

Report
SES Vision Workshop
Brussels, 5th May 2015



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1 Introduction

1.1 Workshop Agenda

On the 5th May 2015, the European Commission hosted a "SES Vision Workshop". The objective of the workshop was to generate and understand a wide range of views on the development of and priorities for the SES in the medium to long term. The workshop therefore involved over 100 stakeholders, including representatives from Member States, European organisations and industry (ANSPs, airspace users, MET providers, airports, manufacturers and staff associations). A full attendance list is included at Annex 34C.

The workshop consisted of the following sessions:

1. Overview of the current situation
2. SES Vision - Views of SES related bodies
 - a. Performance Review Body
 - b. Industry Consultation Body
 - c. European Aviation Safety Agency
 - d. SESAR
 - e. Network Manager
 - f. European Defence Agency
3. Facilitated group discussion on elements of SES:
 - a. Group A: Technical Framework
 - b. Group B: Service Provision Framework
 - c. Group C: Regulatory Framework
4. Conclusion and Closing remarks

Sessions 2 and 3 were followed by a panel debate with the workshop participants.

1.2 Workshop Objectives

Director of Air Transport for the European Commission, *Mr Margus Rahuoja*, opened the workshop. *Mr Rahuoja* highlighted that the Single European Sky is a key item on the European Commission's agenda and a long term overarching vision is needed to plan for the future. The Commission is developing an aviation strategy that will tackle all major areas in the aviation sector, focussing in particular on technology, service provision and creating a streamlined regulatory framework.

The workshop was intended to be the first step towards that vision and strategy by identifying what the Single European Sky should look like in twenty to thirty years. It aimed to recognise challenges for the future and to come up with concrete proposals for how to address them. *Mr Rahuoja* noted that the aim of the workshop was not to reach consensus but to gather all views of the stakeholders to identify the most burning issues.

Mr Rahuoja informed stakeholders that a working group of the Single Sky Committee has been set up for the purpose of creating a vision for SES, and will meet several times this year. A similar workshop with all stakeholders will be held in regular intervals, as appropriate, in order to identify any lessons learned and what can be improved in the Single European Sky in the long term.

Mr Rahuoja's full speech is provided in Annex A.

1.3 This Report

This report captures the main points raised during the presentations, group discussions and panel debates. It is intended to support further work in developing a vision for the development of the Single European Sky. The report is structured in accordance with the workshop agenda:

- Section 1: Overview of the current situation
- Section 2: Views of the SES-related bodies
- Section 3: Group Discussions
- Section 4: Conclusions

The report is complemented with the following annexes:

- Annex A: Speeches
- Annex B: Group discussions
- Annex C: Attendance List

2 Overview of the current situation

On behalf of the European Commission, Deputy Head of the Single Sky Unit, *Mr Olivier Waldner*, provided a review of the current situation with SES, covering achievements and challenges based on the Commission paper “SES key challenges” distributed in advance of the workshop.

Achievements in the first years of implementation

Mr Waldner highlighted the two main threads of the Single European Sky: one thread addressing all issues related to institutional arrangements, including human factors, leading to reform and airspace management and the second addressing technology, and SESAR and its deployment.

These two threads have contributed to the following performance gains in RP1:

- Capacity: ATM-related delays reached their lowest level in 2013 (0.53 minute per flight). This is a significant improvement although has been aided by the slowing down of traffic growth.
- Flight efficiency: Due to the implementation of new routes and free routes by the NM, States, ANSPs, ATCOs and airspace users. RP1 targets were largely met in the last quarter of 2014 for actual routes flown vs optimum route.
- Cost efficiency: The full cost recovery model has been replaced with determined costs and incentives to manage the traffic and costs risks. ANSPs responded to lower revenues and cut costs to improve margins, therefore cost efficiency improved by 9% in RP1.

Challenges

Mr Waldner noted that a major challenge to ATM is the volatile air traffic demand which is an external factor and cannot be controlled. The economic downturn in 2008 contributed to the stagnation of traffic, although traffic levels are now starting to recover. In its Challenges for Growth 2013 study, EUROCONTROL has estimated that there will not be the required capacity to accommodate 1.9 million flights in 2035. The following other challenges were outlined:

