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Mr Jonathan Scheele
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European Commission
Brussels

30 April, 2009

Subject: EC Green Paper on future TEN-T policy ("Towards a better integrated Trans-European Transport Network at the service of the common transport policy")

Dear Mr Scheele,

Thank you for speaking at the recent workshop on sustainable air transport in the future of TEN-T. On behalf of the Industry Consultation Body (ICB) it is my pleasure to present you with a response to the EC Green Paper on future TEN-T policy.

The ICB was established by the European Commission in 2004. Its role is to provide strategic direction to legislators in their reform of the European Air Traffic Management system, otherwise known as the Single European Sky programme. Its members are drawn from across the entire spectrum of Air Traffic Management stakeholders, including airlines, airports, air navigation service providers, manufacturers, meteorological service providers and employee organisations. Such a composition makes the ICB the only body whose formally published views represent all of the major stakeholders involved in the day-to-day running and development of the ATM industry.

Members of the ICB have dedicated considerable effort to develop this response. In particular holding a joint ICB/DG TREN workshop on sustainable air transport in the future of TEN-T. A conclusion reached from the workshop and other ICB activities is that TEN-T policy should support the development of the Single European Sky which is a key enabler of wider community policies including the Lisbon Agenda.

The ICB would welcome the opportunity to participate further in the TEN-T consultation process. Should discussion on this or the ICB response be helpful, I am available at your convenience. I also attach a copy of the report of the SESAR Economics Task Force (E-TF) which investigated the financing and funding of SESAR as well as advocating TEN-T support for SESAR (Annex D).

Yours sincerely

Per Arne Watle
Chairman,
Industry Consultation Body

V1.0 FINAL
30 April 2009

INDUSTRY CONSULTATION BODY

ICB response to the TEN-T Green Paper ("Towards a better integrated Trans-European Transport Network at the service of the common transport policy")

1 Introduction

1.1 Purpose

This paper provides a response by the Industry Consultation Body (ICB) on behalf of the Air Traffic Management (ATM) industry to the public consultation on the European Commission (EC) Green Paper on TEN-T ("Towards a better integrated Trans-European Transport Network at the service of the common transport policy").

1.2 Industry Consultation Body

The ICB was established by the European Commission in 2004. Its role is to provide strategic direction to legislators in their reform of the European Air Traffic Management system, otherwise known as the Single European Sky (SES) programme. It comprises membership from across the entire spectrum of Air Traffic Management stakeholders, including airlines, airports, Air Navigation Service Providers (ANSPs), manufacturers, meteorological service providers and employee organisations (a full list of ICB member organisations is provided in Annex A). The ICB has observer organisations including EUROCONTROL, the military and standardisation bodies. Such a composition makes the ICB the only body whose formally published views represent all of the major stakeholders involved in the day-to-day running and development of the ATM industry.

1.3 ICB input to the TEN-T Green Paper process

Members of the ICB have dedicated considerable effort to develop this response and to the Green Paper process in general. In particular:

- TEN-T workshop on sustainable air transport in the future of TEN-T (April 2009): DG TREN and the ICB organised and participated in a joint workshop for stakeholders to exchange views and refine responses to the Green Paper consultation.
- SESAR Economics Task Force (E-TF): The E-TF[1] provided a background paper to the European Commission in December 2008, advocating TEN-T support for SESAR in the Green Paper. The E-TF published a report on the financing and funding of SESAR in February 2009[2]. This report has been used as a reference by the ICB in elaborating its response to the TEN-T Green Paper[3] and is an attachment to this submission.
- TEN-T conference (October 2008): The ICB Chairman acted as rapporteur for the 'Support to Sustainable Air Transport' workshop session. A number of ICB members made presentations in this session.

[1] The SESAR Economics Task Force (E-TF) was established by the ICB and Single Sky Committee (SSC) to provide advice on financing and funding the future ATM system. The group comprised a diverse group of stakeholders, namely the ICB, SSC, European Commission, EUROCONTROL, Military and the SESAR Joint Undertaking. Input was also sought from groups such as General Aviation.

[2] Report of the SESAR Economics Task Force - Building the new ATM infrastructure for the benefit of Europe: The financial challenge, 2 February 2009, v2.0, FINAL

[3] The E-TF report has been included in the ICB's response the TEN-T Green Paper as an annex.

A conclusion reached from this work is that TEN-T policy should support the development of the Single European Sky, which is a key enabler of wider community policies including the Lisbon Agenda.

1.4 Air Traffic Management in the existing TEN-T guidelines

ATM is included in the current TEN-T guidelines[4]. As per the Green Paper[5], by and large TEN-T priority projects cover major rail, road and inland waterway axes that traverse several Member States. Until now aviation's share of TEN-T funding has accounted for approximately 5% of the total TEN-T budget.

The two main developments, for which implementation will dominate the ATM industry in the next years, are the SESAR (Single European Sky ATM Research) programme[6] and Functional Airspace Blocks (FABs). The R&D activities of SESAR is the by far largest ATM project financed from the TEN-T budget and it represents a truly European network approach with the participation of a wide spectrum of stakeholder groups. Other ATM projects funded by TEN-T have principally been for conceptual and feasibility studies to prepare infrastructure development decisions of air navigation service providers and initial studies to explore and prepare the establishment of FABs. Neither SESAR nor FABs are currently part of the TEN-T 'priority projects'.

The purpose of this paper is to define how ATM should be incorporated in to the future TEN-T guidelines.

1.5 Document structure

- Section 1 of the document provides an overview of the Industry Consultation Body and ATM in the context of the existing TEN-T guidelines.
- Section 2 provides an overview of the current European ATM system, explaining its importance to a strong Europe, why the current ATM system needs replacing, Community level activities taking place to replace the existing system and why ATM requires public funding support.
- Section 3 provides the ATM industry view of its inclusion in future TEN-T guidelines.
- Section 4 responds to specific questions raised in the TEN-T Green Paper.

[4] Article 17 and Annex 2 of the TEN-T (draft proposal) guidelines provided with the Green Paper, respectively, define the characteristics and projects of common interest for the Air Traffic Management network (both texts are provided in Annex B).

[5] TEN-T guidelines made available with the Green Paper: Draft proposal for a Decision Of The European Parliament and of the Council on Community guidelines for the development of the trans-European transport network, recast.

[6] SESAR aims at the modernisation of the ATM infrastructure at European network level. The SESAR Definition Phase 2006-2008 and the Development Phase 2008-2016 are financed from TEN-T (the latter together with the Transport programme in the 7th EU Framework Programme for research and technological development 2007-2013).

2 The European Air Traffic Management network and its infrastructure

2.1 Why air transport is vital to a strong Europe

Air transport is a key enabler to achieving important policy goals in Europe. It helps facilitate mobility both within Europe and with the rest of the world as well as bringing significant societal benefits, for example in providing connectivity to remote and peripheral regions. Air transport is also an important enabler of economic growth and a significant generator of jobs and technological innovation, helping Europe work towards the Lisbon goals.

Air transport is estimated to support around 4 million jobs in Europe (direct, indirect and induced), and this number is estimated to rise by as much as 1.5 million by 2020[7]. The diagram below shows the sum of the direct, indirect and induced aviation contributions to European GDP to be €222bn in 2004. It also shows that air transport had in 2004 a long run effect delivering an additional €410bn through its catalytic and dynamic effects to the rest of the European economy. The catalytic effects of aviation relate to the provision of opportunities for business investment as more flights encourage more businesses to locate or expand in a region, labour mobility, widening of markets, increased competition, more innovation, transfer of technology and increased productivity. Not considering the catalytic effects, air transport has the potential, based on economic forecasts, to contribute €470bn in 2020. If airport capacity fails to meet demand, there could be a potential yearly loss to Europe of about €50bn of added value in 2020.

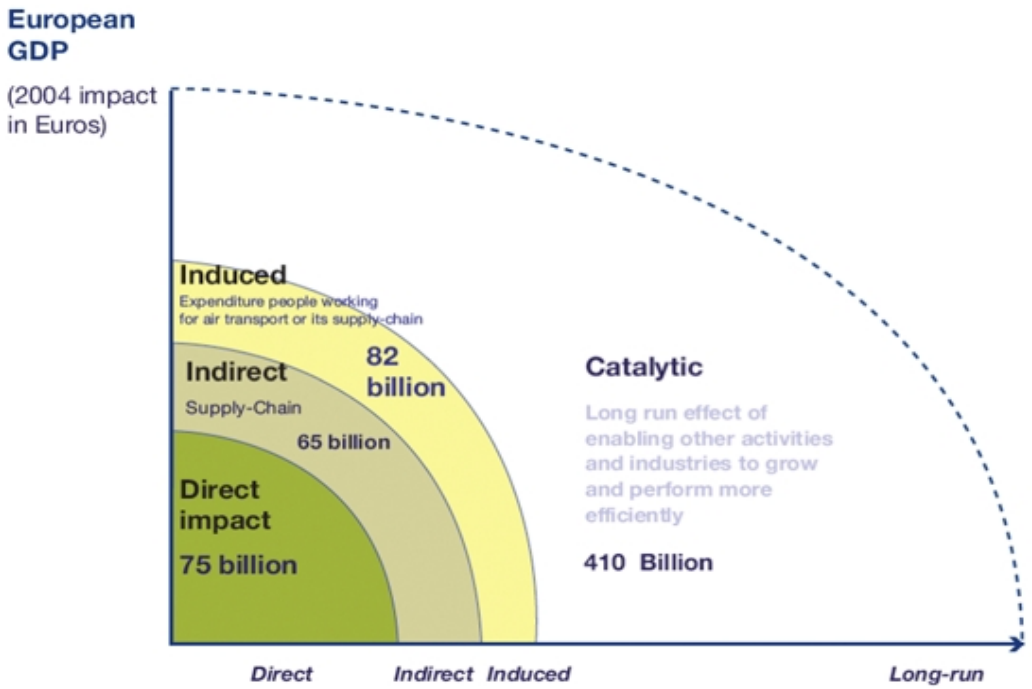

Figure 1: Benefits of aviation to EU GDP[8]

Europe's challenge is to facilitate the development of air transport in balance with environmental and safety objectives, against the background of increased

[7] Source: SESAR Deliverable D5, Section 4.1.

[8] EUROCONTROL, The Economic Catalytic Effects of Air Transport in Europe - 2005

competition from other parts of the world and in the face of the current economic crisis.

2.2 Importance of the European Air Traffic Management network and its infrastructure

The European ATM network and its related infrastructure underpins and enables the operation and development of the air transport sector. The network stretches across the full length and width of the continent, and makes use of an infrastructure operated by a number of actors such as, but not exclusively, airlines, ANSPs, airports, military, business aviation and General Aviation.

ATM and ATM performance are fundamental to ensuring the safety and efficiency of the air transport system, while ATM also has a significant impact on environmental outcomes through its ability to enable more direct ('greener') flight trajectories.

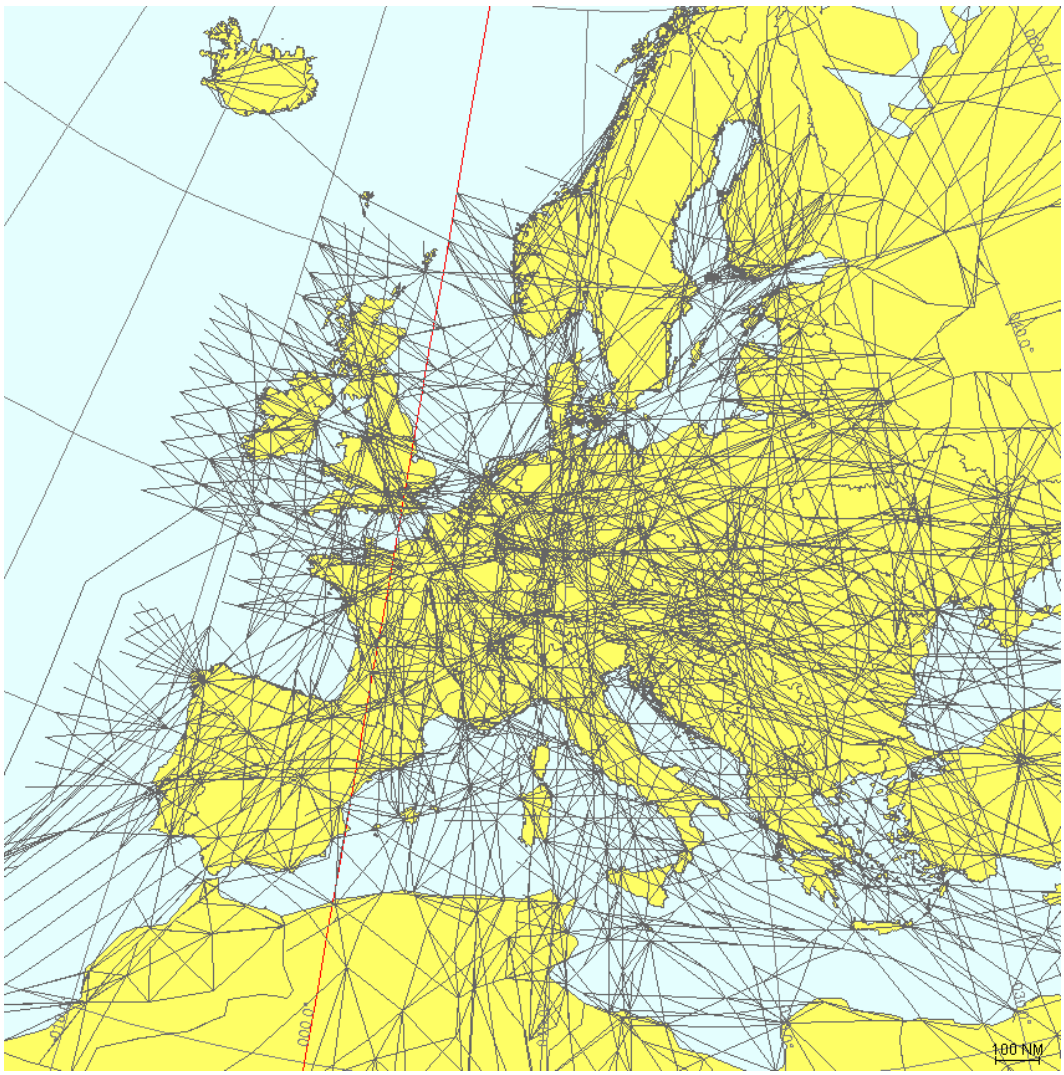

Figure 2: The European ATM route network

2.3 Limitations of the current Air Traffic Management system

The existing ATM system in Europe and the technology that underpins it need to be renewed in order to rise to the challenges of the future, and to enable a truly co-ordinated 'gate-to-gate' approach (i.e. an approach that considers a full system

view rather than optimising individual segments of individual flights) that provides a network more responsive to user needs. Modernisation of European ATM technology through the SESAR programme is vital to ensure that, in the future, European ATM is more efficient, can respond to increases in capacity and can support an environmentally sustainable future for aviation.

This is important for the environmental improvements that the ATM industry is targeting, largely by addressing current flight inefficiencies, i.e. additional distance flown compared to a direct route. Such flight inefficiencies lead to increased costs, fuel burn and CO_2 emissions. Furthermore, the fragmentation of airspace and air traffic management leads to inefficiency and unnecessary costs to airspace users (and therefore the passengers) of approximately €3 billion per year. Only through significant, co-ordinated and sustained investment, will a new fit for purpose system be delivered.

Failure to urgently address the investment challenges presented by programmes such as SESAR would lead to a serious delay in the overall deployment. While a downturn in traffic is being experienced at present, in the long-term traffic will recover. The necessity to replace the existing ATM system and to address the associated investment challenges will remain. The replacement of the current system will take time and will need to happen in stages. It should never happen when the network is at the limit of its capacity. Therefore, programmes such as SESAR should not be delayed and urgent progress is needed now, including finding new and appropriate financing and funding solutions.

2.4 Community activities to address the limitations of the current system

Ambitious Community targets

Recognising the critical contribution that ATM makes, the Community has taken action to address the existing shortcomings of the European ATM system through the Single European Sky. The European Commission have set ambitious goals for improved ATM performance in Europe, to be driven by activities undertaken under SES, such as Functional Airspace Blocks and the development of SESAR, the technical pillar of SES. These activities will make ATM truly a pan-European activity. The goals of SES are to[9]:

- Enable a 3-fold increase in capacity which will also reduce delays, both on the ground and in the air;
- Improve the safety performance by a factor of 10;
- Enable a 10% reduction in the effects flights have on the environment[10] and;
- Provide ATM services to the airspace users at a unit cost of at least 50% less.

Single European Sky

The Single European Sky is the main policy vehicle to bring about the necessary fundamental overhaul of air traffic infrastructure and management in Europe. The initial legislative framework established a Community competence and framework

[9] Communication from the Commission to the Council and to the European Parliament, The Air Traffic Management Master Plan (the ATM Master Plan), Brussels, 14.11.2008, COM(2008) 750 final

[10] This environmental goal relates to ATM contribution only; significant environmental benefits are being sought by the Air Transport sector relating to engine and aircraft design through initiatives such as ACARE and CleanSky.

for the modernisation of the European ATM system. The Single European Sky II (SES II) package reinforces the European network approach through (i) a solid European ATM Master Plan and (ii) binding performance targets to ensure Member State investment in the fundamental overhaul and modernisation of the European ATM system. However, it will be challenging to ensure sustained momentum and commitment to invest in improvements when stakeholders are so highly exposed to economic fluctuation. The geographical scope of the SES is presented in the figure below.

Figure 3: States in which SES is applicable

One important element of the second package of Single European Sky legislation is the introduction of a Performance Scheme and associated Performance Review Body. This will enable binding targets to be set at the EU and State level for key performance areas within air transport including safety, the environment, cost and efficiency. The Performance Scheme is an important non-financial instrument supporting the development of a modernised ATM network that is able to respond to societies needs.

A second significant element is the creation of a Network Management function, which will enable the optimum use of airspace and ensure that airspace users can operate preferred trajectories, while allowing maximum access to airspace and air navigation services.

SESAR

SESAR, which started its implementation phase in 2008, is the most significant air transport infrastructure modernisation programme ever undertaken in the European Union. As the technological arm of the SES, SESAR aims to create a modern, high performing, interoperable, interconnected infrastructure network distributed both geographically and between the ground and air. SESAR includes all major air transport stakeholder groups (airspace users (including the military, General Aviation and Business Aviation), ANSPs, airports and supply industry). Its

successful deployment is essential to deliver air transport's important economic, social and environmental benefits to the Community as a whole.

A roadmap for the implementation of SESAR exists in the form of the European ATM Master Plan. The political commitment for the implementation already exists as the European ATM Master Plan has been endorsed by the Council[11].

Functional Airspace Blocks[12]

The creation of Functional Airspace Blocks (FABs) in 2012, as foreseen by SES legislation[13], represents an important answer to issues of airspace fragmentation and an intermediate step to a full European Single Sky. The establishment of FABs in 2012 at the latest will be an important milestone for international cooperation/integration/consolidation of service provision. Furthermore, operational and technical progress will come together in the FABs: whilst introducing high levels of cooperation at a regional level, FABs will become the 'vehicles' for the implementation of SESAR as cooperation at the technical area moves forward.

As of 1 July 2008, nine FAB initiatives had been declared to the European Commission. As of March 2009, these FABs encompassed all 27 States of the European Union.

[11] Council resolution on the endorsement of the European Air Traffic Management Master Plan, 30 March 2009

[12] The 2003 TEN-T High Level Group (Karel Van Miert Report - High Level Group Report on the Trans-European Transport Network, 27 June 2003) stated that "*to achieve the Single Sky, the integration of air traffic services would require reconfiguration of air space into a limited number of functional blocks. This opens the way to consolidation of service provision and rationalisation and infrastructure…….The Group thus shares the idea that Community financial grants for new and crucial interoperability components, such as for instance data processing systems or equipment, and where appropriate some ground control centres would help lead to an integrated European air traffic management system.*"

[13] Article 9a of the SES-II Service Provision Regulation states "*Member States shall take all necessary measures in order to ensure the implementation of functional airspace blocks no later than three years following the entry into force of this Regulation with a view to achieving the required capacity and efficiency of the air traffic management network within the single European sky and maintaining a high level of safety and contributing to the overall performance of the air transport system and a reduced environmental impact…..*".

