1. BACKGROUND

1.1 Eurocontrol, the ATM 2000+ and ICAO CNS/ATM Strategy

EUROCONTROL is the European Organisation for the Safety of Air Navigation. It has currently 28 Member States. All EU states, with the exception of Finland, are EUROCONTROL members.

The ATM 2000+ Strategy, managed by the Eurocontrol Agency, is a comprehensive gate-to gate strategy outlining the direction of the main Air Traffic Management (ATM) developments required during the period 2000 to 2015. The challenge is to generate extra capacity to meet the demand while reducing unit costs, and simultaneously increase safety levels.

During this period the traffic is expected to more than double compared with the traffic in 1997, and the strategy outlines three steps to provide the necessary capacity:

Step 1: by 2005 – to increase capacity by 60% above 1995 levels;

Step 2: by 2010 – to increase capacity by 20% - 40% above those in Step1;

Step 3: by 2015 – to increase capacity by 20% - 40% above those in Step2;

The ATM2000+ strategy supports and supplement in Europe the ICAO CNS/ATM strategy, adopted by all ICAO members in 1990, which is planned to be globally implemented by the year 2010.

1.2 The European Air Traffic Services

The civilian Air Traffic Services provide mainly services to the Air Transport industry, but also controls and manages some military flights.

The European air transport industry plays an important socio-economic role in the European Union. It currently employs more than 329000 personnel. Around 245 million passengers and 5 million tones of freights were transported in 1998[1]. It importance has been recognised in the white paper on the management of aeronautical traffic published by the Commission in March 96.

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[1] The figures are relevant to the 27 airlines, members of AEA. They do not include airports, general aviation, charter, regional airlines and non-European airlines flying in Europe. The total figure is therefore consequently higher.

Aviation is an indispensable enabler for the transport of people and goods. For Tourism alone, which is the world's biggest industry in terms of employment and turnover: 250 million people are employed world-wide in the Tourism sector including many in Europe. Although our industry might look small compared to Telecommunications, we are a key enabler for economic development and in particular for the tourism sector. Europe's mainly long-haul oriented carriers play an important role in transporting these passengers.

In Europe, General Aviation operates more than 36000 airframes for business and leisure activities

Civil European ATM is also indispensable to the Defence of European and NATO countries as some military flight are also controlled by civilian procedures.

To give a comprehensive view of the importance of aviation activities, we have to include side activities, such as commercial aspects of airports, the construction of infrastructure, ATC/ATM premises and airports.

We are of the opinion that the text of the green paper[2] does not fully consider the public, military and commercial interest of Aviation, and would appreciate that any subsequent communication (such as a white paper) on spectrum policy incorporates them.

The traffic, which grows considerably each year (approximately up to 7%), is restricted by the limited capacity of the ATM and airport infrastructure. As a consequence, passengers are confronted with growing delays, as seen in the table below:

% of departures delayed more than 15 minutes (AEA International Short/Medium Haul)

1998	1997	1996	1995	1994	1993	1992	1991	1990	1989	1988
22.8	19.5	18.5	18.4	13.3	12.7	16.6	18.8	20.0	23.8	19.0

1.3 The aviation specificity in spectrum activities

ICAO, a specialised Agency of the United Nations Family, is globally the responsible body for fostering the planning and development of international air transport, to secure the highest practicable degree of uniformity in all matters concerning safety, regularity and efficiency of air navigation. Radio-navigation systems and services for

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[2] For example, in chapter 2.1 and table 1, it is worth mentionning that Air Transport is key enabler for tourism and military flight. In table 3, the market perspective must not be restricted to radio navigation.

air transport must operate within the framework of decisions, requirements and actions taken by ICAO. (Art 37 of the Chicago Convention refers.)

The Organisation for the Safety of Air Navigation (EUROCONTROL) is the responsible European Organisation for examining and co-ordinating of its member States matters in the field of air navigation addressed by ICAO and other international organisations concerned with civil aviation and to co-ordinate and submit proposals to these bodies

Article 75 of the Maastricht Treaty clearly requires the European Commission to take measures to improve safety in the framework of an established Common Transport Policy.

