



European Union
European Regional Development Fund

decarbonated **AIR**port regions

22 - 23 April 2013

Welcome words from the Mayor

The **Communauté d'Agglomération Terres de France** was particularly pleased to welcome its European partners during the Decarbonised Airports (dAIR) study visit. We were able to exchange experience and information, as well as engage in debates with our partners who come from very different geographical and historical contexts.

We are especially happy about the interest to our 24/7 on demand bus system, Fileo, financed by us, which has proved to be an important contribution to the daily mobility and access to employment on the CDG platform.

The commitment of the Communauté d'agglomération Terres de France in the collaborative development of its Energy Territorial Climate Plan was also acknowledged.

We have seen that the challenges in our airport region can be found in the thematic objectives of the dAIR project.

- Reduce the carbon footprint of our territories, especially from ground operations of airport hubs
- Promote better accessibility to airports for passengers and cargo
- Identify innovative solutions that contribute to the above

These European exchanges are useful and necessary to promote and shape our territories' public policy, share best practices and gather feedback.

This was also an opportunity for our partners to get to know and visit Terres de France, on which Charles de Gaulle Airport is located for nearly 40 years.

Together we will continue with great interest the European program with a visit to our partners.

François ASENSI
President of the Communauté d'Agglomération Terres de France
Member of the Parliament
Mayor, Tremblay en France

Paris Study Visit organised by Communauté d'Agglomération Terres de France

22-23 APRIL 2013

Introduction:

The study visit was organised by Communauté d'Agglomération Terres de France as part of the [dAIR project](#). dAIR looks at how CO2 emissions from surface access and airport operations can be reduced. Through study visits and workshops, as well as stakeholder forums, the 14 member organisations are able to exchange experiences and see what reduction solutions have been used and have worked at other airport regions and how they could be applied to their own.

Programme of the visit:

Monday 22 April:

- Welcome by Marc Gentilhomme (Directeur Général des Services de la Communauté d'Agglomération Terres de France) and Jacques Grangé (Directeur de l'aménagement, Tremblay-en-France)
- Territorial analysis and the role of the Communauté d'Agglomération Terres de France, Marc Gentilhomme and Jacques Grangé
- Paris-Charles de Gaulle airport and the regional airport system of Ile-de-France, IAU – Etienne Berthon (research officer, IAU)
- Bus tour via business park Paris Nord 2, freight area and the Aéroville building site
- Visit to the Environment House (Maison de l'Environnement): presentation of Paris-Charles de Gaulle airport by the airport authority Aéroport de Paris (ADP)
- Presentation of CDGVAL (a people mover system linking the airport terminals)
- Visit to Roissypôle and introduction to Filéo, an on-demand bus service
- Tour of Paris CDG airport on the VAL: Aérogare 1, Aérogare 2 and 2 F and TGV/ RER station
- Bus tour via the hotel area and the FEDEX hub

Tuesday 23 April:

Introduction: a territorial approach

- Introduction to the programme of the day – Marc Gentilhomme/Mariëlle Prins (consultant)
- Sustainable social and economic development in a low-carbon economy; airports and territoriality – Prof. Callum Thomas, Manchester Metropolitan University
- Intelligent Logistics: the 'physical internet' – Prof. Eric Ballot, Ecole des Mines Paris Tech

Two Models

- 15 ways to reduce the carbon footprint. Focus on airport accessibility – *Hans Brattström*, Regional Planner, Office of Regional Planning, Stockholm County Council
- Towards intelligent mobility – *Patrick Gatellier*, Thales research director

Round table debate

Workshop 1: Challenges for carbon neutrality and surface access: freight platforms and their employment basins

- Introduction to the workshop & outcomes of the local dAIR forum of 22 March 2013: the PDIE – *Mariëlle Prins*
- Intermodality and sustainable mobility around airports: the case of Paris – *Jacques Grangé*
- Cases and Experiences:
 - Leipzig/DHL: the 'Jobticket' – *Achim Lohse*, Economic Development Office, City of Leipzig
 - Airport employee access at Vienna Airport – *Franz Jöchlinger*, Regional Coordinator, Vienna Airport Authority

Workshop 2: Innovative actions: from project implementation to contractual networks

- Introduction to the workshop & observations on the outcomes of local stakeholder forums – *Marc Gentilhomme/Mariëlle Prins*
- Sustainable development in an area defined by mobility: the proposals of the Contrat de Développement

Territorial/ Territorial Development Contract – *Antoine Bres*, architect and urban planner (Atelier- Bres-Mariolle)

- Cases and Experiences:
 - Manchester, *Callum Thomas*, Manchester Metropolitan University
 - Stockholm, *Hans Brattström*, Stockholm County Council

Closing remarks by *Marc Gentilhomme*

Day 1: Monday 22 April

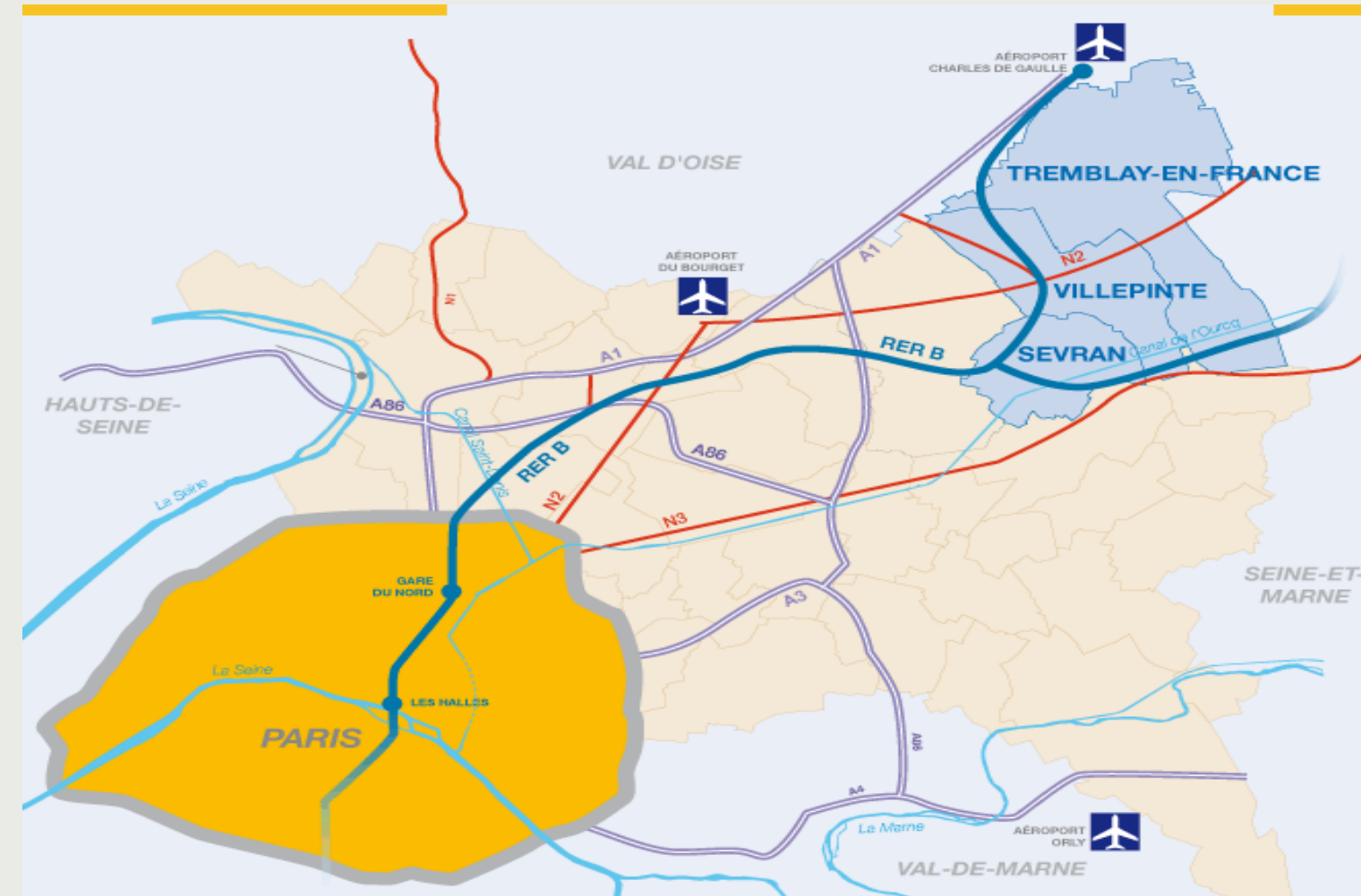
1. Territorial analysis and the role of the Communauté d'Agglomération Terres de France

By *Marc Gentilhomme* (Directeur Général des Services de la Communauté d'Agglomération Terres de France) and *Jacques Grangé* (Directeur de l'aménagement, Tremblay-en-France)

a. Role of the Communauté d'Agglomération Terres de France

The Communauté d'Agglomération (CA) is a Public Establishment created in 2010 grouping three municipalities (Tremblay-en France, Villepinte and Sevrans) and which will most likely expand geographically in the future. It is responsible for **urban planning**. For instance, it is responsible for the definition of particular zones of activity (freight, shopping areas, hotels, etc.). Most importantly for the dAIR project, it is also in charge of **public transportation** and housing. In addition to these competencies, CA Terres de France directly receives all the annual public budget of its three members¹. The budget is then re-allocated to the various municipalities. This is a major asset for the Communauté d'Agglomération which employs 15 people, mostly project managers.

¹ Communauté d'Agglomération Terres de France receives directly all the taxes related to economic activities (professional tax and VAT share). Other local taxes (e.g. from real estate) are directly received by the municipalities



Map of the area

Partnership with the private sector is essential in all areas of competence (mobility, training, planning...). Relations with the State are entrenched in a contract (Contrat de Développement Territorial).

Territorial analysis, and dAIR requirements

C.A. Terres de France is located North East of Paris, and in the immediate vicinity of Paris-Charles de Gaulle airport. As such, airport surface access and the activities generated by the airport are of importance to the functioning of the three cities of C.A Terres de France. It is served by the variety of transport axes that allow CDG to be not only an aviation hub, but also a fully intermodal platform with high-speed train services, local suburban trains (RER), coaches and buses.

CDG is not the only megastructure that is impacting Communauté d'Agglomération Terres de France. The [exhibition centre of Villepinte²](#) is also located in the area and is one of the largest exhibition centres in Europe. The Hotel Zone is also located nearby and has the second largest number of hotel rooms in France (after Paris).

What makes C.A. Terres de France special in the wider picture is that it is impacted by infrastructures that are designed for megastructures like the airport and the exhibition centre.



Jacques Grangé



Marc Gentilhomme

Both Marc Gentilhomme and Jacques Grangé insisted on the spatial structure, its interfaces with the various administrative structures and the economic benefits that can be reaped when they function harmoniously.

² The centre opened in 1982 and is the second largest in France. The centre covers 115 hectares and has 246,000 m² of convention space in eight halls

One key mission of C.A. Terres de France is mobility (more than € 1 million is spent on the issue every year). The priority of Terres de France is mobility at the level of the 'micro-territory' for local companies and residents whereas bigger projects are currently being designed at a larger scale ('Grand Paris'). This led to the development of an **Inter-Enterprises Mobility Plan** by major companies active around the airport. One difficulty is that the airport was originally conceived to be accessible by car. It was connected to the public transport system afterwards, which has been tailored to serve the overall region, rather than the micro territories.

Still, the local service of public transport is needed. The proximity to the airport has led numerous international companies to settle in the area. These companies require connections to and from the airport, and services in between the area (La Poste, DHL, ABX Logistics, etc.).