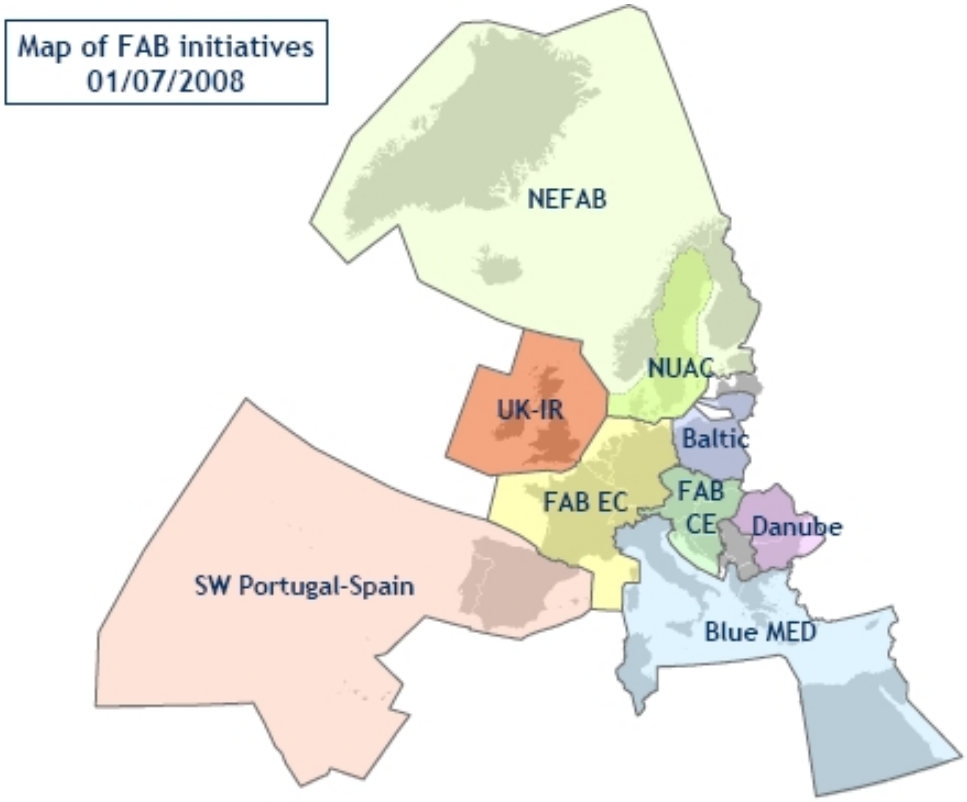

Figure 4: Map of FAB initiatives - July 2008[14]

Harmonised modernisation

The Commission has developed a number of Implementing Rules (IRs) under the Interoperability Regulation, which is part of the SES legislation, to support the harmonised introduction of new concepts and technologies. In the future, Implementing Rules will be used to support the deployment of the European ATM Master Plan, in particular where a harmonised pan-European deployment is required to maximise the network benefit.

The Commission, together with the SESAR Joint Undertaking[15] (SESAR JU) and EUROCONTROL, and with strong stakeholder input through the ICB and EUROCONTROL Stakeholder Consultation Group are currently defining the measures required to support the deployment of SESAR's first Implementation Package (known as IP1). This will include a mixture of Implementing Rules and Community Specifications (CS) designed to ensure harmonised deployment in line with performance requirements at the network, regional and local levels.

A combination of a clear modernisation plan, as set out in the European ATM Master Plan, and the instruments of the Interoperability Regulation provide a solid basis for the harmonised modernisation of the European ATM system in order to support societies mobility needs in a sustainable and cost effective manner.

[14] Performance Review Commission, Evaluation of Functional Airspace Block (FAB) initiatives and their contribution to performance Improvement, October 2008

[15] The SESAR Joint Undertaking is the legal entity created under European Community law to manage the SESAR Development Phase

2.5 Challenges and risks in modernising the current system

The ATM industry supports the SESAR Programme as the means for achieving a coordinated and synchronised modernisation of European ATM to meet the challenges of the future. However, the deployment of SESAR faces a number of significant challenges and risks. For example:

- the scale of the programme, including the required investment on the ground and onboard the aircraft;
- the need to synchronise the investment of a large number of diverse stakeholders;
- the different issues and priorities that exist in different regions of Europe, from the highly congested core area to other areas with much lower traffic density;
- the uncertainties around new ATM concepts, procedures and technologies;
- securing the necessary alignment of airport and airspace capacity;
- lack of buy-in and commitment from stakeholder groups, for example where the CBA is negative; and
- failure to understand the nature of the ATM infrastructure network.

A failure to deliver SESAR will have a negative impact on EU citizens and the EU economy. Air traffic growth will be unduly constrained and with it the future benefits from air transport to European society will lessen.

2.6 Why ATM requires public funding support

The modernisation of the European ATM network requires an unprecedented level of investment and synchronisation

To deliver the necessary performance benefits, the European ATM Master Plan identifies a requirement for a total estimated investment of around €30 billion up to 2020 for the deployment of infrastructure[16]. In addition to traditional ground-based infrastructure deployed by ANSPs, airports and military, a majority of this total investment[17] must be deployed onboard the aircraft that operate in European airspace, including commercial air transport, General Aviation and the military.

In the specific case of SESAR, investment represents a significant new financial challenge for the industry as a whole as well as the need to co-ordinate and synchronise investments at a European level to a greater extent than experienced ever before to ensure that the network benefits are achieved in a timely manner. These financial challenges are taking place against an extremely challenging economic climate across Europe.

Air transport is no longer self-financing

Historically, air transport in Europe has been largely self-financing (unlike road or rail). The aviation industry considers that there is now a strong case for putting in

[16] SESAR Deliverable D5 (ATM Master Plan) section 4.4.1 suggests the €30 billion is 'investment and operating costs' by 2020.

[17] SESAR Deliverable D5, section 4, Table 4, gives full details of investment levels by user group. Total user investments are calculated to be €22.2 billion.

place Community funding support for SESAR to supplement investment by the private sector.

The benefits of SESAR are clear and include not only cost effectiveness but also operational and environmental benefits such as shorter, more direct flights, less delays, less fuel burn, less CO_2 emissions and reduced operating costs for the airspace users for the benefit of the community. Without Community funding support for the deployment of SESAR (e.g. from TEN-T or EIB), the risks around the timely, synchronised and effective delivery of the programme are likely to be increased to the extent that airspace users and ANSPs are convinced that these benefits cannot be achieved.

Modernisation of the European ATM system will have a negative CBA for some stakeholder groups whose inclusion is required to generate system-wide benefits

The SESAR Master Plan Cost Benefit Analysis (CBA)[18] indicated that the costs of investment in new equipment for certain stakeholders is likely to be greater than the benefits, yet inclusion of these stakeholders in the modernisation programme is essential to delivering maximised benefits. Two groups in particular for whom this is likely to be the case in many specific strands of SESAR are General Aviation (GA)/Business Aviation (BA) and the military:

- General Aviation and Business Aviation: For SESAR objectives to be achieved, and a fully-linked ATM network to be developed, General Aviation and Business Aviation must be involved. The ownership structure of GA differs significantly from other groups of Airspace Users, often with an individual aircraft being owned by one or more private individuals, making access to finance or joint procurement activities very difficult. In order to improve the business case for General Aviation, the SESAR Economics Task Force recommended, amongst others that, "*innovative opportunities for equipage by GA stakeholders should be considered, including incorporation of as many 'value added' services as possible for the GA community that would help improve the overall CBA for GA stakeholders. Without this, the case for GA stakeholders to invest will remain unattractive.*" Such innovation will come in the form of manufacturing light weight portable low cost equipage that is scalable.

- Military: For SESAR objectives to be achieved, and a fully-linked ATM network to be developed, military providers, users and airports must be involved. The military have expressed their intention to cooperate in realising the Single European Sky. However, some of the aircraft equipage envisaged in the SESAR programme may provide limited operational benefit for the military, and a poor return on investment. In order to improve the business case for the military, the SESAR Economics Task Force recommended, amongst others that, "*innovative funding mechanisms should be studied including the use of TEN-T grants to ensure civil-military interoperability and the implementation of the Trans European Network.*"

[18] SESAR Definition Phase Deliverable D5, SESAR Master Plan, Section 4.4.2.

2.7 Benefits of public funding support

Societal benefits

There are principled arguments as to why Community funding support for ATM is justified, for example in the case of large-scale complex projects where it will help generate social benefits greater than simply the private benefits (i.e. 'EU value added'). These benefits include economic benefits such as ancillary economic activity and improved social cohesion and would accrue to the EU citizen and not exclusively or directly to passengers, users and service providers.

Aspects of SESAR deployment fit public funding criteria very well as SESAR goals derive public benefits beyond the private benefits for stakeholders (e.g. one of the SESAR goals is to reduce fragmentation which leads to inefficiency, unnecessary cost for users and passengers and fuel consumption and emissions that are higher than necessary; this will be improved by introducing FABs).

Reduced environmental impact in European airspace and at European airports

Efficiency gains through the stepwise implementation of the SESAR ATM Target Concept will directly reduce the environmental impact of every vehicle movement in European airspace and at European airports. The main benefits can be summarised as follows[19]:

- The enhancements in air traffic management through the optimisation of horizontal and vertical flight profiles have the potential to trim down the in-flight CO_2 emission cumulated over the 2008 to 2020 period by around 50 Million tons.
- The reduction in fuel burn due to optimisation of flight profile translates directly to an overall reduction of gaseous emissions.
- Initiatives such as CDA/Green approaches will, in areas where noise and environment around populated areas is an issue, improve local air quality and minimise duration and intensity of noise exposure in the TMA.
- At the airport, reduction will be achieved through the expansion of best "practices" (e.g. reduction of taxi and holding times) and integrating the airport collaborative environment management process in the ATM network.

ATM is working hard to reduce the environmental impact of aviation at a European level. As an example of airlines, manufacturers, airports, air navigation service providers and governments working together, ACI EUROPE, CANSO, EUROCONTROL and IATA recently launched a joint action plan designed to reduce the CO_2 emitted by aircraft in Europe by over half a million tonnes a year. The plan will implement Continuous Descent Approach (CDA[20]) at up to 100 airports across Europe by the end of 2013 .

[19] Source: SESAR Deliverable D5 (SESAR Master Plan), sections 4.1 (societal benefits) and section 9.

[20] CDA - where aircraft fly a smooth approach into an airport rather than the classical stepped approach, not only reduces fuel burn by between 50 and 150 kg for a short-to-medium haul aircraft, but also reduces CO2 emissions by 160 to 470 kg per flight. CDA also reduces noise around the airport by between 1 and 5 decibels. With CDA in place at 100 airports in Europe, airlines will save 150,000 tonnes of fuel and 100 million Euros a year while reducing CO2 by half a million tonnes.

Network level benefits - SES and SESAR will make ATM a truly pan-European activity

SESAR aims to create a modern, high performing, interoperable, interconnected infrastructure network distributed both geographically and between the ground and air. Its successful deployment is essential to deliver air transport's important economic, social and environmental benefits to the Community as a whole.

Deployment of intelligent transport systems

The future ATM system, as to be deployed by SESAR, is all about the utilisation of Intelligent Transport Systems (ITS). The Intelligent Transport Systems (ITS) deployed by SESAR will improve the predictability and efficiency of the Air Transport system through the better transmission of data between all stakeholders (e. g using SWIM, CDM, data link etc).

3 Inclusion of Air Traffic Management in TEN-T

3.1 Introduction

This Section outlines key points related to the ATM industry view on the inclusion of Air Transport in future TEN-T guidelines. Responses to some of the questions raised in the TEN-T Green Paper are presented in Section 4.

It is noted that substantial progress has been made within Air Transport Policy since 1996 when the TEN-T Guidelines were first developed and even since 2004 when they were last amended. The recent adoption of the second package of SES and the adoption by Council of the European ATM Master Plan are important milestones for air transport and must be fully reflected in the revision of TEN-T guidelines.

Within this in mind, the ATM industry is of the opinion that:

- The TEN-T guidelines should be updated to fully reflect the agreed Community policies for development of sustainable air transport. This should include reference to the SES legislation and the European ATM Master Plan.
- The guidelines should support a flexible approach to infrastructure investment that supports the achievement of Community policy in a manner that responds to the societal and business objectives. Flexibility is also required for the regional/FAB implementation since this has to account for regional requirements.
- Within ATM, the SES legislation defines a Performance Scheme that will help set priorities for infrastructure investments and facilitate the achievement of network benefits through the developments defined in the European ATM Master Plan and the creation of Functional Airspace Blocks and Network Management functions. It is important that the TEN-T guidelines recognise the importance and priority of SESAR and FAB related investment as the cornerstones of community policy for ATM.
- The European ATM Master Plan takes advantage of new procedures and technologies to deliver substantial network benefits by integrating the assets of all ATM stakeholders including ANSPs, airports and airspace users (including CNS/ATM avionics on board aircraft). TEN-T guidelines should reflect the need for infrastructure investment across all sectors of the industry. The definition of air transport infrastructure needs to be widened to include both ground and airborne assets. The guidelines also need to support financing required by all classes of airspace users including military and general/business aviation.
- The TEN-T guidelines should include the flexibility for international organisations, joint undertakings, or public or private undertakings to apply directly, with the agreement of the Member States concerned[21], rather than having to apply through the Member State. This can benefit ATM as it stops pre-filtering by the Member State which might prioritise roads rather than ATM for domestic reasons.
- TEN-T funding should (i) be available for the development of airports in line with the Community Policy on Airport Capacity and (ii) support the

[21] TEN-T Programme 2007-13, Guide for applicants, version 2, Section 6.3.1.

implementation of Community security policy (for example requiring additional screening equipment). TEN-T funding should also support improvements to multi-modal links at airports.

With these principles in mind, the ICB notes that the characteristics of ATM and definition of projects of common interest require significant re-work in the new TEN-T guidelines. The ICB's recommendations in these regards are given below.

In terms of the options set out in the Green paper, it would appear most appropriate for ATM to be considered a 'conceptual pillar' of the 'core network'. However, the key point of the ATM industry is that TEN-T policy is able to support achievement of Air Transport Policy and provide the same flexibility to respond to societies mobility requirements as has been established in that policy through use of:

- A Performance Framework to define implementation objectives.
- Network Management functions to support the optimisation of the network.
- An European ATM Master Plan as a roadmap for implementation.
- FABs to be implemented at regional level.

3.2 Characteristics

The characteristics of the ATM network referred to in the current TEN-T guidelines[22] only refer to the ground-based element of ATM infrastructure. As noted above, SESAR requires that the European ATM network comprises both (civil and military) ground-based and airborne infrastructure (i.e. aircraft avionics - including GA and the military)[23]. Therefore the ICB recommends a broad definition of infrastructure is used that does not limit the future advances of SESAR.

3.3 Projects of common interest

Currently only projects of common interest (as defined in Article 7 of the TEN Guidelines) are eligible to receive Community financial aid[24].

The ICB believes that projects of common interest should include projects defined by or responding to community transport policy. For ATM, this includes SES legislation and the European ATM Master Plan. If the concept of projects of common interest is to be retained in the future guidelines then the following should be included:

- ATM infrastructure development projects that support the implementation of the European ATM Master Plan (SESAR), with defined impact at network level and targets for performance improvements (economic, environmental, and safety).

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[22] TEN-T guidelines made available with the Green Paper: Draft proposal for a Decision Of The European Parliament and of the Council on Community guidelines for the development of the trans-European transport network (recast).

[23] A precedent exists for the rail sector where TEN-T funds have been used for equipment that is intrinsically linked to rail infrastructure (i.e. rolling stock). However, the legal basis for ATM financing, as set out in the current TEN-T guidelines, does not include a similar provision for airborne equipment.

[24] TEN-T Programme 2007-13, Guide for applicants, version 2, Section 6.3.1.

- ATM infrastructure linked to Implementing Rules (IRs) adopted in accordance with the SES Interoperability Regulation. TEN-T funding should be used to accelerate the implementation and priority should be given to early deployment and coordination of deployment.
- FAB projects that need to comply with the SES policy framework and deliver results in the foreseen time horizon.
- Common Projects as proposed by amendments to the SES legislation. Common projects are supported by the ATM industry provided that the principles derived by the SESAR Economics Task Force are respected. These include, clear network benefits, robust CBA and governance, wide support of stakeholders and consistency with SES performance targets.

It is emphasised that the TEN-T guidelines should continue to provide a framework for the definition of projects of common interest to reflect the changing implementation requirements for meeting the policy objectives. The above list should only be viewed as examples. They should not be viewed as a closed list as this may preclude the inclusion of future ATM initiatives that provide network-wide benefits.

4 ATM industry response to specific questions on the future of TEN-T

This Section responds to the specific questions in the Green Paper. As per the Green Paper documentation, respondents may answer to all or individual questions[25].

Question 1: *Should the Commission's assessment of TEN-T development to date cover any other factors?*

Community-wide transport policy should:

- Recognise the merits of each transport and seek to maximise and balance their network benefits.
- Account for Community level policy objectives

The ICB is of the opinion that the balance of the different transport modes in the distribution of TEN-T funds has not been sufficiently addressed in the Commission Green Paper. The Green Paper should also consider significant developments that have taken place in all modes of transport since the TEN-T guidelines were developed in 1996 and updated in 2004. Specific to Air Traffic Management, significant developments have taken place which provide European-wide network benefits – namely the Single European Sky legislation and the SESAR programme. These activities support the aims of TEN-T including, supporting the smooth functioning of the internal market, the objectives of the Lisbon agenda on jobs and growth, providing good connections with others parts of the world and supporting the fight against climate change.

As well as the congestion issues in the core part of Europe there are important social links to remote regions and ensuring that Member States defence and security needs are assured, secure and coordinated, when necessary, at the network level

Question 2: *What further arguments are there for or against maintaining the comprehensive network, and how could the respective disadvantages of each approach be overcome?*

The ICB supports a network approach to air transport as this integrates the needs of all airspace users (including the military and general aviation interests), ANSPs and airports. The future TEN-T Guidelines should therefore:

- Mirror a network approach to air transport that combines the ground infrastructure network to the airborne network, in view of establishing a "gate-to-gate" solution as well as intermodality with other modes of transport.
- Combine this network approach with the regional/FAB implementation
- Reference SES legislation and the European ATM Master Plan (SESAR) as a means of achieving the ambitious network-wide environmental (enable a 10% reduction in the effects flights have on the environment), safety (improve the safety performance by a factor of 10), efficiency (provide ATM services to the airspace users at a cost of at least 50% less (which equates to an average of 400€ per flight unit cost by 2020 (2005 prices))) and capacity (enable a 3-fold increase in capacity which will also reduce delays, both on the ground and in the air) targets set by the Commission.

[25] http://ec.europa.eu/yourvoice/ipm/forms/dispatch?form=TRENB1GREENPAPER

Question 3: *Would this kind of priority network approach be better than the current priority projects approach? If not, why not and what are the particular strengths of the latter? If so, what (further) benefits could it bring, and how should it be developed?*

The Commission have set ambitious network-wide environmental, safety, efficiency and capacity targets. Two priority activities under Single European Sky policy that are of greatest interest in the provision of capacity to meet a doubling of demand expected by 2025 are:

- The European ATM Master Plan (SESAR): SESAR is the most significant air transport infrastructure modernisation programme ever undertaken in the European Union. As the technological arm of the SES, SESAR aims to create a modern, high performing, interoperable, interconnected infrastructure network distributed both geographically and between the ground and air. Its successful deployment is essential to deliver air transport's important economic, social and environmental benefits to the Community as a whole. SESAR is part of a global chain which assures the regularity, efficiency and safety of flights across the world and coordination is being undertaken to ensure interoperability with the equivalent programme in the United States, NEXTGEN. The political and stakeholder commitment for the implementation of the European ATM Master Plan already exists as the European ATM Master Plan has been endorsed by the Council. If the current 'priority projects' approach is to continue, the SESAR/European ATM Master Plan should be included in the list of priority projects[26].

- Functional Airspace Blocks which go beyond national boundaries are also seen as priority activities to achieve SES policy. The creation of FABs in 2012 as foreseen by SES legislation[27] represents an important answer to issues of airspace fragmentation and is a milestone to international cooperation/integration/consolidation with major performance improvements expected in all domains, such as safety, capacity, cost effectiveness and environmental impact. As of 1 July 2008, nine FAB initiatives had been declared to the European Commission. As of March 2009, these FABs encompassed all 27 States of the European Union.

Question 4: *Would this kind of flexible approach to identifying projects of common interest be appropriate for a policy that, traditionally, largely rests on Member States' individual infrastructure investment decisions? What further advantages and disadvantages could it have, and how could it best be reflected in planning at Community level?*

The ICB agrees with the use of 'conceptual pillars' to establish a link between (i) Community Transport policy objectives (e.g. efficient and sustainable air transport policy through SES policy and SESAR) and its infrastructure policy.

[26] Priority projects will be subject to a progress report by 2010; amendments to the project list may be proposed if necessary (source: TEN-T Green Paper).