"*For the safety of different transport modes, especially the sea and air traffic, radio navigation systems have a central importance. Projects of common interest should therefore contribute to the improvement of today's systems by means of performance and safety*." (article 24 COM(94)106 and Council Doc.7073/94).

The aeronautical radio services are safety related and the ITU Radio Regulations require special measures for their protection. Administrations are therefore obliged to apply these rules in the day to day operation of radio services, as licensed and operated under their jurisdiction.

2 ANSWERS TO THE ISSUES RAISED IN THE EC GREEN PAPER

2.1 ISSUE 1: STRATEGIC PLANNING OF THE USE OF RADIO SPECTRUM

Sub-issue 1 (a)   Does the strategic planning of the use of radio spectrum respond to the needs of commercial and non-commercial uses, in particular in the areas of mobile and personal communications, broadcasting, transport, and R&D?

1(a).1 The present practice in strategic planning does not fully respond to the need of non-commercial uses, in particular for the aviation sector. The comments below explain that consideration of the safety-to-life case and aviation strategy recognised at EU and Transport minister level, and the safety case, are imperfectly taken into account in the present process.

1(a).2 From a strategic perspective, it should be noted that steps have been initiated to introduce a global, mainly satellite-based, infrastructure to support adequately (in quality and capacity) the future demands in the air transport field, and more specifically in air navigation. However the step towards implementation is so huge, and the implications so large and complex, that a long transition time will be required before the so-called conventional services (supported by a ground-based infrastructure) will be removed. All these aspects are covered in the ICAO and EUROCONTROL strategies and plans.

1(a).3 The international aviation organisations have difficulties in evolving a spectrum planning strategy. Due to the international nature of their work: decisions and implementation require much more time, when compared to similar work undertaken by commercial entities (long international decision and certification process). When firm plans and real public interest exist, reserved spectrum should not be reallocated to other entities because of the time consuming processes needed in developing these plans. This question is directly linked to the first-come, first-served technique for frequency allocation. In fact this technique, as it has been applied in the last WRC for the aeronautical satellite communications band, will almost certainly result in this band being fully occupied by commercial entities by the time that aviation is ready to fully exploit its new CNS/ATM concept. The justification for the strategic planning of spectrum for aviation is based on the various Aviation strategy (ATM2000+, ICAO CNS/ATM) recognised by Transport Ministers and EU.

1(a).4 The aviation concern for today is not only to obtain additional bands, but rather to accommodate the spectrum already assigned to the aviation strategy, including the necessary transition phase between existing and replacement concepts. The decision in the last WRC 97 conference on aeronautical satellite communication band and the on-going pressure on GNSS band, MLS and radar bands are examples where the aviation strategy is seriously threatened.

1(a).5 The governments and the Commission have a duty to ensure the safety-of-life of the passengers flying over Europe. The safety requirement is often translated in additional spectrum capacity (for example to get a real time access) and very low level of unwanted radio-emissions from other services (especially in the landing and departure phase). A purely mathematical method to assess the safety-of-life requirement is utopian. Therefore this argument is difficulty to apply in technical discussions where radio spectrum allocation is decided. In particular, the tendency to share radio bands between aviation services and non-critical services can seriously affect the safety.

Sub-issue 1(b)   What information on radio spectrum allocation, radio spectrum assignment, and licensing should be publicly available for industry and policy makers? Where should this information be collected, and how should it be presented in the European Community?

1(b).1 For safety and strategic planning reasons, the procedure and conditions (spectrum allocation plan, frequency planning, EM compatibility procedure, maximum level of radio emissions) related to the adjacent services of aviation services (co-shared in the same band, or allocated to adjacent bands) should be publicised and made available to the aviation community.

1(b).2 The aviation information related to radio spectrum (including strategy, schedule of implementation, frequency table, radio protection requirements) are publicised in ICAO and by the various National Aviation Authorities and are available to radio-regulators and other sectors

Sub-issue 1(c)   **Should re-farming and substitution policies form part of the strategic planning of radio spectrum for pan-European services, what could be the modalities for this (e.g. actors to be involved, timing), and to what extent is a common Community approach required, for instance with regard to the phasing-out of analogue broadcasting and analogue mobile telephony services?**

1(c).1 Refarming and substitution concepts should not hide the importance of maintaining the existing radio systems of aviation (VOR, DME, MLS, Radar, …) until new systems (Satellite navigation, ADS, digital COM,..) are operable and have demonstrated their capability to replace fully or partly the previous systems. Adequate spectrum capacity is necessary to provide a smooth and efficient transition. Contrary to other applications based on radio link, aircraft can not fly in an environment where the radio infrastructure is too hastily replaced by another without risk of seriously impairing safety .

