COMMISSION OF THE EUROPEAN COMMUNITIES

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COMMUNICATION FROM THE COMMISSION TO THE COUNCIL AND THE EUROPEAN PARLIAMENT

The creation of the single European sky

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The creation of the single European sky

INTRODUCTION

1. In Europe today one flight in three is not on time. The average delay is 20 minutes and this can stretch up to several hours at peak periods. This situation angers passengers, it frustrates airlines and some do not shrink from talking about chaos. It also creates costs to the economy,[1] over and above lost business and ruined holidays damage to the environment (cf. Annex 1). It also raises concerns about the impact of air traffic on the environment.[2]

2. Even specialists, working on the basis of realistic traffic forecasts and assuming that the plans for improvement now in the offing go ahead as planned, are of the opinion that the situation will worsen still further over the next five years.

3. Responsibility for these delays is, of course, shared, and although operators and airports both account for a quarter of delays half of them are due to the saturation of airspace:

   - Delays caused by operators are essentially operational and logistic, but these delays can be compounded by the commercial strategy of airlines which tend to concentrate certain flights at certain airports and at certain times of the day in order to facilitate connections (cf. Annex 2).

   - In airports, apart from the rare operating incidents the principal cause of delays is the saturation of infrastructure, expansion of which often clashes with environmental constraints.

   - Saturation of airspace is due to the need to ensure flight safety. Aircraft performance is not enough to allow the pilot alone to prevent collisions between aircrafts. Under the Chicago Convention, therefore, countries have put the means and procedures in place to guarantee flight safety: airspace management (cf. Annex 3). The techniques used guarantee the safety of only a limited number of aircraft in any given space, sometimes with fairly rough and ready methods. Airspace thus has limited capacity which, to maintain the optimum level of safety, requires the organisation of queues on the ground or the diversion of traffic, and thus delays are created.

4. In order to coordinate their action in this area and to minimise the impact of fragmentations due to political frontiers, several European countries created

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1 Given that the total economic cost of delays linked directly to the congestion of airspace is of the order of EUR 5 billion and that these delays amount to about half of all delays, the damage could be put at EUR 10 billion a year.

2 This issue is treated in a separate communication.

EUROCONTROL[3] in 1961, an international organisation whose job it is, while respecting the sovereignty of its members, to organise cooperation between the respective national administrations and to manage air traffic in part of the airspace of Germany, Belgium, Luxembourg and the Netherlands. A new convention signed on 27 June 1977, for which ratification by the Member States of the Community is linked to the Community's accession to this organisation, will help to strengthen the decision-making capacity of EUROCONTROL's bodies.

5. Air traffic congestion is the result of growing air transport in a limited space. The United States also have this kind of situation and airlines, passengers and Congress are equally dissatisfied. The fact is that in Europe the problem of infrastructure, which is endemic, and climatic conditions is compounded by the problem of organisation of airspace. This organisation suffers from fragmentation caused by national frontiers – to the negative effects of which the Community has managed to put an end in other fields by the creation of the internal market - and problems in optimising the use of airspace by civil and military aircraft. The Community cannot simply stand and watch as air traffic conditions worsen. Without claiming technical competence in this area it is politically responsible to its citizens and users of airspace in order to make for the smooth running of the Community's internal market. It must ensure at the same time that problems caused by the growth of air traffic are not only solved by an increase in air traffic management capacities because of the environmental impact that would involve.

6. On 17 June 1999 the Council asked the Commission to present a communication on recent and ongoing measures designed to reduce the delays in air traffic and congestion in Europe to allow the Council to assess the impact of these measures and, if need be, decide on new initiatives to be taken.[4] An analysis of the situation is attached to this communication. It shows that despite all the efforts made so far fresh measures must be taken if a guarantee is to be provided that air traffic management helps to achieve Community policies, in particular regarding the functioning of the internal market and environmental protection, as well as the improvement of the level of safety of citizens. Although the aeronautical community has developed a strategy for the years ahead - the strategy for the 2000s[5] - it is doubtful whether this initiative, which is based on EUROCONTROL's traditional working methods and does not contain a clear plan of action for the development and implementation of new concepts and procedures of air traffic management, is the right response if major structural reforms are not made both at national and at European level.

7. But above all and to avoid the lack of any decision from the Member States leading to a renewal of the disastrous situation in the summer of 1999, urgent measures have to be taken.

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3 Eurocontrol currently has 29 European countries amongst its numbers, including the Member States of the Community less Finland, which is negotiating accession.

4 Council Resolution of 17 June 1999.

5 At the request of the Transport Ministers of the European Civil Aviation Conference, EUROCONTROL has developed a strategy designed to meet the needs of users over the next 15 years. This strategy will be presented by the Ministers at their meeting on 28 January 2000.

I. SHORT-TERM ACTION IS URGENT

8. Experience in recent years and the Kosovo crisis have highlighted once more the fact that the current arrangements cannot cope with crises. Given the number and the diversity of the parties involved and the time needed for structural reform, chronic congestion is inevitable. The parties responsible therefore need the means to handle them under conditions that are acceptable to the end user. There is thus a need for short-term action

- Planning must be put in place by all parties, with EUROCONTROL in charge, to give a common reference framework to service providers (in particular the control centres) and airlines.[6] A co-ordination structure, involving all interested parties, including the end users of air transport, must therefore be set up within EUROCONTROL and the capabilities to be used by countries must be based on an annual formal undertaking.

- EUROCONTROL must also come up with alternative routes and put these routes into practice when crises arise.

- EUROCONTROL must also draw up and use emergency plans to cope with crises due to unforeseen events (weather, strikes, etc.) or outside circumstances such as the Balkans.

9. It is now time to address these problems at political level. At their meeting of 28 January 2000 the ministers of the European Civil Aviation Conference should instruct the provisional Council of EUROCONTROL to put these emergency measures into effect for the next summer season. EUROCONTROL has the requisite information and experience if the will is there to give it the necessary powers to take charge of this management of the short term.

10. In 2000 the Commission will also propose a system of publication of punctuality indicators, as the United States have been doing for some time. This will enable users the means of forming their own opinions as to the situation and its causes.

II. REFORM OF AIR TRAFFIC MANAGEMENT IS A PRIORITY

11. The Community must assume its responsibilities by bringing its management of the airways in line with its economic and political integration. At a time of a single currency, when the Community is embarking on greater and greater cooperation between judiciaries and police forces and initiatives to create a Europe for defence are gaining in ambition, the management of Europe's skies rests on antiquated methods and principles. Europe cannot keep the frontiers in the sky that it has managed to eliminate on the ground; it must allow the freedom of movement of persons, goods and services beyond such frontiers. This would not be interpreted as undermining EUROCONTROL, but rather as the will of the Commission to highlight the complementarity of the Community's political goals and the specific responsibilities of EUROCONTROL to help meet the objectives of the Community

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[6] EUROCONTROL has developed prediction tools as part of its "medium-term capacity planning mechanism" which can serve a basis for this planning.

while recognising the rights of the countries which are not members of the European Community.

12. The creation of a single sky requires quite specific measures, as reflected in many other areas of Community activity where measures are taken to ensure that all players operate in a common framework, where compatibility between different systems is provided by common rules or where financial solidarity is organised to guarantee simultaneous implementation of common objectives. The functioning of the internal market - especially the common air transport policy, as defined in Article 71 of the Treaty and put into effect in particular by the opening-up of national markets - justifies similar measures in the area of air traffic. The Commission's responsibility cannot be restricted to developing research projects to improve air traffic management which are then applied in fragmented airspace.

13. The Commission takes the view that the creation of a single European sky cannot just be through common technical and operational solutions; collective management of airspace is needed in the interests of all its users, which must make for substantial reorganisation of its structures and use (cf. Annex 4). This reorganisation must be along the following lines:

- Sectors must be subdivided and routes established regardless of frontiers. This will enable the use of airspace to be organised along the lines of efficiency.

- The division of airspace between civil and military uses must take account of the new geopolitical realities and form part of a consistent and efficient framework. The way cooperation between the military and the civil sectors is currently organised does not tie in with the smooth running of airspace. Nor does the subdivision of zones reserved for military use take account of the collective interest of the Community. The European Union has already shown that it can manage the relation between civil and military use of technology and this experience may be of use in this new context.

14. In an area as diverse and complex as air traffic management any action or development will depend on the involvement and collaboration of a large number of players. It is therefore necessary to put new decision-making mechanisms in place to guarantee transparency and foster this involvement. Collective decisions must also be put into effect, in particular as regards the capacities to be employed by each Member State so as to avoid any bottlenecks. This will require a number of measures such as, for example, those developed in Annex 5.

15. The efficiency of any air traffic management system depends on the development of new tools and procedures. Research and technological development, particularly in the Community, such as the Galileo project, are essential contributions in this respect, which must be intensified and speeded up. This also presupposes that the industry can contribute to the necessary innovation and research effort on the basis of common operational objectives and plays its part in the development and application of technical specifications and certification procedures to guarantee the implementation of compatible systems (cf. Annex 6).

16. The quest for efficiency in the respective workings of the regulator and the service provider means separating these two activities both within the Member States and within EUROCONTROL. Application of the fundamental principles of the Treaty

regarding the provision of services and competition can also help to improve the quality of services while at the same time guaranteeing a high level of safety. Adopting methods already used in other sectors, particularly telecommunications and air transport, the Commission will look at what initiatives need taking as a function the specific nature of the sector (cf. Annex 7).

