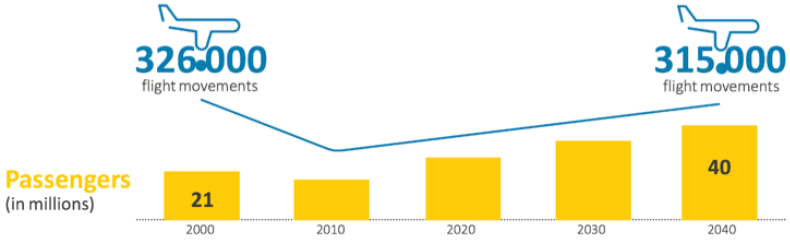
Capacity versus growth

On a global scale, passenger numbers and aircraft movements are expected to grow dramatically. The “Strategic Vision 2040” provisions that passenger numbers should raise from 21 million in 2000 to 40 million in 2040. The increased amount of passengers could lead to congestion due to a lack of capacity at airport infrastructure level, both land and airside.

Brussels Airport Company wants to keep growing at the same speed to reach the 40 million-target. This means that the amount of passengers will grow with 3.8% per year. Not only should the passenger numbers raise, also the amount of cargo should grow by 4.7% per year. These numbers are the same as the expected growth in global air traffic.

In order to make this growth compatible with the neighbouring citizens Brussels Airport aims at reducing the number of flight movements at the same time from 326.000 in 2000 to 315.000 in 2040. This must be enabled by attracting airlines that make use of bigger aircraft with a higher capacity and by striving for a higher occupancy rate on flights.

Planned expansion of BRU by 2040 (BAC)



Expected passenger and movement growth by 2040 at BRU (BAC)

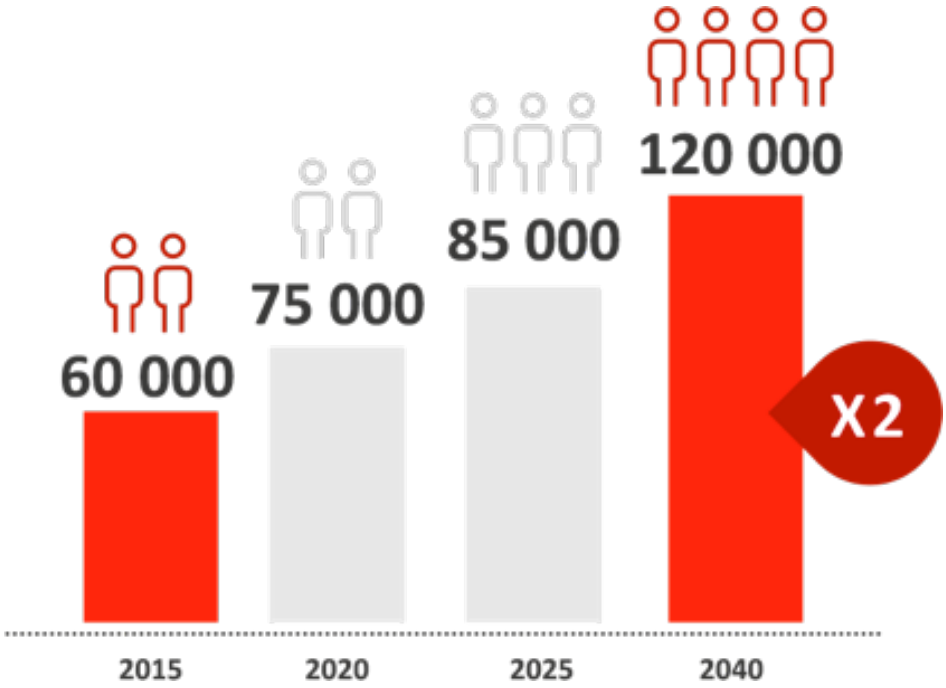
Economic importance

Belgium depends strongly on export, and therefore, Brussels Airport is a key link in the Belgian trade chain. It is important that Brussels Airport becomes more than an airport to be able to play its role as a hub for economic development.

Next to an airport, BRU must be a place of business, a logistics platform and an intermodal hub. As a catalyst Brussels Airport wants the economy of Belgium to grow further and holds several trump cards to achieve this. Increased direct connections stimulate the growth between companies throughout the world.

The airport is also a source of economic activity that creates jobs. Next to the passenger and cargo numbers, BAC wants the amount of employees to increase as well from 60.000 in 2015 to 120.000 by 2040.

From 'just' an airport to a multifunctional intermodal hub (BAC)



Job growth by 2040 at BRU (BAC)

Conclusion

In conclusion, the challenges for Brussels Airport in the future will be to keep the airport accessible when it becomes a bigger hub, to extend the catchment area to areas abroad, and to increase public transport for early and late moments in the day and better HST-connections with neighbouring countries.

Brecht Vanhee

Brecht Vanhee is a Project Manager at SNCB Europe, the Belgian international rail company. Brecht has been working for SNCB/BeNeRail for the past 12 years and is active on both the commercial and IT side, managing the air rail project.

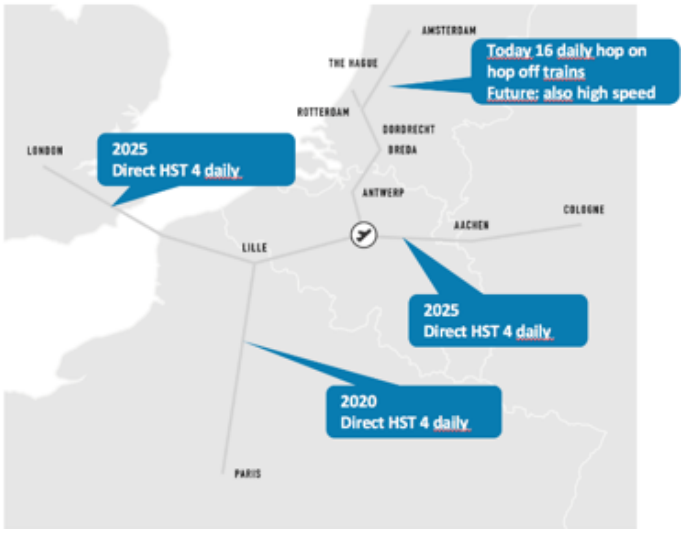
Air rail partnerships: connecting flights with national and international train services

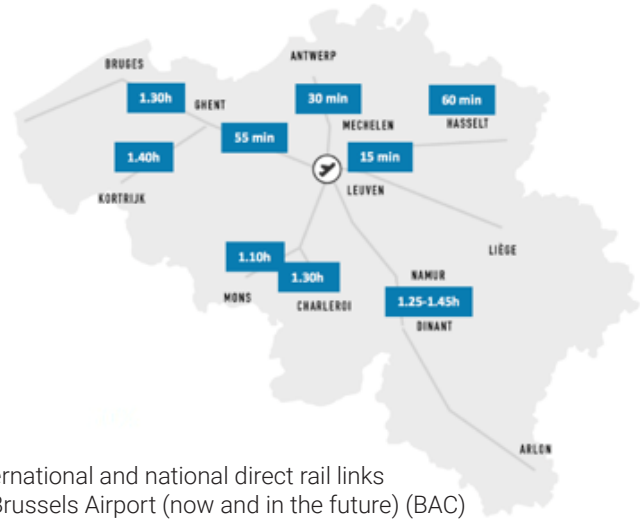
BeNeRail International, a technology joint venture between the Belgian national railway company SNCB/NMBS and Nederlandse Spoorwegen (NS) of the Netherlands, was the first to launch a free-flow air-rail codeshare product. The product enables airlines to only pay for the passengers who actually travel on the air-rail journey segment, meaning the railway operator does not need to block seats on board their trains. This solution is a multi-carrier, multi-channel and multi-modal. It is currently being used by a number of airlines, rail operators and airports.

The Air Rail programme

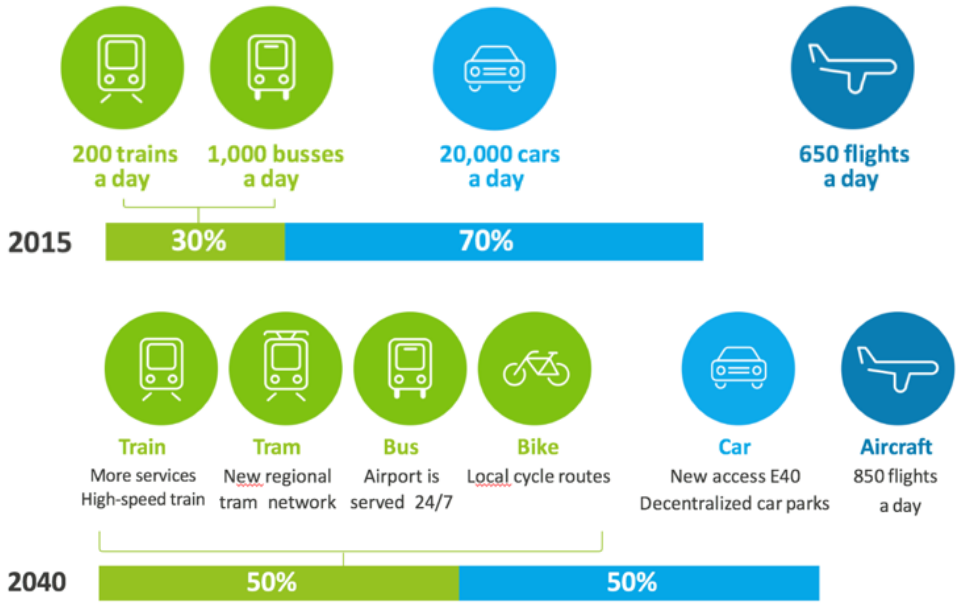
SNCB Europe and Brussels Airport (BRU) have created a joint product to connect flights with both national and international services in a new "Air Rail" programme. SNCB Europe is helping Brussels Airport to enlarge its catchment area by working on better connections with neighbouring airports via international (mostly high speed) trains.

Today, the SNCB already has a dense network of trains connecting the airport directly with 83 destinations served during the week and 72 in weekends. On an international level, the SNCB keeps investigating possible ways to address the international market, mainly by connecting Brussels airport with other international airports to extend its catchment. Airports within less than 300 km from BRU, such as Amsterdam Schiphol, Frankfurt am Main or Paris Charles De Gaulle, can easily be connected by high speed train (HST).





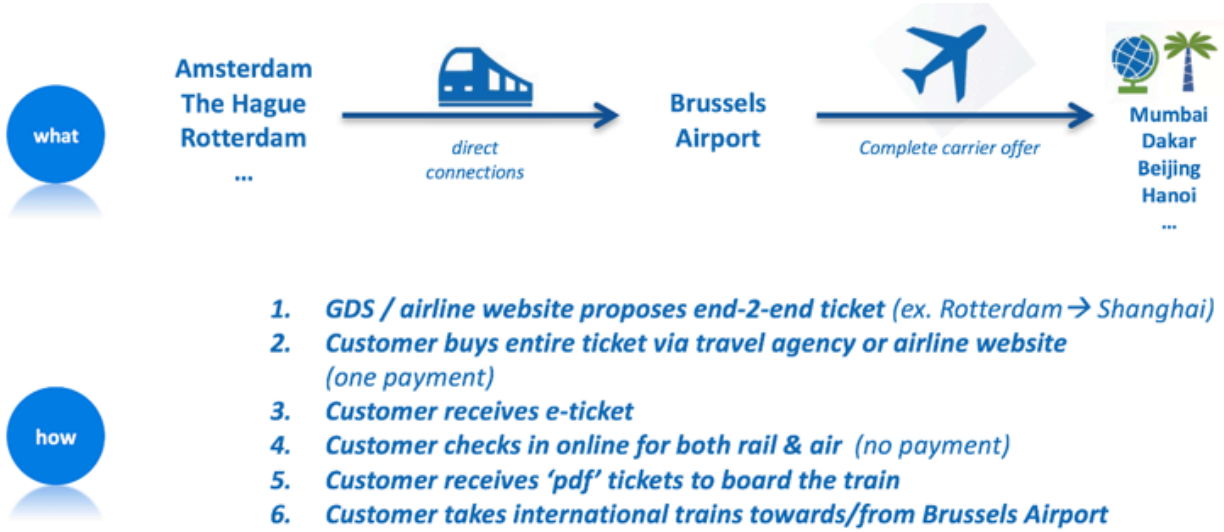
International and national direct rail links to Brussels Airport (now and in the future) (BAC)



Means of transport used by passengers to go to BRU (BAC)

Modal share of surface access at Brussels airport

If the train really wants to compete with (short haul) planes, it is important to create a joint ticketing system to remove the annoyance of needing different sales applications to book a combined rail and air journey. The new Air Rail platform, created by BeNeRail, offers travel agents the possibility to book both rail and air tickets in one application.