1(c).2 Refarming and substitution policy is in general an extremely difficult solution for the aviation bands due to the long world-wide harmonisation and certification process, as well as the huge amount of investment made on the present ATC ground infrastructure.

1(c).3 Refarming and substitution policy, as well as the detailed spectrum investigation processed within CEPT which justifies this policy, should be made with a strong dialog between sectors. The comments 1(a) are also relevant to this sub-issue.

2.2 ISSUE 2 : HARMONISATION OF RADIO SPECTRUM ALLOCATION

Sub-issue 2(a) Are specific Community measures necessary to ensure radio spectrum availability for pan-European applications in the areas of telecommunications, broadcasting, transport, and R&D, or should criteria be established which determine when radio spectrum harmonisation is required?

2(a).1 The aviation radio systems have to be world wide compatible, so the bands allocated to aviation need to remain harmonised between the different regions. This is also necessary to maintain high levels of safety and acceptable cost of radio equipment for the airspace users and the ATM/CNS Service providers.

2(a).2 ICAO is recognised by ITU, for safety reasons, as the co-ordinating body for harmonisation in aviation bands. It is responsible for achieving the highest practicable degree of uniformity and harmonisation of the radio-communication and radio-navigation systems and services for air transport. These must be developed in line with principles of global compatibility and interoperability. The aviation band harmonisation has been practised since 1947, and arises from Article 37 of the ICAO Convention.

2(a).3 Some bands, although used for aeronautical services (such as GNSS, Satellite communications, radar) are controlled outside aviation bodies. In order to cope with operational and safety aviation requirement, the allocation and use (in particular the standardisation process, the frequency registration, the priority of use when shared by

several users) for all regions should be co-ordinated closely with the Aviation community.

2(a).4 Aviation and the EC recognise the fact stated in the green paper "no pre-defined regulatory criteria exist …technical proposal in CEPT and ITU/WRC are increasingly influenced by commercial and political lobbies". In the context of increasing competition for a limited spectrum resource, political, social and economic criteria should pre-exist based, for aviation, on EU and European Transport Ministers agreed policy, before engaging technical discussions in CEPT and ITU.

Sub-issue 2(b) Where and on the basis of what criteria should priorities be set and arbitration take place where radio spectrum requirements for Community policies on telecommunications, broadcasting, transport, and R&D are in conflict? How can it be ensured that commercial and public interests are defined and appropriately balanced in this process?

2(b).1 In addition to technico-commercial criteria such as spectrum efficiency and economic value, other criteria such as adequation with agreed transport policy of EU, CEPT States, safety-to-life case are necessary for a balanced arbitration between commercial and non-commercial services.

Sub-issue 2(c) Can the implementation of radio spectrum harmonisation measures, necessary for the provision of pan-European services, be left to voluntary decisions by Member States or is there a need for legal obligation in that respect? Should the European Community collect and publish relevant information in both cases?

2(c).1 Spectrum harmonisation of Pan-European services, and in particular global aviation service, should benefit of a legal obligation. That will prevent divergence and simplify (and therefore improve the safety) the work of Aviation Bodies.

2.3 ISSUE 3: RADIO SPECTRUM ASSIGNMENT AND LICENSING

Sub-issue 3(a) Where there are differences in Member States as regards radio spectrum availability for pan-European services, what is the overall impact on competition?

No comment

Sub-issue 3(b) Is there a need to agree in the European Community on which radio spectrum assignment mechanism leads to the most efficient use of radio spectrum for the different types of services?

3(b).1 We believe that an efficient management of aviation bands, taking full consideration of the ATC infrastructure and Air traffic, should remain the responsibility of Aviation for the reasons explained as follows:

3(b).2 States have delegated frequency planning of aviation assignments to National Aviation authorities. The aviation spectrum assignment is effectively managed by Aviation Authorities, under ICAO co-ordination, and with close links with National radio regulatory Authorities and ITU for ensuring the compatibility with adjacent services.