17. If only to guarantee the requisite interoperability, many of the measures set out above and in the annex clearly have to be developed as a priority within EUROCONTROL, which have the requisite expertise, provided it makes use of the means for action provided by the revised convention. To this end, the Commission will submit to the Council proposals for action within EUROCONTROL to reform its working methods and to create the individual components for a single European sky. The fact of the Community's becoming a member of EUROCONTROL will doubtlessly facilitate this process, which is why Community accession has to remain a priority. For the Community the creation of a single European sky is not simply a technical matter. It is the confirmation of a policy option established by the different treaties establishing the Community. This option must not jeopardise the cooperation needed with the other European members of EUROCONTROL, some of which are candidates for accession to the Community. It is simply confirmation of the Community's will to go faster and further in the joint management of its airspace without this compromising its cooperation within existing frameworks in any way.

18. However, it cannot be ruled out that the Member States of EUROCONTROL and non-members of the Community might not wish to be party to this. Similarly, delays in the entry into force of the revised convention and Community accession thereto may hamper the implementation of Community objectives within EUROCONTROL. Should that be the case, the Community will have to assume its responsibilities and the Commission will make suitable proposals for meeting the objectives of the Treaty by other means.

CONCLUSION

19. The congestion of airspace calls for measures other than technical ones in the short term in order to prevent any further crises. To this end, the Commission will use the ministerial meeting of the European Civil Aviation Conference in January to initiate the requisite initiatives. Structural reforms are also needed to permit the creation of a single European sky by way of integrated management of airspace and the development of new concepts and procedures of air traffic management.

20. In proposing this course of action, the Commission is not overlooking any obstacles that might present themselves along the way, from the usual inertia to legitimate causes for concern. It therefore plans to set up two working frameworks to help it develop and implement the measures described above:

- Dialogue will be opened with the two sides of industry. It is after all they who are using or operating the airspace management system; they will be using or operating the single sky.

- A high-level group will be set up under the chairmanship of the Commission member responsible for transport. This group will bring together the parties responsible for the management of air traffic in the Member States and will cover the civil and military use of airspace while taking due account of the interests of

the civil and military use of airspace while taking due account of the interests of the end users of air transport. It shall work on the basis, in particular, of the proposals for action contained in the attachments to this communication. It must report within a time-scale of six months.

21. The Commission is of the view that this approach requires a political undertaking at the highest level in order to support steps which in substance are no different from 1985 and the single European market or 1990 and economic and monetary union. In all these cases the aim was to obtain the political support of the European Council and the European Parliament, in the full knowledge that this action would require energy and will on the part of each and every party to overcome the weight of history and the force of inertia.

22. The Commission will report within six months on the progress of implementation of the measures proposed in this communication.

ANNEX 1

THE CURRENT SITUATION

OF AIR TRAFFIC DELAYS AND CONGESTION

I. EVALUATION OF THE PERFORMANCE OF THE EUROPEAN ATM SYSTEM

1. In its White paper on ATM the Commission has underlined the difficulties to obtain comprehensive and consistent data, in particular about the quality level of services provided[7]. The ATM community has recognised that and put in place a "Performance Review System" in the framework of the provisional implementation of the revised EUROCONTROL Convention.

2. The Performance Review Commission itself in its first report states: "In the circumstances, the PRC had to confine its review within the bounds of available information... However, there is insufficient information on a European scale, in particular with regard to safety and cost-effectiveness. A system that is not measured can hardly be managed effectively. Hence, a number of actions have to be taken in order to improve the quality and completeness of future performance review reports."

3. The present documents therefore sums up the findings of the Performance Review Commission itself.

Safety

4. The lack of consistency and availability of safety data at the European level has prevented meaningful conclusions being drawn on the performance of ATM safety. There is an urgent need to introduce a harmonised approach to national ATM safety performance reporting, accompanying a harmonised categorisation of safety occurrences, a common approach to confidentiality issues, and a means of identifying causal factors of ATM accidents and incidents[8].

5. However it has been acknowledged that nothing indicates a significant change in the level of ATM safety; this implies that ATM provides a satisfactory protection of aircraft operations. Current trends are best indicated by the "air proximity and level bust" indicator in the first report by EUROCONTROL's Performance Review Commission.

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7 Appendix 2 to the ATM White Paper:COM(96)57 final.

8 The Commission services have worked on the feasibility of such reporting schemes in view of a proposal for a directive on the mandatory reporting of incidents.

Year	1994	1995	1996	1997	1998
Traffic (millions of movements)	5.097	5.783	6.158	7.039	7.479
Number of air proximity and level bust	396	388	418	381	367

6. One fundamental challenge for the industry, as indicated in a CANSO[9]document, is that the risk of a collision is proportional to the square of the level of traffic and hence even modest growth in traffic can have a significant effect on levels of safety. Thus any attempt to improve the performance of the European ATM system cannot be at the expense of the safety of the European citizens.

Delays

7. In 1998 delays due to air traffic management accounted for half of departure delays other than reactionary delays. But if, as now widely accepted, reactionary delays (due to late arrival) are redistributed proportionally to their original causes, the conclusion is still that ATM is responsible for half of the delays. Others causes are weather, airport ATC capacity, ground operations, technical and other non-attributable events; roughly speaking air operators and airports are each responsible for one quarter of the delays.

8. In 1998 traffic increased by 5% compared with 1997. 17% of flights were delayed for ATC reasons, by an average of 21 minutes; the related figures for 1997 were respectively 15,4% and 19 minutes. The related figures for the last three summer seasons (May to September) are reported in the table below:

	Summer 97	Summer 98	Summer 99
Traffic	3,372,597	3,557,224 (+5.5%)	3,781,028 (+6.3%)
Flight delayed	623,539	753,062 (+20.8%)	929,268 (+23.4%)
Percentage of flight delayed	18.5%	21.2%	24.6%
Delay per delayed flight	20 minutes	23 minutes	26.4 minutes

Source: CFMU

9. According to the PRC, 45% of these delays are due to a very limited number of ATC sectors (3%); this leads it to conclude that "this illustrate the high interdependency of all centres and reinforces the importance of some form of collective management of the ATM system at European level."

[9] CANSO is the association of the corporatised civil air navigation services providers.

10. The above figures which cover only a very limited period since the EUROCONTROL data collection system has been put in place only recently, do not allow for a fair evaluation of the situation; to do so one must rely on the figures collected by the airlines associations as the Commission did in 1996. On these bases the outlook is as follows:

- Flights delayed by more than 15 minutes (of which half are delayed by ATC) represented 12% of the flights in 1986, 20% in 1988, 23,8% in 1989, 12,7% in 1993, 18,5% in 1996 and 22,8% in 1998.

- Record figures were 23,6% in July 1988, 30,8% in June 1989, and 29,2% in June 1998. 1999 figures show a deterioration with an average of 30% of flight delayed for the first six month with a record of 37,3% in June (Source AEA).

11. This explains why the PRC concluded itself in its first report: "It is not an exaggeration to state that the ATM delay situation reached crisis proportions during 1998. The situation is worsening in 1999".

12. The figures for the summer 1999 have however been less disastrous than feared on the basis of the previous months, indicating an under evaluation of the impact of conjunctural factors such as change in the route network or the Kosovo crisis. This however confirms that the systems is working at the limits of its capabilities and that any disturbing event can transform congestion into crisis.

Cost effectiveness

13. While stressing that "there is general lack of consistent Europe-wide information on ATM costs, factors of production (human resources, assets) and plans, which prevented the PRC from making an in-depth analysis", the examination of EUROCONTROL data used for the collection of routes charges shows that these charges amount to € 3,9 billions in 1998; that is to say an increase of 80% at current value as compared to 1993, which itself was 120% more than in 1986; in real terms (after corrections of inflation) these figures are respectively 45% and 60%.

14. Despite these significant increases, routes charges relative weight in airlines costs seems to stabilise at a relatively modest 5,6% since 1993 (this figure was only 3,8% in 1986).

15. More important however are the indirect costs of congestion and delays, but there again figures are missing. In 1996 the White Paper on ATM had made reference to the figure of 2000 MECU provided by the INSTAR study[10] as the cost of delays for airlines, notwithstanding that for passengers, shippers and European economies. On the basis of the same assumptions, this indirect cost can be estimated now at € 5400

[10] The Institutional Arrangements study, conducted by ECAC with the support of the Commission in 1994 and 1995.

M[11], of which additional direct operating costs for aircraft operators would amount to € 600 M[12].

Overall appraisal

16. Despite the worrying lack of appropriate performance indicators, which explains in part the difficulties of this sector, one can certainly conclude that European ATM is able to fulfil its primary missions which is to ensure the safety of aircraft operations in European skies. This however is being done at a cost in terms of delays and additional burden and expenses on airlines, passengers, shippers and economics which is no longer acceptable.

17. Moreover all professionals involved stress that the increase in ATC capacity which allowed traffic increases in the last decade proceeds mainly from system optimisation and productivity efforts of workers, in particular air traffic controllers. As a consequence they consider that the system is working at the limit of what is sustainable.