Brussels Airport as an intermodal hub (SNCB)

Brussels Airport will serve as a hub for all the transportation modes available on Air Rail. If a train station possesses a three-digit IATA-code, the train ticket can be shown and bought on global distribution systems (GDS), the booking tool for travel agents. Today, Brussels Airlines, Thalys International, ICE (DB) and the Intercity Trains (SNCB and NS) are taking part in the project. The application comes with some unique features. There are no seat allotments required, and travel agents are able to book tickets up to one year in advance (instead of the usual three months). Transfer taxes won't be in place and seat reservation on HSTs will be available. The customer receives one e-ticket for both air and rail and can check-in online.

Challenges for the future

An important next step in the development of Air Rail is to find a solution for the baggage handling. For the comfort of the client, baggage check-in and pick-up should be made available in railway stations if the first or last leg of a journey is operated by a train. Another important next step is to provide more railway stations with an IATA-code. This is in line with the European mandate to show connections including a rail Segment on the first page of the primary Air Display.

The Air Rail programme would like other railway companies and airlines to join the programme in the future.

Dr. Barbara Jensen Vorster

Barbara Jensen Vorster, Senior Executive Manager Marketing and Communication, Gautrain Management Agency.

Gautrain Management Agency, the owner of the rail and bus link between the Johannesburg O.R. Tambo International Airport and Sandton, is conducting a study to improve accessibility to public transport from its stations and enhance connectivity with other modes of transport, including non-motorised transport to support the Gautrain system. Enhancing public transport network and infrastructure around stations encourages better pedestrian movements and improves safety. The study will also serve as an input into the planning of future public transport services in the region. It is envisaged that future bus routes and pedestrian corridors will be identified as well as the feasibility of a bicycle sharing around the railway stations. According to Dr. Jensen Vorster, the sector needs innovation, and therefore, professionals must think "first mile last mile".

Global challenges: technological innovation

The smartphone has emerged as the most important urban mobility invention in public transport and operators often are ignoring this trend. The rise of e-haling, car sharing and ride sharing are challenging market dynamics, especially for the AirRail market. The transport sector should innovate faster. People do not download the app of one transport company anymore, they want one global app for one kind of service, like Uber when you want a ride home. App-based on demand transport implies that a commuter's travel demand can be met real time, not linked to any fixed routes and time tables. "Mobility as a Service" (MaaS) brings together multiple modes in a single app or interface, inclusive of routing, timing and payment options.

In its study "The role of regulation in preparing transportation for the future", the European Parliament stated that 'mobility can now be seen as an information service with physical transportation products, rather than a transportation product with additional services'. This is what transportation professionals (big boys with big toys) do not seem to be willing to understand. The industry must develop on demand transportation to commuters. Passengers must choose the AirLink as preferred mode of transport to and from the airport rather then the industry forcing them. To achieve this, price is important, because people now use public transport if they do not have a car – or even if they have a car and public transport is more convenient.

Gautrain

Gautrain is an 80 km rapid rail transport connection. It has 10 stations which include Hatfield, Pretoria, Centurion, Midrand, O.R Tambo International Airport, Rhodesfield, Marlboro, Sandton, Rosebank and Park. It consists of three services:

1.North-South general passenger service running between Hatfield and Park stations.
2.East-West general passenger service running between Rhodesfield and Sandton stations.
3. A dedicated Airport Service running between Sandton and O.R Tambo International Airport stations.

The East-West and Airport services are operated with combined train sets that serve both services but with dedicated cars for the Airport service.

Gautrain Network (Gautrain)

The Gautrain railway network is integrated with the Passenger Rail Agency of South Africa (PRASA) network at Hatfield, Pretoria, Rhodesfield and Park stations. There are 36 bus routes available; 125 buses operate on 430 km Gautrain bus routes and 7 'Midibus' routes with 14 "midibuses"(22x seaters).

Challenges for Gautrain

The main challenges for Gautrain are the proliferation of gated communities, and low density residential developments which makes walking to a station difficult. Medium-high density developments are located beyond a walkable distance from the stations and or bus stops. Competition of Uber and meter taxi is still high, but there is a safety concern around this means of transport as more and more taxi drivers are physically assaulting Uber-drivers. The biggest challenge during the last two years, however, was the decrease of airport ridership.

The objectives of Gautrain are to increase the ridership of the Gautrain System, especially the airport link, to promote integration of public transport at Gautrain stations, to increase utilisation of public transport and to identify future public transport / Non-Motorised Transport (NMT) projects. Next to that, Gautrain is also looking to increase the accessibility to the Gautrain system, to reduce the current high usage of private vehicles and to ensure safety of commuters.

Gautrain is currently working on partnership with Uber, but in South Africa, the legal status of Uber is yet unclear, which delays the project. Gautrain wants people to use Uber to go to the station where they can take a train to the airport.

Benefits for commuters and Gauteng Province

The Gautrain project is in the advantage of both the Gauteng province as of the commuter who wants to go to Johannesburg O.R. Tambo Airport. The local authority welcomes less traffic congestion and reduced accidents/ fatalities, which also leads to more carbon emission saving. Most importantly, the project creates jobs and contributes to the economic growth of the region.

Gautrain intends to offer passengers a "safe and reliable mode of public transport that is time, carbon emission and cost saving which all leads to a healthier way of living for passengers and neigbouring citizens".

Kesagee Nayager

Kesagee Nayager is the Marketing and Communications Executive at Bombela Concession Company and she oversees the successful cooperation between Gautrain and the South African low-cost carrier, Mango Airlines.

Annually over the holiday season in December-January, Gautrain experiences a significant decline in ridership as regular commuters go on holiday. To increase ridership over this period, Bombela Concession Company (BCC) developed a strategic partnership with a low-cost airline which yielded great results for both the Gautrain and the airline.

In 2006, BCC was contracted by the Gauteng Provincial Government in South Africa to design, operate, maintain and partially finance the Gautrain project. Gautrain is a public-private-partnership between BCC and the Gautrain Management Agency (GMA). Today, approximately 55.000 passengers use the train and 22.000 use the bus per week. Gautrain links the Johannesburg O.R. Tambo international Airport with the city centre.

Challenge: ridership in low season

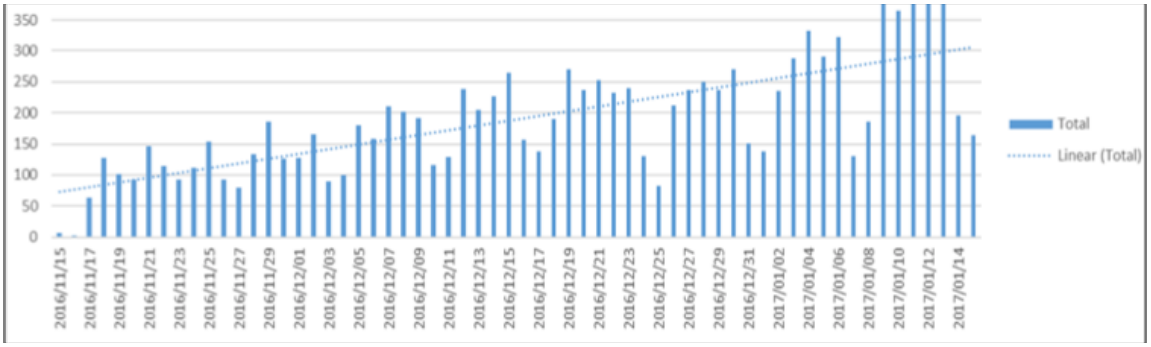
Ridership, however is seasonal. Over the December-January period, ridership decreases significantly creating a financial exposure for BCC's shareholders. The challenge was to devise an integrated marketing campaign to incentivise and increase ridership over this period. BCC came up with a solution by starting a marketing campaign with a two-pronged approach, one for airport service and one for the general passenger service.

The Gautrain-Mango campaign: a partnership between a train operator and a LCC

Gautrain handed out 240.000 Gautrain "Gold Cards" onboard Mango flights that were inbound to Johannesburg. The Gold Card would normally have to be purchased by passengers before the service could be used. Some of the cards were loaded with value as an incentive for the passenger to visit the train station upon arrival to check whether they received one of the lucky pre-loaded cards. If they did not win a free ride, the passenger was already in the station and likely to then load value onto the free card and use the train service. They were not left empty-handed as the free, yet uncharged, Gold Card is a reusable card which passengers can keep using afterwards.

The campaign was mainly marketed on social media, which seemed the most efficient way to reach the target market. Part of the campaign was to be sure that passengers kept these cards after the campaign period to continue using Gautrain to go to and from the airport. After the campaign, the number of users kept increasing faster than before the campaign as can be seen on the graph above.

Mango-Gautrain campaign for increasing ridership (BCC)



Increased ridership for Gautrain since the Mango-Gautrain campaign (BCC)

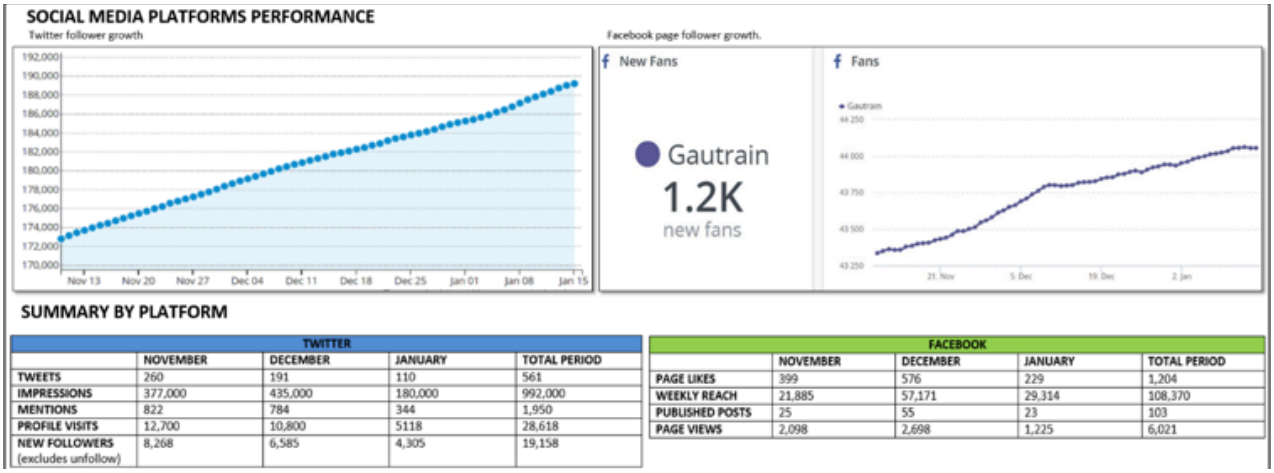
Creating online visibility

To promote an air rail link, airlines can play a crucial role. It is however not always easy to convince an airline to take part in a promotional campaign as their gains are less direct than the gains for the train operator. Therefore, it is important to seek to find a win-win solution for all parties. In the Mango-Gautrain-case, the visibility of the airline increased enormously.