[27] Article 9a of the SES-II Service Provision Regulation states "*Member States shall take all necessary measures in order to ensure the implementation of functional airspace blocks no later than three years following the entry into force of this Regulation with a view to achieving the required capacity and efficiency of the air traffic management network within the single European sky and maintaining a high level of safety and contributing to the overall performance of the air transport system and a reduced environmental impact…..*".

The ICB supports ATM being a 'conceptual pillar'. If air transport and ATM are considered as a conceptual pillar then the focus will shift from the national to the network concept where infrastructure planning and investment are aligned to meet the needs of all users. In this context the Member States, in the various FAB developments underway, will coordinate their investments to meet capacity needs in a more efficient manner.

It is noted that in meeting the ambitious network-wide environmental, safety, efficiency and capacity targets set by the Commission, implementation priorities may change with time. This will be reflected in Single European Sky policy and updates to the European ATM Master Plan. Therefore, to provide the necessary flexibility, the ICB recommends that the TEN-T guidelines reference SES legislation and the European ATM Master Plan (SESAR).

Question 5: *How can the different aspects outlined above be best taken into account within the overall concept of future TEN-T development? What further aspects should be taken into consideration?*

No answer.

Question 6: *How can Intelligent Transport Systems (ITS), as a part of the TEN-T, enhance the functioning of the transport system? How can investment in Galileo and EGNOS be translated into efficiency gains and optimum balancing of transport demand? How can ITS contribute to the development of a multi-modal TEN-T? How can existing opportunities within the framework of TEN-T funding be strengthened in order to best support the implementation of the ERTMS (www.ertms.com) European deployment plan during the next period of the financial perspectives?*

The future ATM system, as to be deployed by SESAR, is all about the utilisation of Intelligent Transport Systems (ITS). Intelligent Transport Systems will enable a more efficient ATM system, thereby providing environmental benefits such as shorter, more direct flights, less delays, less fuel burn and less CO_2 emissions. This will be made possible at an EU level not only through intelligent technological solutions, but also through the application of the appropriate legislation.

While SESAR integrates Galileo and EGNOS, in the multimodal context promoted by the EU, it must be emphasised that it is also about the cost effective deployment of other Intelligent Transport Systems (ITS). The Intelligent Transport Systems deployed by SESAR will improve the predictability of the Air Transport system through the better transmission of data between all stakeholders (e.g. using SWIM (System Wide Information Management), CDM (Collaborative Decision Making), data link etc). Additionally, air transport needs to recognise the multi-modal approach. As a general principle one should acknowledge the need for a process that ensures clear accountability for the targeted delivery of benefits from such complex ITS SESAR projects , as well as their ability to meet the performance and business requirements identified by the relative stakeholders including the necessary financing and funding of such projects.

Question 7: *Do shifting borderlines between infrastructure and vehicles or between infrastructure provision and the way it is used call for the concept of an (infrastructure) project of common interest to be widened? If so, how should this concept be defined?*

A key challenge, addressed by SESAR and the European ATM Master Plan, is to improve the integration and interoperability of the ATM system and hence reduce fragmentation. In particular, SESAR promotes the adoption of new technologies to

integrate decision making across the network. This includes the integration of ANSPs, airports, airlines, aircraft, aeronautical information providers, MET service providers and others in to a System Wide Information Management (SWIM) infrastructure that will promote enhanced network benefits by promoting enhanced awareness of issues across the network and CDM (Collaborative Decision Making) to ensure that the most environmental and cost effective solutions are available. SESAR will also enable ATM to move to a new control paradigm based on enabling airspaces users to achieve their preferred business trajectory - a concept that encompasses both civil and military concepts of airspace use - and hence provide significant cost and environmental benefits. SESAR is able to achieve these benefits by fully exploiting the capabilities of new Communications, Navigation, Surveillance and decision support technologies. SES and SESAR will also require deployment of new network wide functions to ensure optimum use of scarce resources. It is important that the concept of projects of common interest is broad enough to:

- Encompass the projects indentified by Community Policy - in ATM's case those defined by the Single European Sky and European ATM Master Plan.
- Include a comprehensive view of infrastructure including the necessary fixed and mobile infrastructure - in ATM case SESAR requires that the European ATM network comprises of both ground-based and airborne infrastructure (the characteristics of the Air Traffic Management network referred to in the current TEN-T guidelines only refers to the ground-based element of ATM infrastructure).
- Recognise concepts such as airspace design and network management functions that will be required in the design, planning and implementation of new concepts of operation.

Question 8: *Would this kind of core network be "feasible" at Community level, and what would be its advantages and disadvantages? What methods should be applied for its conception?*

The ICB agrees that TEN-T should be an effective basis for all relevant transport policy objectives. In doing so, as stated in the responses to questions 2 and 4, the TEN-T guidelines should reference SES legislation and the European ATM Master Plan (SESAR) as a means of achieving:

- The ambitious network-wide environmental, safety, efficiency and capacity targets set by the Commission.
- The flexibility to address implementation priorities changing with time and to address regional requirements. This will be reflected in Single Sky policy and updates to the European ATM Master Plan.

The advantages of a Community based approach is that the institutional and legal frameworks open up new possibilities for financing and governance such as Public Private Partnerships where public and private financing can be secured and aligned in the pursuit of public policy objectives. The Community based approach also promotes harmonisation and provides the possibility of synchronised implementation through regulatory initiatives.

Question 9: *How can the financial needs of TEN-T as a whole − in the short, medium and long term − be established? What form of financing – public or private, Community or national – best suits what aspects of TEN-T development?*

The investments required for SESAR related ATM infrastructure are well defined for both the future phases and the different stakeholders in the SESAR deliverables. These can be a basis for the study of the ATM part of future TEN-T funds. The investments are mainly long-term; therefore it is important that guarantees are given for continued funding during subsequent TEN-T funding periods.

Concerning the form of financing, all solutions are possible: public financing, private financing or a mixture via a Public Private Partnership (PPP) model. ATM infrastructure is normally financed at national level; however regional projects will exist more and more through FAB developments. The report of the Economics Task Force[28] provided the following recommendation:

"Recommendation 5 – FAB arrangements could facilitate common financing by ANSPs and should be pursued. FABs should continue to develop financial structures to promote efficient investment, and further work should consider how Community funding could help support the delivery of key network investment within the FAB structure."

Question 10: *What assistance can be given to Member States to help them fund and deliver projects under their responsibility? Should private sector involvement in infrastructure delivery be further encouraged? If so, how?*

The role of European Community and of Member States

SESAR is a major European project where the intervention of the European Community is fundamental in order to ensure a synchronised implementation. SESAR implementation does require public funding. TEN-T is seen as an essential part of a comprehensive set of options and Member State budgets (especially for the funding of the military and General Aviation) The European Commission, together with the SESAR Joint Undertaking, has a fundamental role in assisting Member States for the implementation and for the financial solutions.

As stated in the report of the SESAR Economic Task Force (Section 2.2.5) "Member States have an important role to play in demonstrating sustained commitment to SESAR implementation, (…) not only at the national level, but also collectively at European level (e.g. through the European Council and Single Sky Committee) as the benefits of SESAR can only be delivered if the implementation is effective at a network level".

The role of private sector

The private sector can be involved in various ways. The report of the SESAR Economic Task Force states:

- "Recommendation 6 – Public Private Partnership (PPP) structures offer a useful vehicle for delivering SESAR investment in circumstance where key principles such as clear political support, governance and project objectives are met."
- "Recommendation 3 – vendor finance could offer potential for aspects of the SESAR deployment, provided appropriate safeguards ensure the most cost-effective solution is achieved."

[28] Report of the SESAR Economics Task Force - Building the new ATM infrastructure for the benefit of Europe: The financial challenge, 2 February 2009, v2.0, FINAL

Conditions for private financing

There are however conditions to permit private financing, as stated in the report of the SESAR Economic Task Force (Section 2.2.2) on Governance:

- Clear definition of roles and responsibility by all different public or private entities
- Transparency of funding and financing
- Risk sharing principles and predictability of return
- Ownership needs to be clear; Those providing funding or financing expect it to be repaid and inmost large projects this requires a legal or operating owner to be established with legal rights to recover value
- Decision making should be supported with business cases

Question 11: *What are the strengths and weaknesses of existing Community financial instruments, and are new ones needed (including "innovative" instruments)? How could the combined use of funds from various Community resources be streamlined to support TEN-T implementation?*

As per the answer to question 1, the ICB is of the opinion that the balance of the different transport modes in the distribution of TEN-T funds needs to be addressed. To date, compared to other modes, only a limited amount of TEN-T funding has been made available for air transport[29] much of that devoted to R&D by the SESAR JU. Sectors such as rail and inland waterways have tended to receive significantly more TEN-T support.[30].

Innovative funding instruments combined with TEN-T funds should be explored to enhance the deployment of the European ATM Master Plan (SESAR) to achieve its synchronised deployment as associated network-wide benefits. Some work in this area has already been undertaken via the report of the SESAR Economics Task Force which provides an extensive description of financing solutions such as:

- Sources of financing: debts via commercial banks, bond issue, lease finance, vendor finance and EIB loans
- Sources of financing via TEN-T grants, other grants by public subsidy and state budgets, use of grants as an incentive tool
- Financial structures that can use all these different sources of financing and grants

The above shows that the implementation of the European ATM Master Plan (SESAR) will require a combination of various solutions. TEN-T will most probably be part of the solution, together with EIB loans, potentially in a public private partnership structure.

Common projects will be important provided that the general principles derived by the SESAR Economics Task Force are adhered to, including "*clear network*

[29] The 30 priority TEN-T projects include one completed aviation project (Milan Malpensa), 18 railway projects, 3 mixed rail-road projects and 2 inland waterway projects.

[30] The SESAR JU has been allocated €350m from TEN-T for R&D in the period from 2007-13.

benefits, robust CBA and governance, wide support of stakeholders and consistency to SES performance targets".

Question 12: *How could existing non-financial instruments be improved and what new ones might be introduced?*

ATM already has in place a number of non-financial instruments that enable the prioritisation of infrastructure deployment and all contribute to the improvement of the network. These instruments are central elements in SES Package II, are described in Community legislation and could be introduced to compliment TEN-T support:

- The Performance Scheme and associated Performance Review Body: Within ATM, the SES legislation defines a Performance Scheme that will help set priorities for infrastructure investments and facilitate the achievement of network benefits through the developments defined in the European ATM Master Plan and the creation of Functional Airspace Blocks.
- Network Management functions: Which will support optimisation of the network and allocation of scarce resources.
- Interoperability regulation which provides a set of instruments (Essential Requirements, Implementing Rules and Community Specifications) to ensure that ATM modernisation is harmonised across Europe,
- A network-wide plan (European ATM Master Plan) The European ATM Master Plan is a "rolling" plan that will be regularly updated, while continuous performance monitoring will be undertaken to ensure that the future ATM activities will deliver the agreed benefits defined within an agreed performance framework. The political commitment for the implementation of the European ATM Master Plan already exists through an endorsement by the Council[31].

Question 13: *The Commission considers three options for further TEN-T development to be possible:*

- *Maintaining the current dual layer structure with the comprehensive network and (unconnected) priority projects.*
- *Reducing the TEN-T to a single layer (priority projects, possibly connected into a priority network)*
- *Dual layer structure with the comprehensive network and a core network, comprising a – geographically defined – priority network and a conceptual pillar to help integrate the various transport policy and transport infrastructure aspects.*

Which of these options is the most suitable, and for what reason?

With respect to the TEN-T Green Paper, ATM has the following characteristics

- Network wide activity which integrates the activities of all stakeholders involved in air transport (airspace users (including the military and general aviation interests), ANSPs and airports which provide access to the other transport modes).

[31] Council resolution on the endorsement of the European Air Traffic Management Master Plan, 30 March 2009

- A network wide activity which, in order to achieve ambitious network-wide targets set by the Commission, requires the deployment of both ground-based and airborne infrastructure (i.e. aircraft avionics - including GA and the military)

- Ambitious network-wide targets set by the Commission - environmental (enable a 10% reduction in the effects flights have on the environment), safety (improve the safety performance by a factor of 10), efficiency (provide ATM services to the airspace users at a cost of at least 50% less (which equates to an average of 400€ per flight unit cost by 2020 (2005 prices))) and capacity (enable a 3-fold increase in capacity which will also reduce delays, both on the ground and in the air).

- An activity driven at network level by Community policy (Single European Sky Policy), network-wide targets, a network-wide plan (the European ATM Master Plan (SESAR)) and a series of non-financial instruments to improve the performance of the network (the Performance Scheme and associated Performance Review Body, Network Management functions and the Interoperability regulation).

- Improved network performance will be achieved through regional implementation via FABs; this is therefore an essential complement to the network approach;

- Two major activities driven by Single European Sky policy that are of greatest interest in the provision of capacity to meet a doubling of demand expected by 2025: (i) The European ATM Master Plan (SESAR) which aims to create a modern, high performing, interoperable, interconnected infrastructure network distributed both geographically and between the ground and air. (ii) Functional Airspace Blocks whose creation as foreseen by SES legislation represents an important answer to issues of airspace fragmentation and an intermediate step to a full Single European Sky.

On the basis of the above, and in terms of the options set out in the Green paper, it would appear most appropriate for ATM to be considered a ‘conceptual pillar’ of the ‘core network. While further discussion would be welcomed, this would infer that Option 3 best represents the needs of ATM. However, the key point of the ATM industry is that TEN-T policy is able to support achievement of Air Transport Policy and provide the same flexibility to respond to societies mobility requirements as has been established in that policy through use of a Performance Framework to define implementation objectives.

A Role and composition of the ICB

A.1 Role

The ICB was created in 2004 by Article 6 of the Framework Regulation to advise the European Commission on the implementation of the Single European Sky (SES). In doing so, the ICB complements the regulatory role of the Single Sky Committee.

A.2 Composition

The ICB is composed of the bodies representing the main stakeholder groups in the industry. The ICB has twenty-five formal members from seventeen stakeholder bodies (see table below). Additionally, the ICB has observers from Eurocontrol, non-European interests (FAA and AIA), military, research establishments and standardisation bodies. Such a composition makes the ICB the only body whose formally published views represent all of the major stakeholders involved in the day-to-day running and development of the ATM industry.

Stakeholder group	Representative bodies on the ICB
ANSPs (4)	CANSO (Civil Air Navigation Services Organisation)
Airports (2)	Airports Council International
Airspace users (8)	AEA (Association of European Airlines) EBAA (European Business Aviation Association) ERA (European Regions Airline Association) ELFAA (European Low Fares Airline Association) IACA (International Air Carriers Association) IATA (International Air Transport Association) IAOPA (International Council of Aircraft Owners & Pilots Association)
CNS providers (1)	SITA
Manufacturing industry (4)	ASD (AeroSpace and Defence Industries Association of Europe) which contains representatives from the main ATM manufacturers including Airbus/EADS, FINMECCANICA and Thales.
Meteorological Service Providers (1)	EUMETNET (The Network of European Metrological Services)
Professional staff associations (5)	ATCEUC (Air Traffic Controllers European Unions Coordination) ECA (European Cockpit Association) ETF (European Transport Workers' Federation) IFATCA (International Federation of Air Traffic Controllers Associations) IFATSEA (International Federation of Air Traffic Safety Electronics Associations)

B Current TEN-T guidelines

B.1 Characteristics of the Air Traffic Management network

Article 17 of the TEN-T (draft) guidelines[32] made available with the Green Paper outline the characteristics of the Air Traffic Management network as follows:

"The trans-European air traffic management network shall comprise the airspace reserved for general aviation, airways, air navigation aids, the traffic planning and management systems and the air traffic control system (control centres, surveillance and communications facilities) that are necessary for safe and efficient aviation in European airspace."

B.2 Projects of common interest for ATM

Annex 2, Section 9 of the TEN-T guidelines, defines the projects of common interest for the Air Traffic Management network:

Projects of common interest are deemed to include any project leading to an increase in the capacity of the system and optimising its use which forms part of a pattern of harmonisation and integration of the facilities and procedures of the various national connecting points and complies with the relevant international standards defined by the International Civil Aviation Organization (ICAO) and by the competent European bodies, all of the foregoing taking account in particular of the European Organization for the Safety of Air Navigation (Eurocontrol).

Such projects relate to:

- *studies on better utilisation of airspace by the various users and the establishment of a consistent and efficient system of routes,*
- *air traffic planning and management which helps supply keep pace with demand and makes optimal use of available control capacities,*
- *the studies and work necessary for the harmonisation of facilities and procedures so as to integrate the various service providers taking particular account of the guidelines adopted by the European Civil Aviation Conference (ECAC),*
- *the improvement of system productivity, in particular by means of automated control assistance and potential conflict detection and resolution systems,*
- *contributions to the installation of means of communication, navigation and surveillance necessary for air traffic control, including the promotion of new technologies, in particular satellites and digital data networks, where that leads to compliance with European common specifications.*

[32] TEN-T guidelines made available with the Green Paper: Draft proposal for a Decision Of The European Parliament and of the Council on Community guidelines for the development of the trans-European transport network, recast

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SESAR ECONOMICS TASK FORCE

Report of the SESAR Economics Task Force

Building the new ATM infrastructure for the benefit of Europe:

The financial challenge

The report of the SESAR Economics Task Force (E-TF) is provided to the Industry Consultation Body and the Single Sky Committee for their consideration.

Executive summary and recommendations

SESAR Economics Task Force

The SESAR Economics Task Force (E-TF) was established by the ICB and SSC to provide advice on financing and funding[1] the future ATM system, in particular the deployment of SESAR IP1, and subsequent phases of the ATM Master Plan. The group comprised a diverse group of stakeholders, namely the ICB[2], SSC, European Commission, Eurocontrol, Military and the SESAR Joint Undertaking (SESAR JU). Input has also been sought from groups such as General Aviation.

The E-TF has examined a wide range of possible methods of financing and funding, and the financial structures which might be used to ensure successful delivery of SESAR. It has primarily focussed upon IP1 where the need is most urgent and considered the appropriateness of the potential financing methods and financing structures for specific elements of IP1.

The E-TF has also examined a range of other issues, such as the potential use of incentives to support equipage, issues around the equipage of stakeholders such as General Aviation and the military (where there is not currently a cost-benefit case for investment), and the possibility of pre-financing of investments. These issues are considered in the relevant sections of the main report.

Why air transport is vital to a strong Europe

Air transport is a key enabler to achieving important policy goals in Europe. It helps facilitate mobility both within Europe and with the rest of the world as well as bringing significant societal benefits, for example in providing connectivity to remote and peripheral regions. Air transport is also an important enabler of economic growth and a significant generator of jobs and technological innovation, helping Europe work towards the Lisbon goals. Air transport is estimated to support around 4 million jobs in Europe (direct, indirect and induced), and this number is estimated to rise by as much as 1.5 million by 2020[3]. Europe's challenge is to facilitate the development of air transport in balance with environmental and safety objectives, against the background of increased competition from other parts of the world and in the face of the current economic crisis.

Importance of the European ATM network and its infrastructure

The European Air Traffic Management (ATM) network and its related infrastructure underpins and enables the operation and development of the air transport sector. The network consists of a number of systems operated by a number of actors such as, but not exclusively, airlines, Air Navigation Service Providers (ANSPs), airports, military, business aviation and General Aviation.

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[1] The terms 'financing' and 'funding' are often used in different ways and there is no clear dividing line between them. However, when the report uses the term 'financing' it refers typically to the provision of initial capital for investment, which will require later repayment. 'Funding' typically refers to either the provision of initial capital which does not need to be repaid (e.g. a direct grant) or ongoing revenue over time.

[2] Comprising ICB members representing airspace users, Air Navigation Service Providers (ANSPs), airports and manufacturing industry.

[3] SESAR Deliverable D5, Section 4.1

ATM and ATM performance are fundamental to ensuring the safety and efficiency of the air transport system, while ATM also has a significant impact on environmental outcomes through its ability to enable more direct ('greener') flight trajectories. However, the existing ATM system in Europe and the technology that underpins it needs to be renewed in order to rise to the challenges of the future, and to enable a truly co-ordinated gate-to-gate approach that provides a network more responsive to users needs. Only through significant, co-ordinated and sustained investment, will a new fit for purpose system be delivered.

SESAR

Recognising the critical contribution that ATM makes, the Community has taken action to address the existing shortcomings of the European ATM system through the Single European Sky (SES) initiative and the associated technology programme, SESAR (Single European Sky Air Traffic Management Research). The European Commission have set ambitious goals for improved ATM performance in Europe, to be driven by activities undertaken under SES, such as Functional Airspace Blocks (FABs), and the development of SESAR, the technical pillar of SES. These goals are to[4]:

- Enable a 3-fold increase in capacity which will also reduce delays, both on the ground and in the air;
- Improve the safety performance by a factor of 10;
- Enable a 10% reduction in the effects flights have on the environment and;
- Provide ATM services to the airspace users at a cost of at least 50% less (which equates to an average of 400€ per flight unit cost by 2020 (2005 prices)).

