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APPENDIX

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0 Executive Summary (Workshop Report on European Air Transport Scenarios)

This MINIMISE workshop was held in London in December 1997 as part of the air transport case study. The report summarises the main influences which were identified by participants on the long term development of the sector, in the context of interoperability. The report also outlines several key policy areas which were highlighted in workshop discussions as important and complex issues needing distinctive objectives and goals.

The main influences identified were economic growth and forecasting of cyclical trends; airport capacity developments; EU external aviation policy; the internalisation of externalities and environmental policy; the development of integrated transport. In each of these areas there is a need for clear decisions to be taken with regard to policy approach (liberalised or regulated) and goals, the role of government and the extent of reliance on market forces. Mixed policy strategies give rise to complicated and sub-optimal outcomes, but are necessary to achieve a broad range of policy goals. In the report, the interlinkages between the various issues are highlighted. The key policy areas discussed relate to data needs for the air transport sector; airports policy and the corporatisation/privatisation debate; air freight strategies and social air service policy.

The main conclusions from the workshop are that while the EU has liberalised the airlines, considerable control over the structure and future development of the sector will continue to be exercised by state and local governments through the airports. The capacity constraints at an increasing number of the larger airports combined with the need for a flexible strategy for the efficient management and planning of the EU's airport capacity are the most important issues influencing the air transport sector's medium term development. Concern for the environment and the increasing pressures placed on air transport by environmental policies will have a key impact on the long term development of the sector.

Air transport, particularly on the freight side is changing very rapidly in Europe. Data for the sector has always been poor but is becoming increasingly less reliable and comprehensive as more private sector companies service the market and reporting requirements have not kept pace with the changing market structure. Good data are the cornerstone of sound policy development and this is an area identified as crucially important in the drive towards planning for interoperable transport systems.
Key Words: [Airport capacity; pricing policies; external aviation policy; environmental policy]
1 Introduction

The aim of this small workshop of invited participants was to consider the prospects for the development of European air transport over the next two decades. It forms part of the air transport component of the EU's 4th Framework Programme's project MINIMISE (Managing Interoperability by Improvements in Transport System Organisation in Europe) and seeks to provide some expert views on how air transport policy at the Union level will need to evolve in order to meet the challenges of achieving optimal interoperability in the medium term.

The overall project is multimodal in its orientation but this workshop touches upon other modes only in so far as they are relevant for the development of interoperability in the air transport sector. Interoperability can be defined in terms of reducing excessive impediments to the optimal efficiency with which various providers and users of passenger and freight transport can interact.

The aim of the workshop was to provide for a wide ranging discussion, focused around a number of predetermined issues. These issues are

- Development of external EU air transport relations
- Policy regarding strategic airline alliances
- Criteria for awarding subsidies for social based air services
- Policy on predatory behaviour by airlines
- The development of EU air cargo transport
- Charging for the use of EU air transport infrastructure
- Criteria for investing in new EU airport capacity.
- The creation of improved air traffic management
- Integration air transport with other modes

The aim is not to come up with a blue print as to how these and other issues may be resolved but rather to consider how the adoption of different policy options within a variety of alternative futures (e.g. a larger EU area, faster or slower economic growth) will impact on EU air transport. The number of futures to be considered is very small, and involved taking just one or two extreme possibilities alongside an 'Expected Future'.

The workshop took place at the Bartlett School, University College, London, UK, on 19th December 1997, and involved a small number of invited attendees. This report sets out the workshop's discussions. Participants were not expected to produce any documentation, the report being written and revised in the light of participant feedback, by MINIMISE members. The Workshop agenda and a list of participants are included in the Appendix.
2 The Air Transport Case Study within MINIMISE

MINIMISE (Managing Interoperability by Improvement in Transport System Organisation in Europe) is a funded project forming part of the EU Fourth Framework Programme in Strategic Transport Research. The primary aim of MINIMISE is to better understand the interrelationships between interoperability and three key factors: (i) competition and deregulation, (ii) transport system organisation and (iii) capacity management. The general focus of the project is on reducing costs and trying to increase the productivity and the quality of the transport system by enhancing interoperability, so that societal welfare gains will accrue from a reduction in transport cost for European society.

The main MINIMISE project has defined working concepts of three key terms which provide an important framework for the current discussions. These terms were outlined in the workshop in the following way:

- **Inter-connectivity**: a characteristic of two or more transport networks which are physically linked, (for example, the German and Dutch railway networks are physically interconnected). So, inter-connectivity is where there is a physical link between network systems.

- **Interoperability**: arises where there are two or more interacting transport systems, which display harmonised interfaces and an acceptable level of service so it gives ease of access to operators. Interoperability reduces the barriers between transport systems and we can think in terms of several types of interoperability, namely institutional, legislative, financial, technical as well as cultural and possibly political barriers. It is a prerequisite that interoperable transport systems are interconnected; interoperability implies a much higher degree of integration however.

- **Intermodality**: an inter-modal network allows for the use of two or more different transport modes on trips between origin-destination pairs. Heathrow Airport is an inter-modal facility because it allows for the transfer between road, rail and air. The London-Paris corridor is a multi-modal corridor because there are several options in terms of road, rail and air competing to offer trips between that origin and destination.