Online promotional banners (BCC)

Measuring is key

A very important aspect of the campaign must be to measure the result of it, in this case usage and ridership, to know if the campaign really led to a change in behaviour of passengers. In order to achieve goals, it is essential to use as many marketing platforms as possible to spread the message as quickly as possible.



TWITTER	NOVEMBER	DECEMBER	JANUARY	TOTAL PERIOD
TWEETS	260	191	110	561
IMPRESSIONS	377,000	435,000	180,000	992,000
MENTIONS	822	784	344	1,950
PROFILE VISITS	12,700	10,800	5118	28,618
NEW FOLLOWERS (excludes unfollow)	8,268	6,585	4,305	19,158

FACEBOOK	NOVEMBER	DECEMBER	JANUARY	TOTAL PERIOD
PAGE LIKES	399	576	229	1,204
WEEKLY REACH	21,885	57,171	29,314	108,370
PUBLISHED POSTS	25	55	23	103
PAGE VIEWS	2,098	2,698	1,225	6,021

Increase of Twitter-followers for Gautrain (BCC)

Social media is essential to increase the visibility of a brand, and to measure the impact at the same time. In the graph, the increase in followers on twitter is shown since the start of the campaign.

Laverne Dimitrov

Laverne Dimitrov is a Transport Specialist at the Development Bank of Southern Africa (DBSA). She has worked on some of the largest transport infrastructure projects on the African continent and is an external advisor to the Korean Ministry of Finance and the US Trade Agency.

Innovative financing models and joint partnerships are boosting air-rail developments in Sub-Sahara Africa following the regional policy reforms and uninhibited economic growth. Regions are looking to invest in brand new airports and provide better intermodality with standard gauge railway lines.

Opportunities and challenges for African aviation

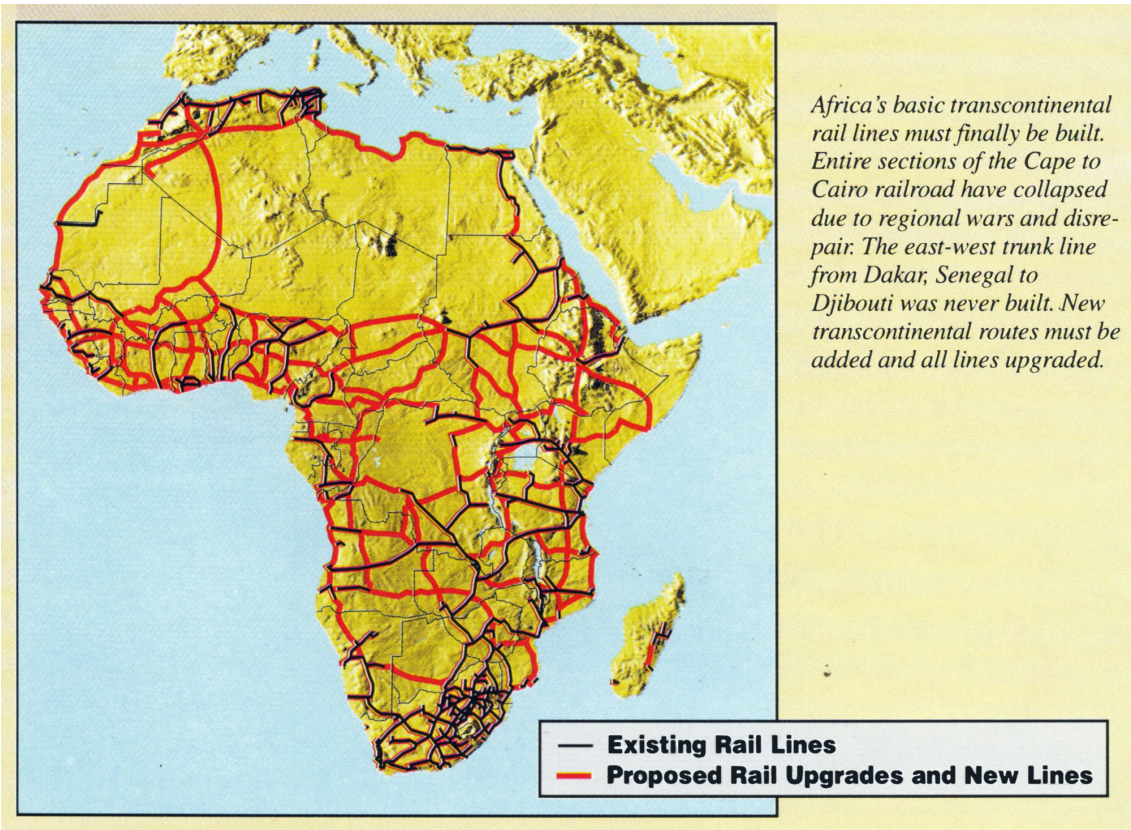
The IATA predicts that passenger numbers in Africa will grow by 4.7% per year to reach 294 million by 2034, almost tripling from the 107 million recorded in 2015. To be able to handle all these extra passengers, it is a priority to invest in regional airports already operating significantly above their designed capacities. The anticipated growth in passenger volumes is being fueled by the long-term economic growth prospects. While many routes between Africa and countries outside of Africa have been liberalised to a significant extent, most intra-African routes remain largely closed, subject to restrictive bilateral agreements which limit the growth and development of air services. This has limited the potential for aviation to contribute to economic growth and development within Africa. Countries where the highest growth is expected are Nigeria, Ghana, Angola, Ethiopia and Kenya.

Air Rail in (South-)Africa

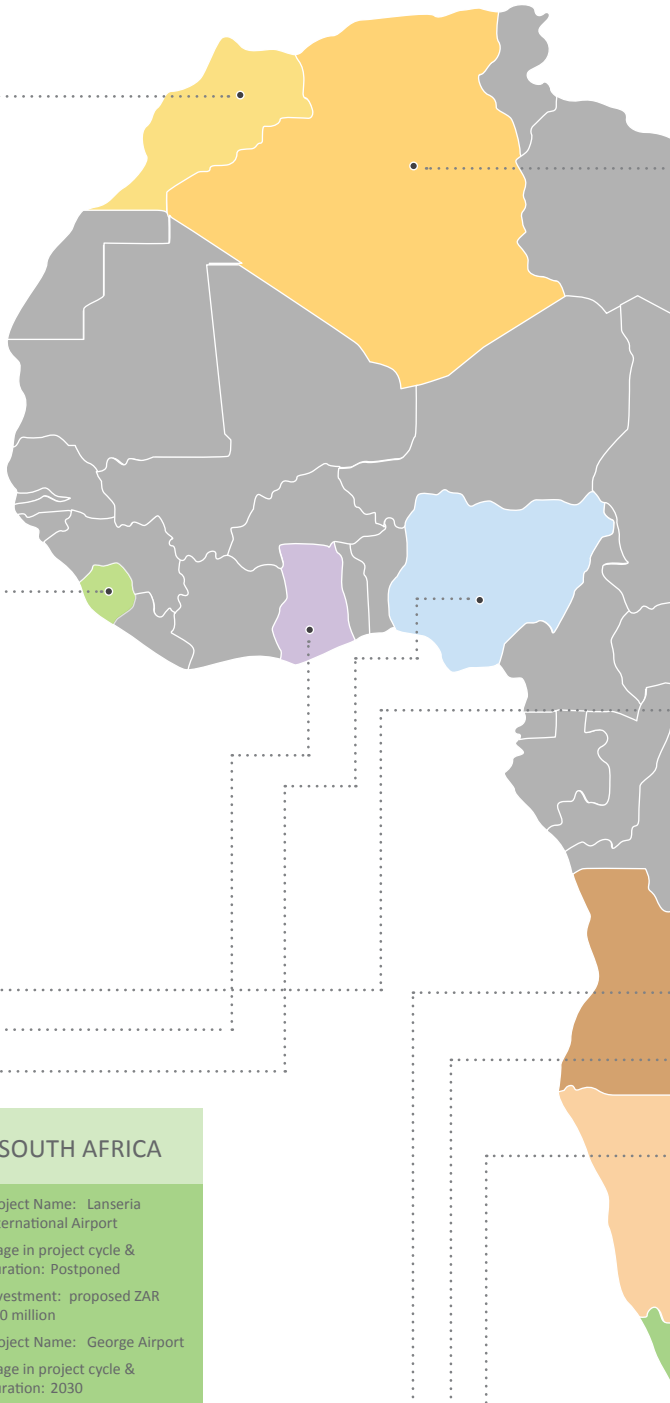
The map shows the existing rail lines in black, added with the proposed rail upgrades and new lines for the future in red. It is clearly visible that South Africa already has a dense rail network. With around 32.000km of rail line, the potential to connect the rail network with airports is high.

The DBSA has become prominent in the financing of airports and rail infrastructure through projects in South Africa such as the Gautrain in Johannesburg and the city programme in Cape Town. Other countries where DBSA is funding projects are Kenya, Ghana, Rwanda, Madagascar, Angola, Ethiopia, Zimbabwe and Swaziland.

Africa, existing and proposed rail lines
(Schiller Institute)



PROJECTS COVERED AT AFRICA'S AIRPORTS



MOROCCO

Project Name: Houari Boumediene International Airport

Stage in project cycle & Duration: end 2016 - end of 2017

Investment: USD 130 million

SIERRA LEONE

Project Name: Mamamah Airport

Stage in project cycle & Duration: Starting in December 2016

Investment: Unknown

NIGERIA

Project Name: Nnamdi Azikiwe International Airport

Stage in project cycle & Duration: Construction of 2nd runway, comprehensive renovation of dilapidated terminal infrastructure. The project was designed to increase the airport capacity

Investment: USD 500 million

GHANA

Project Name: Temale Airport - Phase one

Stage in project cycle & Duration: 2014 - 2016

Investment: USD 130 million

Project Name: Kotoka International Airport

Stage in project cycle & Duration: March 2016 - July 2017.