An interesting example of the potential mobility improvements that can be made in the area is the vast number of airport hotels (and related shuttles) serving the hotel area. Some attempts were made to rationalise the shuttle services by pooling the shuttles. Such a project could also lead, in the longer term, to using the shuttles for non-clients of the hotel. However, no agreement has been reached so far.

a. Examples of projects run by C.A. Terres de France

- i. **Aéroville:** This 80,000 m² shopping mall was designed in principle with people who work at the airport in mind. It is due to be completed by the end of 2013 and will create more than 2000 new jobs. However, the various layers of administration in charge of mobility and Aéroville have thus far made it impossible to agree on an appropriate stop for public transport.
- ii. **Aerolians:** This 200-hectare business area is located just south of the airport. The activities covered are mainly based around three economic functions that require physical contact with the airport:
 - a. business tourism and events
 - b. the knowledge economy
 - c. innovation and high value-added logistics.
- iii. **Densifying Paris Nord 2 business area**
- iv. **Enhancement of the exhibition centre in Villepinte**
- v. **Transport projects:** Several transport projects are being combined around the airport:
 - o 1way undertaking), RATP, ADP and RFF (French Infrastructure Manager). It will be led by ADP.
 - o RER B+ with more frequent trains (a train every 6 minutes as of October 2013)
 - o Grand Paris Express: automatic metro (line 17) linking the RER B line. This project is still to be finalised.
 - o An additional RER station called Aerofret located in the freight area.

Question from Nathalie Leclerc (Intermodes): Will I be able to use my Navigo Pass (public transport card) on all transport modes available in the area and in particular on the COMET line?

Answer from Marc Gentilhomme: The problem, from an administrative point of view, is that Terres de France is located over several zones. The city centre of Paris is 5 zones away. In the short term, it is not realistic to think that we could abolish this zoning.

Conclusion

The grouping of several municipalities can bring about synergies and create economies of scale. The main challenge is the interface between the various decision-makers. A holistic approach is, however, possible thanks to:

- An appropriate territory where the various municipalities are aware of the assets and problems that the airport is bringing;
- The right transfer of competencies and budget;
- Smart planning.

Paris-Charles de Gaulle airport and the regional airport system of Ile-de-France

By Etienne Berthon, Institut d'Aménagement et d'Urbanisme (IAU)



Particularities and traffic at the Paris airports

Charles de Gaulle, Orly and Le Bourget represent together the 5th airport system in the world on the basis of passenger traffic. In fact, there are 25 airports of various sizes in the Ile-de-France area. These **smaller airports** are important because they represent altogether the same number of movements as the two main airports, although

with smaller aircraft. The environmental impact of the smaller airports is therefore relevant and should not be forgotten.

CDG has expanded intensely since its opening in 1974. It now has four runways and nine terminals. This has allowed CDG to accept extra traffic from Orly, where in 1994 the number of slots was capped to 250,000 due to residents' protest. If one bears in mind that CDG still has the capacity to develop its traffic, it can be considered as the most 'powerful' hub in Europe (2nd for passengers, 1st for freight). It is also a triple freight hub with Air France, FedEx and La Poste all using CDG as the base for their operations.

Historically, Orly was more oriented towards domestic traffic but the cap on movements led to a change of the overall mobility strategy of airlines based there, including at national level. Many domestic routes were cancelled following the development of road and (high-speed) rail networks, while others were transferred to CDG; consequently, Orly now only serves medium-haul flights.

Together, Orly and CDG are connected to 360 cities around the world via 190 airlines.

Land access to the airports

Land access to the airports is the main weakness of CDG and Orly. The level of service and the price are not satisfactory, according to stakeholders. Aside from the extension of the tramway to Orly, other projects do not have a clear timeline (dedicated link to CDG or extension of the metro line 14 to Orly). There is also a project to link Orly to the high-speed rail system, and a project to link more directly CDG and Orly.

Despite the above, **public transport to the airport is gaining popularity**; nevertheless individual modes of transport are still being used by more than 50 % of passengers.

Perspectives and stakes

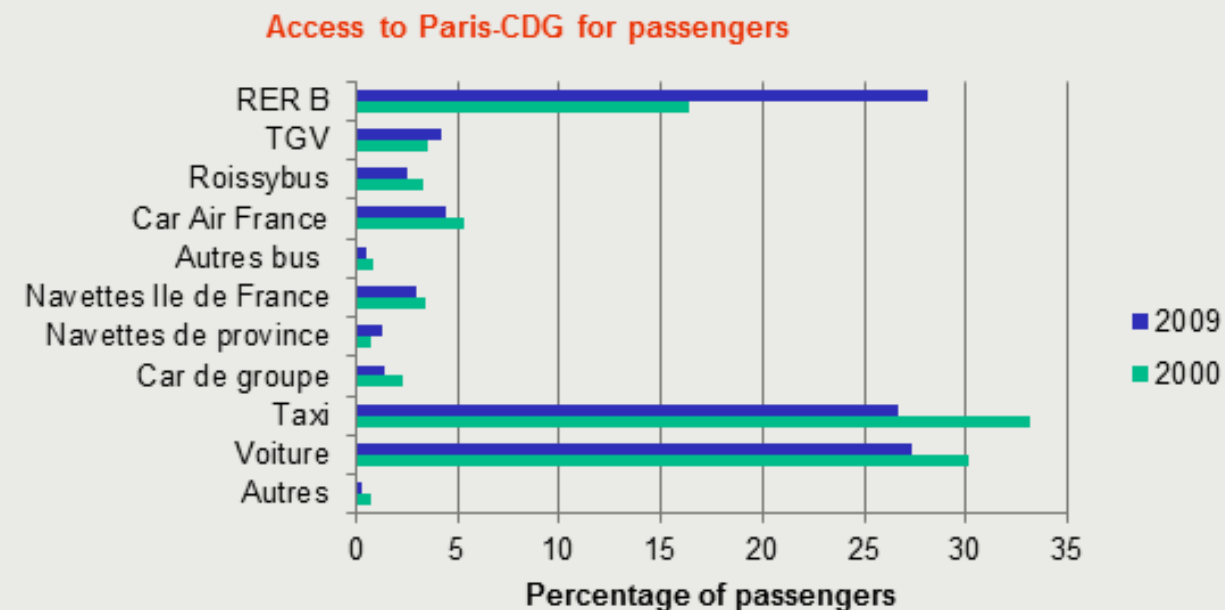
The development of **air-rail connections** will have a major impact on passenger traffic. Sustainable development is a good driver to optimise their complementarity. In the future, it may also impact freight traffic (Projet Eurocarex intends to develop high-speed train freight).

The airline industry is characterised by many uncertainties (economic and environmental crisis, geopolitics, price of kerosene, regulation, etc.). However, EUROCONTROL and the European Commission forecast a shortage of capacity in Europe by 2030. Orly and Roissy are prepared for this but still need to be further integrated within their home territories (quality of service, acceptance) and to improve their land accessibility.

Conclusion:

The data gathered by the French aviation authorities (DGAC) and the ARC led Etienne Berthon to support the orientation of the dAIR project:

- Most CO₂ emissions occur during flights, if you take into consideration the entire journey. However, they have decreased by a third in the last 20 years for 1 passenger/100 km. This confirms that airplane performances are of essence.
- However, a lot can still be achieved to reduce emissions in airport regions, as airport surface access is the main source of CO₂ emissions.



Airport Area study visit

Visit of the Maison de l'Environnement

The Maison de l'Environnement (House of Environment) has been designed as a hospitality area for providing information and fostering exchanges. It offers all visitors information on airport activities, actions undertaken as part of the sustainable development policy conducted by Aéroports de Paris and the history of airport development. It represents an essential tool in Aéroports de Paris' communication policy aimed at local authorities, local residents and associations.

a. Facts and figures about CDG Airport

Charles de Gaulle Airport extends over 32.38 square kilometres (8,000 acres) of land. The choice of this vast area was made based on the limited number of potential relocations and expropriations and the possibility to further expand the airport in the future. It straddles three départements and six communes.

Management of the airport is solely under the authority of Aéroports de Paris (ADP), which also manages Orly, Le Bourget, Marsa Alam in Egypt, and several smaller airports in the suburbs of Paris.

The planning and construction phase of what was known then as Aéroport de Paris Nord (Paris North Airport) began in 1966. On 8 March 1974 the airport, renamed Charles de Gaulle Airport, opened. Terminal 1 was built in an avant-garde design of a ten-story circular building surrounded by seven satellite buildings, each with six gates. The main architect was Paul Andreu, who was also in charge of the extensions during the following decades.

CDG currently has three terminals. Terminal 1 is the oldest. Terminal 2 was originally built exclusively for Air France but since then it has been expanded significantly and now also hosts other airlines. The third terminal (T3, formerly T9) hosts charter and low-cost airlines.

Terminal 1



Terminal 2



b. CO₂ reduction measures at Charles de Gaulle Airport (CDG)

Gregory Magnani (Technical Expert at Aéroports de Paris, Environmental and Sustainability Division) presented the CO₂ reduction solutions being used at Charles de Gaulle Airport (CDG). In terms of Airport Carbon Accreditation (ACA scheme by ACI³), the airport has obtained a **level 3 accreditation** ([optimisation](#)), which it intends to renew in 2013.

Objectives: The target for **the 2011 – 2015 period is to reduce CO₂ emissions by 25 %**. Other targets include a 12.5 % reduction in primary internal energy consumption per square meter of building and using renewable energy sources to cover 15 % of the final internal consumption.

Means: A **biomass plant** (operational since 2012) and a **solar farm** (2790 m² of solar panels) bring electricity to the airport buildings. CDG has adopted a high environmental quality approach through the use of the HQE (*Haute qualité environnementale*) certification for [satellite 4](#) (terminal) and the departure lounges of terminal 2E (100,000 m²). In fact, this allows energy savings of 30 % compared to the average of the other terminals. The airport has also invested in a high-performance thermo-frigo pump for heating and cooling.

³ Airports Council International is the only global trade representative of the world's airports. Established in 1991, ACI represents airports' interests with Governments and international organizations such as ICAO, develops standards, policies and recommended practices for airports, and provides information and training opportunities to raise standards around the world.

Measures have been implemented to reduce **taxiing time**, such as local management of departures (GLD - Collaborative Pre-Departure Sequence system), which in turn also help reduce fuel consumption and CO₂ emissions. The ICAO database (which includes information on CO₂ emissions from different engines) is the tool used for calculating CO₂ emissions from aircraft. As a result, the average aircraft taxiing time for departures at CDG in 2011 was 10 % lower than in 2007.

Aéroports de Paris (ADP) plans to buy 200 **electric vehicles** in the 2012 – 2015 period in order to reduce CO₂ emissions (20 % of the fleet will be replaced). The light train CDGVAL (launched in 2007 to make it easier to travel between the terminals), the TGV and RER lines already result in savings of 750 tonnes of diesel fuel and 2000 tonnes of CO₂ per year.

ADP, Air France, FedEx, La Poste, CIF, GSF and the Chamber of Commerce and Industry of Val-d'Oise have established a **joint mobility plan** for their employees (PDIE - Plan de déplacements inter-entreprises). The aim of the plan is to encourage employees to use public transport, [car sharing](#) or clean vehicles to get to and from work. Workshops and events are organised on different topics related to public transport such as the quality of the taxi services around the airport. Exchanges of good practices, information on the methods of transport available and the creation of a specific position of transport advisor in each company are just some of the measures put in place as a result of the mobility plan.

In 2011, the companies operating at the Ile de France airports set up an [Environmental Partners Club](#) (CPE). They drafted an environmental action plan that is subject to annual review and provides CPE members with environmental assessment tools.

c. Noise at Charles de Gaulle Airport

While CO₂ is a key issue at global level, the pollution that residents notice and resent most is noise pollution. In 2007, the French Civil Aviation Authority set up a programme aimed at explaining the reasons for aircraft noise to people living near airports. Two days per week, air traffic controllers explain to visitors to the Maison de l'Environnement the link between arrivals and departures of aircraft at the Bourget, Orly and Charles de Gaulle airports and noise emissions.