3(b).3 In Europe, Eurocontrol manages in close co-operation with ICAO, programmes that improve the efficient use of the VHF aeronautical band by establishing a new split of the VHF channelling (8.33 kHz instead of 25 kHz), introduction of digital techniques, delivering of frequency planning tools and introduction of filtering technique based on the operational importance of aviation assignments.

Sub-issue 3(c) and 3(d)

3 (c) What is the impact on pan-European services of diverging national mechanisms to assign radio spectrum, which mechanism is most suitable to support pan-European services, and to what extent is a Community approach required in this regard?

3 (d) What is the impact of charges and fees, including relocation costs, associated with the use of radio spectrum on the development of services and on the competitive situation?

3(cd).1 While recognising that pricing is a national matter, the price should not exceed the administrative licensing and assigning cost, and should not penalise ATM services and the Air Transport Industry in one country when compared to other countries which do not apply charging.

3(cd).2 We believe that generally, other mechanisms than pricing the spectrum, are preferable to let and enforce the frequency assignment procedure of aviation service. The programmes and procedures, described in 3(b).2, is though spectrum efficient.

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Sub-issue 3(e) Should the awarding of radio spectrum be separated from the granting of service authorisations or licences? What would be the impact of creating a secondary market for radio spectrum for the provision of similar or different services, and which safeguards are needed in this regard?

No comment

2.4 ISSUE 4: RADIO EQUIPMENT AND STANDARDS

Sub-issue 4 (a) Is there a need to improve the link between the elaboration of standards and the harmonisation of radio spectrum allocation for pan-European services in the areas of telecommunications, broadcasting, transport, and R&D?

4(a).1 ICAO SARPS define operational and safety level for Aviation equipment and standards. Airborne equipment are developed with industry co-operation to obtain the

most up-to date technology and accommodate acceptable level of spurious emissions to other equipment.

4(a).2 Co-operation between aviation and specialised Telecommunications standardisation bodies, such as ETSI is recognised as a rapid and cost effective way to develop standards. This is particularly important for the aviation standards developed within ETSI (airborne NGSO communication equipment, 8.33 kHz spacing VHF communication station,…)

4(a).3 Aviation flights are affected by various causes of harmful interference, some of which may be safety-to-life critical. Identifying sources of interference is a complex and difficult task. It is more efficient to avoid interference by ensuring that aviation requirements are taken into account at the start of the standardisation process. All equipments, capable of unwanted radio emissions, must be considered and therefore the links should be systematic between Aviation bodies, ETSI and CENELEC.

Sub-issue 4 (b) Which practical arrangements are needed to ensure that the full potential of Community policy on radio equipment is supported by appropriate action at the level of radio spectrum management?

4(b).1 As was mentioned in sub-issue 1(b), the establishment of a database of radio practises should help in this process.

4(b).2 The standardisation process should insure that proper EMC is achieved between the various radio equipment, and that operational and safety requirements are properly accommodated. Co-ordination should be systematic between the various standardisation and radio regulation bodies. In the case of aviation, links should be systematic between EC, CEPT, ETSI, CENELEC and the aviation standardisation and certification bodies (EUROCAE, Eurocontrol, CAAs, JAA, ICAO).

2.5 ISSUE 5: THE INSTITUTIONAL FRAMEWORK FOR RADIO SPECTRUM CO-ORDINATION

Sub-issue 5 (a) In view of the need to have a predictable environment in the European Community for the use of radio spectrum, is the framework for the co-ordination of radio spectrum sufficiently open, transparent, and legally certain? Is it clear where and on the basis of which principles the need for radio spectrum harmonisation or for Community positions is established?