Investment: USD 400 million

UGANDA

Project Name: Entebbe International Airport Expansion

Stage in project cycle & Duration: June 1 2016 and expected to be complete by December 2017

Investment: USD 12.7 billion

NAMIBIA

Project Name: Walvis Bay International Airport,

Stage in project cycle & Duration: Completed 2016

Investment: ZAR 100 million

ZAMBIA

Project Name: Kenneth Kaunda International Airport Expansion

Stage in project cycle & Duration: June 2015 - ongoing

Investment: USD 360m million

ANGOLA

Project Name: New Luanda, Angola International Airport

Stage in project cycle & Duration: 2004 - 2017

Investment: USD 3.8 billion

SOUTH AFRICA

Project Name: Lanseria International Airport

Stage in project cycle & Duration: Postponed

Investment: proposed ZAR 200 million

Project Name: George Airport

Stage in project cycle & Duration: 2030

Investment: Unknown

ALGERIA

Project Name: Development of Airport Marrakech Menara

Stage in project cycle & Duration: 2014 - 2018

Investment: USD 910 million

SOMALIA

Project Name: Bosaso airport expansion - Phase 2

Stage in project cycle & Duration: May 2016- ongoing

Investment: Unknown

ETHIOPIA

Project Name: Bole International Airport

Stage in project cycle & Duration: Already started - 30 % completed

Investment: USD 345 million

Project Name: Addis Ababa International Airport

Stage in project cycle & Duration: To be completed in 2024

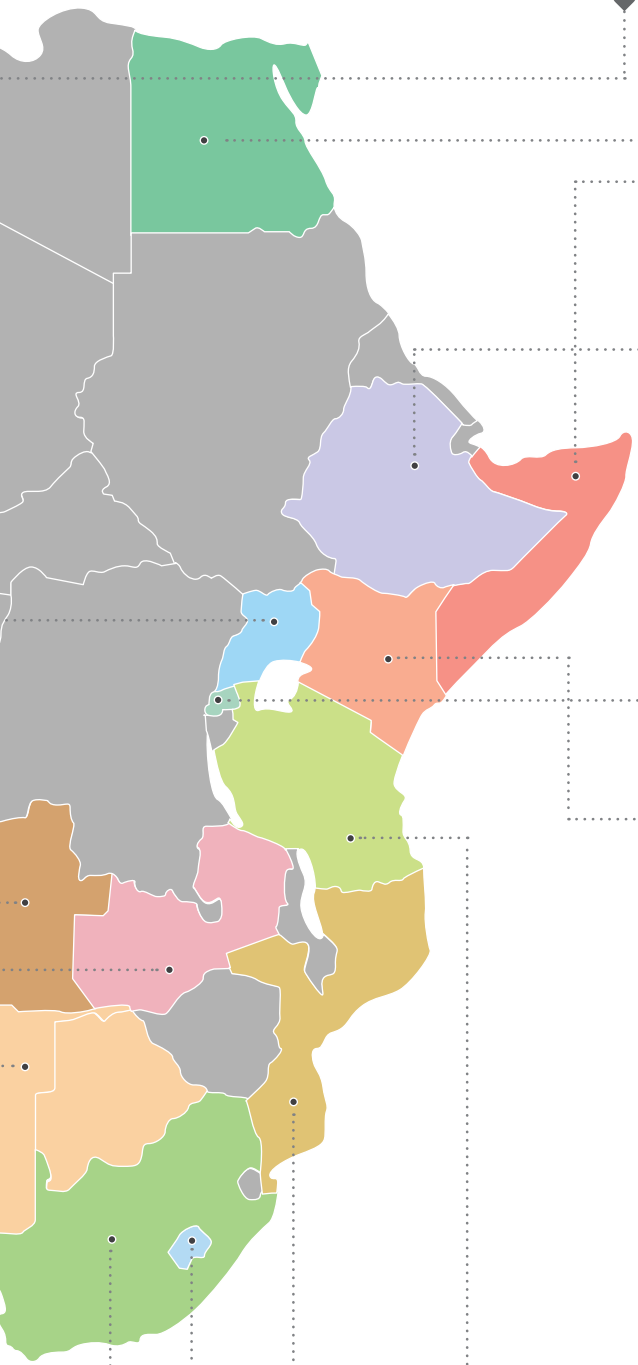
Investment: USD 4 billion

EGYPT

Project Name: Cairo International Airport

Stage in project cycle & Duration: Ongoing since 2011

Investment: USD 436 million



SEYCHELLES

Project Name: Airport upgrade project

Investment: USD 150 million

RWANDA

Project Name: Kigali International Upgrade

Stage in project cycle & Duration: Estimated project completion date: Phase 1 in December 2018, Phase 2 in October 2019

Investment: USD 818 million

KENYA

Project Name: J omo Kenyatta International Airport

Stage in project cycle & Duration: Complete end 2018

Investment: Unknown

Project Name: Malindi Airport Expansion

Stage in project cycle & Duration: December 2017

Investment: USD 7 million

LESOTHO

Project Name: Lesotho Airport Modernisation

Stage in project cycle & Duration: Complete end 2016

Investment: USD 15.3 million

MOZAMBIQUE

Project Name: Maputo Airport

Stage in project cycle & Duration: Completed by the end of 2016

Investment: USD 70 million

TANZANIA

Project Name: Kilimanjaro Expansion Airport

Stage in project cycle & Duration: End date 2017

Investment: USD 40 Million

Project Name: Dodoma Airport Expansion

Stage in project cycle & Duration: End 2016

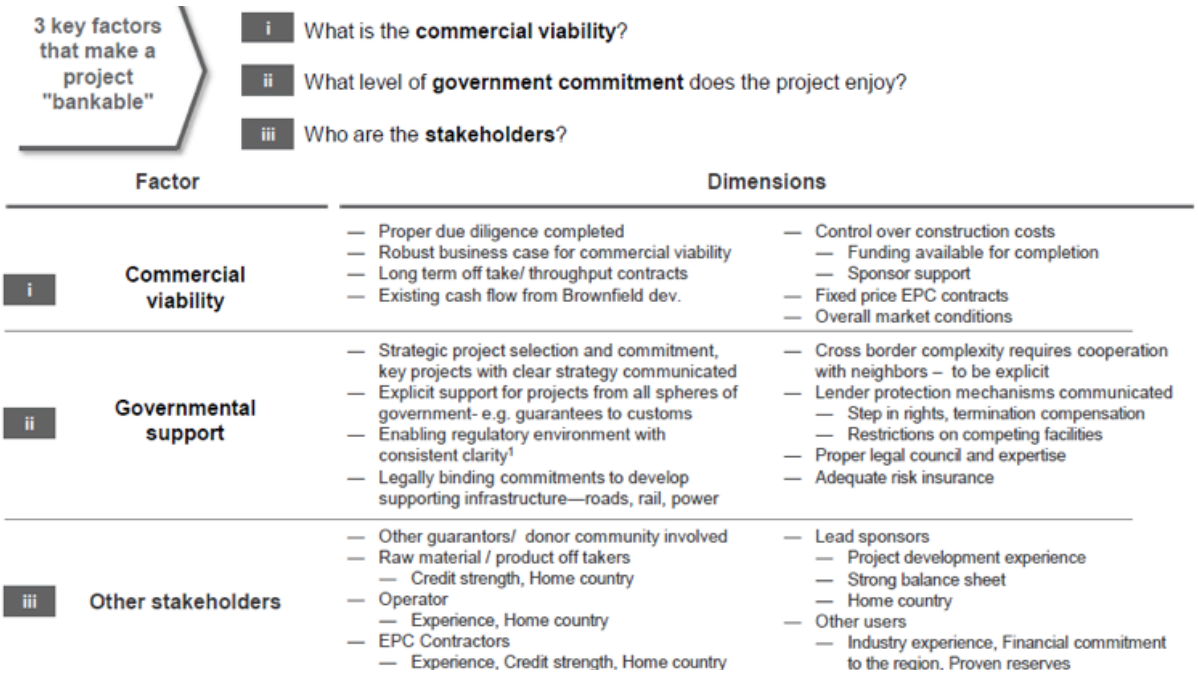
Investment: USD 5-8 million

Project Name: Julius Nyerere International Airport - Phase 2

Stage in project cycle & Duration: Start End 2015 - ongoing

Investment: USD 110 Million

Projects covered at Africa's airports (AASA)



International Best Practices on Funding Economies: Considerations for bankability (ASII)

How to make an air-rail project "bankable"?

When air-rail projects want to receive bank funding, it is key to meet all five criteria of the "Investment Appraisal Value Chain". The project must be feasible, financially an economically viable and sustainable. It must comply with legislation and it must support the national economy. Before approaching an investment bank, it is crucial to clearly show the commercial viability of the project. Projects that enjoy a certain government commitment are more likely to get funded by a bank. For banks, a project becomes more attractive when there are multiple stakeholders involved.

Revenue generation for transportation: funding options

Regional governments, such as provinces, can help to generate revenue for funding transportation projects. Instruments like congestion charges, motor vehicle licensing fees, fuel and transport levies and provincial air passenger footprint duties (South Africa) can be used to collect a budget which can be invested in infrastructure projects. Local governments, like municipalities, can contribute to projects via e.g. community infrastructure levies, and the private sector can contribute by adding sales taxes or letting them bid at an auction for the exploitation of a station.

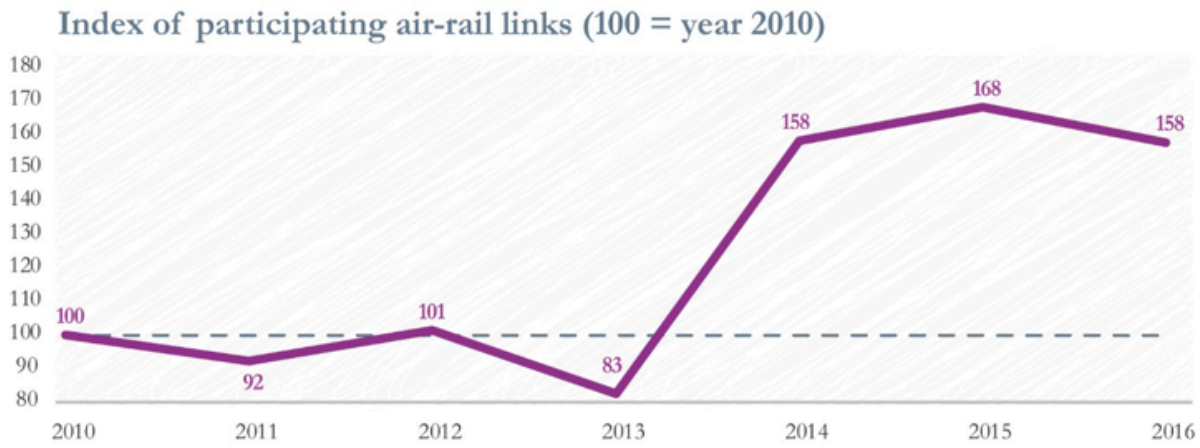
Richard Brown

Richard Brown is a consultant at North Star, specialising in air-rail intermodality.

The North Star Global Air-Rail Market Share report has been issued annually since 2013 and provides insight and analysis into the market share figures and trends of participating air-rail links. It is a platform for participating air-rail links to gain understanding on what actions can influence passengers when choosing a transport mode to travel to/from airports. The report is based on a study of nine leading air-rail operators across Europe, Australia, Asia and South Africa.

A complete report: Market share for Air-Rail Operators

North Star compiles an in-depth and comparative report on market share annually for air-rail Operators. The initial findings were that there was no "league table" of market shares but year-on-year change in market shares is important. The report seeks to understand those changes.



Index of participating air-rail links (North Star)

UK: Strategic railway consultancy, North Star has released its 5th Annual Global Air-Rail Market Intelligence Report, looking into global trends in airport rail link services. The findings again clearly indicate that air-rail services continued to be a vital component of global aviation, in fact, across our sample of nine operators, more than 44 million train passenger movements were experienced during 2016.

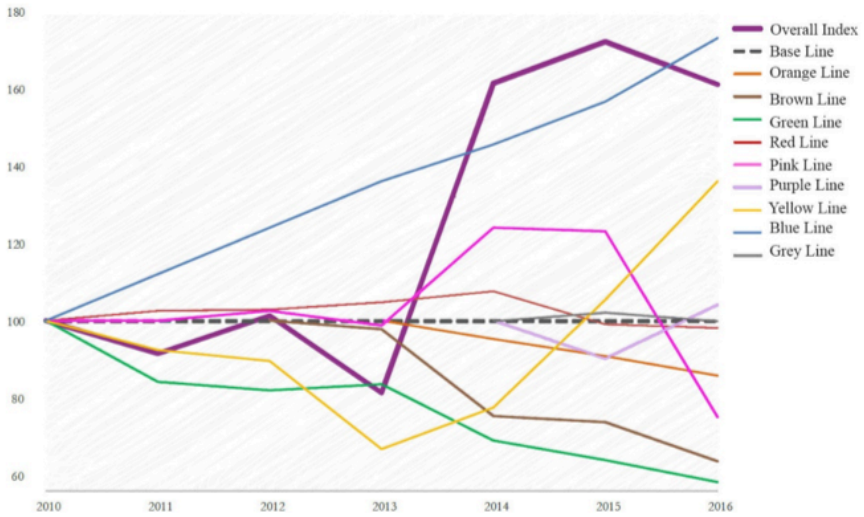


Figure 2 Index of participating Air-Rail Links 2010 to 2016 (by individual operator)

Growth in market share of participants in the study (North Star)

This year there were three operators that grew their share. Previously marketing was seen as the biggest agent of change. Marketing expenditure as a percentage of turnover (table 1 middle columns), has remained the same or decreased slightly for all participants in 2016.