- Fragmentation of ANS: Fragmentation still exists, eg at ATC level and in the technical infrastructure. ANS is still provided in silos with national boundaries. The NM, FABs and other entities are continuing to attempt to deal with this.
- High European ANS unit cost: ANS unit cost still too high/expensive where users of SES airspace bore a total economic cost of €10.5bn in 2012.
- Monopolies, little competition, weakness in oversight: competition of the ANS market remains exceptional and voluntary at a nation's discretion. ANSPs remain national monopolies, so there are few incentives for efficiency or regulation.
- Lack of flexibility of a labour intensive industry: On average, staff costs make up 63% of total costs to an ANSP where ATCOs take half of that percentage. EU ATCOs have a lower average productivity per ATCO when compared with the US (0.8 vs 1.4 aircraft controlled per ATCO on duty). The other half of staff costs is related to technical, operational and administrative support. ANSP cost-efficiency could be much higher if service provision and infrastructure were rationalised.
- Institutional, legal and decision making issues: FABs have not delivered the expected performance gains so far for the SES. Other potential areas for development in the SES 2+ proposal include promoting industrial partnerships to achieve these performance gains. Rationalisation of the number of EU institutions in this field is also required to speed up processes.
- Opaqueness in safety: There are currently no reliable risk indicators on which targets can be set, as well as an absence of just culture in some member states.

While the SES is starting to deliver, much more remains to be done to further improve ANS performance.

The slides presented by *Mr Waldner* are available [here](#).

3 SES Vision – Views of the SES-related bodies

The SES related bodies were invited to provide input to the workshop in terms of their personal visions for the Single European Sky and in particular what the priorities are and how the main challenges and issues should be addressed.

3.1 Views of Performance Review Body

The Chairman of the Performance Review Body (PRB), *Mr Peter Griffiths*, highlighted that since the start of SES, times have changed resulting in the need for a new strategy for the delivery of the SES vision. *Mr Griffiths* presented the strategic steps for the achievement of the performance objectives since 2010 and projected SES delivery in 2030. Whilst *Mr Griffiths* presented a number of weaknesses in the current system, he emphasized the challenges related to high European ANS unit costs. The strategic baseline of the PRB is therefore: “Minimising total economic cost, within acceptable bounds of safety and security”.

The PRB strategy for SES consists of the following main points:

- Optimise safety risk management
- Introduce market opening, and create/promote competition.
- Improving Economic Regulation
- Simpler key performance indicators (KPIs)
- A more efficient institutional organisation
- Better airspace design, management and use
- Add flexibility to match capacity with demand
- Improved human resources management

Mr Griffiths noted that achieving the vision would require:

- Change management
- Clear decisive leadership at EU and national level
- Engagement of all stakeholders
- A clear communications strategy
- Awareness of external threats (RPAS and safety, Environmental constraints, Runway capacity, mobility , retraining and licensing)

Mr Griffiths' slides are available [here](#).

3.2 Views of the Industry Consultation Body

The Chairman of the Industry Consultation Body (ICB) *Mr Olaf Dlugi* underlined the importance of aviation to the European economy and emphasized the need for a collaborative approach in defining changes and improvements to the system. The ICB vision calls for: “A modern, resilient, globally interoperable and sustainable ATM system for Europe delivering high performance for passengers and all airspace users”.

Mr Dlugi presented the vision and priorities of the ICB in terms of the three supporting frameworks:

- Technical framework: At the heart of this framework is the aim to achieve a harmonised ATM System that reflects operational need and supports and strengthens the concept of global interoperability. The ICB welcomes the nomination of the SESAR DM, whose task will be to ensure synchronized deployment. However *Mr Dlugi* also highlighted the need to ensure funding for SESAR deployment in order to support modernisation and changes in service provision.

- Service Provision Framework: The freedom to operate for service provider in order to respond to customer needs has to be ensured. Industrial partnerships and other emerging business models have to be further encouraged and ATM should be open to competition and innovation. Strengthening the Network Manager and the reform of EUROCONTROL has to be prioritised.
- Regulatory framework: Performance based ATM is the key for the success of SES and this requires an improved performance scheme. This will include an improved target setting and monitoring process, whilst ensuring that safety, delay, environment and access remain core priorities. The ICB calls for an independent economic and performance regulator based on transparency, competence, justification, effective consultation and an effective appeal mechanism.

Mr Dlugi's full slides can be accessed [here](#).

3.3 Views of the European Aviation Safety Agency

The Director of the Strategy and Safety Management Directorate for EASA, *Mr Luc Tytgat* highlighted five key issues that, in addition to high European ANS costs, form the key challenges of the SES and how they should be addressed:

- Opaqueness in Safety: Safety has to be part of change management ensuring the deployment phase. Real risk based safety KPIs are needed, assisted by the analysis of big data.
- Fragmentation of ANS: There is a need for a common single regulatory framework; all technical regulation should be covered by EASA. Regulation needs to create a level playing field. This will also be enabled by a centralised infrastructure and better air ground integration.
- Monopolies, little competition, weakness in oversight: EASA envisions stronger competent authorities (eg NSAs) and reinforced cooperation between EASA and the national competent authorities.
- Lack of flexibility of a labour intensive industry: Free movement and mutual recognition of licences is an essential cornerstone for achieving the SES.
- Institution/legal/decision-making issues: *Mr Tytgat* emphasised the need to streamline the decision-making structures including regulatory Committees as well as various State and industry advisory/coordination bodies. In addition a single technical regulatory framework removing all overlaps and promoting performance based approaches is essential.