**MINIMISE Analytical Framework**: There are three strands within which the main thrust of the MINIMISE work is being framed. These strands deal with an examination of interoperability in terms of (i) how different degrees of privatisation and deregulation have an impact on interoperability in the fields of transport operations and infrastructure management and provision; (ii) the influence of system organisation (technical, as well as institutional and legislative aspects); (iii) the impact of both system organisation and the degree of competition and deregulation on the system capacity. Both deregulation and competition on the one hand, and system organisation on the other, would have significant influences and impacts on the capacity of the transport system.

There are a number of issues which must be borne in mind when attempting to apply this framework to air transport - important social, political and regional dimensions to this goal of interoperability. In addition, we can take different perspectives in terms of our scale of analysis when we are looking at these issues. At a local level, we can examine the role and impact of airports for small, medium and large communities. The air transport networks also have important roles and impacts at regional and national scales, as well as serving Union or federal goals. This gives rise to potential conflicts and complicates the policy response.

We note that MINIMISE deals with passenger and freight transport. In the context of air transport we have to think in terms of passenger services, freight services and then combined passenger and freight services, because the latter has been the dominant mode of operation for most of the European line haul carriers until recently. Because there is a separate case study of package delivery services, we will not focus on this increasingly important component of the air freight sector. The impact of express or integrated carrier operations on smaller airports is an important issue in the sector’s long term development.
We note also that air transport has always involved an intermodal aspect, since passengers and freight have to use some form of surface transport to get to and from airports, in the same way as maritime transport. The issue of access to airports is an important issue which will be referred to throughout the discussions.

Air transport is a small component in the MINIMISE projects and reflects a more general perception that perhaps air transport has relatively few problems when compared with other modes. This is not necessarily true. Certainly, substantial progress in regulating and liberalising this sector has been made in the 1990s. However as this report will demonstrate, there remain significant barriers to interoperability, not least the capacity constraints which are binding at an increasing number of EU air transport facilities.

Finally, the external-EU dimension is of great significance to air transport in contrast to all other modes except maritime transport. The global context for EU air transport interoperability must be recognised as an important ingredient in the development of this sector in the long term.
3. Key factors shaping the long term development of an interoperable air transport system

This section reports the main factors which were identified during workshop discussions as being (I) key influences on the development of air transport in the next 15 to 20 years in terms of the transport operators and infrastructure; or (ii) key policy areas for which a considered response from policymakers was necessary in light of long term developments.

The key influences identified by participants were:

- Economic growth and air traffic growth: the policy dimension to forecasting
  - The constraints imposed by airport infrastructure
  - The external policy dimension
  - Internalisation of externalities
  - The development of integrated transport

Key policy areas identified were

- Data
- Airports policy
- Hub dominance and airline alliances
- Air freight developments and scenarios
- Social air service provision

1. Economic growth and air traffic growth: the policy dimension to forecasting

There is a long term historical correlation between GDP growth and growth in air passenger movements. Thus the long run projections for economic growth in the EU may be expected to continue driving growth in passenger and freight volumes. With EU enlargement and new directions in the EU’s regional policies to aid many of the central and eastern European economies in the next two decades, air transport may be expected to play an important role in facilitating and feeding from the economic growth associated with increasing levels of integration and newly emerging industrialised EU states. The development and growth of these markets will boost longer haul services within Europe and as airport slots are freed up because of substitution of short haul surface (HSR) transport for domestic or intra-EU services, these slots may be increasingly taken up for long haul internal EU air services. The issue of whether air transport markets reach saturation or maturity should be explored.

Aviation is primarily driven by growth in GDP and yet the airlines, airports, aircraft manufacturers and other aviation-related industries have been very poor in showing an ability to forecast GDP. The aviation industry has a very low rate of return. The industry seems to be permanently optimistic in its forecasts of future trends. The investment in aviation has a roughly 4/5 year cycle in terms of aircraft and equipment purchase. Given the indivisibilities on the supply side and the poor forecasts of GDP and therefore traffic growth, this is one key reason why we have seen major ups and downs in the industry in the last few decades. The air transport sector has very powerful lobbying groups who influence politicians and can exert pressure for regulatory change or for protection. So we need to recognise that to some extent, policy on air transport reflects or depends on forecasts of GDP.

Policy makers in the US looked for major changes in policy as part of an economic strategy to counteract inflation. There are benefits associated with deregulation, one key factor being the downward pressure on costs. The pressures to deregulate airlines are present in Europe also. The fact that the infrastructure, the airports are still so heavily regulated means that control is still exercised over the industry’s operations by governments. The present growth rates projected by aircraft manufacturers and the airlines themselves are not sustainable because the capacity is not
there to support these traffic levels. It is important therefore that the industry recognises the need to understand the mechanisms by which GDP changes and the influence which this will have on air transport. The turn in the cycle is a particular problem: as are the issues of how policy makers and airlines and other agencies in the industry handle the turn. In the future the danger is that the smaller or newer carriers may be more susceptible to the market downturn and that one result might be increasing levels of concentration in the industry in the long term.