Does online presence or low prices affect market share?

		% of Turnover spent on Online Marketing			% of the Marketing budget spent on Online marketing		
Link	Change in Market Share 2016	2014	2015	2016	2014	2015	2016
ORANGE LINE	-0.47%	0.94%	1.80%	2%	24%	35%	53%
BROWN LINE	-0.95%	-	-	-	8%	8%	10%
GREEN LINE	-0.53%	0.8%	1.2%	1.1%	20%	23%	23%
RED LINE	-0.10%	-	-	-	20%	15%	17%
PINK LINE	-4.51%	-	0.01%	0.02%	< 0.5%	1%	3%
PURPLE LINE	1.30%	0%	<1%	-	0%	7%	11%
YELLOW LINE	2.89%	0.57%	0.50%	2.1%	33%	16%	45%
BLUE LINE	1.53%	2%	2%	2%	8%	1-4%	1%
GREY LINE	-0.20%	-	0.10%	0.10%	-	1.50%	1.70%

Budget spent on marketing per ARO (North Star)

The effect of online marketing on market share of operators is hard to prove. The operator with the highest increase of market share spends 45% of the marketing budget on online initiatives while the second highest barely has an online presence and spends 1%. Marketing spent at the Airport specifically, varies a lot between participants. All top three MS performers spent less/same on traditional marketing. Marketing spent at the Airport specifically, varies a lot between participants. The operator with the highest MS increase, reduced airport spending significantly, while the second highest increased Airport marketing and spends by far the most at the Airport of all the operators. This presents some evidence that increased marketing spending could increase market share but that traditional marketing methods may not be the most effective for all operators.

	ORANGE LINE	BROWN LINE	GREEN LINE	RED LINE	PINK LINE	PURPLE LINE	YELLOW LINE	BLUE LINE	GREY LINE
Change in Market share 2015-2016	-0.47%	-0.95%	-0.53%	-0.10%	-4.51%	1.30	2.89%	1.53%	-0.20%
What % of ticket sales turnover comes from digital ticket sales (split by platform)									
Website and Mobile ticket sale									
2014	4.9%	-	9%	-	0.90 %	19%	20%	-	11.8 %
2015	8.30 %	-	10%	-	0.70 %	19%	26%	-	11.60 %
2016	10%	-	12%	-	3.90 %	20%	28%	-	9.90 %
App Ticket sales									
2014	-	-	2%	-	0.20 %	0%	-	-	-
2015	-	-	4%	-	0.20 %	1%	-	-	-
2016	-	-	6%	-	1.20 %	1%	-	-	-
COUNTER TICKET SALES	Decrease	-	Increase	Increase	Slight decrease	Increase	Increase	Significant increase of	Increase

The effect of online sales on market share (North Star)

Online ticket sales, on the contrary does affect the market share of the best performing air rail operators. Two of the three operators which saw an increase in market shares in 2016 have online sales at 20% or more. In both cases their physical sales (counter and TVM) were also reported to have increased. Others showing online sales increases, presented decreases in physical sales.

Rail Link	Market Share	Taxi/Train Time Ratio	Taxi/Train Price Ratio	Time Difference Absolute	Fare/Starbuck Coffee Ratio	Distance
ORANGE LINE	6%	0.65	2.78	-8	3.7	15.9
BROWN LINE	8%	3.00	2.65	30	4.7	19.8
GREEN LINE	9%	4.00	1.82	45	8.1	24
RED LINE	21%	1.67	2.95	16	2.6	35
PINK LINE	12%	1.79	1.55	22	3.7	57
PURPLE LINE	14%	1.67	3.46	18	3.8	22
YELLOW LINE	29%	1.49	4.22	23	6.1	63
BLUE LINE	21%	2.35	3.82	23	3.9	10
GREY LINE	7%	1.56	3.75	9	2.7	20

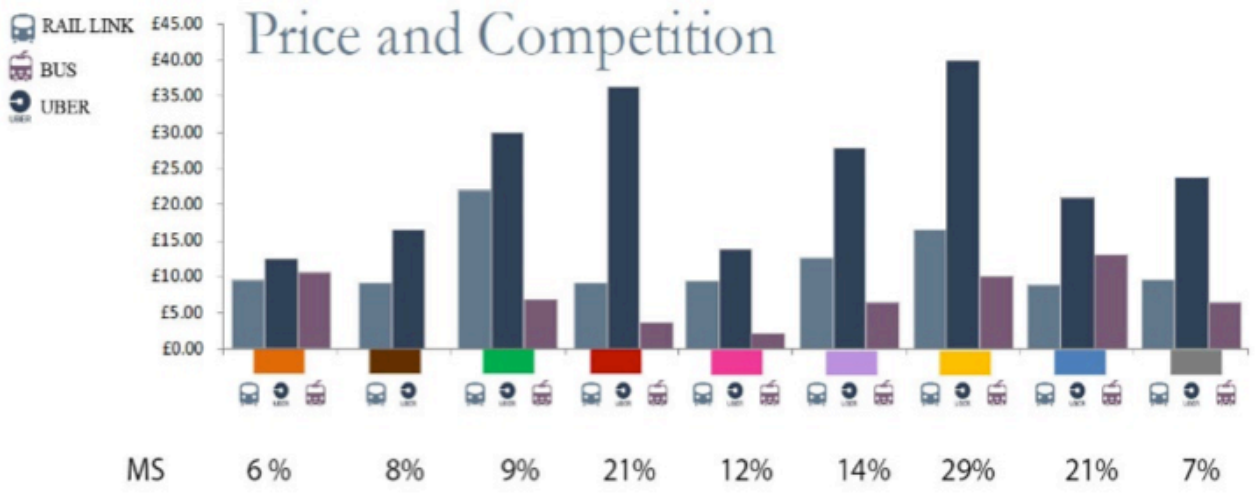
Effect of ticket prices on market share (North Star)

Ticket prices are the most expensive with the two operators with the most market share. This indicates that the market share is not automatically affected by cheaper fares, but more by the product/service that is being offered.

Significant evolution of trends

However, the report concludes that the combined market share index for the nine operators show a slight decrease in people choosing rail when travelling to and from airports around the world. More specifically, three operators within the study showed some market share growth, whilst six experienced a decrease.

Operators all face growing competition from new transport providers, such as Uber and similar car-sharing companies. Although the majority of participants reported low or negligible effect of Uber on their operations and market shares, figures show that those with increases in market shares over 2016 (Purple, Yellow) (and also those with small decreases e.g. Red and Yellow)), are beating Uber price-wise by the largest margin. Operators reported losing to Uber on certain journeys, such as inner suburbs and to certain customer segments such as business passengers.



The "Uber-effect" (North Star)

Solutions

In response, the operators report an increasing need to enhance marketing and service delivery to address the challenge.

The findings also reveal that marketing spending varies greatly amongst the air-rail operators, with many continuing to focus their marketing on reliability, price and the perception of value.

Other outcomes of the study indicate that higher market share is experienced by air-rail operators who have the greatest price advantage over the standard taxi or car-sharing services. Trends also indicate that car-sharing services into capital city inner suburbs is on the increase.

Conclusion

The main reasons as provided by participants for decreasing market shares are the increased competition from taxis, Uber and buses with regards to price, particularly the local market (outbound). Also, airport buses and parking initiatives as well as fare increases of the air-rail operators make them lose market shares.

Reasons for increased market shares are lower fares (less than competitor prices), efforts to focus on marketing and service efficiency and the improvement of customer experience.

Marketing investment has been mainly focused on the promotion of reliability, speed and price and creating a perception of value, in order to increase market share or stem the decline. Operators have spent less on traditional marketing in 2016 than 2015 and investment in online marketing has increased for most operators, although the effectiveness of this investment is variable.

Daniel Gierhart

Daniel Gierhart has worked for Transport for London (TfL) for 3 years covering a number of different positions across the business, including both operational and corporate roles. In his current role, Gierhart is responsible for the overall customer experience of the Elizabeth line, including delivering a vision of world class service and ensuring the Elizabeth line is fully integrated with the wider TfL network.

The Crossrail project will see Transport for London take over the existing Heathrow Connect service between Paddington and Heathrow in May 2018, ahead of the Elizabeth line launch in December 2018. Daniel Gierhart will focus on the challenges that Transport for London, Heathrow Express and Heathrow Airport have been collectively addressing to ensure that customers are able to make an informed choice about the different transport options available to them for Heathrow related travel and beyond.

The Elizabeth line when fully open in December 2019, will transform travel across London, boosting the UK economy by billions of pounds and supporting thousands of new jobs and homes. The Elizabeth line will significantly improve accessibility to key locations in London for those with reduced mobility. All existing stations across the route will have step-free access from street to platform level, and the 10 new stations in the central and south east section will be step-free from street to train level.

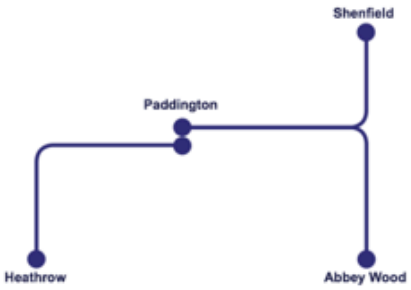
HRH The Queen of England and the Crossrail construction workers (Transport for London)

Staged opening

The Elizabeth line is being opened in stages between May 2015 and December 2019: the next stage is May 2018:

May 2018 - Introduction of a 4tph service between TfL Rail service between Paddington and Heathrow

December 2018 - launch of the Elizabeth line operating brand and the opening of the central section



May 2019 - introduction of Anglia services into the Central Operating Section.

Heathrow Airport surface transport

Heathrow Airport has a variety of different transport options including taxis, buses, and trains. It can be assumed that most customers will make their decision based on three high level criteria; Where do I want to go? How quickly do I want to get there? and How much do I want to spend?

The Elizabeth line is delivering up-to-date rolling stock as part of the staged opening. The brand-new Bombardier Class 345 being used on the Elizabeth line will feature air-conditioned, walk-through carriages stretching to over 200 metres long, with capacity for up to 1.500 customers. Each carriage will have three wide doorways to assist with customers boarding and alighting. The trains will each have four designated spaces for wheelchairs and additional multi-use spaces for luggage, buggies and bicycles. There will be more standing room and a mixture of metro-style seating with longitudinal and bay seating throughout the train.

The Elizabeth line has many different interfaces across London, including London Underground, London Overground and with several other train operating companies such as Greater Anglia and Great Western Railway.

In order to ensure a world-class customer experience, employees need to be briefed with the correct information and training to provide the level of detail customers require. This includes understanding what customers consider excellent customer experience, including knowledge of fares/ ticketing, other train services, information during disruption amongst many other areas. Employees gain this knowledge through a multitude of training sessions as well as frequent training refresher sessions.

Fraser Brown

Fraser Brown joined Heathrow Express as Commercial Director in April 2014. Prior to this he worked at Gatwick Airport as Head of Travel Services, before moving across London to Heathrow. His roles at the UK's busiest airport have included Head of Travel Services and Managing Director of Ultra Global PRT. This involved working with UK and international government bodies to develop sustainable modes of transit. He became Director of Heathrow Express in February 2015.