Visitors are not given information on the amount of noise produced by the aircraft, but there are tools to measure noise levels in some towns around the airports. There are noise restrictions at CDG airport from 12 p.m. to 5 a.m. (no commercial traffic).



CDGVAL

CDGVAL is a **light train** connecting the various terminals of CDG airport. It was developed in close cooperation with Keolis. AeroSat, the company that operates CDGVAL, is owned by Siemens and Keolis. The light train is run under a concession regime. Aéroports de Paris will launch a new call for tenders for the service in 2015.

The airport's first attempt to operate an automatic people mover, in the early 1990s, was called the SK 6000 project but it was not successful. Years later, part of the civil engineering infrastructure left over from the SK project was used to create the CDGVAL. The airport decided to build the light train system because the bus lines were overcrowded and getting from Terminal 1 to Terminal 2 took around 25 minutes, which was poor compared to other minimum connecting times (MCT).

Timeline:

- **2000:** invitation to tender for the first line
- **2001:** Siemens wins the bid for CDGVAL
- **2004:** STS and Keolis win the contract for the second line
- **April 2007:** opening of the first line
- **June 2007:** opening of the second line
- **June 2012:** extension of the second line



Information on CDGVAL

Line 1

- 3.3 km; 5 stations; 1 maintenance workshop; 7 train sets
- 1900 people per hour per direction (pphpd);
- 120,000 km per year per train set
- High availability objective (99.5 %)

Line 2 (LISA- Liaison Interne Satellite Aéro gare)

- 1.1 km
- 11 train sets
- Operating 52 metre trains
- Dynamic information inside and outside
- Also high availability objective (99.5 %)
- Operates 20 hours per day
- Trains up to every 2.5 minutes at peak times

Questions:

Léa Bodossian (ARC Secretary General): Have you measured the level of CO2 reduction between the buses and CDGVAL? At Heathrow the cost of the Pod was 19 % of the traditional cost of a rail line. What will be the next developments?

Sergi Alegre (El Prat): How many people use this system? What is CDGVAL's specific role?

Wim de Kinderen (Brainport): Is this a new product?

Dan Wolff (Eurotran): Considering the high level of penalty for delays, do you have contingency plans?

Franz Jöchlinger (Vienna Airport Authority): Who owns the rolling stock?



Answers:

ADP looks into environmental impacts; Keolis only knows the costs of operating CDGVAL. Passengers do not pay for CDGVAL. As a next step we have to keep the contract after it expires in 2015. We will face competition from RATP (at least).

It is a newer version of the system in place in Lille and Rennes.

They do not have the same frequency. The train is a mass transit system while CDGVAL is a light train built primarily for the airport. The RER arrives at the airport every 15 minutes.

ADP has a contract with a bus operator and when there are technical issues they intervene. This happens around 1 or 2 times per year.

ADP owns the rolling stock.

The contract with ADP includes 19 objectives and for each objective there are penalties. There is a € 15,000/hour penalty if the lines do not work for more than 15 minutes.

Speed regulates itself because there is a carpet containing information about speed and position on the track.

The electricity comes from ADP. Part of the electricity is produced by the airport and the rest comes from EDF (nuclear energy mostly).

Gare Routière Roissy-pôle / Bus Station Roissy-pôle



The Manager of the bus station Roissy-pôle presented his organisation. It is located between Terminals 1, 2 and 3. It is the **largest bus station in Ile-de-France in terms of the number of departures**. Keolis manages the station. It won the call for tenders in 2009 for a 5-year contract with the possibility of extension for another 2 years. There are 15 bus operators, including RATP, SNCF and ADP, operating 50 bus lines on routes from the airport to 90 cities spanning 6 departments. It has a capacity of 22 buses and a maximum of 12 buses can depart at the same time.

At present, the bus station is saturated and there are not enough platforms. Buses using the station pay € 420,000 annually: 60 % of these charges come from the number of departures and 40 % from the platforms. As a result of this charging policy, ADP does not have to pay anything at all. There are plans to modernise the station by adding 31 new parking areas and 8 new platforms.

Questions & Answers:

Wim de Kinderen (Brainport): Have you ever considered offering discounts or better departing positions for cleaner buses?

Léa Bodossian (ARC Secretary General): Can this be part of ADP's specifications of service?

Answer: We have not considered giving incentives for cleaner buses, but ADP could probably include such requirements in its next tender, although that would then have to be reflected in the ticket price.

FILEO

75 % of CDG employees have staggered working hours. As they work in many shifts in the companies around the airport, there was a need for an **on-demand bus service**. The Filéo system fulfils the needs of workers who do not have cars and work late-night shifts.

It is a 24/7 public transport service to/from the airport financed and paid for by the STIF (**Syndicat des transports d'Île-de-France¹**) and other counties in Île-de-France. Workers can take Filéo from 19 cities around the airport but a **booking** has to be made at least one hour and a half before taking the bus (16 % of bookings are made online).

The company has a database with the names and addresses of its clients. In order **to book, clients have to log into the system**. An added advantage of the booking system is that every client that uses the bus is known, and hence there is very little or no fraud or vandalism.

The system is flexible and allows for modification:

- If 30 people ask for Filéo on a specific route for a year then a normal bus is introduced on that route
- If fewer than 30 people use a particular regular bus service, then Filéo can be introduced on that route at night.

A ticket costs 2 euros if you buy it from the driver (the same price as the normal bus system), while [monthly passes](#) vary depending on the various tariff zones. It should be noted that the buses are **not 'green buses', but the system as a whole is green** as it allows savings of 30,000 tonnes of CO₂ (replacement of individual cars). Green buses could be considered, but then the whole system would be much more expensive as green technology buses are 5-10 times more expensive than normal buses and require specific maintenance.

The following measures will be looked at in 2013:

- Smartphone application
- The establishment of a paperless list and of a Mobility Agency.

¹ transport authority that controls the Paris public transport network and coordinates the different transport companies operating in Île-de-France.



Timeline:

March 1998: Allobus Roissy CDG connecting the airport to Goussainville, Sarcelles and Tremblay-en-France is introduced for a period of three years

September 1999: introduction of Allobus Villiers-le-Bel

June 2008: introduction of Allobus Othis-Villeparisis

June 2009: STIF call for tenders for the Allobus service

17 February 2010: signature of the contract between STIF and CIF

1 March 2010: beginning of the contract until 31 December 2016; launch of Filéo bus service

15 October 2012: introduction of 2 new lines: Filéo Sevrans and Filéo Villepinte

Day 2: Tuesday 23 April

Introduction: a territorial approach

Introduction to the programme of the day

Marielle Prins presented the agenda for the second day of the Study Visit which included presentations by Professor Callum Thomas (Manchester Metropolitan University) and Professor Eric Ballot (Ecole des Mines Paris Tech), as well as Hans Brattström (Stockholm County Council), Franz Jöchlinger (Vienna Airport Authority), Patrik Macho (Public transport in Prague Airport Region (PAR) Central Bohemia Region) and Antoine Bres (Atelier-Bres-Mariolle).

1. Sustainable social and economic development in a low carbon economy: airports and territoriality

*By Professor Callum Thomas,
Manchester Metropolitan
University*

There is a need to reduce CO₂ emissions from all activities and from every single part of the system. These reductions are linked to economic development. The air transport industry is one of the worst industries because of the intensity of CO₂ emissions and airlines now have trouble reducing en route emissions further because technological improvements are expensive. As the industry is going through exponential growth, emissions will go up every year for the next 20 to 30 years.



There are several drivers for action. These include the need to:

- make the aviation industry carbon responsible,
- alleviate carbon limits at airports (see example at Arlanda airport),
- reduce operating costs (energy/ C taxes) and
- adapt to a low carbon world.

Adaptation as a priority:

In this context, first movers have the advantage since companies that will reduce CO₂ emissions first will reap economic benefits and will better adapt to a low-carbon world.

Every activity has carbon implications and we have the ability to deal with carbon reduction in the same way that historically we have dealt with health and safety: it becomes part of the system and of the way we operate it.

A PhD student analysed the carbon account for Manchester airport. The percentages will differ from one airport to another, but the principles will be the same:

- 90 % of emissions will come from flights if the entirety of the flight is taken into account;
- 6 % from transport to and from the airport;
- 1 % from food;
- 2 % from utilities;
- 1 % from materials and waste.

Think global but act local:

Aircraft movement at the airport is influenced by the airport's policy and its own carbon emissions. As regards offsetting, millions of euros are paid by the aviation industry for carbon emissions. Instead of paying offsetting schemes to some part of the world, we should see if it is possible to set up a carbon compensation scheme that allows for local improvements that benefit the local population. For example, people living close to the airport could have the opportunity to be provided with low-carbon electricity or better insulation for houses. When these schemes are voluntary, people will be much more inclined to pay if they knew that the money went to the **local** industry.

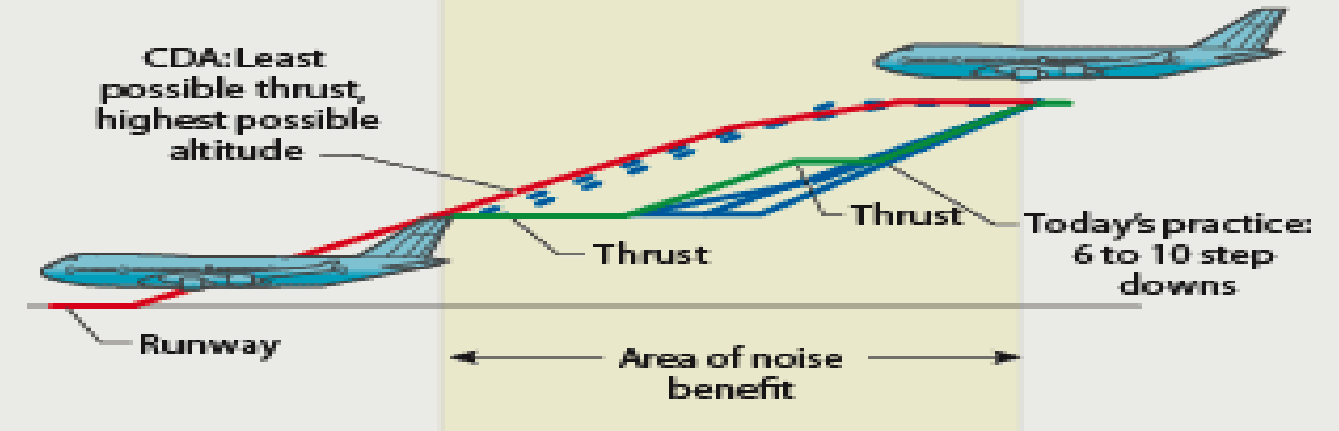
We must encourage airports to develop into intermodal hubs and use incentives in order to convince people to use bus and rail services. This may pose problems to airports as they make millions of euros from car parks. One solution

could be to start bus and rail services to Manchester airport for people coming from cities located far away from the airport.

Aircraft movements in the air are important. Departure routes take airlines as far as possible from inhabited area and therefore use more fuel and have longer routes. Brisbane (Australia) calculated the path caused by noise moves and the airport paid a charge for the fuel used for noise manoeuvres.

Carbon-efficient and noise-efficient solutions such as continuous descent and climb out should be used. Taxiway and apron design as well as air traffic management all need particular attention. There should be a system where an aircraft released from the stand has a direct route until it departs.