2. The constraints imposed by airport infrastructure:

Growth in air transport is going to be increasingly constrained by airport infrastructure capacity limitations. The airline industry in some parts of Europe has experienced the growth in new products initiated by low cost scheduled operators, who have been to the fore in driving change in the regions in which they operate. The situation was more widespread in the US. It is important to emphasise the important role which these carriers can have and have had in driving change. From a policy perspective, this raises two issues: (i) are these low cost carriers short run phenomena - will they last the pace and how should their needs be incorporated into EU infrastructure planning (ii) the low cost operators are not as 'destination-constrained' as the mainstream operators. Thus in many instances, they select under-utilised secondary or reliever airports as the focus for their services. This will clearly impact on the interoperability of the air transport system.

It is perhaps a paradox of liberalisation or deregulation that liberalisation causes the frequency of service to increase with carriers using smaller aircraft in order to increase frequency. Capacity at airports is then reached faster than it would have been otherwise. In liberalising the airlines, the air transport industry has remained within the control of the regulators through the regulation of the airports: using this instrument of control, growth can be curtailed or accommodated at a ‘sustainable’ level.

The development and emphasis on particular modes of transport in the Trans European Transport Networks will also impact through political and investment pressures. For example, the move towards replacement of short haul air services by high speed rail in France and Germany will in the long term lead to new degrees of specialisation of particular modes in particular regions and over certain distance ranges.

We note that in the US and in the internal EU market, the average size of aircraft has not increased in the last decade - in fact in the US, it has declined (because of the increasing regional services and the emphasis on twin-jets for long haul services domestically and internationally). At Heathrow airport, the average size has increased, due to the congestion and the substitution of long haul for short haul services.

In summary, the main questions arising from the workshop discussions in relation to airport capacity were

- Should policy makers be focusing on measures other than ‘re-regulation’ to affect increases rather than decreases in average aircraft size? An airport’s pricing policy could affect a change in the appropriate direction, by altering charges in favour of larger and more environmentally friendly aircraft.
- It is noted also that external air transport agreements constrain the frequencies of services on routes. If these agreements were to continue to regulate international air transport, then they restrict competition while also influencing the size of aircraft.

3. The external policy dimension

The global arena will have an important impact on the shape of air transport within the EU since the more profitable long haul routes will influence the nature and structure of an airline’s route network.

With the inevitable breakdown in the bilateral system outside of Europe, this could lead to greater
concentration focused on one or two major hubs which may pose considerable problems depending on the strategy adopted by the carrier.

It is worthwhile assessing the strategies adopted by US carriers in Europe in the last decade and trying to appraise whether the various 'strategy models' can and will be applied by European carriers. For instance, will we see the 'Delta strategy' of putting traffic into secondary hubs, which seems to be what United, American, Delta and Northwest have done in Europe. The Delta strategy was to realign itself with smaller carriers in certain markets - a strategy which would have one set of implications for European aviation, relating to capacity issues and interoperability. Northwest's strategy was one of buying and setting up closer ties with a major European carrier; American's strategy initially was to stand out on its own. This was not successful and they now seem to be following the Northwest strategy. The United strategy was to develop a major European hub in Germany (rather than the UK, as Germany is strategically a superior location because of the current and future geography of the EU). An open skies policy outside of the EU will have very significant influences on the internal structure of markets within Europe. This dimension makes the future scenarios for air transport quite different from the other modes of transport.

The Delta strategy of setting up a new hub in the US and getting international licenses to connect to various places in Europe (London, Turin, Paris, Brussels etc.) relied on being in a position to apply and get such international rights to EU cities. Within the EU, the trouble is that if an EU carrier registered in one state wishes to set up a new hub in another EU state, they currently have no chance of getting long haul licenses. It is not viable to set up such an operation relying solely on short haul traffic, so there is currently no incentive to develop outside of the state in which you are owned and registered. Network experiments with multiple interacting regional hubs (the preferred network strategy of the majority of the major US carriers) are and will continue to be of limited scope in Europe at least in the short to medium term.

For the larger established carriers in Europe, the perception is that the short haul routes are unprofitable and the long haul routes profitable. It is important to ask whether this arises because of some intrinsic market reason or due to the nature of the regulations? The short haul cannot be abandoned because they feed the long haul routes. But are the long haul markets viable - in most cases yes. In most cases there is not sufficient point-to-point traffic to support high frequency long haul direct services. The network effects feed the traffic making the long haul viable at higher frequencies.

It is worth considering what form or forms of network structure are stable and most efficient in Europe now and in the expanded EU of the next decade. For example, is the market unstable in and of itself or could we get stability from multihub operations? It is not tenable now to build up new hubs and put competitors or competitor’s hubs out of business as was seen in the US. Certainly, the UK, France and Germany are the three core European markets and whoever dominates these markets has very distinct advantages competitively as well as geographically.

4. Internalisation of Externalities and Environmental Policy

The growing pressure for taxation of the air transport sector and other measures aimed at internalising the externalities which are associated with this mode, will have an important influence on the shape of the industry’s long term future. In a recent study by the Association of American Airlines, the environment was identified as a key issue shaping airline operations in the long run. While American airlines have begun looking at strategies to deal with the constraints that will be placed on them by various environmental policies, EU airlines have not considered these issues yet in a formal and coherent manner.