Welcoming Crossrail to Heathrow

Crossrail is a 118-kilometre railway line, to be called the "Elizabeth Line", under development in England, running through parts of London and the home counties of Berkshire, Buckinghamshire and Essex. Crossrail will arrive at Heathrow Airport in May 2018, bringing new challenges along for the airport and the existing Heathrow Express services. London Heathrow airport is preparing to welcome Crossrail with new ticket gates and updated wayfinding, as well as Heathrow Express's strategy for competing with the new operator.

Heathrow expansion

The expansion of London's Heathrow Airport has been a much discussed and sensitive topic for years. British Secretary of State for Transport, Chris Grayling, has promised a decision on expanding Heathrow in the first six months of 2018. Today, 70% of cross-party Members of Parliament have indicated that they are in favour of a third runway for Heathrow. Heathrow is doing well, and so does Heathrow Express. Passenger numbers for Heathrow Express increased with 9% and the revenue went up with 10% compared to last year. Crossrail is Europe's largest construction project to create an East to West runway connection in a city. It is also designed to connect the airports and to cope with the extra passengers that are expected thanks to the expected growth of aviation.

A 200m long heavy rail train that will make use of Crossrail (Crossrail)

Challenges

These satisfactory results should not be taken for granted as Heathrow faces a great deal of challenges. London Heathrow Airport is the world's busiest double runway airport and has no slack in the schedule which brings operational challenges. Heathrow is, without the expected expansion, saturated. There are also some operational challenges for the works of building the Crossrail facilities, as disruptions and pressure for the route's maintenance occur more frequently.

Bringing a new operator to Heathrow also requires harmonisation with the existing rail-links that are already serving the airport. The project requires structural interventions such as creating gate lines and common payment methods in all Heathrow rail stations as well as installing new ticket vending machines to make sure that this project will meet the requirements of Heathrow Express and Crossrail. Some challenges toned to be overcome to make this possible.

The location of the gate lines and ticket machines has to be well studied. There is planning of the installation required around a 'live' station, including enabling works required before the installation itself can begin. A detailed testing period is necessary to ensure that the best experience for passengers has been designed. To ensure the most comfortable journey to passengers, new signage and wayfinding to reflect multiple train operating companies' services must be put in place.

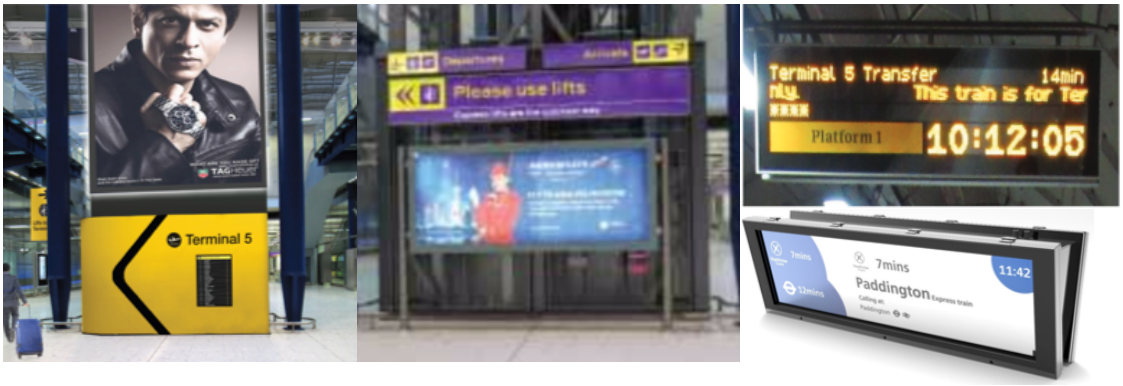
Cooperation for success

Temporary negative impact does not outweigh the expected benefits. The arrival of Crossrail will bring more rail services than ever before to Heathrow passengers and its employees. The close cooperation with other stakeholders of the air-rail sector located near Heathrow is important to deliver a harmonised, well-functioning product to the passenger. Transport for London has helped Heathrow to understand the requirements of Crossrail. Cubic, the gate manufacturer and installer, has installed gates across the London Underground network.

The Heathrow Express operations team has been tasked with minimising disruption to colleagues and customers and to ensure that business processes were aligned with the new environment. Heathrow Rail which owns the stations was also a crucial partner in the matter of getting approval to proceed with the project.

Wayfinding

To offer the most accurate information to the passenger, research has been done. More than 900 people from five countries were asked to take part in market research to help reach the best possible signage and wayfinding proposition. Designers of the project utilise latest train and customer service information system to replace the existing next train indicators. As a result of the survey, simplified wayfinding has already been installed and digital signage has been improved.



Improvements of signs at Heathrow (Heathrow Express)

Future

The goal of Heathrow Express is to be included in the booking process, so that passengers can book the train while booking their flight. To incentivise arriving passengers, Heathrow Express wants to sell tickets airside before they arrive in the arrival hall where other means of transport usually get in the eye of arriving passengers first. Heathrow Express does not see the arrival of Crossrail as a threat as the combined services of Piccadilly Line, Elizabeth Line and Heathrow Express will enable passengers to choose between 22 services per hour. Heathrow has committed to making sure that half of all passenger journeys are by electric or low emission public transport by 2030, and the arrival of Crossrail will help the airport to achieve this goal. Besides that, Crossrail and HEx will serve different customers. Heathrow Express is well aware of the fact that ticket price is important, but modelling shows that customer proposition and commercial strategy is also key for the success of Heathrow Express.

Andy Camp
Mat Garner

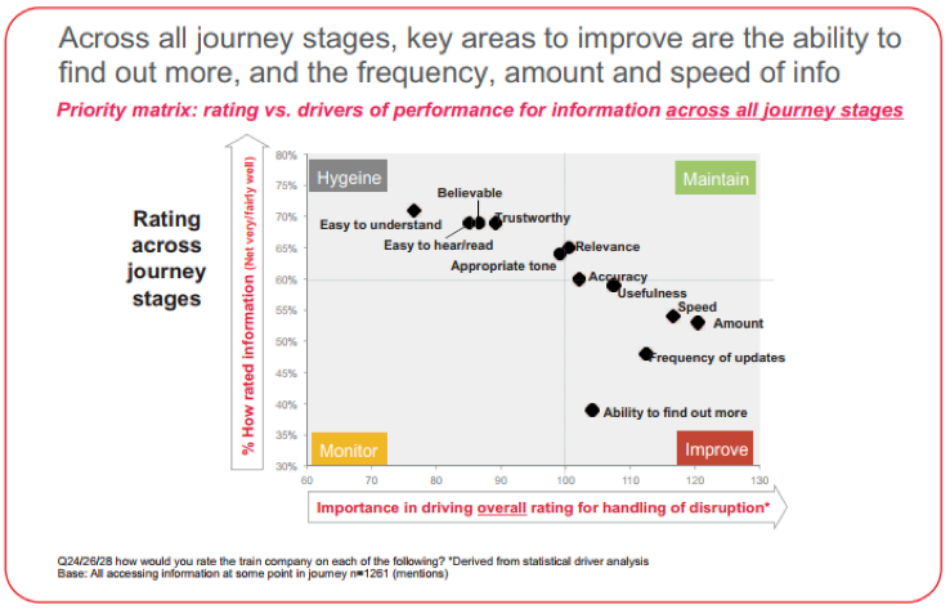
Andy Camp is the Commercial Director of the Greater Anglia Stansted Express, and Mat Garner is the Co-Founder of Ethos Farm Technology.

Operational disruptions can very quickly turn into "in the moment" brand damage via social media. For operators, it is crucial to push the latest information to their workforce and their customers as soon as possible. This joint initiative improves communications to the Greater Anglia Stansted Express workforce through a new, colleague-specific, application that provides a daily briefing and communications platform to staff as well as live operational updates during disruptions. The app drives better product knowledge by generating daily tests on procedures, ticket information and alternative routes during disruptions.

On October 28 2013, the so-alled St Jude's Day storm raged over the UK, uprooting over 230 trees that blocked the Stansted Express leaving 300.000 passengers stranded. As the M11 motorway did not get away with the storm either, there was no alternative to offer the passengers to get to Stansted Airport.

Damage and chaos during 'St Jude's Day storm' (Greater Anglia Stansted Express)

Lessons have been learnt from this dramatic day. It turned out that passengers asked employees what happened, and they failed to give them the correct information. In fact, many passengers received pieces of information via social media, before staff members were updated on the events. It became clear that on- and offline information provisions are important and should be matched. In-station communications are the most popular sources from which to find out about disruption. It is important to know that the first update on the disruption is key, because further updates are not always experienced by the passengers.



Utilize dramatic events to improve service

Having learnt the lessons of this dramatic event, Greater Anglia commissioned Ethos Farm to develop an integrated app for employees working on the lines at the airport to provide passengers with reliable, accurate and useful information on a regular basis.

The idea behind the solution is to reverse the briefing process and utilize user stories. These are essential, because this drives the better product accuracy from the outset and allows the app-developer to understand the end product better and reduce technical debt. Technical debt is the implied cost of additional rework caused by choosing an easy solution now instead of using a better approach that would take longer to develop. It is important to understand that the developer does not necessarily know the sector he or she is creating an app for.

Challenges

There are some barriers to a fully operational system. Not all of the staff have a device on them or have email to be updated on the situation. Some staff might show resistance to change which could lead to a union of challenges. Technical issues are also still existing, e.g. not all areas at airports have Wi-Fi/4G. This might lead to the opposite world where staff is checking Twitter or worse that staff asks the public for updates during a disruption.

An additional difficulty is that it is not enough to inform staff members once, because they will most likely forget much, as 75% of information is lost 7 days after receiving it.

Solutions

Ethos and Stansted Express found a solution to this dilemma and made the app they created as user-friendly as possible. First, the app does not require users to enter a password (frictionless sign-in) to improve knowledge retention and to ensure that all colleagues are on board. This is necessary as not all staff have a device and it is preferable to reduce multiple log-ins as much as possible. The app would send push notifications with a hotlink to brief the staff. This feature is removing the need for log in and is increasing usage at the same time. The app also has an alert function to privately notify colleagues of information ahead of public dissemination. This is to make sure that front line staff no longer check Twitter or ask the public to be updated. Next to that, the app has a daily briefing and a Q&A to provide daily comments to all staff. This allows the employer to see who is reading each brief, to attach any document that is required to be read, set any question back of house and to test colleagues at random.

The app has a reporting tool to provide staff with a one stop shop for their work-related activities which allows colleagues to track sales, HR and Health & Safety related issues. Also, what is important is that the app possesses a recognition function which serves as an incitement to make employees feel rewarded for their efforts. Staff needs positive reinforcement regarding their performance and behaviour because they will be incentivised to do the right thing. This also helps drive a positive culture change to front line staff to improve the customer journey.

Conclusion: scheme

Concluding scheme (Stansted Express & Ethos Farm)

Liam Henderson

Liam Henderson is an independent transport professional with extensive experience in rail transport planning and passenger service. Through his work at Transporting Cities, Liam has delivered many air-rail passenger journey assessments and will look at best practices in wayfinding, information provision and language that can be used to improve overall journey experience.