5(a).1 We agree with the statement in the green paper: "users of radio spectrum are likely to benefit from a high level of openness in the regulatory framework and should therefore more involved in the decision making process". We also agree with this other green paper statement "priorities in radio spectrum use are difficult to set where no objective principle (whether technical, economic, political, and social) exist on the basis of which priorities to spectrum access can be set". There are indeed many factors, at National and at CEPT level, which prevent a clear, balanced and predictable consideration of all the sectors. The factors are as follows:

5(a).2 Radio Administrations, responsible of the National view in CEPT, belong to Ministry of Commerce, Ministry of Industry or Ministry of Post and Telecommunications; therefore they represent partial interests in the CEPT process. Moreover CEPT discussions are based on a States negotiation basis, therefore preventing full consideration of supra-national views and policies of the different sectors.

5(a).3 Within CEPT/ERC, contrary to ITU, there is not legal obligation or procedure to co-operate with European non-Telecommunication Administrations. Under the present practice, acceptance of a candidate as an observer is decided on a voluntary basis within ERC.

5(a).4 In the present CEPT mechanism, radio spectrum matter are co-ordinated in technical groups where the decision is naturally driven by the quality and the quantity of study materials, while lobbying is also applied aside. Within this mechanism, the commercial entities, who achieve rapid returns on their investment, are obviously favoured

5(a).5 Another factor aggravating the lack of balance and certainty both at National and CEPT level, is that aviation contribution can not compete with Telecommunications contributions as their resource in the telecommunications domain is naturally limited when compared to the Telecommunication industries and Ministers.

5(a).6 We are of the opinion that the present mechanism of frequency allocation can be improved to reflect the EU policy on transport, and in particular the agreed ATM2000+ and ICAO CNS/ATM strategy.

Sub-issue 5 (b) Is the establishment of a priori Community agreement necessary to achieve radio spectrum harmonisation or is it sufficient to co-ordinate the positions of the Member States in CEPT on an ad hoc and technical basis?

5(b).1 The radio allocation of a very scarce resource where competition is growing higher and higher can be balanced equitably only if the different criteria (social, public, economic, technique) can be evaluated within a well balanced decision mechanism. The present practice is on technical basis biased by the stronger influence of the commercial service community. We are of the opinion that, by its nature, the decision mechanism should be on a political basis, able to judge on both commercial and public interests and their relative importance.

5(b).2 Examples where CEPT proposals were not aligned with high level policies agreed at Transport Minister level, happened during the WRC in November 97. One is the sharing of a portion of the 1559-1567 MHz GNSS band with MSS; another is the sharing of AMS®S with generic MSS service. The generic MSS allocation was pushed without any safety case or proven feasibility, and finally agreed at WRC 97. Thanks to vigorous oppositions from the aviation community, USA, and some other States, the proposal related to GNSS band has been delayed until the technical, operational and safety requirements of sharing are proved. After WRC 97, the EC by

various communications has requested its member States to ensure the availability of sufficient capacity and protection for the development of a European GNSS. We believe, that this high level policy of EC has been a determining factor in the present CEPT draft proposal for WRC 2000. We also believe that the CEPT process for ITU WRC 97 and WRC 2000 preparations, would have been more efficient and speedier if this kind of high level policy had been taken into account prior to technical discussion.

5(b).3 In order to better balance the high level policies of the different sectors and to resolve the structural deficiencies identified in 5(a) comments, we are in favour of establishing priorities in spectrum policy by introducing a mechanism where all sectors may discuss the criteria and priority.

5(b).4 This mechanism could be implemented in a committee where the sector views can be directly and independently expressed and decided. This committee would be responsible for defining a negotiated spectrum policy. In particular this spectrum policy should define priority of spectrum allocation between the different sectors, and the mechanism to monitor the application of this policy and possibly correct the technical decision if contrary to the spectrum policy. The present CEPT mechanism would use the directives of this committee. This would give the CEPT a more certain framework and help it to concentrate its effort where needed.

5(b).5 In order that this committee really reflects a balanced and transparent negotiation between sectors, we believe the negotiation mechanism should be enlarged to the European Administrations in charge of co-ordinating/implementing the policy of the various sectors, such as the EC, Eurocontrol, ESA.

5(b).6 Objection has been made that this mechanism can not be implemented because CEPT is constituted by more States than some other Pan-European Administrations such as EC or Eurocontrol. We nevertheless believe it possible with some adaptation for States that do not have representation in these pan-European administrations.