Mr Tytgat's slides are available [here](#).

3.4 Views from SESAR

The Executive Director of the SESAR Joint Undertaking, *Mr Florian Guillermet* emphasised the importance of ATM in the air transport value chain and argued that a vision must be accompanied by clear performance objectives and must aim to create benefits for EU citizens. Thus the objective of SES should be connectivity for sustainable and performance driven aviation. A vision for SES will have a direct impact on technological development and thus SESAR will act as a supporting structure for the achievement of the vision, and for coping with the disruptive changes coming from the transformation.

Mr Guillermet identified 7 improvement areas across the entire value chain, connected to specific performance gaps:

- Improved ANS operations productivity
- Lean and efficient use of ANS infrastructure (rationalisation)
- Collaboration/operational predictability
- Improved airport performance and access

- Improved flight trajectories
- Inclusion of all air vehicles in to the SESAR environment
- Enhanced safety and security.

Mr Guillermet stated that SESAR enables a step-change in system capabilities to 2035, with deployment progressively moving from structural enablers to a target vision. The vision should address multiple (potentially cooperative) options for further development and validations such as end-to-end ANS service provision, temporary delegation of separation, etc. Technology should be deployed where it brings a benefit and enables performance. But technology alone is not enough, it is important to also consider procedures for operational needs and maintenance, deployment options for optimisation, the economic and safety dimension, as well as social dialogue. *Mr Guillermet* concluded that the bigger the change, the greater the need for the correct safety framework and oversight.

Mr Guillermet's slides can be accessed [here](#).

The Technical Director of the SESAR Deployment Manager, *Mr Nicolas Warinsko* stated that the Deployment Manager was too young to express a vision, but wanted to share their views on the subject. He stated that the main objective should be to improve the life of EU citizens, reflecting the statement made by *Mr Guillermet*. He added that this would only be possible through implementation of technologies that have been developed through SESAR. A practical and deployment oriented approach is essential, not just for modernisation but also for defragmentation.

Mr Warinsko highlighted that the common challenge will be the coordinated and synchronized implementation to improve performance. This relies on;

- Public authority
- EU funding
- Incentivisation
- Creating the right environment for decision-making

Mr Warinsko's full speech is presented in Annex A.2.

3.5 View of the Network Manager

The Director of EUROCONTROL's Network Manager Directorate, *Mr Joe Sultana*, stated that the Network Manager's objective is to deliver improved performance and that this is an essential part of the SES vision. The Network Vision 2020 states that it aims to achieve predictability, punctuality, safety and service continuity, but the question is thus: what needs to change to achieve this?

Flight efficiency as well as cost efficiency needs to be considered. To enable this, future systems have to deliver more capacity and more safety using collaborative traffic management (4D trajectory). The SJU, Deployment Manager and Network manager are working on collaborating to deploy validated solutions in support of this.

Mr Sultana identified 7 key areas for the future:

- Focus on 4D user preferred routes
- Balanced segmented ATC provision
- Avoid unused capacity, remove shortages (Runway/TMA capacity is vital)
- Common/centralised service provision where appropriate
- Resolve distortion from different unit rates
- Focussed research, targeted deployment
- Reducing ATM costs through the human factors / optimised rostering and sectors

Mr Sultana concluded that the Network Manager will have a fundamental role to play. It forms the heartbeat of the SES, with emphasis on impartiality and transparency. The Network Manager is not the problem it is the solution.

Mr Sultana's slides are available [here](#).

3.6 Views of the European Defence Agency

The EDA Cooperation Planning and Support Director Agency, *Mr Roland Van Reybroeck* stated that EDA clearly recognizes the crucial importance of SES for improving efficiency and capacity and highlighted that civil-military cooperation is essential. On the side of the military this starts at practical level of airspace management with a flexible use of airspace. On the side of the civil stakeholders it involves the acknowledgement that economic development and prosperity in Europe, which are key for the expansion of commercial air space usage, cannot be durably achieved without guaranteeing the necessary level of internal and external security for European citizens. SES therefore has to accommodate equitable access to both civil and military ends, whilst preserving the capacity of the military to operate across national and European airspace, including in the most dense and complex areas. Developments so far form an excellent basis to further develop civil-military cooperation. *Mr Van Reybroeck* identified the following improvement areas in which EDA can facilitate civil-military cooperation, by providing access to a number of existing cooperation platforms:

- Sharing information on relevant R&T programmes at earlier stages
- Develop harmonized and coordinated roadmaps for civil and military, to ensure sustained compatibility
- Effectively ensuring the integration of military requirements in SES development and the regulatory domain
- Ensuring fair and equitable access for EU funding for civil and military projects alike
- Improving coordination in the field of regulation and standardisation
- Avoiding duplication of efforts and reducing investment burdens, by recognizing that certain military systems are robust enough based on equivalent level of performance
- RPAS integration and jointly addressing cyber and security issues

Mr Van Reybroeck stated that EDA is ideally placed to facilitate cooperation in all of these areas between civil and military stakeholders, adding that the military will strive to be as civil as possible but will need to remain as military as required. He concluded by stating that EDA is reaching out to all relevant stakeholders in order to jointly build a Single European sky in which the views and needs of the defence community are duly taken into account.

Mr Van Reybroeck's full speech is presented in *Annex A.3*.

3.7 Panel Sessions

The Panel Session was chaired by *Dr Mike Shorthose*, Executive Chairman of Helios, and included the six speakers from the SES-related institutions. *Dr Shorthose* sought questions and comments from the workshop participants.

IATA pointed out that the 2014 performance fell significantly short of the targets. Airspace Users support the development of a vision but it has to be built on concrete milestones and on the recognition that the set targets are not being met. Both *Mr Dlugi* and *Mr Griffiths* voiced their own disappointment at the 2014 numbers and *Mr Griffiths* added that the main causes were bad weather and poor social dialogue. He highlighted that constructive social dialogue is essential. *ATCEUC* also noted that FABs were not achieving their aims and instead only added another layer complexity, increasing costs to airlines. *ATCEUC* reminded the workshop of their MOSAIC concept - a single

provider with a single unit rate facilitating operational improvements across Europe in a harmonised manner.

IATA, *IACA* and *CANSO* stated that they fully support the concept of an Independent Economic Regulator and highlighted the need to work out how to implement and establish this entity within the institutional framework. *IACA* added that the Performance Scheme has so far led to ANSPs increasing their margins, whereas it should aim to reduce Airspace User charges instead. There was general agreement from the speakers that independent economic regulation needs to be put in place and that it needs to deliver benefits.

The importance of technology was emphasised as well as the need for a market driven approach where technology leads to the development of SES. *IATA* noted that deployment needs to be structured and be focussed on rationalisation. *Mr Dlugi* agreed and emphasised the role of the Deployment Manager in this regard. In response to a question from *CANSO*, *Mr Tytgat* explained that EASA supports the use of a more net centric approach in terms of infrastructure, where possible, to simplify SMS and certification and that robust deployment was necessary in order to focus industry efforts.

It was noted that some Member States are using advanced SMS and have a good system for reporting safety issues. *Mr Tytgat* agreed with this statement and clarified that he considered that there was a need to consolidate and clarify the system to help industry comply with safety regulation. This should be partly achieved through consolidation of regulation by SES 2+. In addition there is a need to make better use of available data.

ACI Europe emphasised that SES has to be a total system approach, including airports and capacity. Airports are fully committed, but feel that something is missing, such as a strategic objective to balance/reconcile airside and ground capacities. *Mr Sultana* agreed that this needed to be a key part of the strategy over the next 20 years.

NATO stated that they supported the view presented by *EDA*. They agree with the need for a total system approach for aviation, including safety and security. The main three aspects that need to be considered are: access to airspace, security of the ATM system, Interoperability on a military-military and civil-military basis.

The risks linked to competition were discussed, including the possible introduction of further fragmentation and the creation of monopolies. This also applies to the centralisation of services. A balance between competition and monopoly is important. *Mr Griffiths* emphasised that the ATM community needs to move towards a defragmented supply, introducing competition where it is beneficial.

ELFAA noted that a vision has to be bold and radical. It was generally agreed that a realistic roadmap towards the vision is needed. This relies on collaboration between Industry, Member States and institutions, as well as full commitment to SES.

4 Group Discussions

The afternoon sessions of the workshop were focused around three supporting frameworks: technical, service provision and regulatory. Each framework is discussed in a parallel session using a series of questions distributed in advance of the workshop as the basis. Following the breakout sessions, the facilitators presented a summary of the discussion to the workshop plenary. Each presentation was followed by a panel discussion with the following industry experts:

- Mr Miroslav Bartos, Chief Executive Officer of LPS SR
- Mr Peter Curran, Assistant Director for Infrastructure Safety and Flight at IATA
- Mr Adrian Curtis, Member of the European Transport Workers' Federation (ETF)
- Mr Andreas Eichinger, Head of Deployment and Strategic Project in Airside Operation at FRAPORT
- Mr Marc Hamy, Vice President of the SESAR and NextGen Programmes for Airbus Prosky
- Mr Adriaan Heerbaart, Director Pan-European Single Sky for EUROCONTROL
- Mr Chris Gadsden, Head of Regulation at Easyjet
- Mr Michal Kalidova, Project Office for defence investment fat NATO
- Mr Luc Lalouette, Chairman of the Air Traffic Management Committee of the AeroSpace and Defence Industries Association of Europe (ASD)

The breadth of the discussions are summarised below; more details are provided in Annex B.