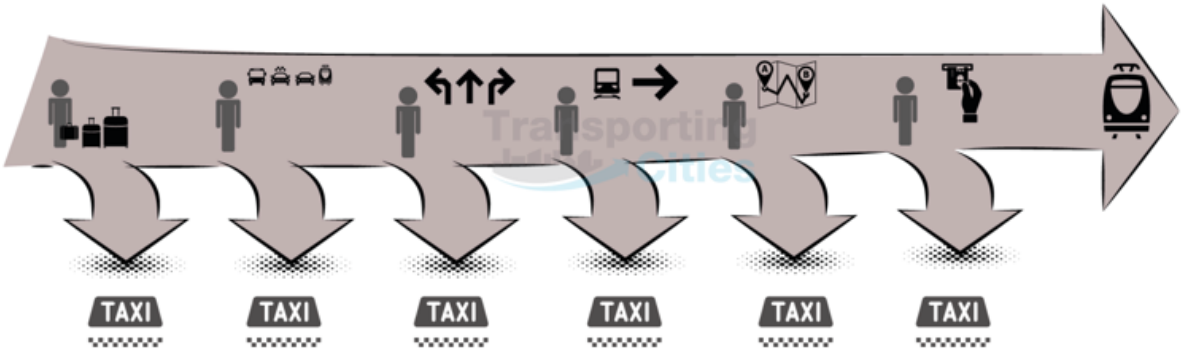
International passengers arriving in a new city encounter barriers which entice them to jump in a taxi or use ride-sharing apps – instead of a rail service. Using the concept of 'escape points' between the airplane and the rail service, Transporting Cities undertakes reviews of the air-rail interchange in locations across the world. When airports provide too many escape points, they drain the revenue of the air-rail operator and prevent the airport from reaching public transport mode share targets.

Transporting Cities was established with the idea of improving the passenger experience at airports by undertaking lite reviews of global systems to gain evidence of best practice and by giving recommendations. "Passenger experience" is a broad term but with recommendations, they want the passenger to understand better the system that is used at an airport, to improve ssignage to make way-finding easier, to enable an end-to-end journey experience, to make buying a ticket easier by a smarter digital integration and to let airports communicate with passengers through social media in case of a service disruption.

Cater for a first-time users

For frequent travellers or aviation professionals, using an airport has become routine. But not all passengers think the same of the same experience. Airports usually plan information provisions assuming that people walk slowly and study all signs logically. The reality is that many people rush through stations glancing up for their platform or sign. Next to that, it is important to keep in mind that not all passengers are frequent travellers. While planning signage, we must have sympathy for a first-time user. Many of these first-time users are uncertain, don't understand how local transport in other cities work and are sometimes suspicious of authority. When passengers are tired, hungry, in a rush or uncertain, at least the signalisation to guide them out of the chaotic place must be clear. If you cater for a first-time user, you will probably meet the needs of everyone else.

Arrival procedure (Transporting Cities)



Distractions for arriving pax on their way to the railway station (Transporting Cities)

Visibility of the train

Most of the time, arriving passengers need to go through the entire arrival hall to get to the railway station, while on their way, they see taxis that can get them to their final destination right away. People want to go with what is comfortable. There is a reason why North Americans use taxis for airports more than Europeans, it is the first thing they think of. Why would you risk it in an unfamiliar city, not knowing which station the train goes to? To get people attracted to trains, airport operators must focus on wayfinding, branding, identity, the journey, the process and accessibility.

A common theme throughout the assessment is trying to communicate to the passenger where your rail line goes. What does the rail option do? Where does it go? What should I look for? Where are the tickets?

London is unfortunate as it does not have a Central Station. Passengers who are not familiar with the city, would not know by reading "Paddington Station", that this is the best option for them to access the city centre. Therefore, operators may want to consider how they visually represent their service.

Conclusion

There is only a short window to get into a passenger's mind before losing them into the formal arrival process starting with the immigration queue. One can only really plant the seed of taking the train at this point. Once that has been established, the association can be followed through the following sections.

Henrik Rothe

Henrik Rothe is a Senior Lecturer in Air Transport Management at the Cranfield University in the UK and he has perceived the Urban turbine research, redefining the role of the airport and the city.

Aerial ropeways as alternative form of transport for airport access

In a soon to be released paper on overcoming service quality and cost shortcomings, Cranfield University is looking at alternative forms of transport to and from airports. Automated People Mover require transport corridors often not available or to be constructed at considerable cost. Aerial ropeways have been successfully integrated in urban contexts globally and have the potential to link the airport to commercial and residential activity hubs close by supporting the paradigm shift of airports to open up for multipurpose human interaction.

While constructing an airport, engineers are focussing too much on peak hour capacity requirements, leaving out the importance of the airport's contribution to the brand of a city. Investments are often excessive while facilities remain underused over large periods of the day. Another main problem at many airports is limited airport access options leading to congested transport corridors. While designing an airport, more attention should be paid to non-aviation related activities nearby the airport, to make it a useful and intermodal hub for more people than just passengers, linking global passenger streams to the local economy.

Challenges

The main challenges for airports to become intermodal, multifunctional hubs are the congested airport corridors and the lack of connectivity to suburbia. This is since peak hour calculation is ruling facility capacity. Who pays for the infrastructure when it is not always used? While tackling challenges, passenger experience must be kept in mind.

For instance, when two terminals have to be connected, there are two options. Either by tunnel or a bridge. Bridges are subject to maximum aircraft height and changing security, safety and operational regulations, but passengers' frustration about a daylight-less environment of tunnels only to be overcome by great effort, as Chicago O'Hare has done.

Proposal

To decongest traffic flows and to elevate passenger experience, airports should redistribute activities throughout the journey. A trend to kick-in would be swapping landing fees for access to retail on the plane. For example, a passenger spends an average 24min at Dubai Airport, (Paul Griffith, CEO Dubai Airport) while spending 8 hours in average in the air. During the flight, passengers have more time to handle administrative issues and use commercial offers.

Cable cars

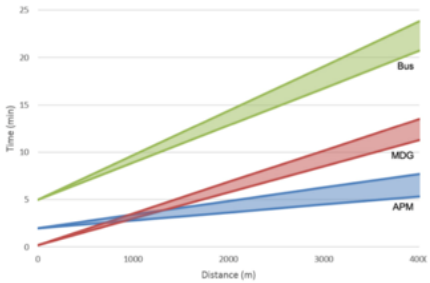
The University of Cranfield has come up with a value proposition, a combination of multiple means of transport, without the passengers needing to leave a cabin. This can lead to reduced energy use and CO2 emissions. In many cities in Europe and Latin-America, cable cars are since long connecting city parts. In Genova, Italy, a project to connect a railway station with the airport is currently implemented and will start operating in 2021.

Social inclusiveness

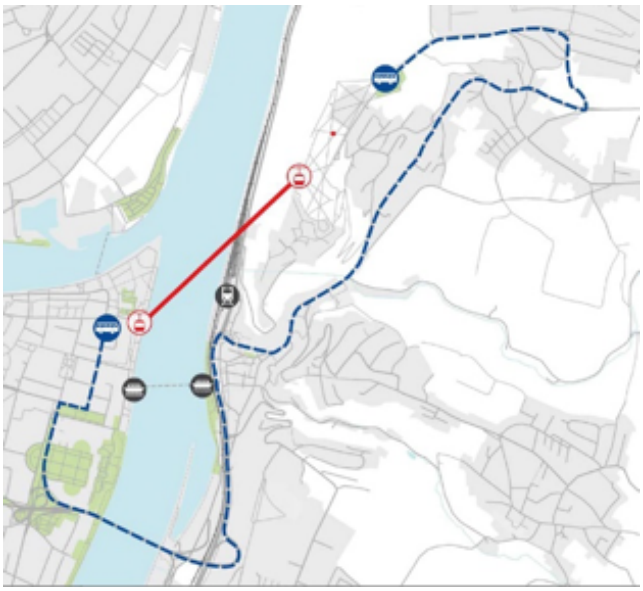
30.000 aerial ropeway systems are in operation worldwide, many in much more constraining mountainous conditions, than typically in airports, in terms of wind, temperatures, ice and accessibility for maintenance. Cable cars are a segregated right-of-way and require lower cost than traditional light or heavy rail.

London Garwick Airport, Chicago O'Hare Airport pax bridge vs. pax tunnel (Cranfield University)

line length	total trip time in min			
	APM (42km/h)	APM (72km/h)	MDG (18km/h)	MDG (21.6km/h)
1km	3.4	2.8	3.5	3.0
2km	4.9	3.7	6.9	5.8
3km	7.7	5.3	13.5	11.3



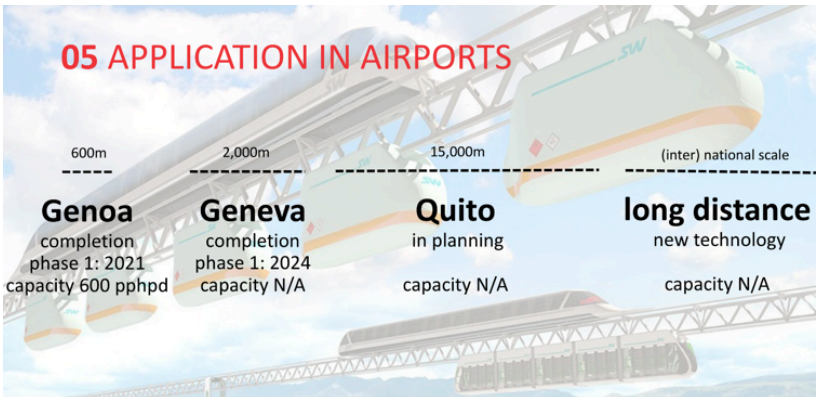
	km	min	KWh	g CO2	type of energy
Bus	7.00	28	0.61	157.55	Diesel
Aerial ropeway	0.95	7	0.02	0.05	Electricity (hydro)



Comparison between conventional transport systems vs aerial ropeways (Cranfield University based on manufacturers data)

Application in airports

In Genoa, two integrated macro-projects are being combined. A new airport station in an area owned by RFI (including relocation of Cornigliano Station) and a connection between the new railway station and the passenger terminal by a 600-metre aerial ropeway are under construction and are planned to be finished by 2021. In Geneva, a 2km aerial cable car has been foreseen as a tangential link between axial transport corridors from the city to the airport by 2024.



Aerial ropeway applications and their capacity to change the ecoscape of airport surface access (Cranfield University)

Genoa Airport (Aeroporto di Genova)

Top 5 lessons when planning an infrastructure/transportation project

While planning new transportation infrastructure, planners, engineers, architects, designers and many other stakeholders must foster passenger trust, and to build using data and adapt a 'customer first, revenue later' mentality. Globalisation is coming to urban transport (Uber, autonomous vehicles e.g.) and therefore, collaboration between all stakeholders is key.

Aerial ropeways in summary

1. Aerial ropeways enter intermodal airport access
2. Use of level +1 de-congesting the ground level
3. Short distance: link the airport to major rail networks (Genoa)
4. Aerial ropeways create new tangential connectivity linking the airport at medium distance to other axial transport systems (Geneva)
5. Light weight structures reduce amount of energy and emissions
6. Seamless travel experience (aim to connect directly to the gate)
7. Individual gondolas critical for high peaks numbers but offer opportunities for new business/services

Alice Nick

Alice Nick, Project Manager, Department of Mobility, Regional Authority FrankfurtRheinMain (RVFRM). The RVFRM project aims to enhance bicycle infrastructure in and around the airport, facilitating cycling to work for a great number of employees. Through a communication campaign the project bring people together, creating a community of cyclists around the airport. The project is funded by the German Federal Ministry of Transport and Digital Infrastructure.

Surrounded by motorways, streets and railways, Frankfurt Airport is not only a mega transport hub but also the biggest employment hub in the Frankfurt Rhein Main region. Alongside 105 million annual passengers, more than 81.000 people commute to and from the airport every day.