SESAR, which started its implementation phase in 2008, is the most significant air transport infrastructure modernisation programme ever undertaken in the European Union. As the technological arm of the SES, SESAR aims to create a modern, high performing, interoperable, interconnected infrastructure network distributed both geographically and between the ground and air. Its successful deployment is essential to deliver air transport's important economic, social and environmental benefits to the Community as a whole.

SESAR Implementation Package 1

SESAR is a phased programme underpinned by the early implementation of key technology and infrastructure enablers during Implementation Package 1 (IP1) from 2008-2013. The successful, synchronised and timely deployment of the IP1 'enablers' is critical to the success of subsequent phases of SESAR. If IP1 is not delivered as planned, the successful deployment of the subsequent elements of SESAR (IP2 from 2014 and IP3 from around 2020) will be jeopardized, and the ambitious performance goals which have been set will remain out of reach.

Major activities planned for IP1 in the SESAR ATM Master Plan[5] that require airborne, air-ground or ground only infrastructure deployment include[6]:

[4] Communication from the Commission to the Council and to the European Parliament, The Air Traffic Management Master Plan (the ATM Master Plan), Brussels, 14.11.2008, COM(2008) 750 final

[5] SESAR Definition Phase Deliverable D5, SESAR Master Plan, Section 3.

- controller-pilot datalink communications (CPDLC);
- automatic dependent surveillance broadcast (ADS-B);
- performance based navigation (PBN);
- implementation of 8.33kHzVHF communications below FL195;
- ATS Message Handling System (AMHS);
- Surveillance and airborne collision avoidance systems (Mode S/ACAS).

Challenges facing SESAR and associated risks

The successful deployment of SESAR, both IP1 and subsequent phases, faces a number of significant challenges and risks, for example:

- the scale of the programme, including the required investment on the ground and onboard the aircraft,
- the need to synchronise the investment of a large number of diverse stakeholders;
- the uncertainties around new ATM concepts, procedures and technologies;
- the long-term nature of the programme, allied to the urgent need for implementation of IP1 as the foundation of the deployment sequence.
- securing the necessary alignment of airport and airspace capacity;
- lack of buy-in and commitment from stakeholder groups, for example where the CBA is negative;
- failure to understand the nature of the ATM infrastructure network.

A failure to deliver SESAR will have a potential negative impact on EU citizens and the EU economy.

These risks can be mitigated and the challenges met through:

- securing the financing and funding to underpin synchronised development and deployment;
- securing necessary public funding support in the overall framework of ATM financing and funding to underpin synchronised development and deployment;
- ensuring clear governance structures;
- ensuring robust cost benefit analysis at the overall programme level, as well as for the specific programme elements and for the individual stakeholders;
- ensuring synchronised delivery of the technological enablers to move from a fragmented system to a truly integrated, unified one (from 'patchwork to network') that is globally interoperable;

[6] The Stakeholder Consultation Group (SCG) Prioritisation Task Force has been working with Eurocontrol to improve the understanding of which elements should be considered as part of IP1. The SCG should finalise this work by summer 2009 thereby providing a definitive guide as to what IP1 consists of.

- with reference to the ATM Master Plan, ensuring a match between operational requirements and the supporting technological enablers developed and deployed;
- clarifying the nature of the ATM infrastructure network.

Where these elements are not in place in a timely manner, there could be a lack of support from key stakeholders, potentially jeopardising the successful delivery of the SESAR project.

Required investment in SESAR

To deliver the necessary performance benefits, the SESAR ATM Master Plan identifies a requirement for a total estimated investment of around €30 billion up to 2020 for the deployment of infrastructure[7] (of which IP1 is expected to represent €10 billion). In addition to traditional ground-based infrastructure deployed by ANSPs and airports, a majority of this total investment[8] must be deployed onboard the aircraft that operate in European airspace, including commercial air transport, General Aviation and the military. Overall, SESAR investment represents a significant new financial challenge for the industry as a whole as well as the need to co-ordinate and synchronise investments at a European level to a greater extent than experienced ever before. These financial challenges are taking place against an extremely challenging economic climate across Europe.

Failure to urgently address the investment challenges presented by SESAR would lead to a serious delay in the overall deployment of IP1 and the subsequent phases of SESAR. However, delays to SESAR would not avoid the necessity to replace the existing ATM system at a future date and addressing the associated investment challenges. Urgent progress is now needed to take IP1 forward, including finding new and appropriate financing and funding solutions.

Public funding support for SESAR investments

Historically, air transport in Europe has been largely self-financing (unlike road or rail). The E-TF considers that there is now a strong case for putting in place Community funding support for SESAR to supplement investment by the private sector.

The E-TF believes that ensuring the provision and synchronised deployment of network infrastructure is explicitly relevant to the objectives of Community funding mechanisms. Such public funding support must be considered urgently, and could:

- ensure the timely delivery of the broader economic, societal and environmental benefits associated with air transport, enabled by ATM;
- provide incentives for the timely and synchronised deployment of investment that is critical to enhance the performance at the network level;
- fit with the emphasis on investment in infrastructure networks in the European Economic Recovery Plan, agreed by the European Council in December 2008.

[7] SESAR Deliverable D5 (ATM Master Plan) section 4.4.1 suggests the €30 billion is 'investment and operating costs' by 2020. However, the E-TF considers, based on Table 4 adjacent to Section 4.4.1 of Deliverable D5, that this in fact relates to investment only.

[8] SESAR Deliverable D5, section 4, Table 4, gives full details of investment levels by user group. Total user investments are calculated to be €22.2 billion. .

There are principled arguments as to why Community funding support for SESAR deployment is justified, for example in the case of large-scale complex projects where it will help generate societal benefits greater than simply the private benefits (i.e. 'EU value added'). These benefits include economic benefits such as ancillary economic activity and improved social cohesion and would accrue to the EU citizen and not exclusively directly to passengers, users and service providers. Ensuring the provision and synchronised deployment of network infrastructure is especially relevant to the case for some Community funding support.

Without Community funding support for the deployment of SESAR (e.g. from TEN-T or EIB), the risks around the timely, synchronised and effective delivery of the programme are likely to be increased to the extent that airspace users and ANSPs are convinced that the benefits of SESAR cannot be achieved. The situation is especially urgent in regard to IP1.

Main recommendations on sources of financing

Financing can come from a range of sources. Equity, commercial bank loans or bond issues are traditional infrastructure financing mechanisms and the E-TF would expect that they would be important elements in helping finance the future ATM system. Of those possibilities investigated by the E-TF, TEN-T (Trans-European Transport Networks) funding and EIB (European Investment Bank) loans may offer the most potential to provide additional support for SESAR IP1, though these, and other options, would only be likely to support a limited percentage of the overall IP1 investment cost. The E-TF recommends:

- Main recommendation 1 - TEN-T (Trans-European Transport Networks):
    a. TEN-T funding for IP1 under the Economic Recovery Plan: A window of opportunity exists in regard to the €500M TEN-T budget brought forward as part of the European Economic Recovery plan. The E-TF recommends immediate action to ensure that the ATM community is in a position to bid for part of these funds for SESAR IP1 when the expected call for proposals is made at the end of March 2009. Further work should: (i) establish a clear understanding of the precise criteria and eligible stakeholders, considering the case for avionics investments for users (including GA and military) in addition to ANSPs' case for ATM infrastructure support, (ii) clarify why the interpretation of TEN-T rules should include both airborne and ground equipment as part of the ATM network (iii) identify the process through which the TEN-T application will be made, and, (iv) identify SESAR projects that will commence implementation in 2009, or at the latest 2010, as candidates for the available TEN-T funding.

    b. TEN-T funding for subsequent phases of SESAR: The E-TF provided a background paper to the European Commission in December 2008, advocating TEN-T support for SESAR in the forthcoming Green Paper on TEN-T from 2014 (see Annex D). The E-TF recommends that further work be done to identify (i) a definition of ATM infrastructure (airborne and ground), and (ii) the required criteria, appropriate SESAR elements for funding, and appropriate process through which a future application could be made.

- Main recommendation 2 - EIB (European Investment Bank): The European Investment Bank (EIB) offers potential to support delivery of IP1 and subsequent phases of SESAR, and the European Economic Recovery Plan, agreed in December, has earmarked significant additional sums in 2009 to 2010, as well as a new European Fund (the Marguerite Fund) for energy,

climate change and infrastructure. The E-TF recommends further detailed work by the SESAR JU and European Commission, by the end of May, to explore (i) the EIB criteria for infrastructure investment projects such as those in IP1, (ii) the level of EIB financing available in the IP1 timeframe,, and (iii) the process by which EIB financing can be accessed. Further work by the SESAR JU will also consider the level of EIB financing available in the period from 2014-2025.

- Main recommendation 3 - vendor finance: Vendor finance has not been used extensively in the past for ATM but the E-TF considers it could offer potential for aspects of the SESAR deployment, provided appropriate safeguards ensure the most cost–effective solution is achieved. The E-TF recommends that further work is developed by the SESAR JU to investigate the scope for vendor finance to support the deployment of IP1 and subsequent phases of SESAR.

Main recommendations on financial structures

The use of financial structures to support financing solutions provides the potential for lower and more transparent deployment costs as well as efficient sharing of risks, though the exact nature of these structures will vary depending on the circumstances and the needs of the stakeholders involved. The E-TF notes that different operational and deployment structures exist and highlights the following:

- Main recommendation 4 - common projects: In considering potential 'common projects' of the kind envisaged by the European Commission in proposed SES II legislation, a set of general principles should be adhered to. These include: clear network benefits, robust CBA and governance, the wide support of stakeholders, and consistency to SES performance targets
- Main recommendation 5 - FABs: Functional Airspace Block (FAB) arrangements could facilitate common financing by ANSPs and should be pursued. FABs should continue to develop financial structures to promote efficient investment, and further work should consider how Community funding could help support the delivery of key network investment within the FAB structure.
- Main recommendation 6 - Public Private Partnership (PPP): PPP structures offer a useful vehicle for delivering SESAR investment in circumstances where key principles such as clear political support, governance and project objectives are met.
- Main recommendation 7: Financial structures will however, take time to be established. This impacts on their applicability for IP1. The E-TF therefore recommends that:
    a. An assessment of the applicability of different financial structures to IP1 should be driven forward urgently by the Commission in co-ordination with all stakeholders to define what type of financial structures and governance arrangements need to be put in place in the short-term to support the deployment of IP1.
    b. Work should be developed by the SESAR JU in order to identify in greater detail how specific types of cost effective and appropriate financial structures could be put in place to facilitate the deployment of SESAR.

Main recommendations on key principles

The identification of suitable financing and funding solutions and supporting financial structures will not in itself guarantee (i) that financing is obtained or (ii)

the successful deployment of SESAR will be achieved. The E-TF would therefore recommend ICB/SSC endorse the following key principles for the defining and deployment of specific elements of IP1 and subsequent phases of SESAR:

- Main recommendation 8: Financing and funding has a significant impact on the overall SESAR business case and consequently stakeholder buy-in. To help avoid the same financing and funding challenges being faced by IP1 being repeated for IP2 and IP3, the SESAR JU should dedicate resources to identify financing and funding solutions for the subsequent phases of SESAR as an integral part of its working arrangement.
- Main recommendation 9: The overall CBA and business case for SESAR must be positive. In addition, a CBA and business case confirming the overall benefit, and the benefits for the individual stakeholders, are pre-requisites to build and maintain stakeholder buy-in, while an up-to-date CBA and business case should also be maintained for the programme as a whole going forward. The SJU should develop and implement methodologies that will ensure that CBA and business cases are the driving force in all key decisions taken within the SESAR Work Programme.
- Main recommendation 10: Business cases should be prepared by Eurocontrol for IP1 and consequent Deployment Plan. These should be approved under the new Eurocontrol governance arrangements with industry involvement.
- Main recommendation 11: There must be clear governance arrangements for IP1 and the subsequent (post-SESAR JU) phases of SESAR deployment. Without this, financing for investment is likely to be unavailable or more expensive. IP1 governance should be clarified by the European Commission once the work of the Stakeholder Consultation Group Prioritisation Task Force on defining IP1 is complete (summer 2009).
- Main recommendation 12: All investments which relate to ATM network infrastructure must be aligned with the ATM Master Plan, and duplication must be avoided. The contribution of SESAR investments to the societal goals set by the Commission and the future SES performance scheme shall be continuously reviewed by the SESAR JU and kept up-to-date through the future versions of the ATM Master Plan.
- Main recommendation 13: Member States have an important role to play in demonstrating sustained commitment to SESAR implementation, including the achievement of financing and funding solutions. Member States support will be important in, for example, providing political support for: (i) TEN-T funding for ATM, and; (ii) use of EIB loans. Member State commitment needs to be not only at the national level but also collectively at European level (e.g. through the European Council and Single Sky Committee) as the benefits of SESAR can only be delivered if the implementation is effective at a network level.

Recommendations on the future of the E-TF

The E-TF was originally remitted to produce a report by the end of 2008. In terms of the future of the E-TF, while the final decision will be for the ICB, E-TF members recommend the E-TF is remitted by the ICB/SSC to urgently take forward specific items of further work. This should focus on the following recommendations:

- Main recommendation 1a - TEN-T funding for IP1 under the Economic Recovery Plan: Specifically sub-recommendations:

i. establish a clear understanding of the precise criteria and eligible stakeholders for TEN-T funding, considering the case for avionics investments for users (including GA and military) in addition to ANSPs' case for ATM infrastructure support;

ii. clarify why the interpretation of TEN-T rules should include both airborne and ground equipment as part of the ATM network;

iii. identify the process through which the TEN-T application will be made.

§ Main recommendation 1b - TEN-T funding for subsequent phases of SESAR: Specifically sub-recommendations to identify:

i. a definition of ATM infrastructure (airborne and ground);

ii. the required criteria, appropriate SESAR elements for funding, and appropriate process through which a future application could be made.

The E-TF should also monitor progress on main recommendations 2 (EIB) and 3 (vendor finance). :

1 Background to the E-TF

1.1 Establishment of the E-TF

The SESAR[9] Economics Task Force (E-TF) was established following concerns expressed about the delivery of SESAR Implementation Package 1 (IP1). These concerns included financing and funding[10], the need for adequate governance, the clear and coherent identification of stakeholder responsibilities and the need for clarity regarding technology and interoperability.

The purpose of the group, set out in the Terms of Reference, was as follows:

> *The purpose of the Economics Task Force is to provide advice to the ICB and SSC on funding and financing the ATM system and in particular the deployment of SESAR Implementation Package 1 (IP1) and subsequent phases of the ATM Master Plan.*

The E-TF was tasked with reporting back to the ICB and Single Sky Committee (SSC) by the end of 2008, and met five times between September 2008 and January 2009. The full list of E-TF members and Terms of Reference are included in the Annexes to this report.

The approach of the E-TF has been to utilise the experience and expertise of Members to develop papers on a number of themes. These papers, supporting presentations and issues raised at E-TF meetings have been crystallised into this report.

1.2 Why SESAR matters and risks to delivery

SESAR is a pan-European project, involving a very wide range of stakeholders, aiming to transform the European ATM system. The SESAR Master Plan envisages around €30bn of total investment across all stakeholders to achieve ATM Capability Level 3[11], to deliver a new ATM concept focussed on direct 'business trajectories', instead of the current concept of 'routes in the sky'. The SESAR Master Plan also envisages improved safety, greater capacity, more environmentally efficient routings and lower unit costs, and successful delivery of SESAR is vital to the achievement of long-term performance improvements in the Single European Sky. Delivery of SESAR also has the potential for further catalytic impacts on the EU economy, helping underpin its status as a leading economy globally. Figure 1 and Table 1 below show required future investment in SESAR per stakeholder, and shows the magnitude of the envisaged investment for each stakeholder group.

Due to the complexity, cost and long-term nature of the project, SESAR also carries risks. Without stakeholder buy-in to SESAR concepts and technologies,

[9] Single European Sky Air Traffic Management Research

[10] The terms 'financing' and 'funding' are often used in different ways and there is no clear dividing line between them. However, when the report uses the term 'financing' it refers typically to the provision of initial capital for investment, which will require later repayment. 'Funding' typically refers to either the provision of initial capital which does not need to be repaid (e.g. a direct grant) or ongoing revenue over time.

[11] SESAR Definition Phase Deliverable D5, SESAR Master Plan, Section 4.

clear governance to oversee delivery, and financing in place for investment, the overall benefits of SESAR may not be realised. The SESAR Joint Undertaking was formally established on 8 December 2008. It will be vital to ensure that Implementation Package 1 (IP1) is successfully delivered in the period from now until 2013. If IP1 is not fully implemented the E-TF considers it will lead to further delays in subsequent phases of SESAR.

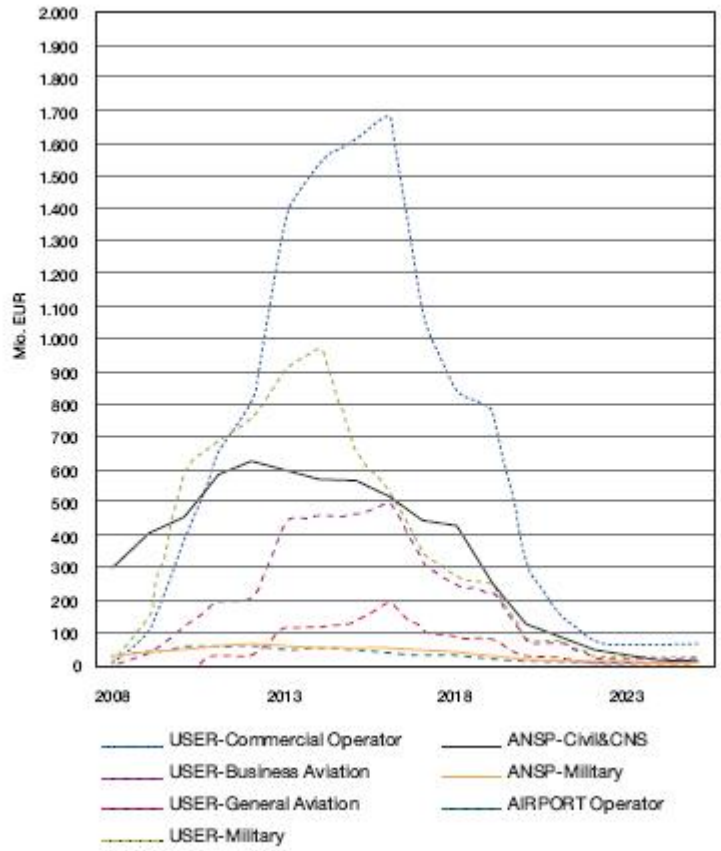


Figure 1: SESAR investment per stakeholder to achieve ATM capability level 3[12]

Description		USER-Commercial Operator	USER-Business Aviation	USER-General Aviation[13]	USER-Military	ANSP-Military	ANSP-Civil&CNS	AIRPORT Operator	Total investment (M€)
Cap. Level	1	2,130	650	940	3,330	240	2,560	300	10,150
	2+3	9,400	2,740	0	3,060	330	3,660	250	19,440
Total		11,530	3,390	940	6,390	570	6,220	550	29,590

Table 1: Investment overview of SESAR stakeholders to achieve ATM capability level 3 (in €M)[14]

[12] SESAR Definition Phase Deliverable D5, SESAR Master Plan, Section 4.

[13] User IFR Capable GA (except BA) and User VFR Only GA costs are to retrofit to Capability Level 1. However, these costs are incurred mainly in the period from 2013 to 2020.

[14] SESAR Definition Phase Deliverable D5, SESAR Master Plan, Section 4.

1.3 What is IP1?

Implementation Package 1 (IP1) of SESAR can be divided into two main strands: Rolling out current best practices such as DMEAN (Dynamic Management of the European Airspace Network) and preparing for Trajectory-Based Operations. IP1 will provide much of the basis on which IP2 and IP3 will be built from 2014 onwards.

The SESAR Master Plan[15] gives more detail on IP1, including details of specific programme names. The Stakeholder Consultation Group (SCG) Prioritisation Task Force has been working with Eurocontrol to improve the understanding of precisely which elements should be considered as IP1. The SCG should finalise this work by summer 2009. The SCG report should then be considered as the definitive guide as to what IP1 consists of. Deployment of SESAR IP2 from 2014 and IP3 from around 2020 will then build on IP1, with new technologies being put in place to complete the modernisation of the European ATM system.