Continuous descent approaches



Use local assets:

Airport energy sources also need particular attention. In South Korea, the apron area is used for heat exchange and in Greece a lot of solar energy is used. It is possible to reduce energy consumption through **terminal design** and generate renewable energy.

Within an airport terminal you want to have happy customers that come back year after year. Shopping at the airport increases carbon emissions. However, airports can make profits, keep customers happy and at the same time reduce carbon emissions. A new business model is needed. There is a need to find a way in which one does not have the carbon costs of taking everything on the plane.

By 2015 or before, Manchester Airport will:

- be carbon neutral for energy and vehicle fuel use
- have reduced direct energy use by 25 % c.f. 2000
- ensure new buildings are carbon neutral for energy use
- will have reduced vehicle fuel use by 20 % c.f. 2006
- be generating 25 % of final energy demand from renewable sources (40 % by 2030).

A shared liability:

Every organisation in the airport needs to work and collaborate with the planning authorities and the communities around the airport to reduce the emissions that they control and to influence political choices. We must not let carbon fall through the cracks because nobody takes responsibility.

Questions & Answers:

Åsa Sahlqvist (Swedavia): It would be useful to have a compensation system connected with the aviation industry because people can see that the money is used to get reductions for aviation. You gave the example of the possible contradictions between noise mitigation and CO2 reduction. Can you elaborate?

Representative of Bologna: It could be possible for some airports to bear the costs for offsetting surplus for longer routes, but this is not always possible. It depends on distance and each particular company. In the case of Bologna we have restricted the nominal routes. Emissions from flight operations are not the responsibility of the airport operator. However, the operator can influence ground operations (better management of taxi times, etc.) through the master plan.

Léa Bodossian (Secretary General, ARC): You are inviting us to think outside the box. Two questions, then: do you have examples of 'outside the box' CO2 compensation schemes, and do you have any examples of passengers not being obliged to carry the products they bought at one airport to their destination? Could that be done via alliances between duty-free shops?

Sergi Alegre Calero (Vice Mayor of El Prat): A Spanish airline, Clickair (low-cost company based in Barcelona) has decided to give passengers the option to offset carbon emissions when purchasing plane tickets.

Professor Callum Thomas (Manchester University):

At Hamburg airport, if you buy an airplane ticket, you get a ticket to come from the city centre using public transport. We calculated the number of people coming to Manchester airport. If you encourage the use of public transport for people living far away you can lower carbon emissions without endangering car parking.

The debate between noise and CO2 was about whether we should increase flight paths to reduce noise levels or not. We can calculate the length of the additional distance that the airplane needs to fly and the airport can pay for the carbon offset according to this distance.

The management of the system becomes less effective when partners do not take responsibility and limit the perimeter of their intervention. Airports have to prove that they are doing everything they possibly can.

You can buy something in Manchester and collect it in Dublin. When you travel you can also choose to collect on return.

We need to look at the way carbon offsetting is credited but in the short term if you want to maximise the contribution you have to give an opportunity locally. For example Ryanair charges 40 cents for the ETS scheme while others charge € 2-4 in order to make profit out of this. There are clever ways of making profit and cutting carbon.

If you have the possibility to use wind or solar power you should do so. We are asking companies to make the most carbon efficient investment.

Intelligent Logistics: the ‘physical internet’

By Professor Eric Ballot, Ecole des Mines Paris Tech

The freight system is very fragmented:

Loads are smaller and smaller and it is difficult to completely fill a train. In order for the train to be completely filled, people have to collaborate. However, it is difficult to go further than the negotiation stage.

Each mode of transport is using a different system which reduces the efficiency of the logistics chain.



As a consequence most freight transport is done via trucks, and the load factor of trucks is usually low. This is inefficient, both environmentally and economically. Unfortunately the current system works well in terms of ‘just in time’ management and this is the reason why it is kept as such. In order to switch to a more efficient system, we need to keep ensuring the ‘just in time’. On top, reductions of up to 57 % of CO₂ emissions could be achieved by filling trucks efficiently.

Starting from this, Professor Ballot and a consortium team are developing a universal interconnection of logistics project. The most relevant comparison is with the internet, which is the reason why it has been named the ‘physical internet’. On the internet you have a multiplicity of providers and an even greater number of end users. Still, the data can travel. The idea is to use a similar functioning with physical goods instead of data. They could travel via different networks (= the various transport modes) and switch from one operator to another without problems. Instead of taking 2 days, delivery could take 24 hours.

To this end there is a need to trace each individual parcel electronically. We already have the technology to make every parcel and box traceable (chips, electronic labels, etc.). If parcels and boxes are traced using IT, they can be grouped into more concentrated flows.

Success factors

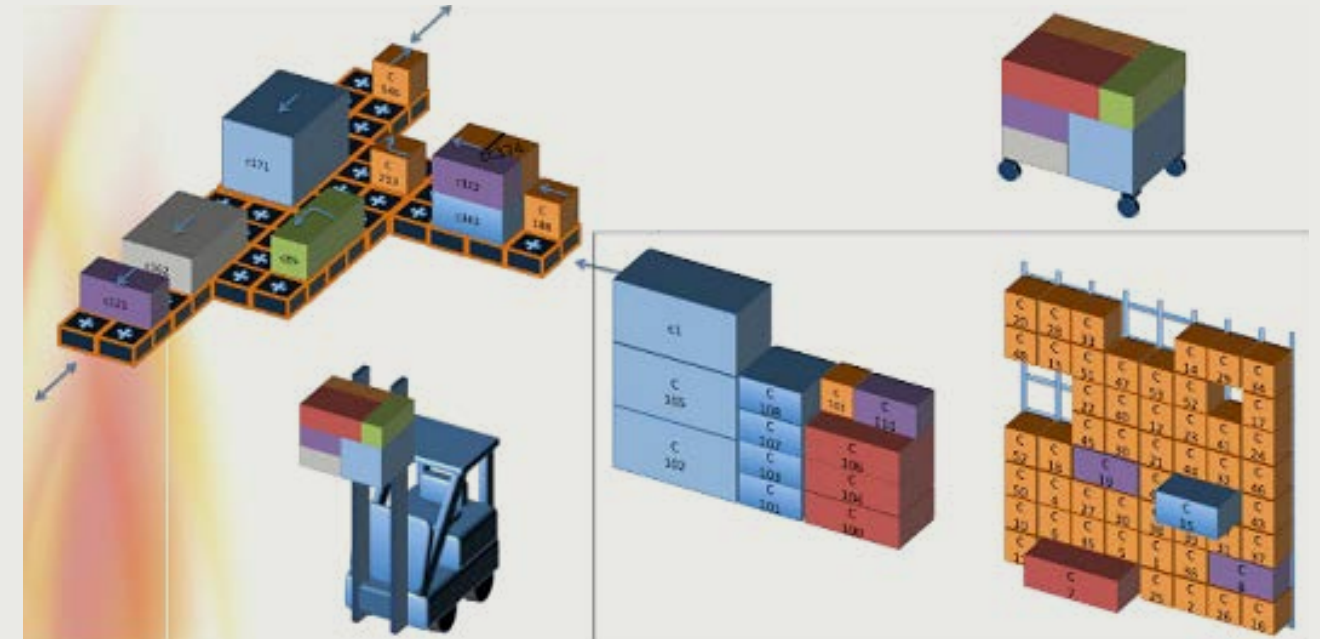
A key to success is to ensure data structuring formats in order to keep the packages confidential. A golden rule of logistics is that a client (Pepsi for example) will not want to travel together with its competitors (such as Coca-Cola),

notably because the competitor would gain an advantage by seeing the new packaging, new offers and new labels. Hence, there is a need to create new types of parcels and boxes that are completely neutral and where product information does not leak.

If you have to go through a dozen of hubs, the system will not work. For a system based on data to work, 2-3 hubs are enough. Wal-Mart, HP, Casino and Carrefour are some of the partners that are helping to develop this system.

Given the fact that CDG is the largest European freight airport and that the roads nearby are saturated, such a project would diminish considerably the number of trucks driving to and from airports and would therefore help reduce CO₂ emissions.

The consortium won a competition on the first routing centre with pallets. We are working on a European project involving intermediate containers that can connect to a shelf or be delivered directly at home. A group of professors from the UK, USA, Europe and Asia are working on this. Standardised containers are a first necessary step.



At the moment, we have to make the most with what we have. For example, even though green corridors (freight rail) and car sharing are developing, car trunks are always empty. You can take some luggage with you when you go from one place to another every day. This will have an impact on emissions as well. It is not only for big manufacturers and it can be done on small scales.

Questions & Answers:

Dan Wolff (Eurotran): The fact that you can have 2- or 3-fold more efficiency means that transport by lorries is too cheap at the moment. EU came out with specifications to increase the size and weight of lorries. This will increase efficiencies, but will also create more modal shift to road.

Jacques Grangé (Terres de France): What you are saying regarding freight transport also applies to air transport. The airport is an air hub as well as a road hub. There are several highways leading to the airport, but these are extremely congested and access to the airport is difficult. In terms of urban planning, airports need extra space to develop ancillary activities. Logistics areas are developing around the airport and at some point it will be hard to organise other activities.

Åsa Sahlqvist (Swedavia): Are there any incentives for the transport industry to move towards sustainability?

Professor Eric Ballot (Ecole des Mines Paris Tech)

We have a dilemma between road transport (affordable costs) and rail transport which is very conservative. It is hard to change the rail system, but capacity needs to be enhanced and managed in order to surpass the negative effects of this lack of innovation.

If you want to foster good intermodal connections, your system needs to look for freight elsewhere to make it more viable and useful. I support the idea of putting containers on trains.

We are thinking about all modes of transport including inland waterways and aviation, but this is marginal. We want our containers to be used in all possible modes of transport.

It is difficult to calculate the number of jobs that we can create. Booking systems generate new jobs and handling is a very intense industry, but we are possibly also destroying some of the jobs.

We do not have eco-taxes; the only taxes we pay are for fuel. The Eurovignette will be in place later this year and it will improve efficiency. There are not that many incentives to improve sustainability.

Two Models

15 ways to reduce the carbon footprint: Focus on airport accessibility

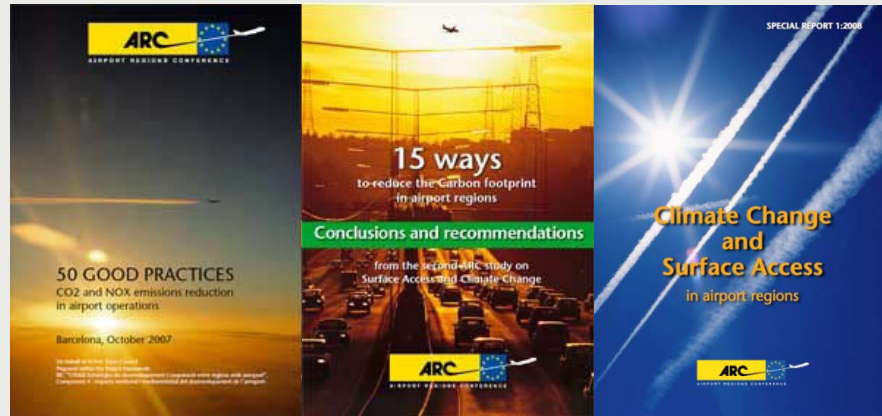
Hans Brattström, Regional Planner at Stockholm County Council

Several studies analyse the activities and emissions from surface access to and from airports. According to one of these studies, approximately 50 % of CO₂ emissions from Arlanda and Gatwick are related to surface access.