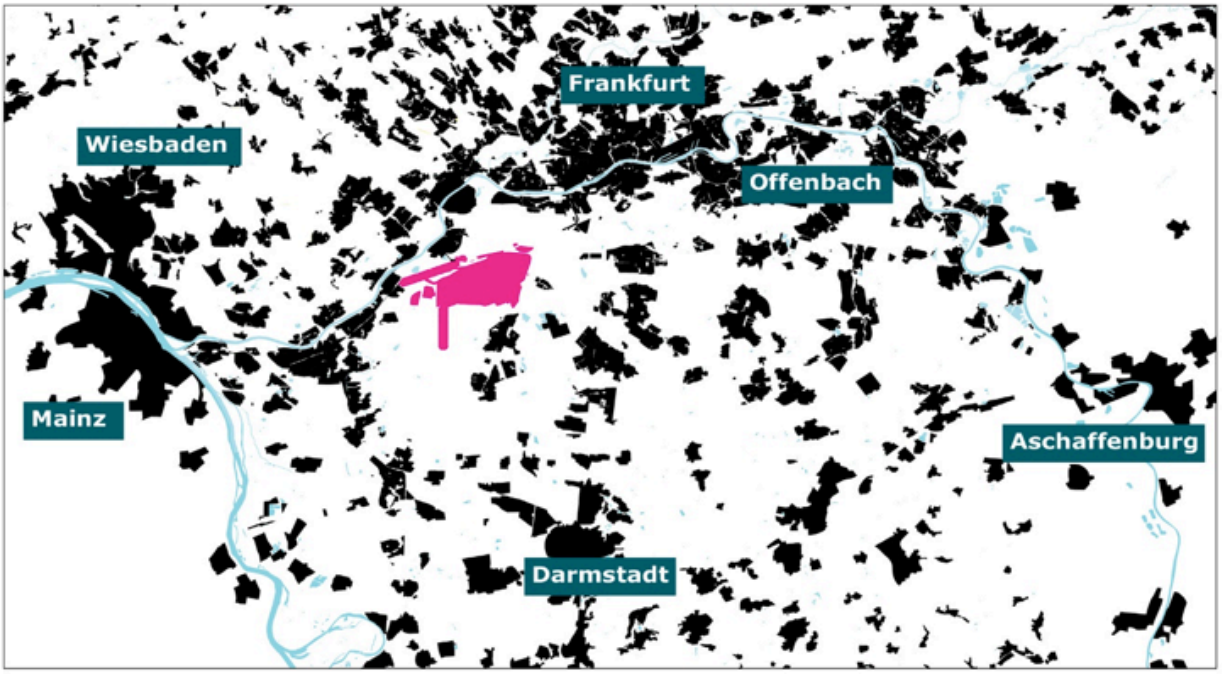
Settlement structure of the FrankfurtRheinMain region

The Regional Authority (Regionalverband, RV) FrankfurtRheinMain is a statutory body which has been managing and coordinating regional development since 1975. The RV is also a platform for the strategic orientation and goals of regional companies. It is responsible for the development of a joint image of the region and creates and updates the regional preparatory land use plan and landscape plan. Frankfurt Rhein Main carries out regional monitoring and provide comprehensive services to the 75 member municipalities. The RV tries to include all other actors of the metropolitan region. Regional policy no longer ends at the administrative borders, but the strengths of the entire region must be consolidated in the competition of the metropolitan regions.

The RheinMain Region is known for its polycentrism, meaning many, more or less equally sized cities, which accomodate many job locations and employees. This leads to a high level of commuting in the region, which causes traffic jams and air pollution. Also, employees have to commute longer distances than they should.

Mobility hub Frankfurt Airport: next up, cycling routes

Frankfurt Airport is one of Europe‘s main mobility hubs and one of Germany‘s biggest employment poles with over 80.000 employees. Because of its proportions, it is not easy to access Frankfurt Airport by bike. There are several reasons for going by bike to work but many people do not know how they could reach their work places by bike. Although the airport is one of the biggest mobility hubs itself, cyclists are not a common sight. Besides that, as one of Germany‘s biggest work places, Frankfurt Airport has a huge potential for commuting by bike. The RV is figuring out how to raise awareness for cycling and other sustainable modes for commuting and how to make cycling at the airport more attractive.



Settlement structure of the RheinMain Region (RV FrankfurtRheinMain)

Why should people commute by bike?

When planning surface access infrastructure for cyclists, a crucial question is „why should people commute by bike and what benefits does it have?”. First of all, commuting to work by bike can eliminate costs for the commuter, such as fuel, parking (both space and charges), maintenance, taxes and insurance for the car. Secondly, the commuter could experience health benefits, such as losing weight and a lower risk of heart disease.

More cycling traffic has a positive effect on some external costs such as the environment, because it reduces CO2 output and noise pollution, and it has a positive impact on traffic jams.

Reasons to commute by bike (Milton-Keynes)

How to encourage employees at Frankfurt Airport to commute by bike?

The picture above shows an overview of the different branches one can find directly at Frankfurt Airport. Now approximately 80.000 people work at the Frankfurt Airport, which will grow to 90.000 by 2021. 18.000 of these people will work in the „Gateway Gardens", a newly developed business district next to the airport, developed as a pilot / test area. Since nobody lives directly at the airport, all of the staff has to commute to work.

A key challenge is the unattractive public transport connections for commuters from some municipalities. Employees living in these areas prefer travelling by car, which causes traffic jams and high costs for parking spots. Another challenge which impacts the surface access strategy is the fact that there are work shifts 24/7 and people have to reach their work place and home at any time of the day. Public transport, however does not run 24 hours a day.

An analysis of airport operator Fraport AG with its 20.000 employees at the airport, gave a good insight of surrounding potential. It showed that most of the Fraport employees live in the surrounding municipalities. 11% of them live at a linear distance of under 12 km to the airport. Even within relatively short distances, public transport connections from some municipalities are quite unattractive for commuters, so they prefer going by car. However, it is also clear that many of the municipalities are within an electric bike friendly distance between 12 and 15 km (a classic bike friendly distance is 5-6 km). In relation to the places of residence of Fraport AG employees, this means a potential for e-bike riders of 10-12% (8.000-9.600 employees). Also, many trips in the airport region or to neighboring business districts could be done by cycling.

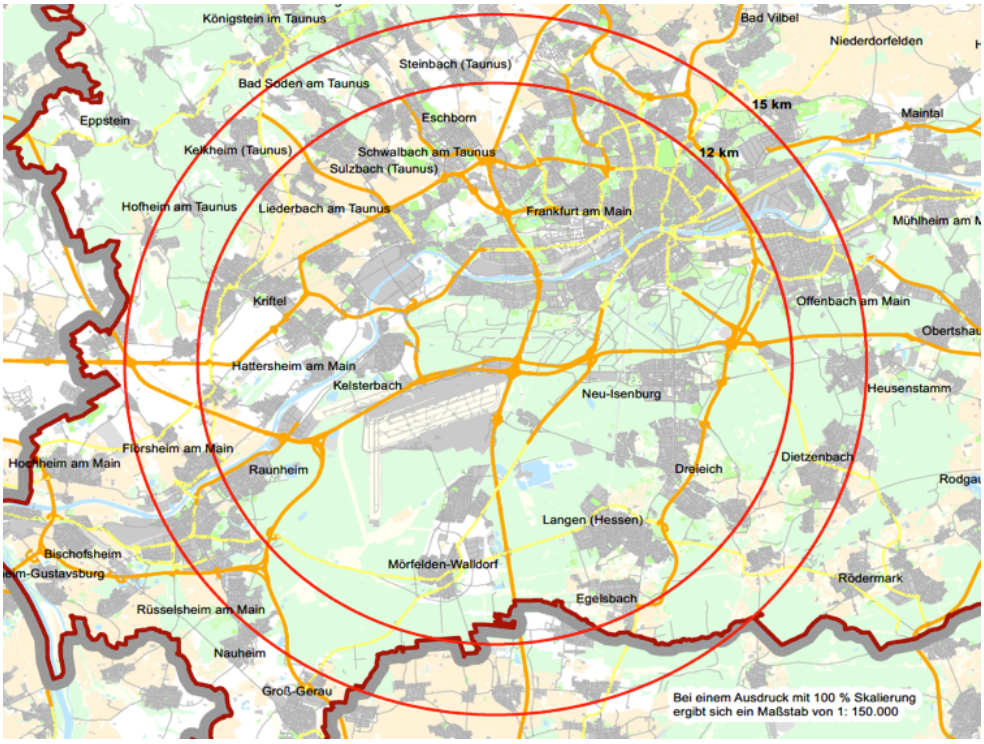
The RV wants to cooperate with three target groups: with mobility / urban planners; because the bicycle should be integrated into planning as an equal mode for daily transport. With commuters; to inform and motivate them to use bikes for their way to work or parts of it (intermodal transport compound). And finally with companies; that can support their employees to use the bike as an sustainable and healthy mode of transport to work.

The approach will be more comprehensive, as it includes all relevant factors and addresses all relevant target groups. The RV is analysing the current status of infrastructure and is trying to improve it by preparing bike paths and bike parking for bikes. A survey among employees at the airport gave the regional authority an overview of the main barriers for cyclists, to and at the airport. No direct routes, too many cars on the road and a lack of secure parking at public transport connection came out as the main reasons not to use a bike.

Therefore, FrankfurtRheinMain wants to improve the orientation of bike routes along the airport, to provide infrastructure for cyclists for parking, information and security, to attract attention to the needs of cyclists and to motivate people to cycle as well, and to communicate with all target groups to inform them, motivate them and answer questions.

To achieve this, the RV will use different instruments through two publicly funded projects (national and international) and a permanent working group, to hold meetings with representatives of the airport surrounding municipalities, the Fraport AG, the Gateway Gardens real estate company mbH, General German Bicycle Association, ADFC Hessen and other stakeholders.

Employees at FRA (Fraport AG)



Catchment area Frankfurt Airport of 12km and 15km (RV FrankfurtRheinMain)

Public funded projects: German national cycling plan 2020 & CHIPS

The German Federal Ministry of Transport and Digital Infrastructure (BMVI) has identified the measures that are required to make cycling evolve in a sustainable manner, and describes the specific steps that need to be taken by the federal government, the federal states and the local authorities. This resulted in the German national cycling plan 2020. The BMVI has been the leading facilitator, coordinator and catalyst in nine action areas.

Moreover, the BMVI is funding important projects to implement the National Cycling Plan with 3.2 million euros per year:

- The Cycling Portal: Germany's largest internet platform addressing all aspects of cycling.
- The Cycling Academy: as the one-stop-shop for training and education in the field of cycling.
- As well as research projects which support cycling today and tomorrow in a special manner and serve as a model for other regions of Germany.

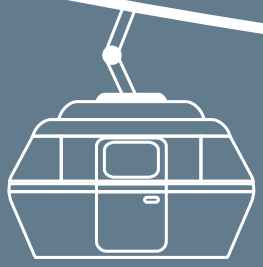
Cycle highway of the future (CNN)

On a European level, CHIPS (Cycle Highways Innovation for smarter People Transport and Spatial Planning) will develop and promote cycle highways as an effective and cost efficient low carbon solution for commuting towards and from urban employment poles. CHIPS will demonstrate that, especially in combination with the growing number of e-bikes, cycle highway innovation can effectively get commuters out of their cars.

Project partners from Belgium, Germany, the Netherlands and the UK will develop solutions which will help regions and mobility stakeholders to position cycle highways as a new mobility product and to overcome physical and behavioural barriers that keep commuters from using cycle highways. It is also designed to maximise synergies between cycle highways and trains, buses and cars, to upgrade cycle highways to key structuring elements in future spatial planning and to monitor performance and assess the impact.

More publications?

All our publications can be accessed via our website:
airportregions.org/publications



Airport Regions Conference
Rue Montoyer 21,
1000 Brussels, Belgium

+32 2 513 48 85
info@airportregions.org
www.airportregions.org