1.4 Document structure

- Section 2 outlines the general principles that will need to be followed in order to achieve the successful financing and funding of the deployment of SESAR.
- Section 3 identifies the possible range of financial solutions in terms of sources of funding and funding, and financial structures.
- Section 4 assesses the applicability of the possible financial solutions to SESAR IP1.
- Section 5 provides conclusions and recommendations.

[15] SESAR Definition Phase Deliverable D5, SESAR Master Plan, Section 3.

2 General principles

2.1 Introduction

The identification of suitable financing and funding solutions and supporting financial structures will not in itself guarantee (i) that financing is obtained or (ii) the successful deployment of SESAR will be achieved. The E-TF have therefore developed a set of general principles for the definition and deployment of specific elements of IP1 and subsequent phases of SESAR:

2.2 General principles

2.2.1 Importance of Cost-Benefit Analysis (CBA) in the SESAR business case

Buy-in to SESAR investments from relevant stakeholders, including potential financiers, can only be achieved if based on a compelling business case that includes a positive and credible Cost-Benefit Analysis (CBA) that is presented in a way that is transparent and acceptable to decision-makers and financial partners. The initial CBA analysis for SESAR set out in D5 requires further refinement. The CBA should be robust for both the individual elements of SESAR, and for all stakeholder groups. There should also be an up-to-date CBA for the SESAR programme as a whole. Validated CBAs and appropriate governance processes will also facilitate access to more financing solutions.

Recommendation of the E-TF:

Financing and funding has a significant impact on the overall SESAR business case and consequently stakeholder buy-in. To help avoid the same financing and funding challenges being faced by IP1 being repeated for IP2 and IP3, the SESAR JU should dedicate resources to identify financing and funding solutions for the subsequent phases of SESAR as an integral part of its working arrangement.

Recommendation of the E-TF:

The overall CBA and business case for SESAR must be positive. In addition, a CBA and business case confirming the overall benefit, and the benefits for the individual stakeholders, are pre-requisites to build and maintain stakeholder buy-in, while an up-to-date CBA and business case should also be maintained for the programme as a whole going forward. The SJU should develop and implement methodologies that will ensure that CBA and business cases are the driving force in all key decisions taken within the SESAR Work Programme.

Recommendation of the E-TF:

Business cases should be prepared by Eurocontrol for IP1 and consequent Deployment Plan. These should be approved under the new Eurocontrol governance arrangements with industry involvement.

2.2.2 Governance

For a provider of finance to become involved in a project, there must be a clear governance structure. Appropriate governance requires the clear definition of roles and responsibilities, by all different public or private entities (SESAR JU, European Commission, Eurocontrol, Member States, groups of stakeholders etc). This is particularly valid in regard to demonstrating the case for financing. Other important principles are:

- Transparency of funding and financing is of utmost importance in SESAR due to the overall collective approach and benefits that are being pursued. Having transparent information on the investments to be made by all groups of stakeholders will be important, while subject to commercial confidentiality being respected. Transparency and predictability will also be major elements for external financial partners.
- Risk sharing principles and predictability of return are major elements to secure the involvement of the private sector moving forward.
- Risk management and risk mitigation is of major importance in the deployment of SESAR. The Definition Phase has clearly highlighted a number of major risks[16] and these should be permanently kept under review by the SESAR JU.
- Network-wide benefits require synchronised implementation of specific SESAR elements; this has not been attempted on this scale previously, is a significant challenge, and will require either mandatory EU rules or a collective decision-making process.
- Ownership needs to be clear. Those providing funding or financing expect it to be repaid, and in most large projects this requires a legal or operating owner to be established, along with legal rights to recover value, for example from flows of revenues, and/or assets, and/or guarantees.
- Effective consultation is required with all stakeholders in a performance partnership environment, to ensure (i) that SESAR solutions are sufficiently mature for effective deployment and (ii) stakeholder commitment is obtained on proposed implementation programmes, actions and timelines. Stakeholder consultations should include GA and military stakeholders.
- Decision making should be supported with business cases in which CBAs (updated as and where appropriate) play a pivotal role.
- The planning and monitoring of the SESAR implementation is an important part of the ATM Master Plan maintenance process.

Recommendation of the E-TF:

There must be clear governance arrangements for IP1 and the subsequent (post-SESAR JU) phases of SESAR deployment. Without this, financing for investment is likely to be unavailable or more expensive. IP1 governance should be clarified by the European Commission once the work of the Stakeholder Consultation Group Prioritisation Task Force on defining IP1 is complete (summer 2009).

[16] SESAR Definition Phase Deliverable D5, SESAR Master Plan, Section 5.

2.2.3 Links between network investments and the SESAR Master Plan

All future network investments need to be aligned with the SESAR Master Plan and contribute to the realisation of the European, FAB and national performance targets as well as the performance targets stated in the SESAR Master Plan[17]. IP1 investments and those in subsequent phases of SESAR should be consistent with the delivery of performance goals.

Recommendation of the E-TF:

All investments which relate to ATM network infrastructure must be aligned with the ATM Master Plan, and duplication must be avoided. The contribution of SESAR investments to the societal goals set by the Commission and future SES performance scheme shall be continuously reviewed by the SESAR JU and kept up-to-date through the future versions of the ATM Master Plan.

2.2.4 Public funding support for SESAR investments

The E-TF considers that there are principled arguments as to why Community funding support for SESAR deployment is justified, for example in the case of large-scale complex projects where it will help generate societal benefits greater than simply the private benefits (i.e. 'EU value added'). These benefits include economic benefits such as ancillary economic activity and improved social cohesion and would accrue to the EU citizen and not exclusively directly to passengers, users and service providers.

Ensuring the provision and synchronised deployment of network infrastructure may be especially relevant to achieving these wider societal benefits and therefore to the case for some Community funding support. Without Community funding support for the deployment of SESAR, the risks around the timely, synchronised and effective delivery of the programme are likely to be increased to the extent that airspace users and ANSPs are convinced that the benefits of SESAR cannot be achieved. The situation is especially urgent in regard to IP1.

Recommendation of the E-TF:

The E-TF considers that there is now a strong case for putting in place public funding for SESAR at the Community level, to supplement investment by the private sector. This could:

- ensure the timely delivery of the broader economic, societal and environmental benefits associated with air transport, enabled by ATM.
- provide incentives for the timely and synchronised deployment of investment that is critical to enhance the performance at the network level.
- fit with the emphasis on investment in infrastructure networks in the European Economic Recovery Plan, agreed by the European Council in December 2008.

[17] SESAR Definition Phase Deliverable D5, SESAR Master Plan, Section 2.1, Table 1 (Summary of the 2020 Performance Targets)

2.2.5 Role of Member States

Member States have committed to ensure that SESAR is implemented in a timely and synchronised way. This commitment needs to be not only at the national level but also collectively at European level as the benefits of SESAR can only be delivered if the implementation is effective at a network level. In addition, Member States:

- will be required to agree on a number of implementing rules and potentially other collective measures;
- are responsible for financing and funding some elements of the ATM system, for example military infrastructure and State aircraft;
- will have an important role in oversight of SESAR (e.g. through the European Council and Single Sky Committee), including the mitigation of various risks.

Recommendation of the E-TF:

Member States have an important role to play in demonstrating sustained commitment to SESAR implementation, including the achievement of financing and funding solutions. Member States support will be important in, for example, providing political support for: (i) TEN-T funding for ATM, and; (ii) use of EIB loans. Member State commitment needs to be not only at the national level but also collectively at European level (e.g. through the European Council and Single Sky Committee) as the benefits of SESAR can only be delivered if the implementation is effective at a network level.

2.2.6 Importance of stakeholder buy-in

The successful deployment of SESAR requires the synchronised and co-ordinated engagement of all stakeholders based on a sound business case to ensure that the envisaged network benefits are achieved. Inter alia, this will require a clear governance structure, well-defined, roles and responsibilities, transparent financing arrangements and the necessary level of consultation to enable all actors to provide input to the decisions that affect them.

Key stakeholders within the network (especially airlines, ANSPs Military and airports) will be responsible for the majority of the financing and funding of SESAR and will be the key procurers and users of SESAR technologies.

Recommendation of the E-TF:

The E-TF considers it will be vital that funding and financing arrangements are fully supported by key stakeholders, and that the SESAR products to be deployed are defined in detail and submitted for the approval of all groups of key stakeholders as far as is possible.

2.2.7 General aviation and military stakeholders

The SESAR Master Plan Cost Benefit Analysis (CBA)[18] indicated that the costs of investment in new equipment for certain stakeholders is likely to be greater than

[18] SESAR Definition Phase Deliverable D5, SESAR Master Plan, Section 4.4.2.

the benefits. Two groups in particular for whom this is likely to be the case in many specific strands of SESAR are General Aviation (GA) and the military. To achieve the network-wide benefits envisaged by SESAR, involvement of these groups in its deployment is likely to be required.

General Aviation

General Aviation (GA) and Aerial Work Operations (AWO)[19] are those operations not considered to be operated by airlines, charter operators or the military. In Europe there are approximately 50,000 GA and AWO aircraft not including ultra light aircraft and gliders. The E-TF has discussed the financing of GA and invited input from AOPA on the impact of SESAR on this diverse group of airspace users. As with the military (see section below), the CBA for GA SESAR equipage is not positive, and solutions will need to be found if GA is to engage with SESAR in the way envisaged in the SESAR Master Plan.

The ownership structure of GA differs significantly from other groups of Airspace Users, often with an individual aircraft being owned by one or more private individuals, making access to finance or joint procurement activities very difficult. This should be taken into account when considering the capacity of GA to engage with new requirements emerging from SESAR. Innovative solutions should be explored for GA equipage and this could include the use of value added services that would help improve the overall CBA for GA stakeholders[20]. The E-TF recognised that it would be vital to ensure the necessary level of consultation of GA stakeholders to enable all of the actors to provide input to the decisions that affect them.

Recommendation of the E-TF:

In order to improve the business case for General Aviation, the E-TF recommends that:

- The specific needs of GA should be considered by the SJU and others, with particular reference to the economic constraints specific to this group.
- Innovative opportunities for equipage by GA stakeholders should be considered, including incorporation of as many 'value added' services as possible for the GA community that would help improve the overall CBA for GA stakeholders. Without this, the case for GA stakeholders to invest will remain unattractive.

Military

For SESAR objectives to be achieved, and a fully-linked ATM network to be developed, military providers, users and airports must be involved. However, some of the aircraft equipage envisaged in the SESAR programme may provide limited operational benefit for the military, and a poor return on investment.

[19] The terms General Aviation (GA) and Aerial Work Operation (AWO) do not mean the same thing throughout Europe or the rest of the world. For example in Germany an air taxi is considered as GA whereas in the UK its aerial work for which an AOC is required even if it is a pleasure flight.

[20] A parallel exists with the compulsory equipage of vessel tracking systems. At the time of the compulsory equipage, ships were communicating via telex, to provide 'value added', a fax system was linked to the satellite-based tracking system.

Funding of the military is a Member State competence, necessarily affected, sometimes at short notice, by operational priorities, and the specific needs and circumstances of the military need to be recognised. The E-TF believes that there is a need to engage, co-operate and develop a relationship with the military in order to highlight the requirements for military equipage and improve the overall business case.

Recommendation of the E-TF:

In order to improve the business case for the military, the E-TF recommends that:

- The needs of the military should be seriously considered, including the economic constraints that are specific to this group. The E-TF also supports the SJU launching a study to investigate military issues from an economic perspective.
- Innovative funding mechanisms should be studied including the use of TEN-T grants to ensure civil-military interoperability and the implementation of the Trans European Network.
- There should be further investigation of possible joint procurement between military operators and users (e.g. learning lessons from NATO, European Defence Agency and the Organisation for Joint Armament Co-operation). It is noted that in most case such programmes are a way to co-ordinate procurement, rather than fund projects, though of course this could reduce financing requirements and risks.

Information on joint procurement in NATO[21], European Defence Agency[22] and the Organisation for Joint Armament Co-operation (OCCAR) [23] mentioned in the above text box is provided in the footnotes.

2.3 Pre-financing by Airspace Users

The principle of pre-financing of ANSP or airport investment by airspace users is a topic which has been consistently debated and the E-TF felt it was an area which was worth examining, both in terms of the existing ICAO and Eurocontrol framework, and the views of airspace users.

ICAO[24] specifies that "*after having allowed for possible contributions from non-aeronautical revenues, pre-funding of projects may be accepted in specific*

[21] In 2006, common funding arrangements in NATO amounted to €934M for the Military Budget and €640M for the NATO security investment programme. The total amounts to less than 0.3% of the combined defence budgets of NATO Allies (including the United States and Canada).

[22] The European Defence Agency (EDA) promotes and enhances European armaments cooperation and European Defence R&T. It can assume management of specific programmes (through OCCAR or other programme management arrangements) or contracts and works in liaison with the Commission to maximise synergy between defence and civil related programmes.

[23] The Organisation for Joint Armament Co-operation (OCCAR) manages collaborative European armament Programmes through their life cycle. The programmes managed by OCCAR in 2008 include the A400M military aircraft programme (€20,330M) and the TIGER helicopter programme (€7,740M).

[24] ICAO's Policies on Charges for Airports and Air Navigation Services (Doc 9082/7), Seventh Edition (2004).

circumstances where this is the most appropriate means of financing long-term, large-scale investment, provided that strict safeguards are in place". Safeguards include (i) effective and transparent economic regulation of user charges, (ii) transparent accounting, (iii) substantive consultation by providers and (iv) the application of pre-funding for a limited period of time.

Eurocontrol, meanwhile[25], specifies that:

- pre-financing can only be considered for systems that become (or at least are planned to become) operational two-years hence;
- the items that can be included in the cost base for cost recovery are:
  - the annual cost of capital (effectively annual interest on loans) charged in the year that they occur from the start of the pre-operational period until the loan is repaid. Alternatively the pre-operational cost of capital can be capitalised and amortised over the life of the system with recovery starting when the system becomes operational;
  - the annual reduction in value of the asset over its life (depreciation and amortisation) but this cannot start until the system is in service;
  - the unavoidable marginal operating costs (including installation, calibration, testing, etc) associated solely with and used to put the system in service during the pre-operational period. These should be capitalised and amortised over the lifetime of the system and only charged when the system is in operation.
- the assets associated with R&D and the R&D operations themselves are not allocated to a specific system and should be charged in the year that they occur.

Discussions within the E-TF on pre-financing could not reach a consensus and confirmed that airspace users reject the use of pre-financing. Users reiterated that the SESAR Definition Phase investigated the role of pre-financing (and front loading) and determined that any sort of pre-financing/front loading was not recommendable for SESAR investments because of the following reasons:

- pre-financing shifts the project risks away from ANSPs and onto airspace users;
- pre-financing reduces the incentives for ANSPs/airports to implement on time (because airlines pay in advance for something that may materialise late or potentially not at all);
- pre-financing through user charges is more expensive to airlines than if ANSPs/airports were to borrow funds (as airlines may pay a higher cost of capital);
- airlines are less concerned about fluctuations in charges (which pre-financing might be designed to smooth), than about ensuring that they only pay for something when they are receiving it.

Additionally, users stated that pre-financing has been maintained by ICAO principally to allow pre-financing in areas such as Africa rather than Europe.

[25] Eurocontrol Central Route Charges Office, Guidance on the Rules and Procedures of the Route Charges System, October 2003 (En).

2.4 Use of a levy on route charges to repay loans

Another possible financing option for IP1 projects, especially perhaps for 'common projects' is through taking out a commercial loan, funded through an additional levy on en-route charges. This option has been discussed by the E-TF. This raised a number of questions including:

- who should take the loan on a common project (e.g. should a single ANSP source a loan on behalf of all involved in the project, albeit therefore carrying all of the risk of financing the repayments, or should a consortium of ANSPs be formed through some form of legal agreement, with the loan being repaid using a levy (perhaps a common levy) on each of the ANSP's route charges);
- what should be the source of the loan;
- whether some ANSPs would be prevented from this approach by their constitutions.

Airspace users are strongly against an additional new levy on user charges and believe that costs for loans should be recovered as they are today through user charges and the individual cost bases of ANSPs.

3 Identification of possible range of financing solutions

3.1 Introduction

The overall financing and funding options for the deployment phase can be categorised into three base types: debt, equity and grants. These are underpinned by a range of options for the source of finance: capital markets, States, Community funding, and the European Investment Bank (EIB). The focus of the E-TF was to identify and prioritise solutions applicable from a pan-European and/or FAB perspective, primarily in the context of IP1, without trying to be exhaustive. For this reason, financing by State debt or raising private equity has not been a focus of the group, nor has the distribution of cost between actors in the ATM system.

3.2 Sources of financing

3.2.1 Debt

3.2.1.1 Commercial banks

Commercial banks are the largest providers of finance. They have loaned large sums to support infrastructure projects globally (in particular in the United States) but have struggled to find profitable European projects to finance. Most commercial banks have specialist departments that work on putting finance deals together for infrastructure projects. Projects need to be of a reasonable size to provide banks with enough revenue to make the time spent worthwhile for them. Arranging debt for a project much under €25m, is unlikely to be economic (unless it is part of a production line of very similar projects for which the same approach can be used), and most major banks would prefer to work on structured (see Section 0) projects of around €80m or more. Commercial banks will also require clear and legally enforceable rights to servicing and repayment.

The impact of the global economic crisis makes the current climate for raising finance extremely challenging, and therefore it will be even more important that projects are robustly put together, with clear CBA, governance, and stakeholder buy-in.

Recommendation of the E-TF:

While the economic crisis is impacting the current availability and cost of finance, there is some potential for commercial bank loans to support SESAR projects. Large-scale projects, with a reasonable opportunity for commercial returns to be made, are likely to still be attractive to commercial banks.

3.2.1.2 Bond issue

Bond issues provide an important source of project finance in certain specific markets[26]. The key difference between loans and bonds is that bonds are tradable instruments and therefore have at least a theoretical liquidity, which loans do not. Bonds are purchased by investors looking for long-term, fixed-rate income

[26] Infrastructure service providers, for example, may issue bonds as a means of raising finance, secured against future, stable revenue streams.

(typically life insurance companies and pension funds). Tied to a specific project structure (see Section 0) bonds may provide an attractive alternative to buying government or corporate bonds, since the return is higher, though this will depend to an extent on the perceived risk.

3.2.1.3 Lease finance

In a lease finance context, the equipment being financed is owned by the lessor (lender) rather than the lessee (borrower). The lessee pays lease rentals instead of interest and principal payments (debt service) on a loan, but other things being equal (e.g. assuming the implied interest rate for the financing included in the lease rental payments is the same as the loan interest rate), payments under a lease or a loan should be the same. Leasing is most commonly used for financing small investments such as vehicles and IT equipment, but is also used for larger assets such as facilities and aircraft. It tends either to offer finance to clients who cannot otherwise raise finance, based on the security offered by the value of the equipment, or allows the lessee to use the equipment for a short period of time and then return it, with the lessor taking the residual value risk. There may also be tax advantages of leasing. Both of these types of finance are expensive compared to direct loans, and neither of them are normally relevant to large-scale project finance situations.

3.2.1.4 Vendor finance

Finance may be offered by a seller of equipment or a supplier of services to the project (a vendor in this context). An ATM manufacturer, for example, may have better understanding of the project than a commercial lender, and therefore be willing to submit a global offer including a financing instrument. A tailored offer combined with a variety of financing instruments may thus enable a supplier to increase sales and open new markets.

Vendor finance may take the form of a loan (i.e. selling the equipment on credit), a lease of equipment or a participation in a Public Private Partnership (PPP). The vendor finance option is often examined when looking at financing alternatives, but its role in the project finance market has been limited, being primarily confined to-date to finance construction of mobile phone networks. In the aviation sector Rolls-Royce for example has pioneered the provision of financial packages tailored to the specific requirements of each individual client. Similar solutions could be sought for SESAR.

Recommendation of the E-TF:

Vendor finance has not been used extensively in the past for ATM but the E-TF considers it could offer potential for aspects of SESAR deployment, provided appropriate safeguards ensure the most cost–effective solution is achieved. The E-TF recommends that further work is developed by the SESAR JU to investigate the scope for vendor finance to support the deployment of IP1 and subsequent phases of SESAR.

3.2.1.5 EIB loans (public sector finance)

Public-sector debt can be provided to projects as a form of subsidy, often on a subordinated basis to that provided by the commercial financing markets. Re-payment in such cases, as with any subordinated debt, will come in second place to the senior lenders. Alternatively public-sector grants may be made available (see Section 3.2.2). These may be without any obligation for repayment (so long

as the money is in fact used for the project), or may be repaid if the project reaches an agreed level of success.