II. THE ATM COMMUNITY RESPONSE

18. Since the crisis of the late 80's the European ATM community is well aware of the seriousness and urgency of the situation. As a consequence national organisations – civil and military – in charge of ATM have reacted individually and collectively within their joint organisations ECAC[13] and EUROCONTROL, with the support of the European Commission, by developing and implementing numerous improvement measures at technical, operational and institutional levels within the framework of several successive ECAC strategies covering the en-route phase of flights (EATCHIP) and the airports aspects of ATC (APATSI). Currently, the EUROCONTROL's Convention has been revised and strengthened. The ATM 2000+ Strategy has been produced in order to build a uniform European ATM network capable of meeting the predicted future demand for ATM up to 2015. This will require the progressive and phased implementation of new operational and technical solutions based on an overall top-down and performance-driven systems approach. In addition to the technical aspects, the scope of the strategy includes safety, economic, environmental and institutional aspects. This strategy will embrace all phases of flights in a "gate-to-gate" context and provides a comprehensive work programme for the development of ATM during the next fifteen years.

Technical measures

19. The limits of the airspace are currently imposed by the methods used to manage air traffic and in particular by the limits on the number of aircraft an air traffic controller is able to control at the same time in a given piece of airspace. Increasing airspace capacity means therefore either changing the whole concept and give pilots

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11 The total indirect cost of € 5.4 Billion to airlines is based on 450 thousand hours of ATM delay (Source: CFMU 1998) at an hourly cost of € 12,000 (Source: reference 3 above).

12 IATA has determined values for the cost of delay (on the ground and in the air) in Europe based on aircraft operators' direct operating costs. The value in 1997 was 22 ECU/minute for ground cost of ATFM delay. Note that additional costs related to ATM airborne delays are not known and are excluded.

13 European Civil Aviation Conference.

appropriate tools to be able to avoid mid-air collision on their own; or increase the number of aircraft an air traffic controller can handle by providing him/her with appropriate facilitating tools; or a combination of both.

20. Progress in these directions has been slow until now, and several ambitious advanced programmes have produced frustrating results. This explains partially why the system is reaching its limits in several places. This is indeed not a pure European problem; other parts of the world where traffic density is equivalent to that in Europe, such as North America, are having the same difficulties.

21. Finding the real break-through which would allow the perfect fluidity of traffic enjoyed by aviation in its early ages is still a chimera, although technological progresses in various fields such as artificial intelligence, data links, telematics, positioning and navigation, indicate that it is not out of reach.

22. Significant research and technological development activities are therefore still necessary to design and validate related concepts, procedures and tools. In addition, the human resource contribution from the ATM community, based on human factor expertise and principles, will be an essential feature in the acceptability of new technologies. In this area however, it has to be recognised that although the world ATM market is expanding rapidly, it remains more of a niche and it is not certain that spontaneous industry investment will be sufficient to allow short term results to be achieved. The potential worldwide CNS/ATM has been valued at approximately € 100 billion over the years 1997 to 2006. Europe would count for ¼ of such a market[14].

23. The Community has provided substantial means for research and technology development (RTD) for ATM and spent about 120 MECU in the ECARDA initiative in the 4th Framework Programme for RTD 1994-98, triggering roughly a doubling in value in terms of total RTD expenditures. It is the intention to allocate about the same amount of financial support in the fifth Framework Programme 1998-2002.

24. On its side EUROCONTROL is financing for an amount of € 45 M per year, external studies on the development and adaptation of new tools.

25. Additionally it is evaluated that European ATM organisations invest an average of € 180 M each year in tests and studies. Figures on other national investments in ATM RTD are not available, although some European countries, whose ATM industry is among the world leaders, are well known for providing significant support to that sector.

Operational measures

26. Since no technological revolution can be expected shortly, the ATM community is reduced to a step by step evolutionary process to get the best of the current system and technology. This implies individual and collective investment by ATM organisations so as to increase airspace capacity through the multiplication of sectors, the extension of the periods during which they are operated and the improvement of air traffic controllers productivity; it necessitates therefore:

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[14] Treaty 2 Study – 1998.

- restructuring route networks and airspace sectorisation;
- hiring and training new controllers;
- extending and modernising air traffic control centres;
- providing air traffic controllers with state-of-the-art assistance tools;
- implementing additional communication, navigation and surveillance means.

National actions

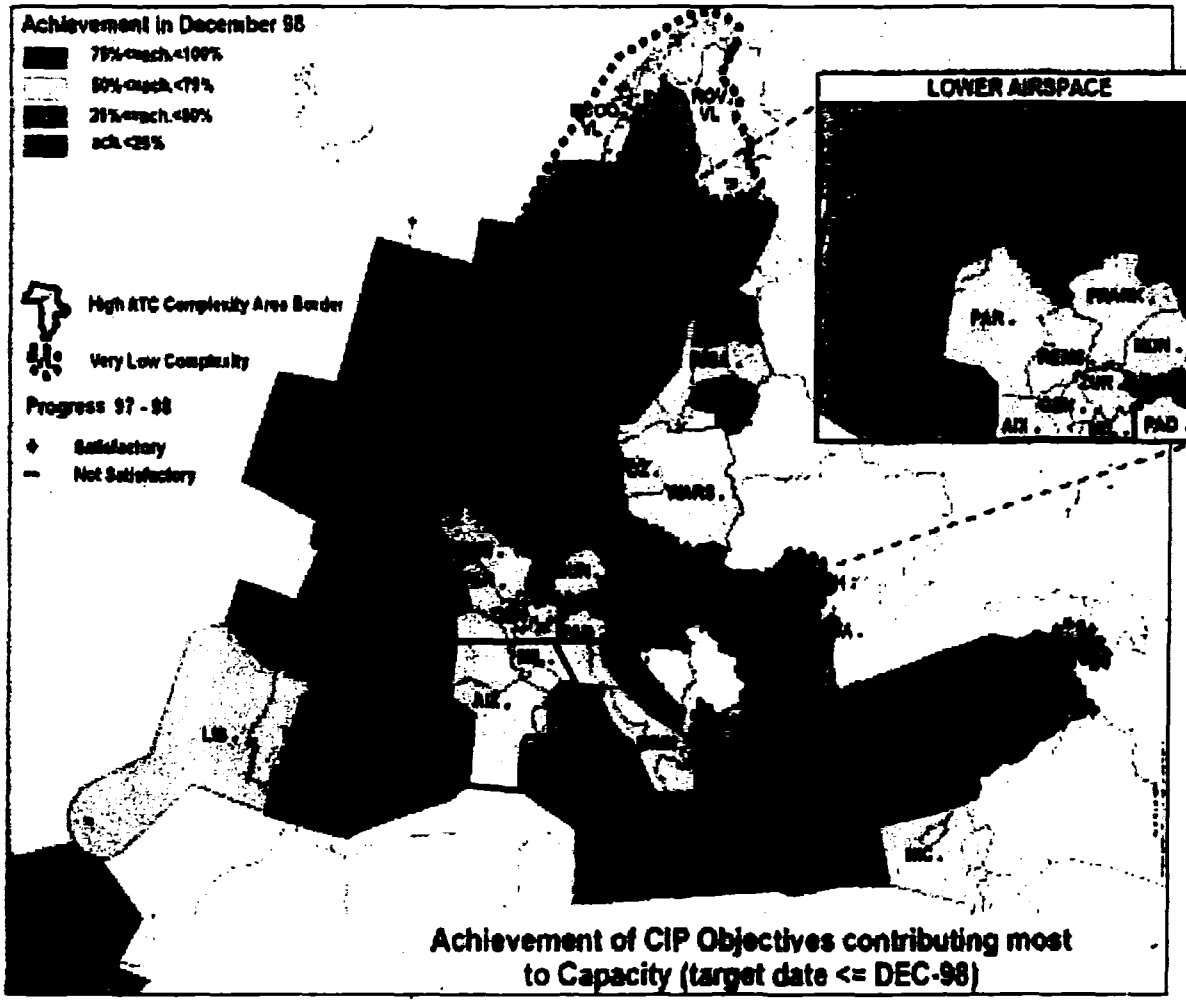
27. Given the inter-dependence underlined here-above of all the elements of the European patchwork of national systems, the ATM community decided in 1990 to task EUROCONTROL with the co-ordination of all the necessary actions to be implemented in a consistent way. Therefore EUROCONTROL developed the Convergence and Implementation Programme (CIP) as a tool of collective planning, with common targets and agenda, detailed up to the level of each state (local CIP), with the objective to achieve the harmonisation of the European systems by 1998 within this framework ATM organisations have hired and trained new staff and improved their facilities.