5. Issues in the development of integrated transport

- **Access to airports**

  The development of integrated transport, from an air transport perspective, must give emphasis to the issue of access to airports. The view that air transport is already highly integrated with surface modes
should not distract policy makers from dealing with the airport access issue. In the UK, the emphasis in policy discussions on airport access has focused on ‘access to the city centre’ which in Germany and France, the emphasis has been on connecting airports to the rail system, which is more of a regional integration strategy. The attitude of the aviation industry towards regulators and towards the concept of integration, is that they will be given still greater freedom to do as they please. There is a role for transport planning, if all regions are to be integrated in the internal EU market and this means that there is a need for very specific goals for regulation and government.

It is noted that it is in the private sector that the greatest push towards intermodal transport has been achieved. For freight, BA use road more than air for intra-EU air freight services. Lufthansa in Germany have been combining air and rail services for several years now. With the involvement of Richard Branson in the UK recently, one can expect to see greater strides towards intermodality in the private sector in the UK also.

- **Integrated developments most advanced in air freight sector**
  Intermodal transport has been achieved on a greater scale in air freight rather than in passenger services. One of the effects of using smaller aircraft in Europe is that it is not feasible to offer air freight services from many points because the belly-hold of typically B737 aircraft restricts the size of the freight which can be carried. So an increasing proportion of Europe’s air freight is being carried by road, under air waybill (i.e. it is air trucked). In Europe in fact, we are now beginning to see the same specialisation in the freight sector which emerged in the US after deregulation there in 1977 and 1978. The dedicated cargo carriers (including the integrators) are now handling between 50 and 60% of the US domestic air freight market. In Europe in 1992 as in the US prior to 1978, the combination passenger-freight carriers dominated the air freight market. Under liberalisation, the dedicated cargo operators and increasingly the integrated carriers dominate these markets. The integrators operate multimodal air and surface networks and decide on the cost minimising mode and routing for sending freight and packages from origin to destination, given the time constraints set by the customer. Overnight deliveries are more expensive than 48 hour deliveries etc.. The expertise to solve these logistical problems is routinely practised by the integrators.

- **Tracking existing short haul developments: HSR versus air travel demand**
  The evidence from studies in Europe of the impact of high speed rail on air transport demonstrates the substitution of rail for air on short haul operations. The rail links duplicate the air network however with city-to-city direct links and limited accessibility for those between the main centres. In the case of London, there has been a cessation of growth in the London-Paris air traffic; the airports remain more conveniently located than the rail stations for suburban travellers in the south-eastern and western suburbs. In some cases on long haul flights, short haul connections may be serviced by rail rather than air and there may well be time savings to passengers who will be connected directly to the city centre by rail rather than to a suburban airport by air. The information detailing the available mix of mode options currently offered and the traffic levels on these multi-modal trips is not being gathered and monitored routinely and this kind of information will be vital in appraising the potential and impact of interoperability and intermodality.

- **Intermodal transport reinforces geographical and temporal concentration of traffic**
  The other point to be made here is that with intermodal transport being offered, there tends to be greater concentration: it is not feasible to have TGV stations at every airport. The most viable locations are the busiest locations where there is an already existing concentration of traffics. So some sort of balance needs to be struck in designing and planning the extent to which transport systems can be integrated- balance in terms of regional development strategies and environmental objectives. The drive towards intermodal transport is most obvious in the air transport sector at the largest airports. The smaller centres can not justify the levels of expenditure required to link their airports to the surface transport network. This cements the advantages of the larger centres.

### 6. The need for data

In order to plan for integrated transport, the infrastructure bottlenecks and barriers to interoperability have to be quantified on an ongoing basis. Data for Europe’s aviation sector are
becoming increasingly less reliable and piecemeal. Furthermore, data collections will need to be increasingly sophisticated as several modes are being used to transport passengers and distribute freight and this should be reflected in the surveys designed and used by the statistics agencies. The relative weighting of different modes of transport in an 'integrated' journey/trip must be appreciated as well as the fact that more than one mode is typically used.

Statistics tracking the extent of the volumes and value of freight being carried within Europe by integrated carriers for example, are not collected by any agency. The ability to identify or detail key important new trends which will significantly affect the long term development of the air transport sector is not possible for this reason. Agencies like Airbus and Boeing make annual forecasts and estimates of the trends, but these are not based on comprehensive and quality data.

Sound policy and planning follows from thorough analysis and understanding of existing patterns and trends: good data are vital in this context.

7. Airports Policy

Air transport policy in Europe has focused on liberalising the operations of the airlines. In relation to airports however, attempts to harmonise and improve the efficiency and operation of airports has been much more limited. Capacity constraints were discussed briefly above. Much discussion took place during the workshop about the most appropriate framework for dealing with this crucial problem. A summary of several points raised in relation to the possible corporatisation and privatisation of airports on one hand and to design of pricing policies on the other follows.