The Airport Regions Conference (ARC) has published a number of relevant studies regarding the reduction of CO₂ emissions:

- 50 good practices: CO₂ and NO_x emissions reduction in airport operations
- 15 ways to reduce CO₂ emissions in airport regions
- Climate Change and Airport Regions
- Climate Change and Surface Access in airport regions



The study on '15 ways to reduce the carbon footprint in airport regions' focuses on the different ways in which local and regional authorities can influence airport related CO₂ emissions. The objective has been to provide a tool for improved dialogue with the aviation sector. Nine airport regions participated in this study. The study identifies the sources and the determination factors for airport related CO₂ emissions and analyses the effects of different reduction measures:

Emissions from air traffic

- Size of airplane/ number of seats
- Fleet age
- Cabin factor

- Length of taxiways
- Air traffic management

Emissions from airport activities

- Heating and cooling
- Groundhandling, including airside vehicles
- Electricity for aircrafts on apron

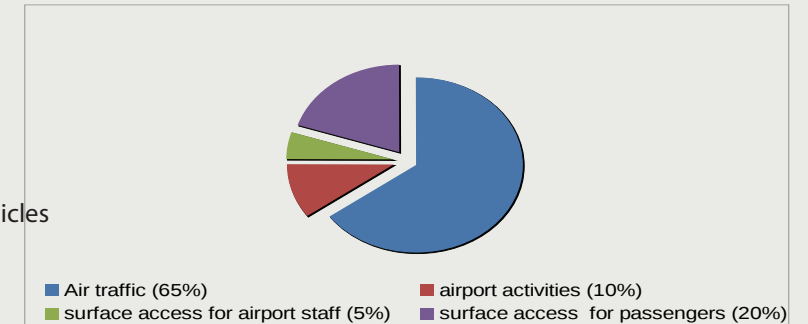
Emissions from surface transport

Depends on:

- Emissions per passenger kilometre for different modes (type of vehicle and fuel, source for the production of electricity, occupancy rate)
- Modal split (car, taxi, train, bus): depends on costs, convenience, information on public transport supply
- private car parked at airport
- 'Kiss and fly'
- Distance to airport

Numerous variables were studied

1. Length of taxiways
2. Load factor
3. Size of airplane
4. Age of aircraft fleet
5. Continuous Descent Approach (CDA)
6. Airport activities
7. Access toll for cars and taxis at airport
8. Occupancy rate in car and taxi
9. Share of Public transport
10. Environmental friendly taxis
11. 'Kiss and fly'
12. Cost of public transport
13. Staff travelling behaviour
14. Biogas instead of diesel buses
15. Share of passengers travelling by rail
16. Parking fees



Factors influencing behaviour:

- Information about public transport
- Chartered buses
- Taxi
- Rental cars
- Parking
- 'Kiss and fly'
- Strategy for public transport
- Cost of public transport during the stay

The **results** of the study indicate that:

- The carbon footprint varies between airports.
- There is a need to look at a door-to-door perspective.
- There is a need to 'green' all modes of transport
- Reducing 'unnecessary' trips to the airport is important. 'Kiss and fly' trips are the worst and should be eliminated as much as possible.
- There is a need to integrate surface access with normal transport and land use planning.

The simplified model for calculating CO₂ reductions focuses on the following criteria:

- Change of public transport share
- Change from diesel to ethanol or biogas buses
- Change of proportions between taxis, kiss and ride and private cars (parking)

Local and regional authorities can have a major influence on emissions from surface transport, but very little on emissions from air traffic and airport activities. There is no single quick fix; a number of measures need to be used and a number of stakeholders need to be involved.

Questions & Answers:

Marielle Prins (consultant): If you wanted to calculate emissions for your region you would have to fill in the figures for your region. Is this spreadsheet available on the dAIR website?

Professor Callum Thomas (Manchester Metropolitan University): One of the interesting challenges is that in different countries there are different predispositions to use public transport. For example, in the UK, people are more inclined to use private cars to go to the airport than in Sweden, where they prefer using public transport to travel to the airport.

Léa Bodossian (ARC Secretary General): This model is the right tool to convince politicians. Goteborg obtained good results using this tool.

Hans Brattström (Regional Planner at Stockholm County Council)

It should be on the dAIR website. The calculator is self-instructive and you can change the parameters.

As individuals we choose different actions, but we really need to be aware of this and have discussions in order to find incentives to change habits. We need to achieve a mental shift.



Towards an intelligent mobility – Patrick Gatellier, Thales research director



Most travel planners (e.g. TomTom™, Waze™):

- focus on one mode of transport,
- separate the public and private modes,
- do not take the current real-time situation of all existing means of transport into account,
- do not provide dedicated solutions for each demand.

Future travel planning systems will be able to provide a **customised** itinerary and planning for each demand even during rush hours, monitor each provided solution in real time and adjust it to travel. The Instant Mobility prototype is a comprehensive early implementation of these concepts.

The user makes an immediate travel demand and the system calculates the intermodal itinerary. We can calculate all the trips in real time, but since the system is not in place we use simulation data.

Instant Mobility Prototype:

- 1. Initial individual planning:** in a reference city (Bordeaux, France), each urban traveller is individually requesting a travel planning solution to go from their current location to their destination
- 2. Based on Real Time status knowledge of transport means:** The planning system provides a specifically crafted solution based on its current real-time knowledge of the position, relative speed and capacity of all known transportation means
- 3. Continuous tracking of traveller & transport means:** Once the solution is accepted by the traveller, the trip starts and the traveller's position is periodically reported to the planning system, along with the planned means of transport
- 4. Automatic planning adjustment in real time:** Based on events received from the means of transport, traveller, or planning system's external criteria

If you want to implement this system you have to **take into account the divergent interests** of travellers (want the

best journey), vehicle drivers (want the best itinerary and to save money) and local urban authorities (want greener transport and to promote public transport).

The prototype is using data from the Bordeaux urban area. The simulation currently uses 450,000 travels per day (departures only). The density of cars and buses reflects the reality. Overall, the purpose of the prototype is also to show a realistic simulation of the local situation.

When 60 % of the trip is done using public transport, you gain 5 minutes per trip and you optimise the carbon footprint.

Questions & Answers:

Marius Nicolescu (ARC): When you use this system you have to give up a bit of your privacy as you will be using your smartphone. Doesn't this pose a problem?

Question from the audience: You are at the experimental stage; when can you make an offer for regional governments?

Question from the audience: What is the price of the system and how would Thales break even?

Marielle Prins (consultant): In an airport, you do not know exactly when you arrive, but you have to be on time. How does the system cope with these contradictions?

Professor Callum Thomas (Manchester University): Programmes for tracking how long you spend in shops exist. As a consumer you are interested in having accessible travel solutions for going home or flying to the destination.

Patrick Gatellier (Thales research director)

You can find the results of the poll on customer satisfaction online. The overall conclusion is that if data is used for the person's interest and not shared with other companies then there is no problem.

It is like car sharing, it is just part of the trip. You need to ensure that people pose no danger to the other passengers and compensate in some way the person (pay a part of the person's trip). These people know their identities and there is a check-in and checkout process. We are not going to resolve the problem of tariffs, which are specific to each region.

You have the question of the various segments of travel. Once you complete the itinerary you know the total number because perhaps you will not follow the whole itinerary. This system allows for resources to be shared in the

best possible way.

The prototype is ready and we are fine-tuning it. Lots of people are travelling to and from the airport and you have the possibility to use car sharing (private cars, taxis, shuttles etc.). This system can drop all people off at a common point.

We are at the experimental stage. This tool is not a programme that can be applied blindly to all cities; it depends on the criteria of each city and the payment measures. The capacity to make all these calculations in real time is at the pre-sale/marketing stage in many cities. We have to try out a prototype in a limited area. You cannot apply this tool to an entire city as it could compromise the integrity of the system.

Thales will be able to make profits for instance by:

- Marketing the data even if the individuals using the service will remain anonymous;
- Suggesting itineraries passing by specific shopping districts or advertising zones (same as what is done virtually by Google).

This information is sensitive and should be managed by regional authorities. Cities should adapt this tool to their specific needs and have their own economic model.

The data is provided by travellers and when the system is established, people will provide data every time they book trips.

In the next version we will be able to see the rerouting of travellers when there is a problem on one route.

Round table debate



Léa Bodossian (ARC Secretary General): There are different territorial levels/administrative entities involved. Airport employees live in different municipalities, counties and even regions. How do you coordinate?

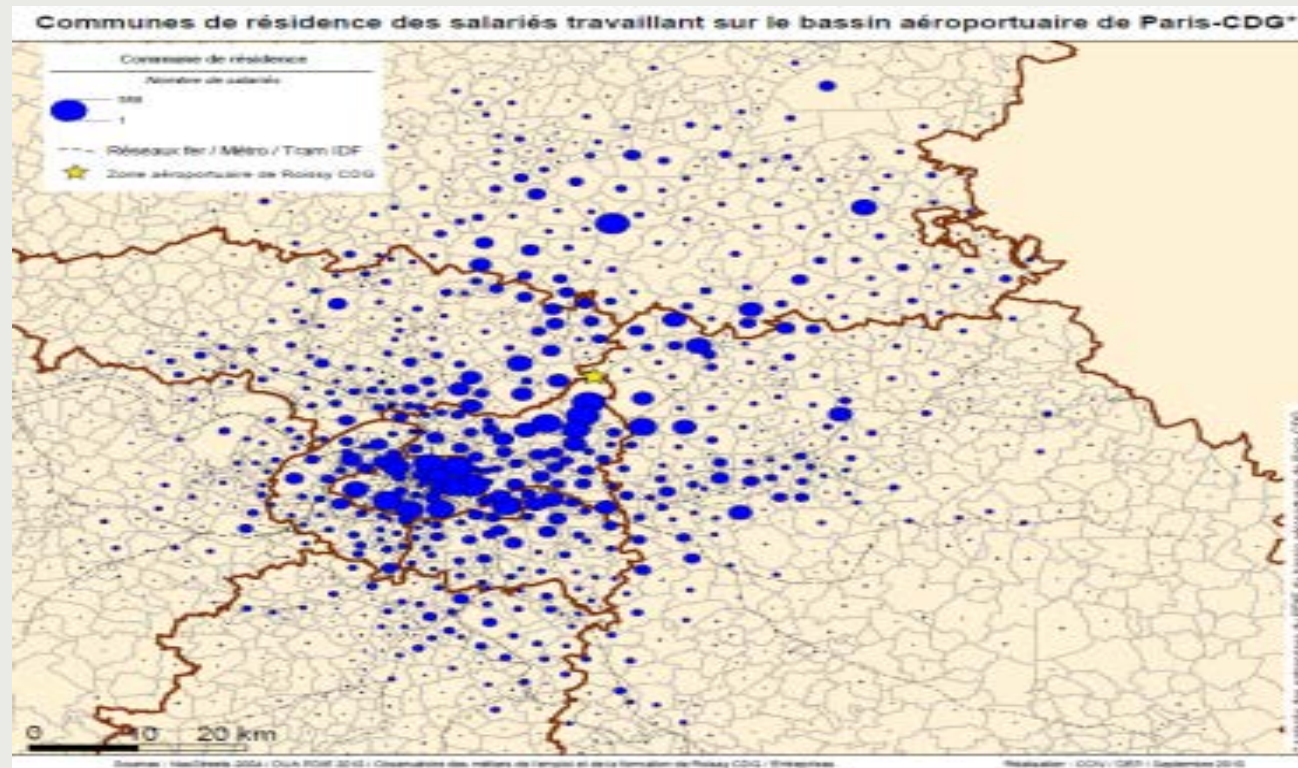
Marc Gentilhomme (Directeur Général des Services de la Communauté d'Agglomération Terres de France) Terres de France is in fact responsible for transport. This allows us to be in charge and make sure that the top-down and bottom-up approaches are well coordinated on the various existing and upcoming projects (Filéo, Grand Paris project).