4.1 Technical framework

The Technical Framework Session was facilitated by Dr Mike Shorthose, Executive Director of Helios, and considered the following questions:

A1. Evolution of ATM infrastructure

Introduction: The current ATM infrastructure is highly fragmented and disparate, which results in unnecessary costs, operational limitations (e.g. obstacle to European-wide free routing) and synchronisation issues (e.g. data-link).

- How should the future ground ATM infrastructure in particular ATM systems be harmonised, based on European standards, open source and modular systems, common ATM system architecture, common support services and common procedures, in order to ensure the desirable level of capability, reliability, interoperability and upgradeability at minimum cost? How should this harmonisation be achieved?

A2. Funding the renewal of ATM infrastructure

Introduction: The value of the current ATC system infrastructure is in the order of €3B. Available CEF funding (C2.5B) and complementary funding from EIB and EFSI would be sufficient to progressively replace it by harmonised infrastructure.

- How could the process of harmonisation (referred to in point A.1) and the financing mechanisms support the defragmentation of ATC system infrastructure?

A3. Renewal of ATM infrastructure

Introduction: ATM infrastructure has been deployed on the basis of individual investment decisions with limited or no synchronisation of investment in new systems.

- How to accelerate the pace of change in the way air navigation services are provided by triggering the deployment of new systems in a synchronised manner based on harmonised infrastructure?

Group discussions

A1: Evolution of ATM Infrastructure

- Technological harmonisation is important on one level but it is only part of the solution - human factors and procedures are fundamental for making it work
- Rationalisation of technology is required between states. An incident in Cologne in summer 2014 highlighted that the aircraft are tracked by 28 different radars. Rationalisation will require political agreements to share data and achieve the rationalisation necessary
- Technology standards should be created with a view to moving towards global interoperability in the future, driven by users and industry
- Standardisation of the environment could be more effective where synchronised operating procedures drive the harmonisation of technology
- Europe should strive towards common system architecture, because without such a vision, very little change will happen
- Harmonisation of organisational structures is also required alongside technological harmonisation to ensure efficiency
- Technology could facilitate changes in business models
- Infrastructure should not be owned by the service providers to enable competition. In addition, legislation needs to be rewritten from being monopoly orientated to being competitively orientated
- Strong leadership is required from our own institutions, and the relationship between industry and regulators needs to be strengthened

A2: Funding the renewal of ATM Infrastructure

- CEF grants do not fund the entirety of projects; loan financing for 'good projects'
- Intelligent funding to:
 - help smaller, less profitable ANSPs improve their technological infrastructure
 - help 'fringe' ANSPs fund required functionality that they do not need
 - fund useful technology
- A comparison of the funding received by ANSPs from their national governments should be used to aid fair funding allocations.
- Funding for ground infrastructure vs funding for air infrastructure: difference in cost scale.
- Larger ANSPs have the clout to trigger big changes in technology, but standardisation will allow smaller ANSPs to come in.

A3: Renewal of ATM Infrastructure

- The Deployment Manager is well received by stakeholders; it's remit is well defined, and needed to bring about infrastructure renewal.
- Money needs to be spent on people as well as infrastructure.
- The performance scheme and charging regulation regimes are potentially driving different behaviours and need to be treated in a harmonised way.
- Best equipped, best served is a promising concept that needs better definition.
- Caution is needed when accelerating the pace of change and done intelligently to ensure proposals are well tested.

Plenary discussion

Mr Luc Lallouette (Thales) noted that although standardisation is essential, there is a risk to go into too much detail, which can be counterproductive. He also noted that there is a high level of expectation on the DM, but that at this stage he is only dealing with deployment of capabilities that require synchronisation. Funding the deployment of other functionalities with high performance impact on the network should be considered as well.

Mr Chris Gadsden (EasyJet) stated that it was important to keep technology harmonised to allow ATCOs to easily move from one ANSP to another without retraining. He also emphasised that it was important that the available funding was not wasted on uneconomic projects. *The Italian CAA* emphasized the need for impact analysis of investments. Only projects delivering real benefit should be funded.