The European Investment Bank (EIB) is an autonomous body within the European Union financing capital investment to further European integration. Between 2001 and 2005, €7.5 billion of European Investment Bank (EIB) loans were made to air transport[27] covering both airports[28], airlines[29] and ANSPs[30]. Prospective airport and ATM projects must be in conformity with the EIB's new transport lending policy[31]. The policy provides the following proposed criteria for prospective airport and ATM projects:

"*Airport projects may be supported when they demonstrate high economic value. Appraisal will therefore take into account potential future adjustments to demand including those occurring when the emission burden is carried over to consumer prices (e.g. through inclusion of airlines in the EU Emission Trading System). Particular attention will be paid to developments in Air Traffic Management, as improvements in this field can contribute not only to improved safety but also to improved efficiency and reduced environmental impact.*"

Reference to the EIB website[32] provides a further overview of EIB selection criteria for airport and ATM projects. With reference to ATM:

"Air Traffic Control (ATC) investments may also provide opportunities to improve traffic management with positive side-effects on greenhouse gas (GHG) emissions, an area which the Bank follows closely due to the important developments based on the EU SES (Single European Sky) legislation and the recently agreed European ATM (Air Traffic Management) master plan."

In line with these criteria, the EIB supports projects that, among other things:

- are Trans-European Networks (TENs);
- are located in Convergence regions and contribute to regional development;
- are supporting a local economy, highly dependent on air transport services;
- demonstrate high economic value;
- contribute to improved safety;
- contribute to reduced congestion or result in time savings for travellers;
- contribute to airport operating efficiency and innovation.

EIB loans are typically provided at a low cost for up to 50% of the project costs, for periods of up to 20 years for infrastructure projects. Repayment schedules are flexible. The EIB acts as lender of last resort for projects that the private sector

[27] Source: EIB presentation to IATA, 24th April 2007.

[28] For example, €150M loan for the construction of a fifth runway and associated taxiways at Schiphol airport, Amsterdam (source EIB website).

[29] For example loans to Aer Lingus (€174M) for the acquisition of Airbus aircraft (source EIB website).

[30] For example loans to AENA (€550M (during the period 2005-2008)) for the renewal, upgrading and expansion of air traffic control system (source EIB website).

[31] A renewed policy for EIB lending to the transport sector, EIB, October 2007.

[32] http://www.eib.org/projects/news/eib-financing-of-airport-projects.htm

cannot finance. In fact, the EIB has refinanced loans made by commercial banks some time after Financial Close, because its own procedures can be too slow to enable EIB to provide finance at the same speed as the private sector. The EIB can also lend outside the EU on the basis of "mandates" decided by the EU.

Recommendation of the E-TF:

The European Investment Bank (EIB) offers potential to support delivery of IP1 and subsequent phases of SESAR, and the European Economic Recovery Plan(*), agreed in December, has earmarked significant additional sums in 2009 to 2010, as well as a new European Fund (the Marguerite Fund)(**) for energy, climate change and infrastructure. The E-TF recommends further detailed work by SESAR JU and European Commission, by the end of May, to explore:

- the EIB criteria for infrastructure investment projects such as those in IP1;
- the level of EIB financing available in the IP1 timeframe and in the period from 2014-2025;
- the process by which EIB financing can be accessed. Further work by the SESAR JU will also consider the level of EIB financing available in the period from 2014-2025.

** Communication from the Commission to the European Council, COM(2008) 800 final of 26th November 2008.*

*** Presidency conclusions, European Council, 11 and 12 December 2008.*

3.2.2 Grants – general considerations

Large infrastructure projects such as road and rail often obtain grants to cover either part or all of the project cost. Such grants are normally funded from the budgets of supranational or intergovernmental institutions such as the EC, World Bank, regional development banks, etc, or those of individual states, at national or local level.

Air transport has historically been largely self-financing (unlike rail or road). The E-TF considers that there are principled arguments as to why Community funding support for SESAR deployment is justified, for example in the case of large-scale complex projects where it will help generate societal benefits greater than simply the private benefits (i.e. 'EU value added'). These benefits include economic benefits such as ancillary economic activity and improved social cohesion and would accrue to the EU citizen and not exclusively directly to passengers, users and service providers.

Previous investment has not been co-ordinated to the fullest extent, leading to fragmentation and inefficiencies and the failure to deliver the maximum benefits to EU citizens. Improved governance and management will be fundamental to delivery of SESAR objectives, but the judicious application of grants, could not only help to supplement private investment, but also support the coordination of SESAR investment and hence the synchronisation of its deployment. Use of grants should be considered where they would generate overall societal benefits greater than simply the private benefits (i.e. 'EU value added').

Obtaining grants via TEN-T funding or other public subsidy is considered in the following sub-sections.

Recommendations of the E-TF:

Areas of SESAR discussed by the E-TF which could potentially benefit from the application of grants include:

- Deployment of large-scale network infrastructure where there are 'spillover' benefits to EU citizens: Grants could focus on the areas of ground-based infrastructure where there is significant risk for implementation.
- Financing for groups where the SESAR CBA is negative, but where grants could generate overall system benefits. Two groups in particular for whom costs are likely to outweigh benefits significantly are General Aviation (GA) and the military.
- Investment in avionics: The current economic outlook and the financial challenges faced by many airspace users mean that the very large investments in SESAR avionics are subject to a range of risks. Where elements of SESAR require essential synchronised implementation and could generate overall system benefits, there may be a case for grant support.
- Stranded assets: Synchronised deployment of SESAR may require some stakeholders to write-off existing systems and equipment that are not yet fully depreciated. There may be arguments (e.g. around ensuring fairness) for grants to be used in certain circumstances to facilitate the early amortisation of such equipment.

3.2.2.1 TEN-T grants

The Treaty of the European Union provides the facility[33] to support the development of trans-European networks as a key element for the creation of the Internal Market and the reinforcement of Economic and Social Cohesion. This includes the interconnection and interoperability of national networks as well as access to such networks and links to third country networks.

The Community contributes financially to the implementation of the TEN-T through (i) the TEN-T budget[34], (ii) Cohesion and Structural Funds and (iii) loans and guarantees of the European Investment Bank (EIB) (see Annex C for a breakdown of contributions). Despite the high contribution from the Community budget to the TEN-T development, the lion's share of the investment has to come from the national and regional budgets as well as through private financing[35]. To date, compared to other modes, only a limited amount of TEN-T funding has been

[33] The legal basis for the TEN-T is provided in the Treaty on the European Union, under the terms of Chapter XV of the Treaty (Articles 154, 155 and 156).

[34] Under the financial framework 2007-2013 the TEN-T budget available for projects has increased to €8.013 billion.

[35] Source: Key Issues on the Implementation of Ten-T Priority Projects: Background & Questions for discussion at the Informal Transport Council of 6 May 2008.

available for air transport[36], much of that channelled through the SESAR JU[37] to support R&D. Other support has been provided to some Functional Airspace Block (FAB) projects, various airport projects and, indirectly, through the Galileo programme. Annex C provides an overview of the contribution of TEN-T to air transport in 2004.

Of immediate relevance to IP1, as part of the European Economic Recovery Plan[38], by the end of March 2009 the European Commission is to launch a €500 million call for proposals for TEN-T projects[39]. Such projects must demonstrate that Community support will (i) enable works to start in 2009 or, at the latest, in 2010, and (ii) accelerate the start of works which are already under preparation[40]. DG TREN is currently exploring the extent to which this could accelerate the deployment of new ATM infrastructure as foreseen in the ATM Master Plan.

However, in considering TEN-T funding, it is worth noting that:

- TEN-T is limited to EU states and manufacturing and equipage by EU entities. For states and participants outside of the EU, but who are engaged in SES, funding may not be available.
- For implementation works, the maximum TEN-T contribution is 10% of the implementation cost.
- For a given TEN-T funding period, 80-85% of the TEN-T budget must be assigned to the 30 TEN-T 'priority projects'.

[36] The 30 priority TEN-T projects include one completed aviation project (Milan Malpensa), 18 railway projects, 3 mixed rail-road projects and 2 inland waterway projects.

[37] The SESAR JU has been allocated €350m from TEN-T for R&D in the period from 2007-13. Sectors such as rail and inland waterways have tended to receive significantly more TEN-T support.

[38] Communication from the Commission to the European Council, COM(2008) 800 final of 26th November 2008.

[39] This will bring forward existing funds that would have been reallocated by the mid-term review of the multiannual TEN-T programme in 2010.

[40] Projects can be ongoing TEN-T projects or new projects of common interest, as defined in Article 7 of the TEN Guidelines, which are sufficiently mature and can clearly demonstrate their contribution to the TEN-T priorities. No studies or preparatory projects will be funded.

Recommendation of the E-TF:

The characteristics of air transport network infrastructure correspond well to the criteria to be considered for TEN-T funding(*). There is, therefore, a strong case in favour of supporting not only R&D but also deployment of SESAR with TEN-T funding.

- TEN-T funding for IP1 under the Economic Recovery Plan: A window of opportunity exists in regard to the €500M TEN-T budget brought forward as part of the European Economic Recovery plan. The E-TF recommends immediate action to ensure that the ATM community is in a position to bid for part of these funds for SESAR IP1 when the expected call for proposals is made at the end of March 2009. Further work should: (i) establish a clear understanding of the precise criteria and eligible stakeholders, considering the case for avionics investments for users (including GA and military) in addition to ANSPs case for ATM infrastructure support, (ii) clarify why interpretation of TEN-T rules should include both airborne and ground equipment as part of the ATM network, (iii) identify the process through which the TEN-T application will be made, and, (iv) identify SESAR projects that will commence implementation in 2009, or at the latest 2010, as candidates for the available TEN-T funding.
- TEN-T funding for subsequent phases of SESAR: The E-TF provided a background paper to the European Commission in December 2008, advocating TEN-T support for SESAR in the forthcoming Green Paper on TEN-T from 2014 (see Annex D). The E-TF recommends that further work be done to identify: (i) a definition of ATM infrastructure (airborne and ground), and (ii) the required criteria, appropriate SESAR elements for funding, and appropriate process through which a future application could be made.

* *These criteria include: 'establishment and development of key links and interconnections to avoid bottlenecks....and improve interoperability on major routes', and 'integration of safety and environmental concerns in the design and implementation of the trans-European network'.*

An E-TF paper of December 2008, inputting to the development of the European Commission Green Paper on the future on TEN-T, including a number of conditions which under which the deployment of SESAR could be supported by TEN-T funding, is presented in Annex D. It highlights in particular, the current economic conditions and the challenges faced by many airspace users, which mean that the very large investments in SESAR avionics may run particular risks related to delay or the cost of capital for investment. This is particularly important where the return on investment is over a long time period (e.g. IP2 investment period 2013 –2016 according to the Master Plan). Where TEN-T support may offer worthwhile 'EU value added', then funding support should be considered.

3.2.2.2 Other grants by public subsidy and state budgets

Member States may consider that they have a role in providing public subsidy to support SESAR deployment in certain circumstances. Where a project is difficult to justify on individual cost-benefit grounds, but is of vital importance for the overall success of the ATM Master Plan (due for example to additional benefits accruing from network effects), individual Member States or the European

Commission may consider granting outright non-repayable grants for funding such projects (specific examples could include General Aviation and the military (see Section 2.2.7). Governmental Agencies have also often provided grants for projects with clear socio-economic benefits for a region or country, or where Government itself is a major user of the service. Military aviation or projects like the Galileo (GNSS) are examples where such grants have been used. To ensure that there is a level playing field between stakeholders (e.g. ANSPs from different Member States), a co-ordinated approach at pan-European level would be desirable.

It is recognised that Member States already have budgetary constraints associated with the economic recession and that many may also need to provide funds for military equipage under SESAR military component.

Other mechanisms (e.g. INTERREG) exist with various objectives that provide channels into the other main sources of Community funds and grants (e.g. European Regional Development Fund (ERDF), Cohesion Fund). There are a variety of conditions that must be met to access these grants, some of which may be applicable to SESAR.

Recommendation of the E-TF:

The E-TF recommends further work to investigate the applicability to SESAR deployment of other mechanisms that provide channels into the other main sources of Community funds and grants (e.g. European Regional Development Fund (ERDF), Cohesion Fund).

Recommendation of the E-TF:

In terms of Member State budgets, the E-TF was of the view that these matters are for individual Member States to decide. Therefore, the E-TF does not make specific recommendations in this area. However the E-TF notes that a co-ordinated approach at a pan-European level would help ensure a level playing field between stakeholders.

3.2.2.3 Use of grants as an incentive tool

SESAR will result in co-ordinated procurement, equipage and deployment on an unprecedented scale in EU aviation. While recognising that the bulk of future investment in SESAR is likely to come, as it does now, directly from the relevant actors within the ATM system, the E-TF considers there is a good case for some grant funding, in certain circumstances. In cases where grants are used to cover part of a project cost, one option would be to use them as an incentive tool. This could:

- avoid planned equipage of aircraft being delayed until the last possible moment before carriage is mandatory. This results in a situation where the industry does not have the capacity to equip a large number of aircraft in a very short time resulting in delays to the programme;
- account for the mistiming of the up-front cost of equipage and the later realisation of benefits (i.e. close the gap between the costs and benefits curves).

Incentives investigated to support the deployment of large-scale projects in the past have included grants for early equipage, operational incentives and different charging schemes. Experience to date has shown that it is extremely difficult to implement incentives due to, amongst others, opposition among stakeholders, limited agreement on the approach where a critical mass of States need to be involved and lack of funds. In pursuing incentives it would also be necessary to work within the following (i) non-acceptance by airspace users of any incentives that lead to an increase in route charges and (ii) some constraints related to ICAO, EU and Eurocontrol charging principles.

Recommendation of the E-TF:

While experience to date has shown that it may be challenging to implement incentives to encourage uptake in new technology, the E-TF considers further wok in this area worthwhile.

The E-TF has developed basic principles for incentive schemes, drawing on Eurocontrol and elsewhere. These principles are:

1. incentives must be focused on achieving clear and tangible goals;
2. incentives must also be simple, transparent, non-discriminatory, of sufficient size to influence behaviour and not too expensive or complex to administer;
3. a co-ordinated approach at pan-European level is recommended;
4. a joint approach to and definition of infrastructure is needed that acknowledges that success is dependent on ground-ground and air-ground integration and networks. ATM needs to be identified as a key European infrastructure and its dispersed elements must be viewed as a coherent whole;
5. incentives are more justified for retrofit aircraft since forward fit investments will be more easily integrated in future plans;
6. there must be consultation of, and buy-in by, all stakeholders as far as possible;
7. governance of common projects needs to be clear and defined at all levels including political, technical and operational;
8. synchronisation in implementation, geographically and across the stakeholders, including those that might incur cost with little benefit;
9. delivery of early benefits is a critical goal.

Recommendation of the E-TF:

The E-TF recommends that the SJU work with the FAA investigate a co-ordinated approach to any incentives schemes used for avionics in SESAR and NEXTGEN.

It should be noted that any use of Community grants, such as TEN-T, to fund incentive schemes for avionics investments would be limited to equipage by EU entities (i.e. not applicable airlines from the United States, Middle East etc)[41]. The E-TF recommends that the SJU works with the FAA investigate a co-ordinated approach to any incentives schemes used for avionics in SESAR and NEXTGEN.

3.3 Financial structures

3.3.1 Introduction

Given the size of SESAR and the risks identified in financing its deployment; it is relevant to consider methods of "financial engineering" whereby the financial burden could be shared between the public and private sector or within the private sector and financing solutions on a pan-European and/or FAB basis could be used. Financial engineering in this context would aim to raise long-term debt against the cash flow generated by the deployment of SESAR itself. Such financial structures will depend on a detailed evaluation of the project's construction, operating and revenue risks, and their allocation between the potential "investors", lenders and other parties through contractual and other arrangements.

3.3.2 Features

Financial structures differ between various industry sectors (as well as between different operators within the same industry) and on a project-by-project basis. There is no such thing as a "standard" structure since various appropriate forms can be sought. There are, however, common principles underlying the structured finance approach.

- It involves a "ring-fenced" project (i.e. one which is legally and economically self-contained) through a special purpose legal entity (usually a company) whose only business is the project (the "Project Company").
- It is usually raised for a new and strategic project rather than usual business.
- There is a high ratio of debt to equity ("leverage" or "gearing"). Roughly speaking, debt may cover 70-90% of the cost of the project.
- The project has a finite life.
- There is a high degree of certainty provided for lenders that they will recover the principal and financing costs.

3.3.3 Potential advantages for the owners (public and/or private partnership)

Depending on the nature of the project and the degree of risk, potential advantages to owners may be summarised as follows:

- High leverage: investments in ventures such as SESAR have to be long term but do not offer an inherently high return: high leverage can improve the return

[41] We understand that there is scope though for EU neighbouring states, such as Norway, Iceland and Switzerland, to make a contribution to funding such as TEN-T, and then become eligible for recipient funds. This option may be worth exploring for those states.

for the owners. A Project Company may thus take advantage of the fact that debt is cheaper than equity, because lenders are willing to accept lower rates of return (for their lower risk) than equity investors.

- Borrowing capacity: setting up a Project Company can increase the level of debt that can be borrowed against a project, where there is a higher level of certainty of recovery within the project structure than outside.

- Risk mitigation: an investor in a Project Company structure does not normally guarantee the repayment of the debt (limited to the equity invested). A stakeholders company's credit rating is also less likely to be downgraded if its risks on project investments are limited through a Project Company structure.

- Risk spreading/joint ventures: typically in the case of SESAR, a Project Company may be too large for one investor to undertake, so others may be brought in to share the risk in a joint-venture Project Company (taking the form, for example of a Public Private Partnership). This both enables the risk to be spread between the investors and limits the amount of each investor's risk because of the nonrecourse nature of the Project Company's debt financing. A public-private partnership can provide funding that the public sector might otherwise not be able to undertake because of economic or financial constraints on the public-sector investment budget.

- Long term finance and better credit: well structured project finance loans typically have a longer term and lower cost than corporate finance, depending on the risks.

3.3.4 Advantages to third parties

Advantages to third parties may be summarised as follows:

- Lower deployment cost: apart from relieving budget pressures from each SESAR stakeholder, a Project Company might be able to finance the SESAR investments more cost-effectively by making best use of financing instruments and enable joint procurements.

- Shared risks: share risks of, for example, deployment cost overruns between the public and private sector (assuming there is sufficient upside risk for the private sector to invest).

- Transparency: as the deployment cost is self contained, the true cost of the deployment of SESAR can more easily be measured and monitored.

3.3.5 Implications of specific types of financial structure

While the kind of financial structure described above could offer significant advantages, from the point of view of individual stakeholders and/or service providers who may be investing within the structure, there would be questions to consider, for example around the risks associated with a potential loss of autonomy in their funding and investment decisions (including on the sourcing of new equipment). In addition, there would be questions around the management of any common procurement, who would have the final say in the investment decisions, and whether the structure would be simply a financing vehicle or would also manage deployment. The exact nature of appropriate financial structure may vary depending on the nature of the project and the stakeholders involved. The E-TF considers that further work should be developed by the E-TF or another forum in order to identify in greater detail how specific types of financial structures

could be put in place to facilitate the deployment of SESAR, while bearing in mind that the majority of investment in SESAR will come directly from the relevant actors.

Recommendation of the E-TF:

The E-TF considers that further work should be developed by the SESAR JU in order to identify in greater detail how specific types of financial structures could be put in place to facilitate the deployment of SESAR.

3.3.6 Ideas around possible financial structures

3.3.6.1 Commission proposal on common projects

The Single Sky II proposals in July 2008[42] from the European Commission, included provisions for a new Article to the Service Provision Regulation to facilitate the deployment of large-scale projects such as elements of SESAR. The proposals would allow the Commission to bring forward proposals for Common projects, with a view to using en-route unit rates to fund the investment in the project over a period of time.

During the course of the E-TF's work, these proposals were being debated in both the European Council and Parliament processes, and, while uncertainty remains about exactly what a 'common project' would involve, the Commission's proposals have evolved to meet a range of concerns expressed by stakeholders. These included the need for:

- appropriate governance structures and involving stakeholders to pilot projects;
- the backing of Member States;
- appropriate mechanisms to finance and recover the costs of the deployment of a common project, including possible access to financial instruments.

[42] Proposal for a regulation of the European Parliament and of the Council amending Regulations (EC) No 549/2004, (EC) No 550/2004, (EC) No 551/2004 and (EC) No 552/2004 in order to improve the performance and sustainability of the European aviation system, COM(2008) 388.