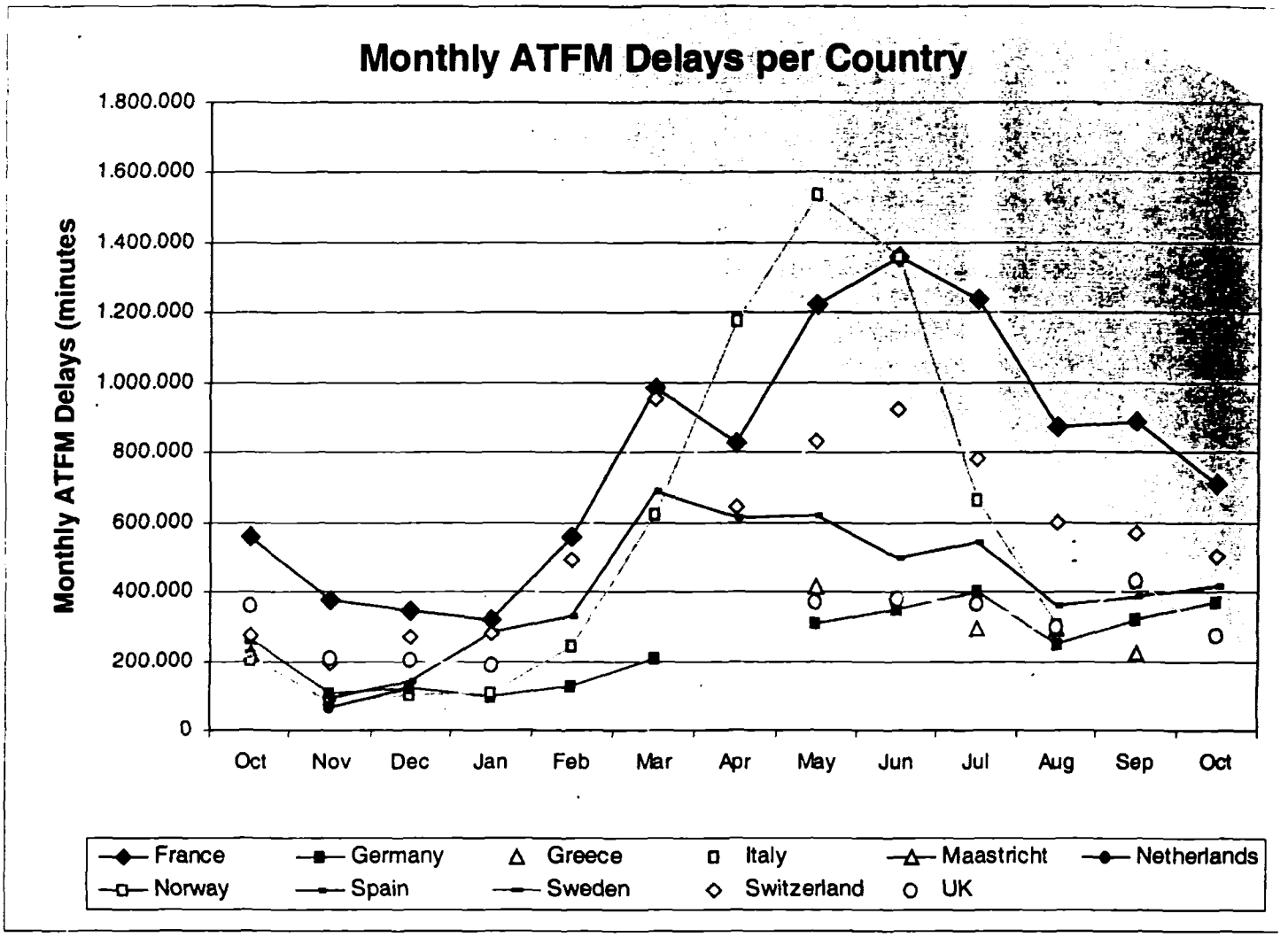
28. The Community itself through its Trans European Network budget has contributed to these projects by an amount of € 80 M between 1995 and 1999.

29. EUROCONTROL acknowledges that roughly 80% of the targets assigned had been reached by the end of 1998. Rates of achievement however vary considerably among Air Traffic Control Centres (ACC) ranging from 100% to 27%. Progress in recent years has often been slower than expected, affecting in particular some improvements likely to bring about significant benefits, such as reduction of separation between aircraft, improved radar coverage and flight data processing.

30. EUROCONTROL has established that there is a good correlation between the level of achievement of the CIP targets and the level of delays: the average delay per ACC decreases as that rate increases (see table and chart below). Areas particularly designated for their low rate of implementation are Greece[15], Switzerland, northern Italy, eastern France, and Southern Germany.

[15] This has changed in 1999 with the operational implementation of new facilities.


Achievement in December 98
High ATC Complexity Area Border
Very Low Complexity
Progress 97 - 98
Satisfactory
Not Satisfactory
LOWER AIRSPACE
Achievement of CIP Objectives contributing most
to Capacity (target date <= DEC-98)



ATFM delay is the time spent between the last take off time requested byan aircraft and the take-off assigned to it by the air traffic management system

Consequently, EUROCONTROL concludes that delays in harmonising local systems and in raising them up to the required functional level, had serious consequences in cases of local congestion and also had an adverse effect on interoperability between adjacent centres and on the provisions of a "seamless"service.

Collective actions

31. In situations where demand exceeds capacity it is necessary to manage the flow of traffic to avoid the overload of congested areas and to keep aircraft on the ground in virtual queues. The ATM community realised as early as 1988, during the first ATM crisis, that such management would be better organised at collective level for the whole of Europe, because it would allow a more effective use of available capacity by suggesting alternative routings to airspace users.

32. EUROCONTROL was therefore tasked to put in place the Central Flow Management Unit and related sub-systems, such as a central Flight Plan Processing systems, for the whole of the ECAC area. This has been done progressively by transferring to EUROCONTROL the functions executed at national level and the CFMU is now operating since 1997. This central facility employs 440 people and its

cost has been 58 MECU. It is widely recognised that this action has been a success and has contributed greatly to improving the quality of the service provided, while ensuring a fair treatment to all airspace users as for access to ATC capacity.

33. In parallel, because it is considered that the fragmentation of the airspace and of the provision of air traffic services by small units, is conducive of inefficiencies and rigidities, several central European countries[16] have decided to create a common centre, to be located in Vienna, to control their upper airspace. This model follows the example set by EUROCONTROL's Maastricht Centre which provides upper airspace air traffic control for Belgium, Luxembourg, the Netherlands and North-western Germany. The so-called CEATS centre however will not be operational before 2006.

Institutional measures

34. The culture of the ATM community is based on the Chicago Convention, whose first article reaffirms the full sovereignty of States on their airspace. As a consequence the ATM community merely accepts binding international commitments for interoperability standards designed to facilitate the free circulation of aircraft when they meet a minimum level of safety and of equipage. As for the provisions of air traffic services (which in the ICAO framework is an obligation of States) the only tool available to ICAO – the body in charge of promoting the harmonious development of international civil aviation – is the mechanism of collective planning, supported by political commitment. To do so ICAO has developed a process to evaluate the needs of users and convince States, by "soft" means, to put in place the appropriate resources to satisfy them. This is being done at regional level, each region[17] establishing a plan, which is updated from time to time and endorsed by the ICAO Council.

35. When ECAC and EUROCONTROL engaged in the European ATC Harmonisation and Integration Programme (EATCHIP) they opted for the same kind of process and tried to get the best of it. Conscious however of the limits of this traditional "soft approach", the ATM community undertook a revision of the EUROCONTROL Convention in order to provide it with better legal tools to address and solve European ATM problems.

Collective planning

36. It is to organise collective planning that the CIP described earlier has been established. Similar approaches for multiple sub-regional programmes aiming at solving local difficulties or improving efficiency through joint planning and sharing of facilities are:

- The Nordic ANS Programme involving Denmark, Finland, Norway and Sweden;
- The Transalpine regional development with France, Switzerland and Italy;
- The Baltic States regional development with Estonia, Letonia and Lithuania;

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16 Austria, Bosnia and Herzegovina, Croatia, Czech Republic, Hungary, Italy, Slovenia and Slovak Republic.

17 The ICAO European regions include Europe and the whole former USSR.

- The AEFMP plan for Algeria, France, Marocco, Portugal and Spain;

- The Balkan States regional development with Albania, Bulgaria, FYROM, Greece, Republic of Yugoslavia and Romania.

37. It is in the same spirit that it is envisaged to plan the implementation of the operational parts of the European ATM Programme, successor of EATCHIP and APATSI, based on the ATM 2000+ Strategy. This successor plan is called the European Convergence and Implementation Plan (ECIP).

38. Recently, in view of the persisting mismatch between the capacity provided by air traffic control centres (ACC) and the demand from airspace users, it was decided to establish a medium term capacity planning mechanism. This process managed by EUROCONTROL has for objective to evaluate the traffic demand through each ACC for the next 2 to 5 years, using available knowledge of airspace users plans and simulation tools, so as to indicate the capacity increases these ACC's should plan to provide a good quality service. In the absence of commonly agreed units to measure ATC capacity, this empirical approach is a good performance driven means to help service providers to plan development ahead. Airspace users are putting great expectations in the use of that tool.

Standardisation

39. The lack of interoperability between national systems has been identified as a source of inefficiency and of loss of capacity in the overall system. This aspect of interoperability being not addressed by ICAO, the European ATM community tasked EUROCONTROL with developing the necessary requirements and standards. Additionally, traffic density in the core of Europe justified new operational procedures (reduced vertical separation, area navigation), or technical means (8,33 Hz channel spacing, Collision Avoidance Systems) for which interoperability requirements tailored to European needs had not been established by ICAO and for which Europeans had to take the lead.

40. EUROCONTROL has therefore established a standardisation process to develop Technical Specifications (which are useful for interoperability and strongly recommended) and EUROCONTROL Standards (which are essential for interoperability and mandatory). Between 1990 and 1998, EUROCONTROL has produced several Technical Specifications and adopted 7 EUROCONTROL Standards.

41. In order to give more legal value to EUROCONTROL Standards and use the enforcement tools of the Treaty, the Community adopted in 1993 the Directive 93/65[18] which empowers the Commission with identifying, and adopting as Community law those EUROCONTROL standards which contribute to the harmonisation and integration of national ATM systems. The Commission has adopted on this basis only 2 of those standards through Directive 97/15 EC[19] the other ones either falling outside the scope of Directive 93/65 or including provisions

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[18] Directive 93/65 EEC on the definition and use of compatible technical specifications for the procurement of air traffic management equipment and systems – JO n° L187 du 29.7.1993.

[19] Directive 97/15 EC on the adoption of EUROCOTROL standards and the modification of Directive 93/65 EEC.

on exemptions or national variants which make them incompatible with a proper enforcement under Community law[20].