Marielle Prins (consultant): As we develop the airport, different activities set in and mobility needs become more complex. How do you see your trip from a small village to an airport in 2030? How do you get there and how do you make sure you do not emit a lot of CO₂?

Professor Callum Thomas (Manchester Metropolitan University): What is fascinating is that the technologies

delivered ease our life, but also make us retreat to our private space. As time goes by, the idea of arriving at the airport and getting in a private car or taxi with unknown passengers will lead people to back away. How do we get human beings to help each other?

Marielle Prins (consultant): Individual journey does not mean that we are able to compute for you something that is different from all that is out there. Individual journey means personalisation of your journey. There will be as much as possible information processed about passengers before providing the right journey. Preferences such as multimodal journey or single mode journey and female or male drivers are registered. If there are too many constraints, however, this system might not work.



Regina Wiala Zimm (Vienna airport): In the countryside, people spontaneously enquire where you need to go if they see you walking. In the city, however, if you are at a tram station and the tram is late and you ask someone to take you from one point to another, nobody will stop to pick you up.

Professor Eric Ballot (Ecole des Mines Paris Tech): At the moment, when you are in a position to go somewhere alone you do it. If the context changes (increased prices, etc.), attitudes might follow.

Marielle Prins (consultant): This idea comes more or less from the strikes in 1995 which lasted for one month. As time goes by you begin to change your behaviour and to offer a seat in your car. From the passenger point of view, it becomes also possible to rate your driver at the end of the journey (car-pooling).

Hans Brattström (Regional Planner at Stockholm County Council): We need more efficient solutions for transport because there will be no money to invest. We need to use what we have in the most efficient way. When talking about the airport, as a passenger, you are anxious about getting to the airport on time and uncertain as regards the processes that need to be accomplished before boarding your flight (check-in, baggage handling, etc.).

Marielle Prins (consultant): We are not talking only about transport, but also about the environmental impact, social behaviour and technology. There will be a smart way to travel for employees, but will there be an integrated approach?

Professor Callum Thomas (Manchester Metropolitan University): If you have a **downtown check-in** for an airport then the aviation experience starts at that moment.

Marc Gentilhomme (Directeur Général des Services de la Communauté d'Agglomération Terres de France): Accessibility is the main goal for transport authorities but we have no role as regards take-off and landing. What role can we play?

Marielle Prins (consultant): A related question is: where does power lie?

Sergi Alegre Calero (Vice Mayor El Prat): Is it better to legislate or to tax? This is an eternal debate. Some say legislate but do not tax while others tax but do not legislate. Aviation is an industry still in national hands. Why do you have to buy the ticket with your name? You also have to go with your identity card to the airport. On a ship there are no constraints related to these issues. There are still a lot of national interests in aviation. **Influencing political decision-makers is one of the things that we do at ARC**, but we need a lot of information to share with the institutions. They should hear the voice of regions, especially metropolitan regions, in Brussels.

Professor Callum Thomas (Manchester Metropolitan University): Regions need airports for economic development, but we have risen above this level. An airport building is one of the places on the planet where you have people from all around the world and we have to protect this mobility. Air transport plays a critical role, but when it comes to pricing **we have to accept that there is an economic and environmental cost to mobility**. There is a limit to how much carbon you can emit. We should be trying to keep ourselves mobile because of the economic benefits that mobility brings, but in 50 years aviation has changed the planet's climate and we need a long term perspective.

Workshop 1: Challenges for carbon neutrality and surface access: freight platforms and their employment basins

Introduction to the workshop & outcomes of the local dAIR forum of 22 March 2013: the PDIE – Mariëlle Prins

The first workshop of the afternoon focuses on a specific problem in surface accessibility: the access of employees to and from the airport sites. Many projects dealing with the improvement of the surface access focus on the passenger, but employees have to get to parts of the airport site that are not necessarily connected via the usual public transport system. However, a large part of CO₂ emissions in surface access is caused by the trips that employees need to make between work and home.

It is often predicted that the twenty-first century will be dominated by air transport: the airport site itself will be a focal point in the globalised network flows of both passenger and cargo transport. Large airports will, through their size and importance, act as drivers of regional growth. The wider area around airports will transform structurally; firms and services providers relying on airborne inputs will relocate in the area, with major road and rail infrastructure connected to it. The enlarged urban field caught up with most airports, once situated outside the city, and now forms a part of the urban fabric.

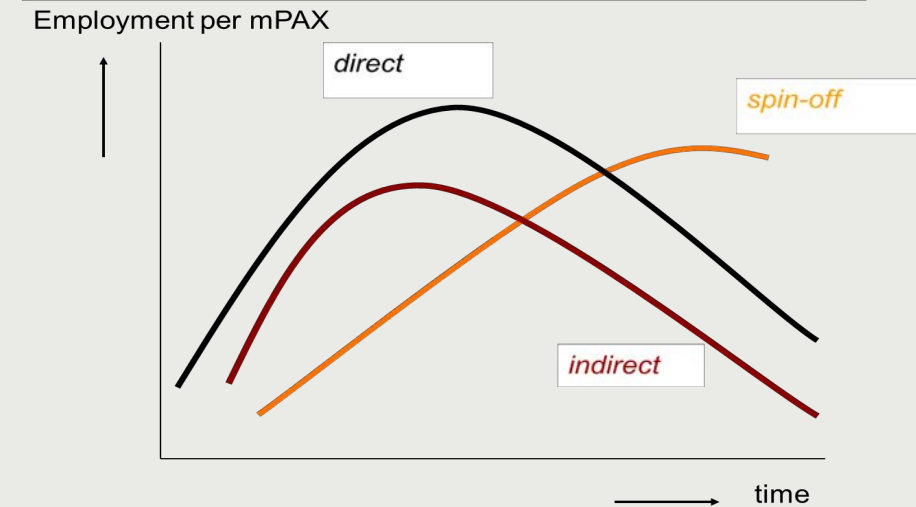
Visions on airport cities and in particular the ‘**aerotropolis**’ (the airport as hub for industry and as a driver of economic development) are promoted (Kasarda). However, none of the popular concepts such as aéroville, airport city, airport corridor airportmetropolis or aerotropolis explain the mechanisms behind the spatial manifestation of the airport as an economic centrality.

Evidence of the economic impact of airports is available, ranging from correlations between worldwide economic growth and air passenger growth to the employment impact per million passengers at a specific airport.

The economic potential of an international hub airport is estimated to be in the order of 950 jobs per million passengers and 900-1,000 jobs per 0.1 ton of cargo. Traffic growth at airports is reflected in **direct economic impact** figures. Over time, the size of the airport permits more and more indirect and derived economic activities and the spin-off effects start to increase. However, after the initial expansion phase, an optimum is reached and the number of jobs created per million passengers starts to decrease. The internal efficiency of the airport platform, even by sufficient technical capacity, is optimised which means that a larger quantity of persons and goods can be handled without creating the impressive external economic effects from the earlier period, and thus **slowing down the curve of the direct effects**.

Simultaneously the number of firms at the site increases, profiting from the volumes that transit through the site, and this creates the opportunity for **spin-off effects**. Next to the increase in the number of jobs at an airport area over time, the increase in spin-off activities urges better local surface access. Surface accessibility to and from the airport, but also in the airport area is a prominent issue.

The economic impact of an airport: Direct, indirect and spin-off effects over time



M.E. Prins 23-04-2013

Source: Button, 1995

Direct effects: employment and added value of activities carried out mainly at the apron, such as airlines, cargo handling, on-site hotels, etc.

Indirect backward effects: employment and added value of suppliers to companies and other organisations at the airport site.

Indirect forward effects: employment and added value of activities for which the airport is important or even essential for their functioning.

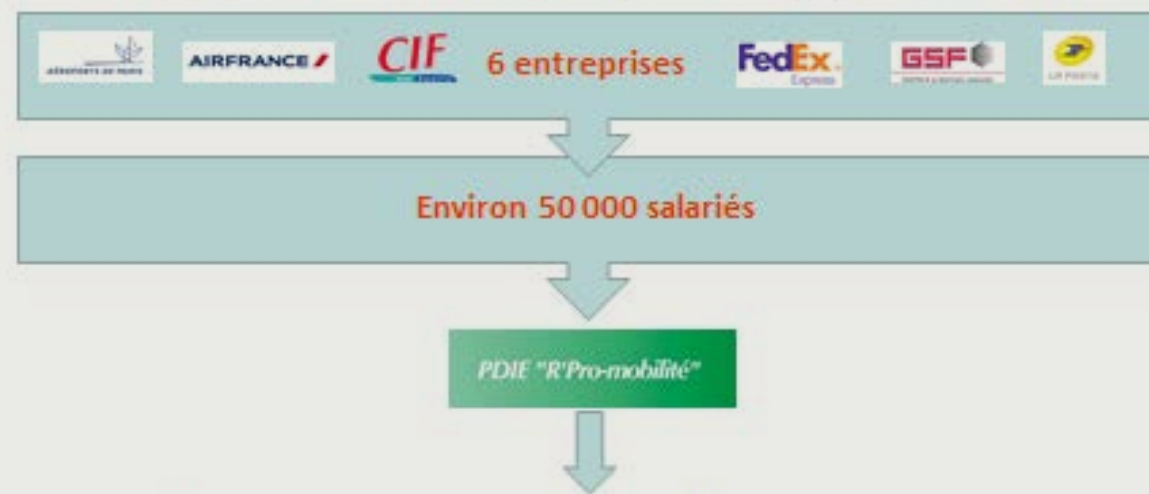
Spin-off: The effects that result from the formation-linkages. Employment and added value of activities for which the development of the airport is not in direct connection to the criteria and attraction of a specific location site, but for which the good functioning of the airport is nevertheless of crucial importance.

CONCLUSION: Next to the increase of the number of jobs at an airport area over time the increase in the spin-off activities urges a better local surface access. Surface accessibility to and from the airport but also in the airport area is a prominent issue.

There has been a lot of information about future development such as direct and indirect employment as well as spin-off activities. These activities are not necessarily linked to aviation, but allow the development of different businesses in the area. Transport planning is important for Air France, ADP, CIF, FedEx, GSF and La Poste as these firms need to have mobile workers. **Through the Plan de déplacements inter-entreprises** (Mobility Plan), all of these firms accepted to share the information regarding where their employees live. Most come from Paris, but also from the cities around Paris, which do not have good access to the airport, and that is why Filéo exists. Firms are located all over the airport site, and there is no even distribution.



Plan de déplacements inter-entreprises, presented on 22/03/2013 Local D-air Forum



Find solutions to ameliorate the accessibility of the employees to and from Paris CDG airport

We saw experiences yesterday during our area visit of the vast distances at Paris CDG airport and the vastness of the area, but airports are, out of security concerns, only accessible via a limited number of entrances. The need to access remote parts of the airport site at irregular working hours, when public transport services do not run, further complicates matters.

We hope to hear more from project partners in order to compare your experiences with what you have seen so far in Paris. One of the challenges for the dAIR project is to find a way to structure information and **benchmark innovation**. Are there mobility plans or charters in your region?

Marc Gentilhomme (Directeur Général des Services de la Communauté d'Agglomération Terres de France): The role of public authorities is to reduce CO₂ emissions. The question of **housing** is a very good one. However, it is not possible to force employees to live closer to the airport and thereby reduce transport demand.

Léa Bodossian (ARC Secretary General): In Geneva, they have an interesting Mobility Plan for transport to and from the airport. The airport offers a ticket to the city centre and there is a generous mobility scheme for people working at the airport. The airport makes a lot of money out of parking. As there is no land availability, the airport imposes a very expensive fare for parking. **The increase in parking at Geneva airport is sufficient to finance free tickets for passenger to the city centre.**

Intermodality and sustainable mobility around airports: the case of Paris – Jacques Grangé

There are two partners that CA Terres de France wished to involve in this session: Carex and FedEx. Carex is in a difficult situation. Its chairman was a French MP representing our constituency of Val-d'Oise. However, he is now in the opposition, which does not help him promote his project. Neither DB nor SNCF supported this project. We do not know what will happen.