- Privatising airports will not change the nature of the ultimate decision about the expansion of capacity because this remains a public and NOT a private decision, particularly in relation to large scale expansion projects. The UK case highlights this. While the London airports have been privatised for a decade, the decision to build Terminal 5 at Heathrow remains a public decision. Even the airport’s view and the airline’s view of capacity expansion do not necessarily coincide.

- Decisions to build new facilities on an existing site may remain an airport decision, and overall expansion then depends on better managing all of the airports suite of infrastructure facilities. Under these circumstances, whether the airport is in private hands or in public hands may significantly affect the extent to which investment funds may be generated to support the expansion programme. The evidence points to privately run airports being more efficiently managed.

- The UK decision to privatise all three London airports under one corporate entity highlights the need to examine the nature of airport services, efficient airport management and the role of airport competition in some detail. BAA has been trying to encourage diversion of traffic to the under-utilised Stansted airport, particularly among the newer carriers, but they have not been very successful in this regard. The role of the airport’s charging or pricing strategy is obviously critical in attempting to use economic instruments to affect such diversions in traffic. Huge increases in landing charges may well be needed to begin to affect such redistributions of traffic.

- The fact that landing charges are linked to overall revenue, and that the concept of cost-relatedness in airport charges now encompasses all of the airport costs, means that the pricing mechanism is not let provide the necessary signals for efficient infrastructure management. So while the airlines are being given greater freedom to price and manage their operations, it seems that the airports are being constrained to an increasing degree particularly in the area of pricing. While the new Airport Charging Directive demands transparency and non-discrimination in the application of charges to operators, the directive also allows for willingness-to-pay and Ramsey pricing mechanisms, which by their nature are discriminatory. Further, the directive permits the charges to be related to the airports overall costs or indeed to a regional system of airports’ overall costs.

- Competition between airports would seem to be central to the concept of liberalisation: in relation
to airlines certainly, competition in terms of carrier network is arguably the most important form rather than city-pair competition. At the same time however, the capacity issue or problem would seem to suggest that airports should be viewed collectively as a system and system capacity then managed as efficiently as possible. This would allow, for example, the diversion of short haul traffic to express or secondary airports. But such a scheme or system requires some form of control over the airports, which runs against the idea of privatisation.

- The airlines make money through this shortage of capacity at airports, not the airports themselves. Because the airports do not charge appropriately for the shortage of space at their facilities, there is a greater incentive to exploit the shortage of capacity from the incumbent airline’s perspective than from the airport’s perspective.

- While an integrated system is attractive in terms of managing needs and capacity, what has tended to happen in European countries is that such government organised systems have tended to become controlled by the labour unions. Any integrated system will have a problem arising from either the growth of an oversized government bureaucracy or unions excessive wage demands or some other grouping which ends up with dominant or monopoly control.

- Aviation is perceived as being environmentally unfriendly: one advantage of an integrated system is that it seems to address the growing environmental pressures which legislators are facing. Airports themselves are becoming increasingly conscious of these pressures and are monitoring and attempting to improve their environmental impacts. At some airports, new strategies have been introduced to combat specific problems of noise or pollution. For example at Amsterdam, the runway capacity has been increased without increasing the number of available slots. The idea here is that with more runways, the movements on any particular pavement are reduced and the noise and other externalities are spread around a larger area. Management of flights at Sydney airport is again aimed at minimising the overall noise level through operational strategies. There is certainly increased awareness and active operational management of environmental externalities associated with air transport.

- An alternative strategy is of course to buy out those who complain about these externalities. It is interesting that in the UK where a privatisation strategy has been pursued for the airports, the strategy has been to purchase surrounding lands through compulsory purchase orders. The French on the other hand pay market value for the property for the lands and compensation for the inconvenience of moving. The argument here is that those continuing to live in the environs of the airports must be enjoying more than the market value of the property already, so one needs to compensate for moving them. The big change in this arena has come from the public’s increasing awareness of their environment and of factors influencing that environment in a negative way. In order to impose taxes which will be effective in influencing demand conditions, empirical evidence from the transport sector generally seems to suggest a need to significantly increase taxes by factors of 300%, 400% or more.

- The area of transport and environmental taxation is a complex one and in seeking to impose taxes on different sectors or groups of users there are typically quite strong counter-arguments which can be put forward rejecting the imposition of taxes. Furthermore the impact of the taxation may be less desirable that the existing situation. It seems that the public at large object to aviation emissions much more so than they do to other forms of transport emissions, maybe because air transport is a service which is availed of relatively infrequently.

- Recently in the US and Europe the issue of soil contamination has been highlighted in several studies as a growing and serious problem. Furthermore the environmental impacts of surface transport in accessing the airports is also an important issue.

- The US view of airports is generally one where these infrastructural facilities are provided through public funding for use by the public at large. Thus general aviation as well as the various categories of commercial carriers have rights of access to the facilities. Under congested conditions, conflicts can arise between different groups of users if economic criteria alone are
used to allocate the scarce infrastructural resources. Attempts to impose some form of congestion pricing mechanism at east coast airports have run into difficulty because of the underlying philosophy and historical circumstances which led to the development of the larger public airports. In a European context also, there is far greater potential for conflict when the system of control is a dual system (namely management through a combination of economic and administrative controls).