Incentives

42. Considering the rather weak enforcement means included both in the ICAO and the EUROCONTROL conventions, the ATM Community has included in its various improvement programmes various types of incentives.

- The dissemination of best practices by the adoption and distribution of manuals, as well as the organisation of seminars, training sessions in many areas (safety management, flexible use of airspace, human resources, etc).

- The development of common projects : As indicated earlier the market for ATM products is an expanding but niche market; moreover ATM organisations usually act as designers of the tools and systems they use. As a consequence the industry is not really willing to invest in generic off-the-shelf equipment at the detriment of interoperability and cost-effectiveness. EUROCONTROL therefore tries to overcome this tendency by financing the development and validation of new tools. Then equipment so developed can be bought by ATM organisations at better price, intellectual property rights owned by EUROCONTROL being given for free to any Member State which needs them. In the framework of EATCHIP, the Community Trans-European Network budget invested €77 M in projects like:

  - ATN and datalink related projects (ATIF, ACCESS, SPACE, EURO VDL2),

  - ADS related projects (NEAN, NAAN, NUP, ADS Programme),

  - Radar upgrading and replacement (MSSR and Mode-S),

  - New processing systems (eFDP, SACTA, FOCUS, ERATO, VAFORIT).

- In addition, research and technology development of cockpit systems has been funded. Future airborne systems will provide improved situation awareness of traffic, terrain and weather and thereby increase the decision making and operational support to pilots and controllers.

The revised EUROCONTROL Convention

43 On 17 June 1997 the Protocol revising the EUROCONTROL Convention was formally approved, after several years of negotiation. At the same time EUROCONTROL Contracting parties decided to provisionally apply several elements of that revised Convention from 1 January 1998. The main features of this protocol can be summarised as follow:

- An extension of the powers of EUROCONTROL allowing it to co-ordinate the action of its contracting parties in nearly all aspects of air traffic management and to take decisions binding on them.

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[20] See also Commission report on the application of Council Directive 93/65/EC. Report COM(99) 454 of 01.10.99.

- A more efficient decision-making mechanism, the decisions being based on a majority voting instead of unanimity, the national security interests being preserved through a safeguard clause.

- The involvement of stakeholders in the decision-making process through an active participation in the deliberating and consultation EUROCONTROL bodies.

- The development of appropriate aids for decision-making through the establishment of four advisory bodies:

  - a Performance Review Commission (PRC) dealing with the performance of the ATM national and EUROCONTROL systems, including the approval of targets for ATM system improvements, the development of performance indicators and economic regulations guidelines;

  - a Safety Review Commission (SRC) in charge with safety regulation, monitoring and certification of ATM systems and procedures;

  - a Civil and Military Interface Standing Committee (CMIC) competent for any question regarding the civil-military interface;

  - An enlarged Committee for Route Charges, to advise on route and terminal charges policy matters.

- The development of a more business-oriented management under the exclusive responsibility of the Director General supported by appropriate consultative groups.

- The strenghtening of the co-ordination of research activities among EUROCONTROL members and the organisation. This comprises enhanced exchange of views, information and experience about their respective programmes to promote complementarity and to avoid duplication of work.

44. In the light of the new powers of EUROCONTROL and their interference with those of the Community in several fields, the Council of the European Union decided on 20 July 1998 that the best way to exercise Community competence in the field of ATM was for the Community to join EUROCONTROL so as to enhance its role as the single ATM policy-maker in Europe. Negotiations to that end are going on and there are good expectations that they will be successfully completed by early next year.

ANNEX 2

THE COMMUNITY AIR TRANSPORT POLICY.

1. During the last decade, the Community has hammered out a common Air Transport Policy based on the principles of the Treaty, with the objective to provide citizens, undertakings and the economies of its Member States, with the benefits derived from more competition, wider choice and increased cost-efficiency, as has happened in all other sectors.

2. The opening of the internal market to all Community air carriers is already bearing fruits as demonstrated by the Commission reports on the impact of the third package of air transport liberalisation measures[21]. The number of carriers providing scheduled services has increased by 24% between 1993 and 1998; the number of routes served has increased by 30% between 1996 and 1997 and the number of those with more than two carriers has more than doubled from 4% to 9% during the same period, representing more than 25% of the total intra-Community passengers. During the same time the range of tariffs proposed has widened and most passengers now fly at discount fares.

3. To achieve these results airlines have had to adapt to the new competitive environment and their behaviour has changed significantly over the last decade. The tendency is clearly to:

   - use smaller aeroplanes – easier to fill for new entrants and providing more flexibility in terms of routes and frequencies to established carriers,
   - multiply frequencies on routes to better capture all segments of the market,
   - accept lower load factors on competitive routes (usually the largest ones) in order to be able to respond to market demand,
   - develop strong hubs with multiple connection waves to enlarge and strengthen market presence in widening catchment areas

4. The result is a steady increase in aircraft movement. At the same time traffic tends to concentrate at best times of day or week, or at connection times of hubs, accentuating the demand for peak capacity.

5. Therefore further success of the Community Air Transport Policy is heavily relaying on the ability of the aeronautical infrastructure, and in particular of Air Traffic Management, to meet these changing needs, so that air carriers can actually enter the market in conditions which make them competitive and allow final users to benefit from such increased competition.

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[21] COM(96) 514 final and COM(99) 182 final.

ANNEX 3

AIR TRAFFIC MANAGEMENT

1. Technical progress has made it possible for aircraft to fly always faster, longer distances and in nearly all weather conditions. With increasing traffic and as longer, as cockpit systems could not provide direct information, it became necessary to manage airspace and to assist pilots in choosing and keeping their routes safely without conflict of collision with other aircraft and terrain. Therefore, being responsible for the safety of their citizens, on board aircraft and on the ground, states have put in place air traffic management (ATM) systems with the main objective of assisting airspace users in ensuring appropriate separation between aircraft, as well as between them and the ground.

2. The techniques used range from the segregation of traffic by allocating them different pieces of airspace on a more or less permanent basis (military airspace, route structure, holding stacks, flight levels, etc.) - called the Air Space Management; to the real time monitoring by a specialist actor, the air traffic controller, who detects potential conflicts and gives pilots the appropriate instructions to avoid them – called Air Traffic Control[22].

3. These techniques, and in particular Air Traffic Control which relies heavily on individual performances of human operators, introduce limits in the number of aircraft which can actually fly at the same time in a given area, so that the capacity of the airspace for air traffic purposes, is finite. When airspace users' demand to fly exceeds that capacity, this generates delays like on any motorway at peak times. Since queuing or holding in the air creates additional pollution, may generate additional congestion in neighbouring areas, and could even become potentially dangerous, virtual queues are organised on the ground as much as possible; this is called of Air Traffic Flow Management.

4. Although the International Civil Aviation Organisation has been able to ensure that aircraft and national Air Traffic Management systems are compatible so that the same aircraft with only one set of equipment and procedures can fly everywhere in the world, it has been less successful in convincing each state to adjust the capacity of its airspace to actual airspace users' needs so that the European ATM systems looks like a patchwork in which weak areas create knock-on effect on the whole system and introduce artificial limits, on, or under-utilisation of the capacity of their neighbours.

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22 A description of Air Traffic Management can be found in Appendix 1 to the Commission White Paper on ATM "Freeing European Airspace":COM(96) 57 final.

ANNEX 4

AIRSPACE MANAGEMENT

1. Air traffic is composed mainly of the military Operational Air Traffic (OAT) and the General Air Traffic (GAT). Although representing less than 5% of the traffic, OAT requires large volumes of airspace where military aircraft can train for interception, bombing, etc. GAT encompasses all other movements, generally of aircraft flying from one point to another, which need protected corridors; it includes also other uses like leisure, training, aerial work, aircraft testing, whose needs are similar to those of OAT.All these types of traffic compete for the same scarce resource: Airspace.

2. The role of airspace management is to allocate that resource to users so that each of them gets a reasonable share, allowing it to fulfil its tasks and to prosper.

3. Originally this was done by sharing the airspace on a more or less permanent basis along structures composed of routes, reserved areas, holding points, etc., which preserved the distinction between civil and military airspace (see attached map).

4. Since the most easily accessible reserve of capacity for GAT is a better allocation of airspace, there are strong pressures to review the way airspace is managed and allocated. This meets with serious resistance in several countries where military users want to retain their traditional privileged treatment in the sharing of airspace.

5. Therefore EUROCONTROL adopted and recommended to its members a more flexible approach whereby some military airspace is made available for civilian use when not required by its primary users. In such cases GAT is controlled either by military or civilian controllers, depending on the country. This concept called "flexible use of airspace" is now implemented in most European Countries. It is however managed at national level, each country remaining free to arbitrate between civil and military priorities.

6. Few countries, if any, have designated a neutral and independent regulator able to arbitrate between these diverging interests. Choices are made in a rather non-transparent way and civil airspace users lack the confidence that their interests are properly defended. Moreover, as the Commission claimed in its previous communications on ATM, this concept fails to fully take into account the pan-European nature of ATM.

7. If it is legitimate that states take into account their national security and defence interests, they also have obligations vis-à-vis their citizens to protect their other interests. In such fields moreover they have contracted international commitments, such as for example the air transport policy for Community Member States, which oblige them, in addition, to take fully into account the interests of their European partners.

8. Another issue is that currently the airspace structure for civilian use is decided at national level and does not take sufficiently into account the possibilities and constraints of neighbouring countries. It is also influenced by borders and States sometimes resist change in order to maintain traffic flows in their territory and benefit from the corresponding charges. These practices have not allowed an

optimisation of the route network and of the related sectorisation based on the sole collective interest.