Mr Marc Hamy (Airbus) noted that technology has to be used efficiently to benefit airlines/ customers. A customer oriented approach is essential and should be applied to all levels, including deployment. He emphasised the importance of global interoperability to airlines and the need for funding to reduce up-front investment. *IACA* agreed and noted that technological improvements were not only realised through public funding but also funded by ANSPs, who then raised unit rates for customers.

Mr Peter Curran (IATA) reminded the participants that there is a need for rationalisation, to reduce duplication of infrastructure in Europe. He noted that the NM has a central role in this context.

4.2 Service Provision framework

The Service Provision Framework Session was facilitated by Dr Claire Davies of Helios and considered the following questions:

B1. The role of industrial partnerships vs the FAB approach

Introduction: Industry partnership could contribute to the development of a strong European ATM Industry. FAB approach aimed to facilitate the cooperation between ANSPs based on geographical proximity.

- Is the FAB approach consistent with the development of industrial partnership? How can it be improved?
- What should we learn from Airbus industry partnership experience? Could it be applied to the ATM supplying industry?
- What should be the ideal relationship between ANSPs and ATM supplying industries?

B2. The role of the central service provider (next generation NM)

Introduction: Today, both airport and ATC capacity are wasted and delays are generated at the same time. Differential unit rates distort the planned routes at the expense of environmental efficiency. Most air transport delays occur on the ground during turn-around while SESAR focuses on the flight phases, etc. Today, the NM detects problems and makes suggestions on some areas but has limited influence on individual decisions. Overall, there are many opportunities for much improved performance of the European aviation network. What initiatives would foster the improved performance of European aviation network, such as:

- Is there a need for a stronger central service provider? What additional functions/measures would be needed in RP3 and beyond for the NM to ensure an equitable, effective delivery of network-wide performance?
- Should stronger authority, including incentives, be attributed to the NM, for airspace design and management, ATC capacity/demand balancing, airport capacity/demand balancing? Should NM distribute the incentives to the relevant stakeholders based on their performance?
- Should institutional arrangements be streamlined so that the Deployment and Network Manager are governed by a single body (e.g. integration of DM and NM)?

B3. Scope for competition in the provision of ANS

Introduction: In several domains, the opening of market for competition contributed to the competitiveness of European Industry and provision of more cost effective services to European citizens. In the aviation sector, one of the major achievements was the reduction of ticket prices and increased connectivity following the opening of the EU internal market. From the industry perspective,

- Which parts of ANS could and should be opened to competition for the market? Is competition in the market feasible in the longer term?
- What is the right balance between competition and cooperation?
- How could industrial partnerships coexist with competition?

Note: Tower/terminal services are opened in a limited way in some States in the form of tenders for the market. This successful approach could be extended to other States starting in RP3. In the longer term, this approach of competition for the market could be extended to the provision of en-route ANS services.

Group discussions

B1: The role of industrial partnerships vs the FAB approach

What must be considered is the aim of the service provider in the first place. What are the objectives? Cost efficiency and harmonisation are important.

FABs are a regulatory construct that has been put in place for a few years, and have facilitated cooperation to some extent vs we should skip FABs.

If FABs are a proper means of working together, regulation of FABs management must be improved.

FABs are a framework for industrial partnerships.

A number of different viewpoints were expressed on industrial partnerships:

- Not sure what they are. Are they to support/complement FABs? Are they broader? Is the SDM a CS or an IP?
- Will generally be built on a business case.
- More flexible than FABs.
- Should be allowed to flourish, not introduce complexity (in terms of SP and reg).
- Don't see the need for additional regulation – instead barriers need to be removed, particularly within ANSPs and MS.
- Procurement law must be addressed.

B2. The role of the Central Service Provider (next generation NM)

The creation of the NM was an import regulatory step. The NM is the sole point where network responsibility lies.

What is the network? A baseline is needed to move on from.

- NM independence and autonomy is essential vs make good use of EUROCONTROL expertise.
- NM should be governed by those who take responsibility for operation of the network – industrial governance.
- NM should provide services best provided centrally.
- NM must exercise existing powers.
- NM must have further powers to change network.
- NM should be part of Performance Scheme.
- NM should govern the ANSPs.
- Should not have a regulatory responsibility, but be a SP for industry.
- Advisory function over contribution of operational stakeholders to network.

B3. Scope for competition in the provision of ANS

- Should not drop economic regulation for false competition
- Must have clearly defined systems and interfaces to enable real competition
- Important to preserve integrity and accountability of SP

- Role of competition:
 - Competition just for supply market and infrastructure?
 - ATM is a public service of monopolistic nature - competition doesn't make sense
 - Only real competition is IN the market – why trust a MS to select a SP?
 - Competition could make costs bigger, duplicate infrastructure and jeopardise safety.
 - Competition could reduce the barrier for new entrants to allow disruptive technology to enter. Just need a level playing field.
 - Will competition drive out smaller SPs? Bigger doesn't mean better.
- Vision: centralised infrastructure from which ANSPs provide services – freedom to operate?