CA Terres de France also invited Fedex to discuss several issues with them such as employment of young people living near the airport and [aerotropolis](#), but they were not available. We will try and involve them during the third workshop which will take place in November.

CA Terres de France needs to look at the question of intermodality because it is interesting for the metropolitan area. There are two ways of looking at this from the roman perspective, the *cardo* and the *decumanus*. Our metropolitan areas do not reflect the traditional layouts of cities, but they are multipolar areas.



Map of Cassini: the proximity of royal roads increased transport on these routes

There are several roads (A1, A3, A 104, the Francilienne) and railway links (especially TGV) connecting the airport. CDG is at the centre of a European high-speed network with connections to Strasbourg, Frankfurt, Stuttgart, Munich, etc. CDGVAL has improved connections between the terminals and in the coming years CDG Express should also be a reality.

Cases and Experiences:

Leipzig/DHL: the Jobticket – Achim Lohse (Economic Development Office, City of Leipzig)

Jobticket is the result of cooperation between the public transport association Mitteldeutscher Verkehrsverbund and DHL. A rising number of employees at the DHL-Hub are using the advantages of Jobticket. The ticket is free for anyone traveling within the first two tariff zones. The schedule has been tailored to the hours of the various shifts and to facilitate transfers. This ticket can also be used at the weekend to travel with family members.

DHL and Aerologic started using Jobticket in 2008 (50 % of the employees – 1,500 contracts). The reason why people use Jobticket is that parking space is scarce at the airport. As employees often work in fixed night shifts there are traffic problems at the beginning and end of shifts. Moreover, a lot of the people working at the DHL Hub do not have cars.

The City of Leipzig is trying to extend the Jobticket to the employees of the airport and companies based in the airport area. The instruments for implementation are surveys, marketing initiatives and public relations campaigns.

General Information about the City of Leipzig:

Surface access-public transport today

Passenger terminal:

- airport express from Leipzig – Halle
- frequency to the airport every hour (15 min. trip)
- long-distance railway network (intercity)

Cargo – Area South (DHL):

- S-RER Commuter Train Leipzig – Halle
- frequency to the airport (17 min. trip)

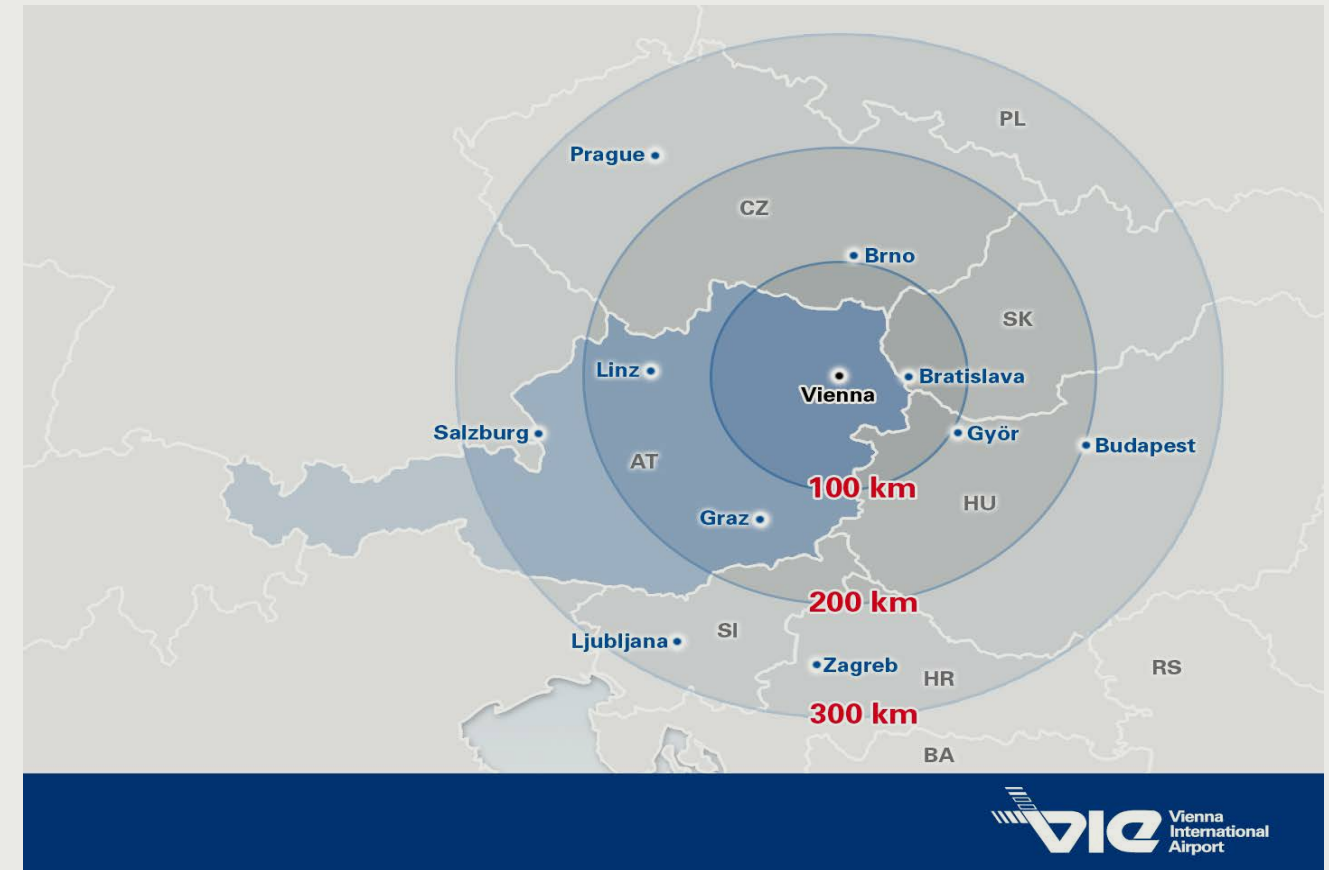
- A Schnell Bahn system will be in place from Leipzig Central Station
- Opening of the City Tunnel by the end of 2013
- to the airport every 30 minutes
- long-distance railway network of DB

Airport employee access at Vienna Airport – Franz Jöchlinger, Vienna Airport Authority

Vienna Airport – Key data

Flughafen Wien AG

- Privatised in 1992
- Ownership structure
 - 20 % Province of Lower Austria
 - 20 % City of Vienna
 - 10 % Employee foundation
 - 50 % Free float
- Passengers 2012: 22.2 million
- Transfer share: approximately 31 %
- Companies on site: 230
- Employees VIE Group: 4,525
- Employees on site: approximately 19,000
- Full service provider (incl. Ground Handling)
- Number of flight movements: 244.7 thousand (in 2012) and 246.2 thousand (in 2011)
- 1.2 flights per person per year
- The leading hub to Eastern Europe with 38 destinations



Vienna airport has to think about the third runway which will be opened most likely in 2022. This third runway is needed for only 4-5 hours per day. In order to build a third runway, a long mediation process was launched between from 2000 to 2005. A **Permanent Communication Platform** (Dialogforum) was founded in 2005 to deal with issues such as the noise protection programme and rules on night flights. The **Environmental Impact Assessment (EIA)** is still on-going and the final decision should be taken by 2014/2015.

Vienna airport has 22,934 parking spaces. Most people use the parking spaces for 3 hours and these are mainly people meeting or greeting passengers. Not a lot of people use the parking grounds for their journeys. There are several bus connections to Budapest, Győr, Prague and Brno, and there is also a **free shuttle bus between terminals**. Recently, Vienna airport opened a new **bicycle path** for employees living close to the airport who can now rent a bike

to use at the airport. Vienna airport employees can use these bikes for free.



As regards rail connections, the **Schnell Bahn (local)** and **CAT (City Airport Train) operated by Flughafen and Bundesbahn** (36 times a day, every 16 minutes) provide connections to the airport. Many airlines (17 airlines) offer the possibility to check-in up to 75 minutes before departure in the city centre. **Pre-evening check-in** from 6 PM for all Austrian flights is also available 24 hours before departure. Employees of Austrian airlines can use CAT for free.

Ticket costs

- **CAT Ticket:**
 - **Online Ticket:**
One-way: € 11; round trip: € 17
 - **Special Offers** (for members of several associations, etc.)
One-way: € 10; round trip: € 16
 - **Combination with** Single or 24h / 48h / 72h ticket for **public transport in Vienna City** (€ 13.5 for Single)
 - **Combination with 'Cat-Cab'** - Taxi2CAT (Single € 28 - € 32)
- **Bus Ticket Vienna Airport Lines**
- **Centre of Vienna - airport**
 - One-way: € 8; round trip: € 13
 - **PARKING:**
 - 1 hour: € 3.70 - € 4.50 / 1 day € 24.70 – 36.40

Vienna airport does not have connections to international rail traffic, but in the next two years a new station will be built and direct connections to Berlin and Salzburg will be possible.

Questions and Answers

Representative from Bologna: CAT and S-Bahn are quite similar and they go to the city centre of Vienna. Is there competition between them?

Franz Jöchlinger (Vienna Airport Authority): We wanted to have better connections and it was not possible to bring in the Bundesbahn so we decided to bring in CAT. We need to find ways to increase the number of passengers for CAT which is more expensive than S-Bahn. You pay for each zone. CAT and S-Bahn have different points and times of departure.

Public transport in Prague Airport Region (PAR) – Central Bohemia Region, Patrik Macho

Prague is in the Central Bohemia Region and has around 2.5 million inhabitants. The regions cooperate closely together on transport issues.

Vaclav Havel Airport is 15 minutes from Kladno, the biggest city in the Central Bohemia Region. There are three regular bus lines that provide connections to the airport.

What is the most adequate solution to provide rail connections to the airport: rail, metro or tram?

In order to connect the city centre of Prague to the surrounding cities, one of the most advantageous solutions is rail transport. There is an **on-going study on a new railway track**. The expected travel time using this track will be around 20 minutes. We will build some parking spaces as well as park and ride facilities to reduce the car flow to Prague. The study will show which direction is more advantageous for the train track: East or West. Prague authorities are also considering **connections with the tram system**.

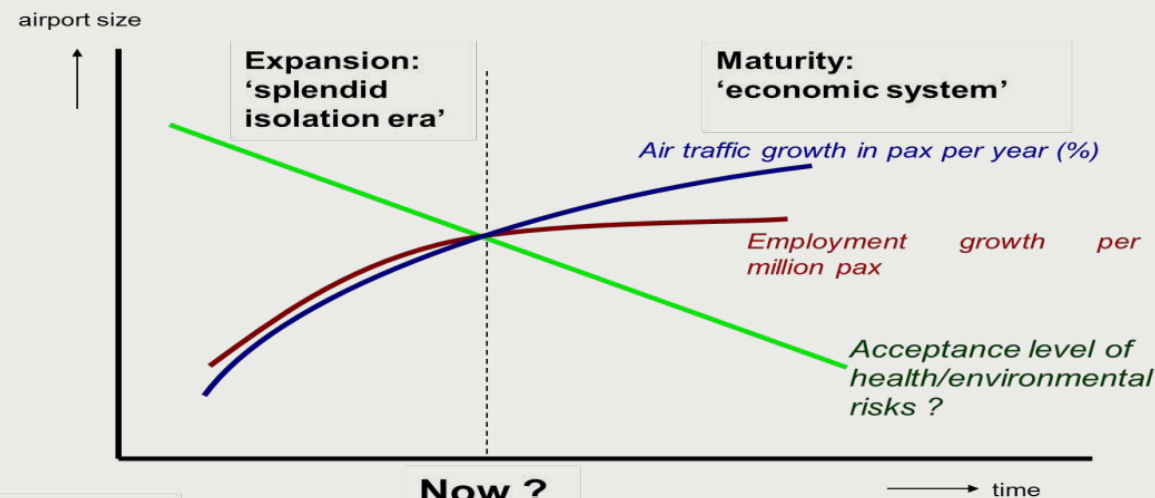
In the long run, Prague Integrated Transport and Central Bohemian Integrated Transport aim to unite the integrated systems for both regions. Central Bohemian integrated transport is cooperating with Prague to **reduce the usage of cars and CO₂ emissions**.