9. For these reasons the Commission advocated in the past that airspace management is a regulatory function which should be exercised as much as possible at a pan-European level, subject to appropriate safeguards to protect national security.

Action: Airspace is a common asset which shall be managed collectively as a continuum, regardless of borders, with the view to satisfy all its users, civil and military and to optimise air traffic management.

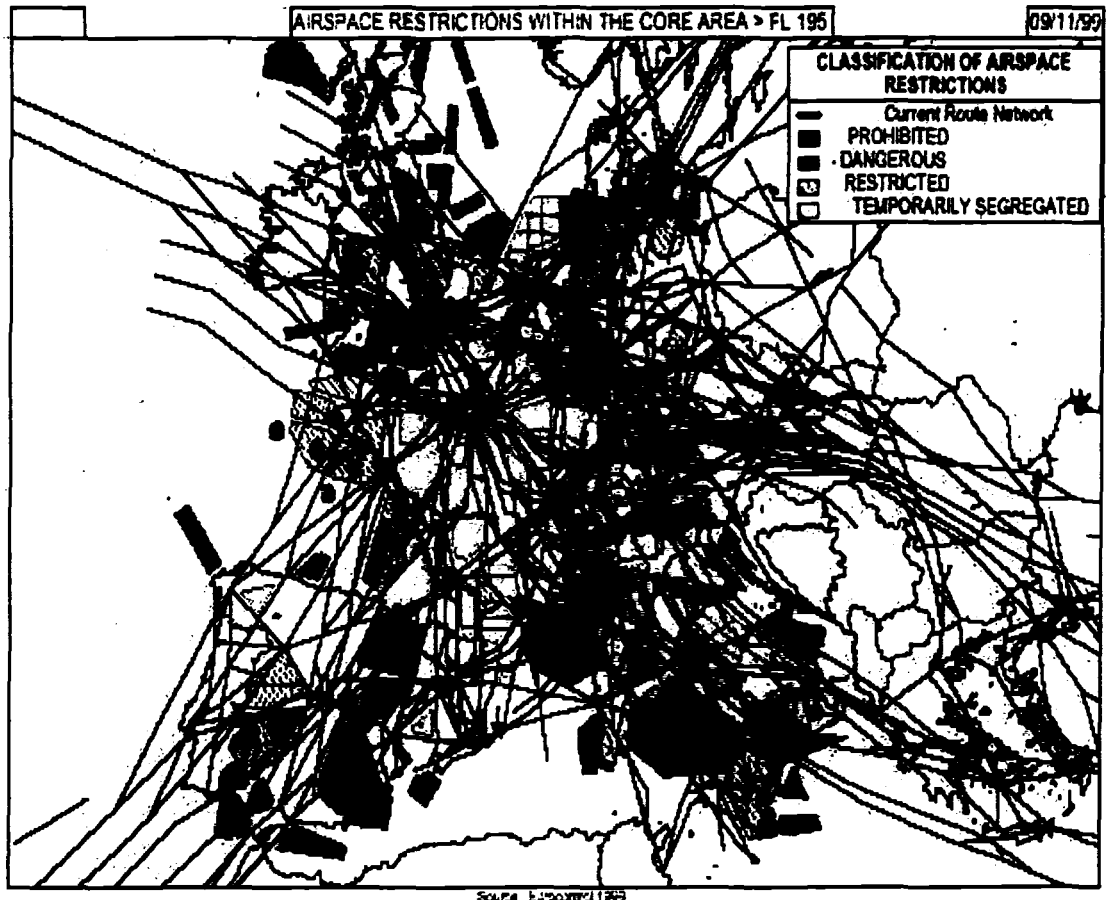
10. To achieve that objective, a central organisation shall be empowered to decide on the strategic and tactical phases of airspace management.

- This should include the general structure of the airspace, the route network, the main reserved zones and the rules for access and flexibility of use of airspace, except for some low density areas or lower airspace, where local management could be considered as appropriate in conformity with the subsidiarity principle. Such rules should, include safeguard provisions in case of urgency or security crisis. Although airspace sectorisation for the purpose of air traffic control can be seen as a service provider responsibility, there could be a need however for the central organisation to arbitrate in case of disagreement between two or several ATM organisations about optimal sectorisation at their borders. This could involve an obligation to accept delegation of Air Traffic Services by one State to another when this would benefit the overall performance of the ATM systems. All decisions concerning these elements of the strategic phase of airspace management should be binding on states.

- As for the tactical phase, the same central organisation shall be entitled to allocate airspace to its various users on the basis of the rules defined at strategic level. To achieve the necessary timeliness and force, the related decisions shall be directly binding on Member States.

Action: A central organisation shall be given full responsibility for the management of the European airspace at both strategic and tactical levels.

11. EUROCONTROL, which has already experience in managing scarce resources, could play the role described here above. The revised Convention is a sufficient legal basis to do so; as appropriate, that could be confirmed by a formal decision taken on the basis of its article 2.1.s.



Source: Eurocontrol 1999
Data provided for France, UK, Germany, Benelux, Italy, Spain and Switzerland

ANNEX 5

COLLECTIVE COMMITMENT

1. The ATM system is a complex system involving a number of different actors:

   - the airspace managers which allocate the airspace to its various users by designing airspace structure, route networks, restricted areas, flight levels, etc., with related conditions of use so as to ensure real-time flexibility;

   - the air traffic flow managers which allocate ATC capacity among their users (mainly civilian) through strategic planning of flow and real-time regulation of departure slots;

   - the air operators which must equip their aircraft, devise appropriate operating procedures and train the crews;

   - the flight crews which apply the procedures in real time and ensure the safe operation of the flight;

   - the air traffic service providers which have to procure, maintain and operate appropriate equipment and buildings, devise operating procedures and recruit/train air traffic controllers, engineers and other support staff;

   - the air traffic controllers which apply the procedures in real time and ensure the proper separation between aircraft and between them and the ground;

   - the manufacturing industry, which has to design, develop and produce the appropriate tools and systems.

2. The good functioning of the system requires that all play their own distinct part in a co-ordinated and consistent way, so as to avoid black spots in the European patchwork of systems. Moreover any change requires a top-down approach to develop and agree operational concepts and requirements, which in turn drive the need for new equipment and procedures. The traditional means used by the ATM Community to support these collaborative processes and trigger the necessary commitments is collective planning.

3. As can be shown by the results of EATCHIP[23] it is now widely accepted that this approach has reached its limits and that new methods have to be explored which go beyond what is envisaged for its succession programme EATMP[24]

1. CAPACITY PLANNING

4. Recently EUROCONTROL initiated an evaluation of capacity needs, entitled "medium term capacity planning" with the objective of persuading air traffic services providers to plan investments in terms of equipment and human resources to meet traffic demand.

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[23] European Air Traffic Control Harmonisation and Integration Programme (See appendix 1).
[24] EUROCONTROL Air Traffic Management Programme.

5. In the absence of commonly agreed quantifiable indicators to measure capacity, objectives are expressed in the percentage of additional traffic which each Air Traffic Control Centre should accommodate during the next 2 to 5 years. This pragmatic approach is, for the short term, recognised as the only process currently available and must therefore be encouraged, since collective planning seems to be a widely shared weakness of ATM organisations.

6. Recent experience has however shown that several of the air traffic services providers in the most dense parts of Europe had not been able to meet the agreed targets for 1999. This raises, inter alia, the status of such targets in the EUROCONTROL system. They are currently discussed at Directors of Air Navigation level and remain subject to consensus before endorsement by the EUROCONTROL Council. It is not clear moreover whether such endorsement gives binding force to such targets. However no action was taken by EUROCONTROL on the basis of the conflict resolution provisions of its Convention vis-a-vis failing States.

Action: In the absence of other measures, Medium Term Capacity Planning shall be encouraged. Targeted increases of capacity shall be decided according to the provisions of the revised EUROCONTROL Convention and given binding effect.

7. It has to be recognised however that the enforcement of such decisions will be very difficult and that other measures are required for the longer term.

II. REGULATION

8. The most effective way to ensure commitment of stakeholders is to regulate them so that clear obligations are imposed with the guarantee of definite rights in exchange. Already in its White Paper on ATM, the Commission had advocated in favour of a strong regulatory framework for the provision of air traffic services.

Scope of regulation

9. When checking through the various stakeholders and their functions, the scope for regulation could be defined as follows:

- Airspace management: this activity which consists in managing a scarce resources for the best of all interests, is a regulatory function in itself the exercise of which is the subject of a dedicated appendix.

- Air traffic flow management: it is questionable whether this activity is a regulatory or a service provision function. In as much as it protects air traffic control providers from overload, it could be considered as a service provided to them. At the same time however it can be seen as the regulation and management of demand and supply through various means, ranging from mandatory regulatory measures (ATC clearances, routings...), to collaborative decision-making. This led the Commission to conclude in its previous communications on the subject that this activity, which looks by many aspects like a police function, was of a regulatory nature. Without prejudice however to further debates on this subject, it is widely recognised that this function should be exercised centrally for the whole

of Europe, as acknowledged indeed by the creation of the Central Flow Management Unit. Furthermore all agree that such activities requires a strong regulatory framework in view of the impact which the management of traffic flows can have on the revenues of service providers, as well as on the overall costs and competitiveness of airspace users.

Action: There is a need for the development of high level rules governing the management of traffic flows giving due consideration to the interests of all parties involved.