Recommendation of the E-TF:

In considering potential 'common projects' of the kind envisaged by the European Commission in proposed SES-II legislation, the E-TF has developed a set of general principles that should be adhered to:

1. industry and Member States need to agree that the content of a specific common project is a fundamental and necessary part of the SESAR implementation;
2. in certain cases the common project could also be subject to mandatory implementation;
3. projects should have clear network benefits and a CBA that is clear, robust and widely supported;
4. there should be clear governance arrangements including wide consultation and shared decision-making with industry involvement;
5. there should be a focus on projects for which early benefits can be achieved;
6. there should be a focus on projects that need a synchronised pan-European implementation to maximise economic benefits, involving different parties such as airlines, airports and ANSPs;
7. there should be a focus on projects that concern major infrastructure investment which are also benefitting from public support, via TEN-T funds or EIB loans;
8. qualifying projects must be consistent with SES-II performance targets.
9. there should be a focus on projects where clear rights to recovering revenues can be established.

3.3.6.2 Functional Airspace Blocks (FABs)

FAB arrangements are a key vehicle for the delivery of performance improvements in future under the Single European Sky (SES). The E-TF considers that the various FAB initiatives, although presently different in ambition, size, scope, and state of development are establishing themselves as significant regional working relationships, which could be used in future as vehicles of regional implementation for different financial structures.

Recommendation of the E-TF:

Functional Airspace Block (FAB) arrangements could facilitate the common financing by ANSPs and should be pursued. FABs should continue to develop financial structures to promote efficient investment, and further work should consider how Community funding could help support the delivery of key network investment within the FAB structure.

3.3.6.3 Public Private Partnerships

Public Private Partnerships (PPPs) offer a further structure within which SESAR investments could be delivered, though there may be a significant lead time associated with their establishment (and for that reason they may be more appropriate for IP2 and IP3 than IP1). PPPs are normally set up in circumstances where large projects are clearly cost beneficial, would generate a steady stream of revenue (including a financial return to equity investors) and ownership is clear. Frequently, PPPs are used instead of non-recurring state budget financing. The benefits they offer include allowing the cost of investments to be spread over the lifetime of the assets. The E-TF received papers from the Commission on recent experience of PPPs in transport.

Recommendation of the E-TF:

Public Private Partnership (PPP) structures offer a useful vehicle for delivering SESAR investment in circumstances where the following principles are met:

1. clear political support to show long-term commitment and seek to stimulate the required level of investment;
2. clear governance structures including:
   - clearly defined roles and responsibilities for financing bodies equity providers, programme management, operational management etc;
   - no duplication of responsibilities or conflicts of interest;
   - appropriate legislation and regulation;
3. clearly defined project objectives, including consensus between project sponsors on the purpose and desired outcomes of the project;
4. clearly defined ownership of assets and a clear definition of the assets themselves;
5. application of the correct PPP model;
6. clearly allocate project risks to the party that can best control them. Use of proven technology and controlled innovations to reduce risk;
7. work on the basis of an agreed Cost Benefit Analysis (CBA);
8. predictable revenues and sufficient returns on capital to equity investors;
9. public sector investments provide value for money for the taxpayer, private sector involvement increases quality.

4 Assessment of the applicability of identified solutions to the IP1 context (short term)

4.1 Introduction

E-TF considered that it would be useful to provisionally assess the potential applicability of the financial instruments and structures discussed in previous sections to some example elements of IP1[43]. The E-TF would stress that this assessment is provisional and subjective, and should not be regarded as a definitive guide. However, it has helped inform the general conclusions reached.

4.2 Method

1. defining criteria for the identification of IP1 example elements considered as relatively stable, significant and mature;
2. identification of the four examples applying the criteria;
3. consideration of a possible range of financing solutions, as outlined in Section 3.2, (with and without financial structures) by provisionally assessing them against the four examples of IP1 activities.

The E-TF considered the following as being important criteria in order to identify 4 examples of IP1 activities:

1. the components must be part of IP1 as defined in the SESAR Master Plan and the CND Work Programme (which is currently the best source of information from which to work);
2. they are considered to be 'infrastructure';
3. synchronised implementation (air-ground and ground-ground) is required;
4. interoperability across the network is an essential characteristic;
5. the deployment costs are substantial (over €100million);
6. there must be a potential tangible benefit of some kind of additional funding mechanism beyond that which could be achieved through the normal mechanisms based on the route charges system;
7. whether an Implementing Rule (IR) is planned for the specific IP1 element in question.

4.3 Analysis of example IP1 activities

Applying this method, Eurocontrol proposed four examples of IP1 activities, representing approximately 50% of the expected €10bn total financing plan for IP1, as worthy of specific focus. These were:

[43] The definition of IP1 and its consequent Deployment Plan is subject to ongoing work by the Stakeholder Consultation Group (SCG) Prioritisation Task Force. The SCG will report by summer 2009, after the E-TF has completed its work.

	Deployment cost	When	% ANSP	% Aircraft owner	Business case	IR
LINK 2000+ (Controller Pilot Datalink)	€ 830m	2009-2013	44%	56%	Yes	Approved
CASCADE (ADS Broadcast)	€ 450m	2010-2013	9%	91%	Yes	Planned
PBN (Performance Based Navigation - GNSS)	€ 2770m	2009-2013	8%	92%	In preparation	Planned
8.33KHz below FL195	€ 770m	2010-2014	11%	89%	Yes	Draft

Table 2: Example IP1 activities[44]

4.4 Provisional assessment of financial solutions – criteria

The provisional assessment applied the following criteria for assessing the potential applicability of financial solutions, with and without financial structures:

- Cost effectiveness: this parameter considered the potential impact of the source of financing in question on the actual cost of the SESAR Financing Plan.
- Availability: this parameter considered, in very broad terms, the likely general availability of finance for IP1 from the sources listed.
- Applicability to different stakeholders: this considered the likely relevancy of each proposed financial solution to the financial context of each stakeholder group.

In each case (see tables below) an assessment of potential applicability was made using 'high' (H), 'medium' (M) or 'low' (L). While this is subjective and lacks accuracy, it should give some initial indication. However, it should be born in mind that factors such as the individual circumstances of stakeholders (e.g. their relationships with commercial banks) will impact on their actual ability to access finance.

4.5 Provisional assessment of financial solutions in the absence of financial structures

The first assessment, see Table 3 below, considers the applicability of financial instruments (from Section 3.2) in the context of the deployment of IP1 being financed by each stakeholder individually as an addition to their existing business rather than on a structured (i.e. collaborative) basis. In this case, each stakeholder is left to explore and use financing solutions. Provided it can be supported by the stakeholders company's balance sheet and earnings record and is in line with SESAR performance goals. The main findings were:

1. Cost effectiveness: In broad terms, purely commercial bank loans or other types of commercial arrangement are considered to be less cost effective (as the borrowing party would need to pay a full commercial rate of return), while subsidised loans and especially outright grants are considered more cost effective, as they offer a reduced cost (or zero cost for grants) to the borrower.

[44] All the costs shown above are estimates of expenditure still to be made.

2. Availability: Commercial loans, EIB loans and TEN-T funding are considered to be the most likely sources of financing for IP1, though the current financial crisis has impacted on commercial loans, while EIB and TEN funding is limited in scope, though the recent European Economic Recovery Plan, agreed by the European Council in December, has provided some additional availability in the IP1 timeframe.

3. Applicability to different stakeholders: The findings here illustrate the potential difficulties for some stakeholders (e.g. General Aviation) in gaining access to EIB finance (in the absence of financial structures), compared to e.g. ANSPs.

The preliminary assessment is set out in tabular form below in Table 3. Airports are not included as they have very limited envisaged expenditure in the IP1 timeframe.

		Com. Banks	Bond issues	Lease finance	Vendor finance	EIB loan	TEN-T
Cost effectiveness		L	N/A	L	L	M	H
Availability		M	N/A	L	L	M	M
Applicability	ANSPs	L	N/A	L	M	H	H
	Airlines	M	N/A	M	M	L	H
	GA/BA	L	N/A	L	M	L	H
	Military	L	N/A	L	M	M	L

Table 3: Prioritisation of financial solutions for IP1- without financial structure

4.6 Provisional assessment of financial solutions with financial structures

Table 4 below considers the applicability of financial instruments in the context of deployment of IP1 (and use of those instruments) being financed under collective financial structures, of some kind, as referred to in Section 0. The criteria used are the same as those used in Table 3 above, in regard to the use of instruments in the absence of financial structures. The main findings were:

1. Cost effectiveness: Most commercial banks would agree to put more cost effective finance deals together for structured infrastructure projects, while bond issues could provide a complementary source of finance.

2. Availability: Most banks (including the EIB) would agree more easily to provide a loan for structured infrastructure projects where risks are effectively shared.

3. Applicability to different stakeholders: Structured infrastructure projects have a greater potential to provide financial solutions to a greater number of SESAR stakeholders.

The preliminary assessment is set out in tabular form below in Table 4.

		Com. Banks	Bond issues	Lease finance	Vendor finance	EIB loan	TEN-T
Cost effectiveness		M	M	L	L	M	H
Availability		H	H	L	L	M	M
Applicability	ANSPs	H	H	H	H	H	H
	Airlines	H	H	H	H	H	H
	GA/BA	H	H	H	H	H	H
	Military	H	H	H	H	H	H

Table 4: Prioritisation of financial solutions - with financial structure

Acknowledging that a number of prerequisites need to be put in place to establish an appropriate Financial Structure, E-TF's assessment is that Financial Structuring has the potential to ensure better access for all stakeholders to the required level of financing while ensuring greater cost effectiveness. However, financial structures, depending on the detailed structure, will take time to establish. This will impact on their applicability for IP1.

With the quality of information available at present, we considered that separate assessments for each of the 4 IP1 examples was not possible, and may not, in any case, be likely to change the overall key finding. The E-TF recommends that future work considers IP1 elements might best be supported through Community loans or funding.

Recommendation of the E-TF:

Financial structures, will however, take time to be established. This impacts on their applicability for IP1. The E-TF therefore recommends that:

a. An assessment of the applicability of different financial structures to IP1 should be driven forward urgently by the Commission in coordination with stakeholders to define what type of financial structures and governance arrangements need to be put in place in the short-term to support the deployment of IP1.

b. Work should be developed by the SESAR JU in order to identify in greater detail how specific types of cost effective and appropriate financial structures could be put in place to facilitate the deployment of SESAR.

5 Summary, conclusions and full set of recommendations

5.1 Introduction

SESAR will be one of the most significant programmes of investment in the European Union in the next twenty years, and the total estimated investments for the Users, Airports Operators and ANS Providers to achieve ATM Capability Level 3 alone is around €30 billion. As the technological arm of the Single European Sky, SESAR will create a modern, high performing, interoperable, interconnected network.

Implementation Package 1 (IP1) will provide the basis on which subsequent phases of SESAR will build. It will be vital to ensure that IP1 is successfully delivered in the period from now until 2013, as if it is not fully implemented it will lead to further delays in subsequent phases of SESAR. Urgent progress is now needed to take IP1 forward, including finding new financial solutions.

The E-TF has considered the financing and funding of the future ATM system, and in particular the deployment of SESAR implementation package 1 (IP1) from 2008-2013, and subsequent phases of the ATM Master Plan. The full set of E-TF recommendations are set out below as well as a set of 'key principles' required maximise the possibility of (i) financing and funding being obtained and (ii) the successful deployment of SESAR. Recommendations on the future of the E-TF are provided in Section 5.4.

5.2 Recommendations on financing solutions

5.2.1 Debt

Commercial banks

There is some potential for commercial bank loans to support SESAR projects. Large-scale projects, with a reasonable opportunity for commercial returns to be made, are likely to still be attractive to commercial banks.

Vendor finance

Vendor finance has not been used extensively in the past for ATM but the E-TF considers it could offer potential for aspects of SESAR deployment, provided appropriate safeguards ensure the most cost–effective solution is achieved. The E-TF recommends that further work is developed by the SESAR JU to investigate the scope for vendor finance to support the deployment of IP1 and subsequent phases of SESAR.

EIB loans (public sector finance)

The European Investment Bank (EIB) offers potential to support delivery of IP1 and subsequent phases of SESAR, and the European Economic Recovery Plan, agreed in December, has earmarked significant additional sums in 2009-2010, as well as a new European Fund (the Marguerite Fund) for energy, climate change and infrastructure. The E-TF recommends further detailed work by the SESAR JU and European Commission, by the end of May, to explore:

- the EIB criteria for infrastructure investment projects such as those in IP1;
- the level of EIB financing available in the IP1 timeframe;

- the process by which EIB financing can be accessed. Further work by the SESAR JU will also consider the level of EIB financing available in the period 2014-2025.

5.2.2 Grants

Grants – general considerations

Areas of SESAR considered by the E-TF potentially to benefit from the application of grants include:

- Deployment of large-scale network infrastructure where there are 'spillover' benefits to EU citizens. Grants could focus on the areas of ground-based infrastructure where there is significant risk for implementation.
- Financing for groups where the SESAR CBA is negative, but where grants could generate overall system benefits. Two groups in particular for whom costs are likely to outweigh benefits significantly are General Aviation (GA) and the military.
- Investment in avionics: The current economic outlook and the financial challenges faced by many airspace users mean that the very large investments in SESAR avionics are subject to a range of risks. Where elements of SESAR require essential synchronised implementation and could generate overall system benefits, there may be a case for grant support.
- Stranded assets: Synchronised deployment of SESAR may require some stakeholders to write-off existing systems and equipment that are not yet fully depreciated. There may be arguments (e.g. around ensuring fairness) for grants to be used in certain circumstances to facilitate the early amortisation of such equipment.

TEN-T grants

The characteristics of air transport network infrastructure correspond well to the criteria to be considered for TEN-T funding. There is, therefore, a strong case in favour of supporting not only R&D but also deployment of SESAR with TEN-T funding.

- TEN-T funding for IP1 under the Economic Recovery Plan: A window of opportunity exists in regard to the €500M TEN-T budget brought forward as part of the European Economic Recovery plan. The E-TF recommends immediate action to ensure that the ATM community is in a position to bid for part of these funds for SESAR IP1 when the expected call for proposals is made at the end of March 2009. Further work should: (i) establish a clear understanding of the precise criteria and eligible stakeholders, considering the case for avionics investments for users (including GA and military) in addition to ANSPs' case for ATM infrastructure support, (ii) clarify why the interpretation of TEN-T rules should include both airborne and ground equipment as part of the ATM network (iii) identify the process through which the TEN-T application will be made, and, (iv) identify SESAR projects that will commence implementation in 2009, or at the latest 2010, as candidates for the available TEN-T funding.
- TEN-T funding for subsequent phases of SESAR: The E-TF provided a background paper to the European Commission in December 2008, advocating TEN-T support for SESAR in the forthcoming Green Paper on TEN-T from 2014 (see Annex D). The E-TF recommends that further work be

done to identify (i) a definition of ATM infrastructure (airborne and ground), and (ii) the required criteria, appropriate SESAR elements for funding, and appropriate process through which a future application could be made.

Other grants by public subsidy and state budgets

The E-TF recommends further work to investigate the applicability to SESAR deployment of other mechanisms that provide channels into the other main sources of Community funds and grants (e.g. European Regional Development Fund (ERDF), Cohesion Fund).

In terms of Member State budgets, the E-TF was of the view that these matters are for individual Member States to decide. Therefore, the E-TF does not make specific recommendations in this area. However the E-TF notes that a co-ordinated approach at a pan-European level would help ensure a level playing field between stakeholders.

Use of grants as an incentive tool

While experience to date has shown that it may be challenging to implement incentives to encourage uptake in new technology, the E-TF considers further wok in this area worthwhile. The E-TF has developed basic principles for incentive schemes, drawing on Eurocontrol and elsewhere. These principles are:

1. incentives must be focused on achieving clear and tangible goals;
2. incentives must also be simple, transparent, non-discriminatory, of sufficient size to influence behaviour and not too expensive or complex to administer;
3. a co-ordinated approach at pan-European level is recommended;
4. a joint approach to and definition of infrastructure is needed that acknowledges that success is dependent on ground-ground and air-ground integration and networks. ATM needs to be identified as a key European infrastructure and its dispersed elements must be viewed as a coherent whole;
5. incentives are more justified for retrofit aircraft since forward fit investments will be more easily integrated in future plans;
6. there must be consultation of and buy-in by all stakeholders as far as possible;
7. governance of common projects needs to be clear and defined at all levels including political, technical and operational;
8. synchronisation in implementation, geographically and across the stakeholders, including those that might incur cost with little benefit;
9. delivery of early benefits is a critical goal.

The E-TF also recommends that the SJU works with the FAA to investigate a co-ordinated approach to any incentives schemes used for avionics in SESAR and NEXTGEN.

5.3 Recommendations on financial structures

Implications of specific types of financial structure

The E-TF considers that further work should be developed by the SESAR JU in order to identify in greater detail how specific types of financial structures could be put in place to facilitate the deployment of SESAR.

Commission proposal on common projects

In considering potential 'common projects' of the kind envisaged by the European Commission in proposed SES-II legislation, the E-TF has developed a set of general principles that should be adhered to:

1. industry and Member States need to agree that the content of a specific common project is a fundamental and necessary part of the SESAR implementation;
2. in certain cases the common project could also be subject to mandatory implementation;
3. projects should have clear network benefits and a CBA that is clear, robust and widely supported;
4. there should be clear governance arrangements including wide consultation and shared decision-making with industry involvement;
5. there should be a focus on projects for which early benefits can be achieved;
6. the should be a focus on projects that need a synchronised pan-European implementation to maximise economic benefits, involving different parties such as airlines, airports and ANSPs;
7. there should be a focus on projects that concern major infrastructure investment which are also benefitting from public support, via TEN-T funds or EIB loans;
8. qualifying projects must be consistent with SES-II performance targets.
9. there should be a focus on projects where clear rights to recovering revenues can be established.

Functional Airspace Blocks (FABs)

Functional Airspace Block (FAB) arrangements could facilitate the common financing by ANSPs and should be pursued. FABs should continue to develop financial structures to promote efficient investment, and further work should consider how Community funding could help support the delivery of key network investment within the FAB structure.

Public Private Partnerships

Public Private Partnership (PPP) structures offer a useful vehicle for delivering SESAR investment The E-TF considers that a PPP structure may offer a useful vehicle for delivering SESAR investment in circumstances where the following principles are met:

1. clear political support to show long-term commitment and seek to stimulate the required level of investment;
2. clear governance structures including:
   - clearly defined roles and responsibilities for financing bodies equity providers, programme management, operational management etc;
   - no duplication of responsibilities or conflicts of interest;
   - appropriate legislation and regulation;
3. clearly defined project objectives, including consensus between project sponsors on the purpose and desired outcomes of the project;

4. clearly defined ownership of assets and a clear definition of the assets themselves;
5. application of the correct PPP model;
6. clearly allocate project risks to the party that can best control them. Use of proven technology and controlled innovations to reduce risk;
7. work on the basis of an agreed Cost Benefit Analysis (CBA);
8. predictable revenues and sufficient returns on capital to equity investors;
9. public sector investments provide value for money for the taxpayer, private sector involvement increases quality.

Assessment of the applicability of identified solutions to the IP1 context (short term)

Financial structures, will however, take time to be established. This impacts on their applicability for IP1. The E-TF therefore recommends that:

a. An assessment of the applicability of different financial structures to IP1 should be driven forward urgently by the Commission in co-ordination with all stakeholders to define what type of financial structures and governance arrangements need to be put in place in the short-term to support the deployment of IP1.

b. Work should be developed by the SESAR JU in order to identify in greater detail how specific types of cost effective and appropriate financial structures could be put in place to facilitate the deployment of SESAR.

5.4 Recommendations on general principles

Cost-Benefit Analysis (CBA)

Financing and funding has a significant impact on the overall SESAR business case and consequently stakeholder buy-in. To help avoid the same financing and funding challenges being faced by IP1 being repeated for IP2 and IP3, the SESAR JU should dedicate resources to identify financing and funding solutions for the subsequent phases of SESAR as an integral part of its working arrangement.

The overall CBA and business case for SESAR must be positive. In addition, a CBA and business case confirming the overall benefit, and the benefits for the individual stakeholders, are pre-requisites to build and maintain stakeholder buy-in, while an up-to-date CBA and business case should also be maintained for the programme as a whole going forward. The SJU should develop and implement methodologies that will ensure that CBA and business cases are the driving force in all key decisions taken within the SESAR Work Programme.

Business cases should be prepared by Eurocontrol for IP1 and consequent Deployment Plan. These should be approved under the new Eurocontrol governance arrangements with industry involvement.