Workshop 2: Innovative actions: from project implementation to contractual networks

Introduction to the workshop & observations on the outcomes of local stakeholder forum – Marc Gentilhomme/Mariëlle Prins

The environmental debate triggered a discussion about the turning point. All around Europe, and even around the world, a turning point is reached when decisions regarding infrastructure development and airport planning are not (any longer) the exclusive domain of airport authorities. This turning point can be seen as a watershed between the expansion phase, where the airport could be developed as an infrastructure facility, and the acknowledgement of the airport as a regional driver for growth.

A turning point?



Now ?

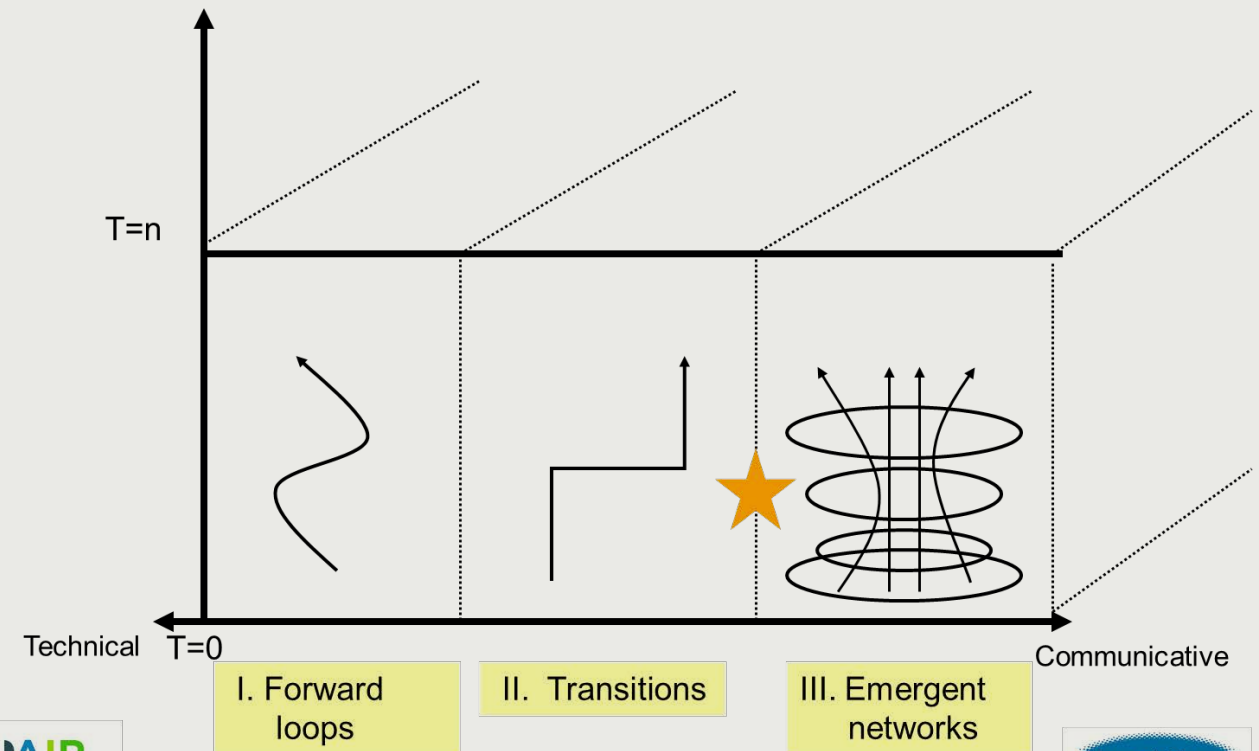
time

When considering the airport in its stages, from mere infrastructural project through a nascent economic centre towards an economic system, the way the airport was dealt with in planning terms has changed accordingly. Starting out with more or less 'insular' infrastructure plans, through more comprehensive airport development plans with

accompanying cost-benefit analyses (mostly aimed at 'selling' airport expansion) through multi-actor approaches (when the airport expansion plans met with resistance).

Planning: from technical to communicative approaches

Based upon: De Roo, RUG



Our turning point: if airports are economic systems, planning involves dealing with a complex system.

On 22nd March CA Terres de France held a **forum dealing with innovation, bike lanes, fleet renewal at La Poste, ACA, ACR's strategy, Filéo and PDIE**. We realised that there are many initiatives and an increase in multi-actor cooperation, but there is a real risk of cutting up the issues. The dAIR project should seek to give examples of practices that are multi-actor approaches and communicate them to the other regions.

Antoine Bres will talk about the territorial development contract. CA Terres de France hopes to make use of your experience to compare and contrast the situation in different airport areas.

The cases that can and will be told, such as the one about Stockholm and Manchester, illustrate that the issues faced by airport areas are key. Of course the themes of surface accessibility and carbon neutrality are in the front row, but noise, adequate housing, or indeed the reality that the degree of urbanisation around airport sites is mounting also need to be tackled. The fundamental questions are:

- Will we evolve to a low-carbon economy?
- What will the role of aviation be?
- What will an airport look like in 2050; what transport systems should be in place?
- How to discern between all the tools, projects and ideas that we have at the moment?
- Which ones are lacking and which ones need to be given priority?

Sustainable development in an area defined by mobility: the proposals of the Contrat de Développement Territorial/Territorial Development Contract – Antoine Bres, architect and urban planner (Atelier- Bres- Mariolle)

Marc Gentilhomme: This territory involves six municipalities, and it was not easy to see the difference between all of them. Antoine Bres is an urban planner and an architect. CA Terres de France has been working with him for three years.



Antoine Bres: What I will show you is the transition from isolation to the economic system that we have today i.e. from a silo approach (lack of collaboration and standardisation between business units) to a more comprehensive approach combining different elements and forming networks.

The space inherited is the fruit of last century's urban planning legacy. CA Terres de France had to draw up a territorial development contract which led to the restructuring of the area. There are activities on all scales, international activities, office space, service areas, and there will be large shopping centres.

The first objective is to **bring consistency**. There is a need to turn the patchwork into a more consistent ensemble and stitch up everything. In order for that to happen, we need to join the different elements: shopping centres, exhibition centres, conference centres, etc.

Several types of **resources** exist to reach this objective:

- economic resources
- landscape and agricultural resources.

There is a need to generate synergies and create dynamic movements between these points. For instance, 2 million people use the hotel shuttle buses to get to the airport from the various hotels. CA Terres de France has established a transport link (the **Comet project**) to facilitate short-distance transport. There will be 15 stops along this route using the cabotage system.

The Comet platform is well connected to the highway networks and major transport infrastructure networks. Soon, it will be connected to the greater Paris express network, which was initially designed to link up the various regions of Paris.

The second objective is to make sure that this powerful economic engine will become the driving force for the **development of certain parts of the territory** which have not yet been developed. The objective is to see how this dense network of transport infrastructure can foster **better cooperation** in the territory. There are a number of programmes that aim to meet the needs of passengers passing through Charles de Gaulle.

Sustainable development means working with what already exists. Instead of focusing on quantitative elements, we focused on qualitative elements. We would like to create possibilities and opportunities for people to benefit from the area's potential development.

Questions and Answers:

Léa Bodossian (ARC Secretary General): you talked about including the airport in the greater Paris region. How will that work?

Marc Gentilhomme: It is not about pitching one against the other, it is about studying the type of development we want for CA Terres de France. This can change with the political scenario. The current government would like to pursue the previous government's development plans and include this in an integrated transport network. There is going to be a link from the city centre to the airport.

Antoine Bres: Some works revolve around what we should do while we are waiting for the greater Paris line and what is the short-term solution in the meantime. Comet is just a small change in the lines that already exist. We really have to put the pieces of the puzzle together and change **from a fragmented approach to a holistic approach**.

Cases and Experiences:

Manchester, *Callum Thomas*, Manchester Metropolitan University

Manchester airport is in the process of developing an [aerotropolis](#). What is Manchester airport trying to achieve with an aerotropolis? Sustainable mobility or increases for the airport itself? The airport must make sure that it has the environmental capacity to grow.

There are more people exposed to noise at Heathrow than at Paris and other airports combined. Heathrow cannot grow for environmental reasons. One of the options is to build a new airport; however, this requires a ridiculous amount of money. This will solve the problem, but then you have to deal with the population.

When one uses the word 'sustainability', one has to be careful. Everyone talks about sharing best practices. Everybody is participating in environmental development programmes and consulting on this topic. **Next practices** are need, not business as usual. Let us try to look at the long-term perspective and start thinking differently about what an airport is.

Marielle Prins: dAIR should find next practices, not best practices.

Stockholm, *Hans Brattström*, Stockholm County Council

I have been dealing with aviation at Stockholm Arlanda airport since the mid-1980s and big changes have occurred since then. The airport used to disregard dialogue with the local and regional authorities. Dealing with the airport was a question of sufficient airport capacity within the region and whether a second airport was needed or not. At that time, noise was the big question as it was causing problems for neighbouring municipalities.

In the 1990s, the **rail connection** at the airport became operational. In early 1990s Uppsala (which is outside of the county, and the fourth biggest city in Sweden with the biggest university and research facilities) and the surrounding municipalities complained that they were not taken into account. As a result, cooperation was established between Arlanda and Uppsala to encourage integration of the labour market and make the most out of the economic development in the territory. A **forum** where all the relevant stakeholders could meet was proposed in order to enhance the functioning of the airport, increase productivity and work on reducing the environmental impact.

At the same time, the civil aviation administration was working on an action programme for Arlanda airport, focusing on the emission cap, which foresaw that in the coming years emission limits would be reached. The administration drew up a plan to tackle this issue. Regional and local authorities, state agencies and all relevant stakeholders signed a letter of intent to work towards better accessibility with fewer environmental impacts and offer possibilities to improve international connectivity. EU funds financed a number of activities which proved to be successful. This was also a good way to **establish cooperation and build confidence**. Now regional and local authorities, state agencies and all relevant stakeholders have identified a number of activities to promote public transport and accessibility, and a new letter of intent will be signed.

Stockholm Arlanda Airport participated in **another INTERREG Programme** dealing with airport-related economic development. Stockholm region, as the host municipality, and the other municipalities were partners. The results of working together brought about good cooperation between the municipalities.

Åsa **Sahlqvist (Sweden)**: We are looking forward to welcoming all dAIR partners to the Stockholm study visit. More information on the letter of intent, our work at the airport and the measures implemented at Stockholm Arlanda Airport will be presented during the study visit.

Closing remarks

Marc Gentilhomme thanked Jacques Grangé and Marielle Prins for the organisation of the event. A lot of interesting information and tips were presented during the event. The Stockholm study visit would be an interesting follow-up.

Annex I: Venue of the dAIR Study Visit organised by Communauté d'Agglomération Terres de France

Dates: 22-23 APRIL 2013

Venue: The Hotel Kyriad Paris Nord 2

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dAIR - Decarbonated Airport Regions

Interreg IVC Project, funded by the European Regional Development Fund

Lead partner: City of Eindhoven

Communication: Airport Regions Conference

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