- Air operations: air operations are regulated by States imposing the mandatory carriage of equipment with required functionalities and levels of performance, as well as the compliance with published procedures. Through licensing they ensure also that essential personal are adequately trained to be able to use the equipment and to follow the procedures. The tendency however of most states to devolve to air traffic services organisations the regulation of ATM aspects of air operations, has not facilitated a balanced dialogue between them and their customers.

Action: The regulator responsible for the ATM aspects of air operations shall be independent from air traffic services providers.

- Air traffic services: being traditionally provided by governmental bodies, these services were not subject to regulation, each state being supposed to ensure that they meet the necessary requirements to satisfy their international obligations. Although self-regulation was used to achieve the expected levels of safety and operational performance, the detailed analysis conducted on the current situation[25] demonstrates that this is not the case for the interoperability of national systems and the level of services provided to users. Nowadays with the corporatisation and privatisation of the providers, it is widely recognised that the provision of air traffic services shall be regulated. Such regulation should encompass the ability of the providers and their staff to provide safe and interoperable services. It should also include for those services which are provided on a monopoly basis, the assignment of given levels of quality performance expressed in terms of traffic managed and average delay, both in normal and crisis situation, as for any regulated public utility.

Action: The provision of air traffic services shall be regulated so as to ensure that they meet the necessary level of safety and interoperability. When provided on a monopoly basis they shall also be subject to economic regulation, ensuring that agreed operational performance or service levels are implemented.

- ATM equipment and systems: such equipment are subject to regulation when they are on-board aircraft, but not when they are operated by air traffic services providers. This explains in part the wide variety of equipment used and their frequent incompatibility. This is also at the root of several problems of interoperability, in as much as even when common requirements are agreed there are no means to ensure their enforcement (see also appendix on system design).

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[25] See appendix 1.

Action: It is necessary therefore that ATM equipment and systems are subject to appropriate high level regulation.

The exercise of the regulatory function

10. A fundamental principle is that the regulator should be independent from those it regulates and has no vested interest itself in the sector it regulates.

- - The first step is therefore that states designate neutral and independent regulators. Since air traffic services and air operations are intimately connected, it is widely accepted that public interest would benefit if both sectors were regulated by the same regulator.

- - It is not certain however that the same regulator should concentrate all regulatory powers. It seems, at the contrary, that public interest would be better protected if, at least, the safety regulator was not that which deals with quality of service and performance aspects, so that arbitration between economic efficiency and safety is made at the right political level.

Action Each State must establish a regulatory framework for the provision of air traffic services. Regulators should be independent from service providers. Safety regulators should be separated from economic regulators.

11. Because all national systems must inter-operate and inter-connect at European scale, it is necessary that all national regulators collaborate to ensure that the essential elements of "seamlessness" are maintained. This requires that common requirements and implementation procedures are adopted, covering safety, interoperability, operational performance, levels of services and environmental protection. This shall be done according to a streamlined rule-making process, allowing independence in the initiative and transparency in the discussion of proposals, so as to reflect collective interest and place decision-takers in front of their political responsibilities.

12. Such a role can be played by EUROCONTROL, as foreseen by the revised Convention, provided the Agency is seen and acts as independent from the interests in the regulation of which it is involved. Its own role in the provision of services and its recruitment policy, which forces it to select its management among national officials or ATM organisation staff and to limit the length of their secondment, have led many outsiders to question this independence.

13. This explain why, when implementing provisionally the revised Convention, the Contracting Parties decided that the support to the PRC and the Safety Regulation Commission (SRC) would be provided by independent units, not subject to the authority of the Director General of the Agency. This in turn leads to serious restrictions of the right of initiative of the Agency in essential areas of competence of the Organisation.

Action: There is a need to develop and adopt common rules in all necessary domains.

Action: EUROCONTROL regulatory and service provision functions shall be clearly separated and its recruitment policies reformed, so that the Agency can act as a strong, neutral and independent promoter of collective public interest.

Application of common rules

14. EUROCONTROL has very weak means to ensure that its decisions are actually applied by its contracting parties, as it is indeed common in traditional multilateral organisations. It has been advocated therefore that EUROCONTROL should be given directly applicable powers, as the Community itself. This is certainly too ambitious, especially for an organisation dealing with military matters. It would imply moreover a complete overall of the Convention in order to strengthen the political control of the organisation and to introduce some kind of jurisdictional control.

15. A more pragmatic way would simply be for the Community itself to adopt the necessary rules in its internal legal order, so that it can use, for its Member States and those states which are bound to it by bilateral/multilateral agreements, its own enforcement capabilities.

Action: The Community shall exercise its competence in all areas where common rules are necessary.

16. Since technical expertise and resources are currently available in EUROCONTROL, this organisation can assist the Community. To do so it shall produce "hard" law in the format of rules drafted in a way which gives them direct effect in the internal legal order of its contracting parties; that is to say that they should be clear, non-ambiguous and not subject to further actions. This would not only facilitate their transposition by the contracting parties, and the control of effective application by EUROCONTROL, but allow also interested parties to seek their application through national legal remedies.

Action: EUROCONTROL must develop a proper rule-making process ensuring the necessary transparency and democratic control.

17. One step towards ensuring effective and uniform application of common rules would be to devise collective certification schemes, for global systems like GNSS. This would also avoid the excessive cumulation of certification processes and of the related burden on manufacturers and operators.

III. INCENTIVES

18. Regulation however is not the single answer to the need for commitment. It is not always possible to mandate and enforce; people cannot be obliged to spend money which they do not have. Frequently voluntary behaviour and motivation are far better means to reach commonly agreed objectives.

19. Therefore, in addition to the necessary transparency and democratic involvement of stakeholders in the decision-making process, there is a need for finding some soft means to facilitate the implementation of those decisions which cannot take the form of legally binding requirements.

20. All realise indeed the interdependence of the various elements of the European ATM systems, and in particular the fact that the efficiency of the whole system is severely

affected by that of its weakest components. There is therefore, as in the Trans-European Network, a strong argument for all contributing collectively to eliminating black spots, using as necessary some kind of solidarity tool to help finance investments with low financial return but high economic profitability for the whole system.

Action: Create at a fund for financing common projects essential for the performance of the European network.

21. Additional means should be worked out which provides for reward for those contributing the most to the efficient functioning of the system. Such could be the case for the pricing policy, so that service providers can make profit when the quality of their services is above average, or that air operators are charged different prices in accordance with the level of service they accept or the type of equipment they use. In the same vein airspace policy could be adjusted to link access right to the level of service and equipage.

Action: Develop new incentives, based on reward or penalty, to support voluntary abiding by collective commitment.

ANNEX 6

SYSTEM DESIGN

1. It is widely recognised that concepts, tools and procedures used currently to manage air traffic are reaching their limits and new means have to be designed and implemented so as to allow more aircraft in the same airspace.

2. As it is likely that in the near future one can only expect incremental improvements through the evolution of the current system; it is questionable whether this will be sufficient to satisfy peak demand, as expected by most airspace users. It will be necessary therefore to find a new solution, a major conceptual and technological development, which needs to be carefully validated so as to ensure that it is accepted by all stakeholders involved and that the transition is managed in a way which guarantees the safe operation of aircraft.

3. Current practices however are criticised as being too much technology driven and do not take sufficiently into account the view and needs of users. It is advocated therefore that system design should be led initially by a top-down approach in which operational concepts and requirements shall be developed and agreed; and which then drive themselves the need for equipment and procedures.

4. At the same time the interdependence of the various national systems is such that, apart from the sharing of airspace and the resectorisation of air traffic control sectors, there is little states can do individually to increase the capacity of their airspace. There is a need therefore for a facilitator, exercising a kind of high level regulatory role to organise collective agreement on feasible and beneficial changes; and to co-ordinate implementation. In this perspective the role of this facilitator will be fundamental for the future of aviation.

5. Although all accept that EUROCONTROL should be that facilitator, at least for Europe, many stakeholders consider that the current tendency of EUROCONTROL and its members administrations to act all together as legislators, customers, designers, certificators and operators is a source of confusion which results in conflicts of interest.

Action: It is necessary to devise a new approach to system design, which allows a balanced involvement of all stakeholders, so as to stimulate creativity and the sharing of knowledge, experience and risks.

I. RESEARCH AND TECHNOLOGICAL DEVELOPMENT

6. It is clear that effort must be concentrated to make the technological and operational breakthrough on a next generation ATM system that can be implemented from the mid-term onwards. This breakthrough will be characterised by the implementation of datalink technologies specifically designed for ATM applications which, coupled with more accurate navigation systems enables the aircraft to determine its location and transmit it to other aircraft and to the ground ATM system with precision and reliability. It will also permit the transmission of other real time data, such as aircraft intent, that will improve trajectory and conflict prediction which are essential for the accuracy of the controller tools and a foundation to further automation.

7. This technological improvement has to be complemented with the implementation of collaborative ATM between pilots, controllers, the airlines, the airports and the ATM service providers. The role of the controller in the future ATM system will change, with the automation tools having more influence in the tactical phase impacting the responsibilities of the controller, and a progressive transfer of separation responsibility to the aircraft. Airspace should be allocated preferentially to suitably equipped aircraft from the beginning, to enable the operational benefits to be achieved immediately, and to speed up implementation of the systems on all aircraft.