Governance

There must be clear governance arrangements for IP1 and the subsequent (post-SESAR JU) phases of SESAR deployment. Without this, financing for investment is likely to be unavailable or more expensive. IP1 governance should be clarified by the European Commission once the work of the Stakeholder Consultation Group Prioritisation Task Force on defining IP1 is complete (summer 2009).

Links to performance framework

All investments which relate to the ATM network infrastructure must be aligned with the ATM Master Plan, and duplication must be avoided. The contribution of SESAR investments to the societal goals set by the Commission and the future SES performance scheme shall be continuously reviewed by the SESAR JU and kept up-to-date through the future versions of the ATM Master Plan.

Public funding support for SESAR investments

The E-TF considers that there is a strong case for public funding for SESAR at the Community level, to supplement investment by the private sector. This could:

- help to ensure the timely delivery of the broader economic, societal and environmental benefits associated with air transport, enabled by ATM.
- provide incentives for the timely and synchronised deployment of investment that is critical to enhance the performance at the network level.
- fit with the emphasis on investment in infrastructure networks in the European Economic Recovery Plan, agreed by the European Council in December 2008.

Role of Member States

Member States have an important role to play in demonstrating sustained commitment to SESAR implementation, including the achievement of financing and funding solutions. Member States support will be important in, for example, providing political support for: (i) TEN-T funding for ATM, and; (ii) use of EIB loans. Member State commitment needs to be not only at the national level but also collectively at European level (e.g. through the European Council and Single Sky Committee) as the benefits of SESAR can only be delivered if the implementation is effective at a network level.

Importance of stakeholder buy-in

The E-TF considers it will be vital that funding and financing arrangements are fully supported by key stakeholders, and that the SESAR products to be deployed are defined in detail and submitted for the approval of all groups of key stakeholders as far as is possible.

General Aviation

In order to improve the business case for General Aviation, the E-TF recommends that:

- The specific needs of GA should be considered by the SJU and others, with particular reference to the economic constraints specific this group.
- Innovative opportunities for equipage by GA stakeholders should be considered, including incorporation of as many ‘value added’ services as possible for the GA community that would help improve the overall CBA for GA stakeholders. Without this, the case for GA stakeholders to invest will remain unattractive.

Military

In order to improve the business case for the military, the E-TF recommends that:

- The needs of the military should be seriously considered, including the economic constraints that are specific to this group. The E-TF also supports

the SJU launching a study to investigate military issues from an economic perspective.

- Innovative funding mechanisms should be studied including the use of TEN-T grants to ensure civil-military interoperability and the implementation of the Trans European Network.

- There should be further investigation of possible joint procurement between military operators and users (e.g. learning lessons from NATO, European Defence Agency and the Organisation for Joint Armament Co-operation). It is noted that in most case such programmes are a way to co-ordinate procurement, rather than fund projects, though of course this could reduce financing requirements and risks.

5.5 Recommendations on the future of the E-TF

The E-TF was originally remitted to produce a report by the end of the year. In terms of the future of the E-TF, while the final decision will be for the ICB, E-TF members recommend the E-TF is remitted by the ICB/SSC to urgently take forward specific items of further work. This should focus on the following recommendations:

- Main recommendation 1a - TEN-T funding for IP1: Specifically sub-recommendations:

    i. establish the required criteria and eligible stakeholders for TEN-T funding, considering the case for avionics investments for users (including GA and military) in addition to ANSPs' case for ATM infrastructure support;

    ii. clarify why the interpretation of TEN-T rules should include both airborne and ground equipment as part of the ATM network;

    iii. identify the process through which the TEN-T application will be made.

- Main recommendation 1b - TEN-T funding for subsequent phases of SESAR: Specifically sub-recommendations to identify:

    i. a definition of ATM infrastructure (airborne and ground);

    ii. the required criteria, appropriate SESAR elements for funding, and appropriate process through which a future application could be made.

The E-TF should also monitor progress on main recommendations 2 (EIB) and 3 (vendor finance). :

A Economics Task Force Members

Industry Consultation Body Representatives

Mr Guy Battistella	IACA
Mr Hemant Mistry	IATA
Mr Vincent DeVroey	AEA
Marie Desseaux (Chair)	CANSO
Mr Iacopo Prissinotti	CANSO/ENAV
Regis Gautier	ASD

Single Sky Committee Representatives

Mr Vitan Todorov	Bulgaria, ATSA
Mr Ad van der Westen	Netherlands DoT
Mr Ronald Geirhovd	Norwegian CAA
Mr Martin Johnson (Vice Chair)	UK CAA

European Commission Representative

Mr Francois Huet	DG-TREN/F2

EUROCONTROL Representative

Mr Kumar Basu	CRCO

SESAR JU Representative

Mr Alain Siebert	SJU Chief Economist

Military Representative

Mr Eric Billard	DCMAC

Airport representative

Mr Luc Laveyne	ACI

Secretariat

Dr Michael Fairbanks	ICB Secretariat
Kevin Tucker	ICB Secretariat

B Terms of Reference

Purpose

The purpose of the Economics Task Force is to provide advice to the ICB and SSC on funding and financing the ATM system and in particular the deployment of SESAR implementation package 1 (IP1) and subsequent phases of the ATM Master Plan.

Composition

The Economics Task Force is composed of:

- Six representatives of the Industry Consultation Body.
- Four representatives of the Single Sky Committee.
- A representative of the Military.
- A representative of the European Commission.
- A representative of the SESAR JU.
- A representative of Eurocontrol.

Substitutes may attend meetings when the member is not available. The Task Force will, if needed, seek input from additional experts and will invite representatives from relevant organisations to attend Task Force Meetings.

The Task Force will be chaired by one of ICB representatives. The Vice Chair will be one of the SSC representatives. The Task Force will be supported by the ICB Technical Support team.

Tasks

The Task Force should examine possible financing and funding mechanisms to deliver IP1 and subsequent phases of SESAR, and provide advice on the following topics[45]:

Financing issues:

- use of incentives (or penalties) to support equipage;
- mechanisms to support equipage of GA and the military where there is no direct benefits case;
- how ANSPs (and Airports) can pre-finance investments;
- how to compensate for stranded assets;
- how IRs of the second package of the SES legislation should support future financing arrangements;

Funding issues:

[45] The detailed task list of E-TF evolved somewhat over the course of the group's work. Where an additional area of work seemed potentially worthwhile (e.g. the possibility of EIB loans) then the group devoted attention to that.

- the instruments that should be included in the next financial perspective for TEN-T.
- others

The advice should be prepared in the context of deployment of SESAR and in particular IP1 and use concrete examples. It is anticipated that the task force will need to be able to commission financial modelling studies.

Reporting

The Economics Task Force will report directly to the ICB and the SSC.

C Community financing of TEN-T and example aviation projects

Community financing of TEN-T

	1993-1999	2000-2006	Share 1993-2006	2007-2013*	Share 2007-2013
TEN-T budget	2.2	4.43	1.7%	8	2.1%
Cohesion fund**	8.3	17.33	6.6%	34.79	8.9%
ERDF	7.5	8.6	4.1%	8.33	2.1%
EIB***	26.5	44.9	18.3%	54	13.9%
Other sources****	63.4	208	69.4%	283.88	73.0%
Total	107.9	283.26		389*****	

Community financing of TEN-T[46]

* Indicative figures
** Including the Pre-Accession Structural Instrument (ISPA)
*** Between 1993-1999 loans for EU-15. From 2000 loans in EU-27
**** Public budgets and private financing
***** Total investment needs from Implementation Report 2004-2005

Example aviation projects financed by TEN-T[47]

Data on TEN-T supported actions in 2004 for airports and air traffic management.

Title	Mode	Project support (€M)
Flughafen Hannover	Airports	1.0000
Novo Aeroporto de Lisboa: Estruturacao de Parceria Publico-privada (2e fase)	Airports	1.2000
ATM: Skaane Project - development of Functional Airspace Blocks for lower airspace	ATM	2.0000
CNS/ATM Integrated Programme "Mediterranean Free Flight" (MFF)	ATM	4.7000
NUP Phase II	ATM	6.4500
Eurocontrol - Single European Sky: Development of Air Traffic master plan for the future European ATM system	ATM	14.0000
Eurocontrol ADS-B Programme Stages 1 and 2	ATM	1.6000
European ATM Reference Validation Platform	ATM	1.8200
Implementation of CEATS	ATM	4.0000

[46] Source: Key Issues on the Implementation of Ten-T Priority Projects: Background & Questions for discussion at the Informal Transport Council of 6 May 2008 (http://ec.europa.eu/ten/transport/projects/doc/2008_key_issues_en.pdf)

[47] Source: TEN-T supported activities in 2004 (http://ec.europa.eu/ten/transport/actions/doc/2004_supported_actions_en.pdf)

D E-TF note to the European Commission on TEN-T: Rationale for SESAR funding

Summary of Recommendations

1. This paper presents a case for the importance of TEN-T funding provision, throughout the implementation packages (IPs) of SESAR, to help ensure the transition to new SESAR systems is smooth, slippages in implementation are avoided, and the performance benefits of SESAR can be realised in a timely manner.

2. Aspects of aviation fit well with key criteria for TEN-T funding and the Economics Task Force (E-TF) strongly recommends that aviation, in particular SESAR, be given key consideration for greater funding in future TEN-T rounds. Elements of SESAR investment involving network infrastructure, interconnectedness, interoperability and links with third countries are especially relevant.

3. TEN-T funding will be required to support timely transition of ATS-infrastructure and technology, in line with the SESAR Master Plan. Failure to do this could result in significant setbacks for the Single European Sky and the foreseen performance improvement. This will impact EU citizens.

4. If funding were to be available in the current TEN-T round (to 2013), the E-TF also recommends that urgent consideration be given to allocating some support to key elements of IP1, where they are shown to meet the criteria set out in the paper.

5. The case for public funding should demonstrate the existence of 'market failure', and therefore potential for 'EU value added' through the provision of public funds (e.g. through TEN-T). Aspects of SESAR deployment fit this criteria especially well and some public support, where determined necessary, would derive public benefits beyond the private benefits for stakeholders. In the absence of public funding, there may be a significant risk that elements of network infrastructure are either not delivered, delivered (too) late, delivered without full synchronisation or at a higher than necessary cost (due to lack of co-ordination).

6. This paper does not recommend which elements of SESAR would be most appropriate for TEN-T funding. Instead it recommends that this should be decided by a transparent process.

Background

The Commission intends to publish a Green Paper on the future of TEN-T in December 2008, focussing on the next round from 2014-2020, though conceivably also touching on the current funding round to 2013. To date, only limited TEN-T funding has been available for aviation, much of that devoted to R&D by the SESAR JU[48]. Sectors such as rail and inland waterways have tended to receive significantly more TEN-T support.

[48] The SESAR JU has been allocated €350m from TEN-T for R&D in the period from 2007-13.

Air transport has historically been largely self-financing (unlike rail or road) and the expectation to date has been that SESAR investment (deployment) would be largely or fully funded by industry. However, previous investment[49] has not been co-ordinated to the fullest extent, leading to fragmentation and inefficiencies, and there are principled arguments as to why specific aspects of SESAR (e.g. network infrastructure elements) may be strong candidates for TEN-T support, and why such support may offer worthwhile 'EU value added'. Also, current economic conditions and the challenges faced by many airspace users means that the very large investments in SESAR avionics may run particular risks related to delay or the cost of capital for investment. This is particularly important where the return on investment is over the long time period (e.g. IP2 investment period 2013 –2016 according to the Master Plan) and in immediate cases where SESAR requires essential synchronised implementation (e.g. LINK 2000+). This paper explores these arguments.

Purpose of TEN-T Funding

The European Union has a legal requirement[50] to promote the development of trans-European networks as a key element for the creation of the Internal Market and the reinforcement of Economic and Social Cohesion. This development includes the interconnection and interoperability of national networks as well as access to such networks. The revising legislation of 2004 (Article 5) restated the priorities of TEN-T funding[51]. Many of these are drafted to be sector specific and link to the related plans and maps included with the legislation, but relevant priorities to aviation / SESAR include:

- establishment and development of key links and interconnections to avoid bottlenecks….and improve interoperability on major routes.
- integration of safety and environmental concerns in the design and implementation of the trans-European network.

Article 6 of the original 1996 Decision[52] also deals with links to third country networks.

The Aviation 'Network'

The aviation network could be thought of as a 'road system for the sky', but in fact is more complex. It consists of both the physical infrastructure in and around airports, and the supporting air traffic control infrastructure both on the ground and in the air, ensuring all actors in the system can communicate effectively and efficiently. The aviation network is not as obvious or 'physical' as that of say road, rail or inland waterways, but it is just as 'real', and ensuring this network is modern, pan-European, efficient and interoperable is critical for the future success of the EU.

The Case for TEN-T Funding for Aviation

[49] Investment volumes for ATM ground systems have been over €1bn per annum.

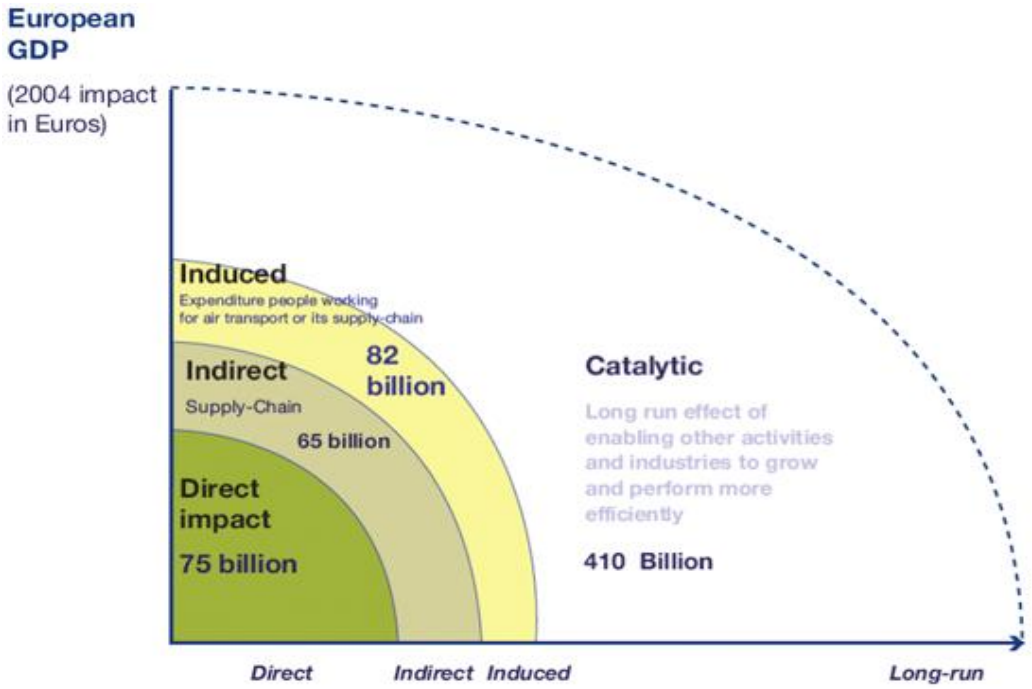
[50] The legal basis for the TEN-T is provided in the Treaty on the European Union, under the terms of Chapter XV of the Treaty (Articles 154, 155 and 156).

[51] http://ec.europa.eu/ten/transport/legislation/doc/2004_0884_en.pdf.

[52] Decision no. 1692/96/EC.

Aviation has important benefits for the EU economy. The diagram below shows the sum of the direct, indirect and induced aviation contributions to European GDP to be €222bn in 2004[53]. It also shows that air transport had in 2004 a long run effect delivering an additional €410bn through its catalytic and dynamic effects to the rest of the European economy. The catalytic effects of aviation relate to the provision of opportunities for business investment as more flights encourage more businesses to locate or expand in a region, labour mobility, widening of markets, increased competition, more innovation, transfer of technology and increased productivity. Not considering the catalytic effects, air transport has the potential, based on economic forecasts, to contribute €470bn in 2020. If airport capacity fails to meet demand, there could be a potential yearly loss to Europe of about €50bn of added value in 2020. The number of jobs enabled by air transport considering the direct, indirect and induced impacts was estimated to be already 4 million in 2004 with an additional 1.5 million in 2025.

Benefits of Aviation to EU GDP



The characteristics of aviation network infrastructure fit well with the TEN-T legislative criteria, for example in regard to the interconnectedness, interoperability and third country links, and aviation has already benefited from some support, albeit limited (e.g. SESAR R&D).

Public funding for infrastructure is normally linked to the concept of 'market failure', and the idea that Government intervention (whether local, national or EU) can 'correct' that failure. This intervention should generate social benefits greater than simply the private benefits, i.e. 'EU value added', therefore justifying public funding support. Aviation infrastructure creates an international network, including links to third countries, and this has spillover benefits ('positive externalities'). These include economic benefits such as ancillary economic activity and improved

[53] EUROCONTROL, The Economic Catalytic Effects of Air Transport in Europe - 2005

social cohesion, and generally these benefits accrue to the EU citizen and not exclusively just directly to passengers, users and service providers. This creates a basic rationale for considering public support for aspects of the system.

Air transport has to deliver capacity growth in future years, while maintaining and improving safety and seeking to mitigate environmental impact. This requires bottlenecks to be addressed and improvements to interoperability between different systems on board and on the ground. These objectives are fundamental to SESAR, and *network infrastructure* which supports aviation may be especially relevant for TEN-T.

The Case for TEN-T Funding for SESAR

The SESAR Definition Phase concluded that without implementation of the Master Plan, air traffic growth will be unduly constrained and with it the future benefits from air transport to European society will lessen.

SESAR deployment will involve the procurement and implementation of new ATM infrastructure and corresponding aircraft equipment and can be considered as the technological arm of the Single European Sky. This process of transition will involve joint procurement and deployment on an unprecedented scale in EU aviation. Significant investment will be necessary for the implementation of SESAR. The SESAR Definition Phase concluded that investments of approximately €30bn would be needed to reach capability level 3 in the SESAR Master Plan in 2020 (€10bn to implement IP1 and €20bn for IP2).

The E-TF considers there is a very strong case in favour of supporting the deployment of SESAR with TEN-T funding, in particular where the following conditions are met:

- funding would support genuine elements of (international) network infrastructure, in line with key TEN-T legislative criteria;
- the development of the specific infrastructure elements offers benefits beyond those directly accruing to the stakeholders involved (i.e. wider social benefits and EU 'value added');
- *synchronisation* of delivery of infrastructure investment is a key requirement, and failure to synchronise delivery would restrict economic benefits on Community level;
- there may be information or co-ordination problems which hamper delivery and which public funding support and related co-ordination could help with;
- problems linked to lack of access to or cost of finance could hamper timely or cost-effective delivery of SESAR investments and the related social benefits;
- funding of investments by specific stakeholder categories (e.g. General Aviation) where those investments are necessary to achieve benefits from a network perspective and for which the business case would otherwise be negative.
- there may be existing sunk costs which cannot be fully recovered and where public funding may be able to compensate appropriately for this investment; and;
- where the social benefits of TEN-T support would clearly outweigh the cost of any funding.

Potential Support for Elements of IP1

E-TF Members understand that the focus on the Commission's forthcoming Green Paper on TEN-T will be the future round from 2014-20. However, if any funding were to be available for the current funding period to 2013, the E-TF urges that consideration be given to the possibility of support for the delivery of key elements of SESAR Implementation Package 1 (IP1) whose synchronisation is endangered by a lack of co-ordination or financial capacity across stakeholders. IP1 will provide much of the basis on which IP2 and IP3 will be built from 2014 onwards, and where aspects of IP1 meet the kind of criteria set out above, then we consider that providing TEN-T support could be an important lever in ensuring timely, effective delivery.

Would Infrastructure be Developed Without TEN-T Support?

It is worth considering whether the potential funding support would simply substitute private investment which would have been made. Aviation infrastructure has traditionally been largely self-financing and one might argue that any public support (e.g. TEN-T) should only be a last resort. The E-TF argues that the case for TEN-T support should be clear and principled, based on the arguments we have set out here. In considering *specific* elements of SESAR for funding it will be important to identify areas where there may be significant risk that the infrastructure is either not delivered, delivered late, delivered without full synchronisation or at a higher than necessary cost (due to lack of co-ordination). In such circumstances, the case for public support offering real value added may be strongest.

Specific SESAR Elements Suitable for TEN-T Support

We consider that this issue is outside the scope of the SESAR E-TF. There are various elements of SESAR which meet the key criteria (e.g. network infrastructure which improves interconnectedness, interoperability and links to third countries) including within IP1 in the period between now and 2012, but we recommend that further work should be undertaken to identify exactly which elements of SESAR might have the characteristics which make them best suited to receiving TEN-T support.

Paper Provided by the SESAR E-TF to the European Commission (DG TREN)

2 December 2008