The US airports have a smaller proportion of their traffic travelling on international routes. Furthermore, they generally tend to have a lower level of concessionaires leasing space in the terminals (i.e. they offer less shopping compared with Europe). The larger US airports have been designed to service a combination of long haul and short haul traffic and typically operate secondary runways to service the needs of the smaller operators. During peak periods, the secondary runways are used for short haul traffic. Many of the larger EU airports are single runway facilities and unlike the US, cannot make use of secondary runways to help relieve congestion in the peak periods by separating the traffic. Furthermore, the growth in traffic in recent years has given rise to a continuous peaking throughout the day. It may not be possible to provide secondary runways at these airports. Where it is possible, the question as to who should pay for the new runway facility must be examined.

In Europe, we can expect to see the development of secondary regional or commuter oriented airports. The larger airports will increasingly substitute long haul services for short haul services. From an environmental standpoint, such a development would be welcome as the larger facilities could then increase their overall throughput and still maintain or reduce the total number of movements by using larger aircraft. The problem is that all airports rely on the combination of locally originating and transfer passengers to support their air services. So the feasibility of separating out point-to-point traffic and concentrating it at secondary airports is questionable.

The evidence from the US suggests that deregulation allowed for significant growth in air traffic and carriers initially serviced the increased demand through interactive multiple hub network systems. Point-to-point operators at a certain stage can then enter certain markets where it is possible because of the increased volume to offer direct service. The viability of secondary airports in Europe will depend on the extent of traffic growth, the extent of competition from other surface transport modes and the characteristics of the traffic, particularly the extent of high yield business traffic. These airports will need to offer a certain threshold level of service on routes served since passengers will choose more frequent service (at primary airports) over less frequent service.

Evidence from the early 1990s in the UK and Ireland suggests that it is the secondary airports which are most vulnerable to downturns in the economic cycle. During the 1991/92 recession in the air transport sector, it was airports in the 40,000-1,000,000 category which experienced the greatest reduction in traffic levels and were slowest to recover. So the long term viability of these secondary airports and of the carriers which support them is an issue which will need careful consideration.

On the demand side, as income levels rise and emphasis on quality of life experience becomes increasingly more important, movement away from the main urban concentrations may accelerate. With rapidly improving technology and forms of electronic communication, the feasibility and desirability of moving to smaller regional centres can be expected to increase. These factors must also be considered in an assessment of secondary airport developments and the thresholds for point-to-point air services between increasingly smaller centres.

On the supply side, it could be argued that it is easier for carriers to add and cut aircraft or particular services when a point-to-point strategy is employed as opposed to a hubbing network. The airports pricing policy can be a significant factors in influencing these kinds of changes.

8. Hub dominance and airline alliances

The issue of hub dominance and interlining is worth addressing. Airlines had all sorts of interlining
agreements under the old regulatory system. With liberalisation, some airlines have been forced to continue these agreements or practices. Is there a point with liberalisation where carriers can decide they don’t want to continue with these arrangements - where commercial agreements can no longer be forced upon an unwilling carrier?

In relation to airline alliances, the larger European carriers have several arrangements with non-EU carriers, global alliances, which gives them advantage on long haul and short haul connecting services within the EU. If one flies into France for example with Air France or a partner, there will always be an Air France partner available to connect you to an internal EU destination. The fact that Air France is the only designated carrier in the bilateral from the European side gives this carrier huge advantages over new entrants or smaller regional carriers. For the non-EU carriers named in the bilateral, they will typically have alliances with one of the other major EU carriers, so that even where there is a choice of operator on the long haul segments, competition on the short haul connections is not on a level playing pitch. Furthermore, there has to be some system of fare co-ordination for long haul consolidations, which means that in certain sectors, some form of price regulation is still in place or perhaps still necessary.

9. Air freight developments and scenarios

Air freight seems to be much more integrated than passenger services with other modes of transport. The big issues relate to the extent to which there will be specialisation of passenger and freight services (passenger and freight services seem to be diverging anyway because of their differing routing requirements and capacity difficulties when mixing them); and the extent to which there will be geographical concentration of activities. It is also dependent on the way Europe views its trade policy: if we have ‘fortress Europe’, there will develop a much more sophisticated integrated freight transport system within Europe. With more open policies, the European system will become part of a more global transport & distribution system. There are many different strategies which can be adopted - air transport will be but one component of the distribution and logistical system. Presumably the best mix of networking strategy and logistical management will be reflected in the commercial performance of the operators. Aviation needs for both passenger and freight services differ by cluster of sector: in the hi-tech sector, the demand for air travel per employee is higher than in other sectors. So there will be a geographical dimension to these sectoral differences. Intermodal transport networks in general are at a more advanced stage of development for freight than for passenger services in Europe.