8. Whilst RTD can contribute to shorter term improvements, the main role for RTD is to open the way for longer term improvement which gives a significant capacity increase. In the short term, operational procedures should be amended to enable existing aircraft capabilities to be exploited, particularly with respect to FMS approaches, displaced thresholds for landing and improved airport surface management to maintain capacity in all meteorological conditions. In the medium term, RTD should support the development of controller tools, which enable deconfliction of traffic up to 30 minutes ahead, and supports direct routing. Controller workload should also be reduced through the possibility of a relatively limited number of ATM clearances to be passed by the datalink. However, this should only be considered as a first step, the main capacity gain in the longer term being through the implementation of ATM concepts such as Automatic Dependant Surveillance – Broadcast (ADS-B), which enables aircraft to have an on-board traffic situation display, and supports direct routing and a degree of self separation assurance of aircraft even in high density airspace.

Action: Allocate sufficient RTD efforts at both National and European levels to speed up the development of the next generation ATM system.

II. SYSTEM CONCEPTION

9. The ATM Community shall learn from the experience gained in the sector of airborne equipment where the initiative is taken by the industry itself, with the support of regulators. RTCA26 in America and EUROCAE27 in Europe, working often together, have already gained a good experience in developing specifications for equipment and systems. Recently the American Federal Aviation Administration supported the extension of RTCA's field of actions to Air Traffic Management and asked it to make proposals for new concepts based on the principle of free flight.

10. On the European side similar work is undertaken by EUROCONTROL within the European ATM Programme, it is questionable however whether this is a governmental task. Moreover participation in EUROCONTROL work is often limited to that of national administration and ATS providers, with too little involvement from the industry and air operators. Programmes developed do not benefit therefore as much as they could, from the knowledge and experience of these actors and may not reflect best practices, industrial capabilities or user requirements. As a consequence, past experience with programmes on Basic Area Navigation

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[26] Radio Technical Commission for Aeronautics; a non-profit association of manufactures and aircraft operators, supported by the FAA.

[27] European Organisation for civil aeronautical equipment.

(BRNAV), collision avoidance systems (ACAS), new channel spacing (8.33 kHz), and eFDPS meet implementation difficulties.

11. To overcome this shortcoming there could be merits in considering enlarging the scope of the activities of EUROCAE, particularly, those associated with the design of new operational concepts and requirements. This, as mentioned in the ATM White Paper, would ensure a proper involvement of the industry in system conception, and thanks to the cooperation between EUROCAE and RTCA, facilitate maintaining its presence in the world ATM market.

Action: Industry – manufacturers, service providers and airspace users - must take the leadership in system conception and establish therefore an appropriate structure.

III. SYSTEM STANDARDISATION

12. Another essential element of system design is the development of technical specifications. EUROCONTROL has put in place a standardisation process, but the production of standards and technical specifications has been very slow. This can certainly be explained by the fact that EUROCONTROL standards are too detailed and that it is questionable whether technical specifications are to be defined by an inter-governmental organisation. The EUROCONTROL process is indeed facing the same difficulties that led the Community to revise its approach to standardisation and to adopt the "New Approach".

13. The ATM Community should learn from this experience and focus government's role to defining essential requirements to be enshrined into common rules. Such rules should have for sole objective to mandate high level objectives in terms of safety, operational performance, functionalities and interoperability of systems and equipment; they should leave technological options open so that industry can also compete in this field, allowing creativity and innovation.

14. In this context the industry could decide – using as appropriate EUROCAE, in co-operation with the European Standardisation bodies - to develop technical specifications, similar to European Standards, the voluntary use of which by manufacturers or service providers being a presumption of conformity with the common rules. This indeed would allow the ATM industry to play the role that it plays in all other sectors and facilitate the improved availability of off-the-shelf equipment and systems, diminishing therefore their costs and the major risks associated with their development: these risks are a major feature within this sector and have significantly affected the timely introduction of many new ATC centres.

Action: new approach to ATM standardisation has to be defined, building on Community policies in this field.

IV. SYSTEM CERTIFICATION

15. Another essential element in system design, is the certification of its component. While it is foreseeable that certification against safety requirements will have to follow the approach used generally in aviation, attestation of conformity with performance and interoperability requirements requires that a certification systems is

put in place, none existing presently in that field. Work has already been undertaken within EUROCONTROL, manufacturer and buyers being equally interested in ensuring that equipment put in the market conforms to the EUROCONTROL Standards and specifications.

16. There is concern however that instead of limiting its role to that of a facilitator, EUROCONTROL involves itself in conformity assessment, which the Community considers to be an economic activity and not a regulatory one. This could create conflicts of interests and is contrary to established Community policies. It would be more advisable therefore to put in place a certification system based on the existing infrastructure created by states and the Community, so as to benefit also from its mutual recognition system which expands well beyond Europe and can facilitate access to foreign markets.

Action: An ATM certification process must be put in place, building on the existing certification infrastructure created under the Community Global Approach to certification.

ANNEX 7

COST EFFICIENCY

1. Airspace users have voiced loudly their doubts about the ability of ATS providers to deliver cost-efficiency in the current organisational framework. The Commission had expressed the same reservations in its ATM White Paper. At the same time the INSTAR study had estimated that if all ATS providers were able to match the economic performances of the second best, costs could be reduced by as much as € 600 M, that is to say roughly one quarter of the total cost. Although Air Traffic Services represent only 5,6 % of air transport services costs, a 25% saving would represent 1,4% of those costs in an industry where profit margins are of the same magnitude. This explains the sensitivity of the subject and the need for further action.

2. The origin of the problem is certainly in the public service nature of that activity, where service providers have long been public administration in charge of ensuring the safety of aircraft operations as a regulatory task. They saw therefore themselves as regulators rather than customer oriented service providers.

3. This has indeed been exaggerated by an internationally agreed charging policy, whereby states were entitled to recover from users 100% of their cost, regardless of their performance or customers satisfaction rating. It must be said that at the time this was supported by airspace users, which preferred such a principle to the risk of becoming unwilling subsidisers of other hidden states' expenditures.

4. It is now widely recognised that things need to change if service providers are to obtain managerial independence and accountability to respond to their customers requirements and to motivate their staff.

   - A first essential step is to establish a clear separation between service provision and regulatory functions. This would allow indeed service providers to concentrate on their managerial tasks and avoid they use regulatory powers to impose their views to their customers. This also would strengthen relations between providers and their customers, facilitating trade-offs between quality of services and costs.

   - In this context and in order to ensure that arbitration between safety and economic objectives are made at the right political level, all agree that safety regulation should also be separated and independent from economic regulation as an absolute prerequisite, at least at national level.

   Action: Establish a clear separation between regulatory and service provision functions at national and European level.
   Ensure that safety regulation is independent from economic regulation.

5. A second step is certainly to adapt the charging policy. If it is legitimate that users pay for the service they receive, there should also be a possibility to take into account an element of satisfaction, so that providers have an incentive in improving the services they deliver.

6. In parallel States should consider organising service provision in a way which facilitates access to capital markets and provides appropriate flexibility to motivate and reward their staff. In this perspective it has to be acknowledged that significant

changes are already taking place. Several European countries have corporatised their ATM providers and EUROCONTROL principles for the charging of en-route services have been adjusted to allow introducing some margin of risk for the service providers. As a result, corporatised service providers are exploring new ways of improving performance, principally by the active participation by their staff in the definition and delivery of ATM solutions which meet user needs.

Action: Reform charging policies so as to reward customers satisfaction.

7. More could be done however since air traffic services are still not provided in conformity with the Treaty provisions on the freedom to provide services. There is no doubt indeed for the Commission that the bulk of ATM is composed of commercial services subject to the Treaty, although constrained by various regulatory needs to ensure that they are safe, interoperable, environmentally acceptable, meeting national security and other policy requirements.

8. Therefore any body fit and able to provide one of these services in conformity with the necessary regulatory requirements, shall be entitled to compete in the market or for the market, depending whether the said service can be provided on a competitive basis or not.

9. When looking more into the details, there are no doubts that communication, navigation, surveillance, aeronautical information, flight data processing, could be provided on a competitive basis. Several providers could indeed compete in the market, using possibly different technologies, provided they are interoperable. It may happen that such "unbundling" is not the most appropriate way to provide some or all of these services, but this remains to be demonstrated and no serious analysis in this field has ever been done; not even by those countries which consider privatising their ATS providers. In the present situation, therefore, it may well be that the exclusive rights granted to ATS providers do not meet the conditions of article 86 of the Treaty.

Action: The Commission will examine the technical and economic feasibility of unbundling of air traffic services.

10. As for air traffic control, all would agree that in the current state of the technology, it is certainly a natural monopoly because only one air traffic controller can separate all the aircraft in a given volume of airspace. In such case, fit and able providers should have an equal right to provide the service, subject again to some legitimate national policy requirements: this would also be without prejudice to the need for economic regulation of such monopolies to prevent abuse of their dominant position and to ensure agreed levels of services are provided at an affordable price. A regime of concession/franchise of limited duration could be a means to ensure that the principle of freedom to provide services is respected. Here again no state has seriously considered such an option.

Action: There is a need for monopoly services to be subject to economic regulation so as to ensure that they meet agreed levels of quality and quantity at an affordable price.

11. There is now a strong support for undertaking in this sector a liberalisation process as has happened in nearly all other sectors. It may also happen that if no move is made spontaneously by states in that direction, there are calls from users and service

providers for the Commission to use legal means to ensure the proper application of the Treaty principles, as it did in the air transport sector fifteen years ago.

Action: The Commission will examine whether the way air traffic services are currently provided is compatible with the Treaty provisions on competition and the freedom to provide services; and take legal action, as appropriate, to rectify any infringement.