Plenary discussion

The following key points were raised during the panel discussion:

Mr Andreas Eichinger (FRAPORT) re-emphasized the importance of being clear about the objectives before deciding on the optimal solution. He also noted that the natural monopoly characteristic of ANS provision should not be a barrier to competition as there are numerous other examples in other transport sectors.

Mr Miroslav Bartos (CANSO) encouraged a study on whether centralised service provision would be beneficial. He noted that ANSPs aim to provide a public service whilst preserving safety and that this should not be compromised in order to reduce costs.

Mr Miroslav Bartos (CANSO) stated that industrial partnerships can support the work of FABs, as they would be more business orientated, whereas the latter are meant to harmonise on a regulatory/legal level. Harmonization should be the main priority, before trying to introduce competition.

Mr Aaron Curtis (ETF) questioned the approach used by FABs (structured around geographical boundaries) and encouraged member states to think outside the box. He expressed the risk that constraining industry to FABs and not allowing alternatives, such as industrial partnerships (COOPANS, iTEC, Coflight, Heathrow arrival delay programme) could result in real benefits not been delivered. He added that competition can have unintended consequences and that as a Member State responsibility it should be carefully considered where it is appropriate and how to liberalise. *Mr Aaron Curtis* (ETF) noted that the NM can be used to inform where airspace bottlenecks might be and where to target deliverables from SESAR. He highlighted the need to consider social dialogue. There is a need to keep staff involved to make a real change and facilitate transformation.

The *FR CAA* noted that competition should not be introduced by rulemaking but should be left to flourish, with a mix of cooperative approach and new opportunities to provide services.

4.3 Regulatory framework

The Regulatory Framework Session was facilitated by *Mr Paul Ravenhill*, Technical Director of Helios, and considered the following questions:

C1. Better and smart regulation (how to reduce administrative burden)

Introduction: Today, economic and technical regulations are quite important. If part of ANS is opened for competition, there would be a need to revise economic regulation. While normal competition rules should apply to the part of ANS opened to the market, economic regulation should be reduced and evolved to cover remaining ANS monopolies.

- How can the principles of better regulation of ANSPs be applied?
- How can financial and non-financial incentives give the right economic signals to both users and providers replacing hard targets?
- Would a performance scheme be still needed at European level in the long term?

C.2 The evolution of national capabilities (NSA) in face of the ramping up of EASA

Introduction: EASA establishing its new roles and responsibilities in ATM with the support of National Supervisory Authorities.

- Should additional tasks and responsibilities be attributed to EASA?
- What would be the evolution of local supervisory role, working methods and organisation in the long term as opposed to the central role of EASA as single aviation regulator?

C.3 Human resources

Introduction: Human resources are an essential element of SES success. Some 43500 staff are directly employed by ANSPs and represent 2/3 of their costs. The average ATCO productivity is rather low (0.8 aircraft under control per ATCO-hour on duty) and labour mobility is currently very low (<0.1% of ANS staff). Support and maintenance cost is also very high.

- What initiatives do you recommend in this respect e.g. enhanced social dialogue, workforce observatory, virtual mobility, common training curriculum, more flexible employment conditions, incentives such as sharing of productivity gains between users, providers and staff, subcontracting support and maintenance services, etc.?
- What should be regulated? What should be addressed through competition and outsourcing?

Group discussions

In general the group discussions touched upon finding the right level of trust and balance, supported by collaboration and cooperation between stakeholders – this is vital in building a new regulatory framework.

C1. Better and smart regulation (how to reduce administrative burden)

- Before elaborating a vision, the shape of the market needs to be understood – whilst competition should not be hindered by regulation, we must acknowledge that ATM is a regulated business by its nature.
- There is a need for regulatory stability (but also in keeping pace with change).
- Regulation should encourage trust in the various actors to perform their tasks. Regulation should only be used where necessary.
- A balance between the pan-European policy level and the local (national) level is necessary for both technical and economic regulation.

- There is a need for performance regulation but the level and form is dependent on the extent that competition drives value for money.
- It is important to consider the State/Public Service dimension: access to services and airspace must be ensured for all users – including State, military and general aviation.

C2. The evolution of national capabilities (NSA) in face of the ramping up of EASA

- NSA cooperation / collaboration is an enabler to a level playing field and to reduce duplication of work.
- NSAs are generally under-resourced.
- Some in favour of independent NSAs.
- A balance between NSAs (for local implementation) and EASA (for rule making and guidance) is important.