The European line haul carriers have reacted more aggressively to the competition from integrators than did the US passenger carriers, in trying to prevent erosion of their freight market share. Links between freight forwarders and line haul air carriers are being forged in order to compete on a more equal footing with the integrators who in the US, raised customer expectations and service quality with the expansion and development of their integrated services. The focus for co-operation in Europe is more on long haul routes than short haul routes as the latter offer more limited commercial opportunities for the line haul operators. The US integrators tend to operate single hub air networks rather than the multi-hub interacting networks preferred by the passenger operators. This is having and will continue to have important implications for the concentration of air transport activities in a European context. Most of the EU freight carriers have the advantage that they are big players in freight on a global scale. This situation is examined in detail in the MINIMISE air freight report. The market power which the European carriers enjoy in the global air freight markets gives them a strong base for competing with the integrators. ‘Heavy’ freight continues to account for the major share of freight handled by European air carriers, though express freight has grown considerably in importance since the early 1990s. Express freight is now thought to dominate the internal EU air freight market.

Air freight is concentrated at the busiest airports in Europe, since this is where long haul services are concentrated. There is significant demand for air freight services in the North of England, but this
freight is trucked to London because that is where the long haul air services and cargo capacity are based. The European freight sector’s main impact on air transport in the future will be in terms of requiring additional cargo capacity at the already congested passenger airports.

The density of population and the density of economic activity in Europe gives rise to much more concentrated catchment areas when compared with other developed countries. Surface transport networks are more widely available and economically viable as a result.

With air freight, the economies of density on the bigger aircraft are such that it can be significantly more efficient (i.e. least costly) to send loads over considerably greater distance than the shortest path in order to avail of the lower unit costs on the larger aircraft. Generally speaking, routing does not matter as much with freight transport compared to passenger services. The main point is that the air transport component of a freight journey needs to be a long haul segment in order to avail of the cost advantages associated with this mode. Air freight services offer shippers greater security and reliability in terms of delivery time. Shippers choose to pay a higher premium for inter-EU air freight, even if these shipments end up being moved by surface. The extra premium presumably covers security and reliability costs for the integrator. This may also be linked to IATA coverage for damage to freight.

Security is becoming a major issue for the integrators and likely to continue placing upward pressure on rates. Indeed air transport’s cost advantage may appreciate at a lower level once the costs of securing surface shipments are included.

Secondary airports are being focused by the integrators for their air transport operations: as in the US the air networks for these operators tend to be single hub structures. The choice of secondary centre reduces the constraints (particularly environmental) which can limit air freight operations at large metropolitan airports. Maastricht, Lille and Brussels are three examples of such a trend by the integrators. It is noted that both the integrators and low cost passenger operators are adopting a policy of using secondary centres as a way of developing and expanding their networks. Surface access to these centres will becoming an increasingly important issue as the volumes of traffic expand.

In terms of the long term growth of air freight, electronic transmission of documents which are legally binding will exert a negative impact on the volume of small packages being shipped by air. We note however that where electronic transfer is used (fax; e-mail), hard copies will be sent by surface or regular mail also, so rather than reducing the volume of interactions, electronic mechanisms have encouraged rapid growth through duplication.

10. Social air service provision

In a European context, the role and efficient management of social air service provision needs to be re-evaluated in the context now of a fully liberalised market, where consideration is given to (i) the capacity problems and opportunity costs of slots at congested airports\(^1\) (ii) the possibilities for intermodal transport in order to achieve the various social and regional development goals (iii) the issue of access for smaller communities in a more general context. In some instances where public service obligation orders have been introduced with government subvention, other modes of transport using a similar corridor are also subsidised. A more centralised and consistent evaluation and assessment in reviews of the slot allocation process for social air service provision.

\(^1\) In evaluating the economic costs of social air service provision, the focus is purely on the direct costs of subverting such programmes rather than the economic or opportunity cost. In the US, this is also the case. At the slot controlled airports, like for example, O’ Hare in Chicago, a fixed proportion of slots are withheld for use by ‘Essential Air Service (EAS) communities (i.e. communities designated to receive social air services by the federal government) by FAA regulation. The economic value of the slots at the congested airports are not assessed in reviews of the social air service programme.
assessment procedure would better deal with achieving a balance between regional, national and EU objectives in the provision of air transport.

In the US since deregulation, the regional and commuter carriers have grown in size (measured by number of aircraft operated and passenger volumes) and availed of economies of density and scope associated with the large networks of the ‘major’ carriers, albeit on a much more limited basis. There has been significant consolidation among the smaller carriers. These carriers have seen consistently more rapid rates of growth than the larger carriers since deregulation and provided small and medium sized communities with vital links to the main national and international transport networks. The evolving EAS programme, now in its twentieth year, has been continuously fine-tuned so that the size of communities receiving subvention for social or essential air services has been steadily declining.

In a European context, the viability of small community airports and air services needs to be appraised in a more comprehensive context which considers not just the broader European airports system but also the intermodal transport system. In the liberalised internal market, consideration must now be given to cross-frontier social air services. There is still a role for government or intervention in small markets where, for a variety of reasons, markets do not work. Air transport has relatively low infrastructural requirements and costs, but appraisal of thresholds and the spatial distribution of airport facilities needs to be planned and allocated from a centralised agency if resources are to be efficiently distributed. The European public service obligation routes and contracts so far support generally larger communities and larger aircraft than the equivalent US programme. The appropriateness of higher levels of subvention for use of larger aircraft to generally larger communities has to be examined against a background of greater availability of surface transport modes in more densely populated environments.