5(b).7 Modification in the present institutions being a long and difficult exercise, an immediate progress can be achieved if the status of pan-European Organisations, such as Eurocontrol, can be improved in CEPT-ERC. An example is to obtain an automatic access to all CEPT-ERC meetings with preferably the right to vote.

5(b).8 It was agreed during the EC consultation meeting that CEPT/ERC and EC will set up an agenda to discuss spectrum policy, and in particular the outcome of this green paper consultation. We believe than pan-European organisations such as Eurocontrol should be involved in these discussions

Sub-issue 5 (c) In which fora should Community positions be developed where needed in discussions on radio spectrum between the European Community and its trading partners?

5(c).1 Although the CEPT mechanism is adapted to technical discussions, as stated in 5(b) comments, we believe that the CEPT mechanism should be re-inforced or supplemented by a special mechanism. The EC has obviously an important role to

play for the European Union in this mechanism. Aviation spectrum usage is not limited to the European Union and this mechanism should be enlarged as much as possible to all European Countries, with recognition of world-wide agreed policy, such as the ICAO positions.

Sub-issue 5 (d) Should procedures be introduced to ensure that the Member States support CEPT positions for ITU/WRC, particularly in view of the need to uphold Community interests in the international arena?

5(d).1 As already stated, the main point for aviation is that European States and CEPT positions reflect a balanced view between the different sectors. Once this point is achieved, it would be valuable for the Community to secure, for example by legal binding, a common Community approach in ITU/WRC.

3. CONCLUSION

3.1 An important enhancement of the capacity, flexibility and safety of the ATM infrastructure can only accommodate the extraordinary growth of air traffic (to be doubled in 2010 in comparison to 1997). The introduction, already applied or foreseen, of non-aviation services in the aeronautical service bands may reduce considerably the safety and the capacity of the Air Transport Industry. The ability of aviation to implement that part of the ATM2000+ and CNS/ATM strategies, which relies on the availability of sufficient radio frequencies will come seriously at risk.

3.2 Aviation, due to its safety nature and world wide harmonisation, needs a long-term stability to develop and implement a strategy. The practices of distributing already allocated bands to a sector, which is able to use it in a quicker way than the other communities is obviously unacceptable to aviation. This practice simply prevents the aviation community from being able to elaborate and implement its strategic plans.

3.3 Aviation needs to operate the existing infrastructure when implementing the replacement infrastructure. This means that during a transition period, it is necessary to preserve radio spectrum capacity for both the existing and the replacement systems.

3.4 We have shown in our previous comments, that the present practices in frequency allocation and regulation are not sufficiently certain, clear and balanced between sectors (Telecommunications, broadcasting, transport, R&D).

3.5 We are certain than the Commission and its Member States are taking care of the socio-economic benefits resulting from Air Traffic and in the preservation of the safety of the passengers (250 Million p.a.) flying over Europe.

3.6 We therefore suggest that the Commission, as well as the CEPT and their member States, take the appropriate measures by whatever communications (white paper on spectrum policy) and actions (EU decisions, directives) to improve the present uncomfortable situation for the Aviation community. Some practical measures are suggested:

1. **Re-enforce the CEPT mechanism or create a special mechanism to reflect the social, public interest and economic policies of the EU States and more generally the CEPT States. This mechanism shall establish criteria and priority between radio policies in order that Sector policies agreed at EU level, and at CEPT States level, are feasible to apply. A follow-up mechanism should be developed in order to check if the radio spectrum policies are properly implemented in the technical discussion of CEPT and in the CEPT proposal for the ITU WRC. A corrective mechanism should be established when decisions of the CEPT groups do not properly reflect pre-agreed radio spectrum policy.**

2. **The Transport Ministers policies of CEPT States (therefore including EU, Eurocontrol States) and EU transport policy, the full consideration of the socio-economic interest of European flights, the longer-term development necessary to aviation systems and the safety-to-life nature of the aviation radio bands should be some of the criteria.**

3. **We are also proposing to participate in the discussions between CEPT/ERC and EC, in particular those related to the outcome of the green paper consultation. We would also appreciate the support of the EC, the CEPT and their member States in order for Eurocontrol to gain a sufficient status in the European radio allocation decision-making process.**