Conflicts between the principle of subsidiarity on one hand and the efficiencies of more centralised decision-making on the other very much complicate the planning and management of the air transport system in Europe. As the number of member states expands in the next decade, the need for review and redesign of policy areas such as the provision of social air services may be expected to become more pronounced.
4 Conclusions

The EU needs to play a more active role in airport planning and in the allocation of capacity. The capacity restrictions are a growing problem in Europe. Liberalisation of the airlines can only have a limited effect if infrastructural capacity acts to constrain entry, growth and strategic development of commercially oriented carriers.

The environmental impacts of aviation in Europe need to be examined in a comprehensive manner so that an informed position may guide policy development for airlines and for air transport infrastructure provision and planning. A long term view of the air transport sector needs to be taken on board by policy makers in order to deal with the evolving situation and increasingly binding constraints placed on air transport and integrated transport by environmental factors.

The move towards intermodal transport involving aviation needs to be examined in some detail. The feasibility and desirability of this trend has to be considered in a policy context. The implications of not acting as a single unit in relation to external policy need to be considered and once again considered in light of the long term development of the sector.

The pricing of airport services will have to become more rational. The management and allocation of limited airport capacity through an efficient pricing mechanism is a key component in the efficient long term development of the air transport sector and also of integrated transport involving air. Within MINIMISE, the case studies are free standing. The integration of these case studies within a broader framework should make a very important contribution to pushing on the debate and emphasis in future policy design.

Data availability is a significant constraint in Europe. In order to identify the current trends and developments in the industry and allow for appropriate policy design, comprehensive and reliable data need to be speedily available. It is extremely difficult to assess trends in air transport on a state by state basis in Europe and to attempt to quantify the major factors shaping the industry’s evolution. In order to shape policy for the long term development of air transport particularly in the context of a multimodal framework, the collection and availability of reliable data must be examined as a matter of urgency.

Within aviation, sectors or policy areas, such as Air Traffic Control, are treated in isolation. Integrating air transport policy areas is an important step in the move to consider integrating different modes.

Getting the balance right between a combination of administrative controls and pricing mechanisms is a difficult balancing act. If an industry or sector is driven primarily by an economic or market based system, control is more easily exercised. Dual control systems on the other hand can give rise to conflicts and inefficiencies.

Management of the airport infrastructure is the crucial element in the development of the air transport sector: it is not possible to build sufficient capacity to cope with projected demand so this necessarily requires that mechanisms are developed to efficiently allocate the scarce resources. The pricing mechanism must be used as the key strategy in the management of air transport infrastructure.
## 5 Glossary

<table>
<thead>
<tr>
<th>Term</th>
<th>Description</th>
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<tbody>
<tr>
<td>Externality</td>
<td>External effect (benefit or cost) not reflected fully in decision making or prices</td>
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<td>Hub dominance</td>
<td>Airport (hub) whose traffic distribution is dominated by one or two air carriers</td>
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<tr>
<td>Integrators</td>
<td>Category of air freight carrier specialising in express operations involving door-to-door pick-up and delivery of consignments</td>
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<td>Interlining</td>
<td>Transfer of passengers or freight between different carriers</td>
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<tr>
<td>Line haul</td>
<td>Transport passengers or freight along route</td>
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6 Abbreviations

BA  British Airways Plc.
BAA  British Airports Authority Plc.
EAS  Essential Air Service - the US Social Air Service Programme
EC  European Commission
EU  European Union
FAA  Federal Aviation Administration (US)
GDP  Gross Domestic Product
HSR  High Speed Rail
IATA  International Air Transport Association
TGV  Traen a Grand Vitesse - High Speed Trains
UK  United Kingdom
US  United States
A1 Appendix 1

Workshop agenda and list of participants

MINIMISE WORKSHOP
DEVELOPING SCENARIOS ON THE FUTURE OF EUROPEAN AIR TRANSPORT

DATE: 19 December 1997

VENUE: 4th Floor, Wates Building, The Bartlett School, Gordon Street, University College, London. (Nearest underground is Euston)

TIME: 10.00 to 15.30

Participants:

MINIMISE Air Transport Case Study Team:
Prof. Kenneth Button
Dr Aisling Reynolds-Feighan

Invited Participants:
Mr Tom Bass (Consultant, former CAA, UK)
Mr Stephen Wheatcroft (Consultant)
Prof. Brian Graham (University of Ulster, UK)
Dr. Nigel Dennis (University of Westminster, UK)

AGENDA

(CHAIR: AISLING REYNOLDS-FEIGHAN)

10.00-10.15  BACKGROUND AND AIMS OF WORKSHOP

10.15-11.15  SCENARIOS OF POSSIBLE PATHS OF FACTORS INFLUENCING EU AIR TRANSPORT

11.15-12.00  EFFECTIVENESS OF CURRENT EU POLICY FOR INTEROPERABILITY

12.30-13.00  EXTERNAL EU RELATIONS

13.45-14.30  AIR TRANSPORT INFRASTRUCTURE NEEDS AND POLICY

14.30-15.00  THE FUTURE OF AIR CARGO IN EUROPE

15.00-15.30  INTERMODAL TRANSPORT