C3. Human resources

- 5th pillar is vital for all actors – needs to support change within the industry.
- Social dialogue is required at all levels.
- Harmonisation will support mobility of ATCOs and/or airspace.

Plenary discussion

Mr Curran (IATA) highlighted that although trust is necessary, it is important to ensure results are achieved. He reiterated the need for an Independent Economic Regulator that sets targets, measures and sanctions. *Mr Heerbaart* noted that in addition to a truly independent character of the regulator, it was important to make sure that it would be pan-European, whilst considering local conditions. The *Italian CAA* noted that creating an Independent Economic Regulator would be a difficult operation, particularly since NSAs are mostly integrated into the public service of the Member states. *Mr Curran* (IATA) pointed out that there is no need for a complete reorganisation of NSAs, as a pan-European economic regulator could work alongside them at a different level.

Mr Curran (IATA) also emphasised the importance of the Network Manager to evolve and technology to be deployed in a synchronised manner. There is a need for change and this requires genuine acceptance that performance needs to improve.

The involvement of consumers to develop the vision was suggested by Airspace Users. *Mr Waldner* (Commission) reminded the participants that an open consultation on the EU aviation strategy in which citizens were invited to express their views was open.

Mr Dlugi (ICB Chairman) proposed to organise another workshop in three months' time, in order to keep the necessary momentum and give all stakeholders the opportunity to come back and develop a full vision.

5 Conclusions

Mr Olivier Waldner closed the meeting by thanking the speaker, panel members, workshop participants and facilitators for a productive day. The slides presented by *Mr Waldner* are available [here](#).

The workshop highlighted the wealth of views across all stakeholders but also the difficulty in establishing a long term vision for an industry. The discussion at the workshop will be a useful starting point for the Single Sky Committee in their deliberations over the coming months. It was significant that topics like the role of competition, the future of Functional Airspace Blocks, the need for stronger economic regulation and significant changes in the technical and operational spheres had been discussed in an open and positive manner by such a wide range of stakeholders.

The Commission noted that further consultation would be required once the SSC has established the core of their vision for the Single European Sky.

A Speeches

A.1 Opening Address – Margus Rahuoja, Director, DG-MOVE

Thank you all for coming, I would like to extend a warm welcome for this the first workshop for the Single Sky Committee vision.

We welcome people from all over the aviation industry and we have come together today to take the first step to see what the Single European Sky will look like 10-20 years down the road by identifying the challenges for the future and how to address them.

The aviation sector is a victim of its own success where growth is expected to create great challenges. Globalisation is both an opportunity and a threat. There are tangible benefits to the industry from growth where people get to fly more for lower fares. Growth has slowed in the last decade but it is expected to increase and will be a challenge, opportunity and threat.

The European ATM system needs to be modernised and made more sustainable to deal with the airport capacity crunch while also maintaining safety levels.

The Single European Sky gives a way to deal with all these problems, and is a key item on the European Commission's agenda. A long term overarching vision for the Single European Sky is needed to plan the future and the Commission is developing an aviation strategy that will tackle all major areas in the aviation sector. Today is the first step towards that. Innovation and technology, service provision and a streamlined regulatory framework are important. We will look at these in more detail during the breakout sessions where I'm certain you will make valuable contributions.

Last year, the European Commission requested visions from the Industry Consultation Body and Performance Review Board. Many stakeholders participated and both papers were delivered at the meeting of the Single Sky Committee earlier this year. Some members raised the idea of organising a workshop consisting of all member states to share all views – here we are.

The aim of this workshop is not to have a discussion on the continuation of SES 2+, but to consider a long term vision, or in competition language – a steady state. This differentiation must be made clear. We come with no pre-conceived ideas, but want ideas from you. We want to know the target system in 2035 or 2050 and the necessary steps to be taken towards this.

You will have received the questions and working paper as background for the discussion, stating main challenges as perceived by the Commission, and we would like your views and concrete proposals for how to address these challenges. We are not looking for consensus but aim to gather the diverging points to identify a few of the most burning issues.

We have set up a SSC working group that will convene for the first time tomorrow. Views may vary significantly from state to state. This working group will meet several times a year to discuss the vision, and we will also hold a similar workshop today once a year in order to identify lessons learned and what can be improved in the Single European Sky in the long term. The funding available should be used effectively to help the Commission to plan the budget for the future.

As for the layout of today, I will ask Olivier to present the key challenges based on the background material you have received from the Commission. This will be followed by speeches from the PRB, ICB, EASA, SJU, DM, NM, and EDA.

You will have a chance to express your thoughts in the facilitated sessions after lunch. Please feel free to be vocal, open and provocative whilst listening openly to others.

The day will be rounded off with some conclusions and we will identify the next steps in the process.

A.2 Speech given by SESAR Deployment Manager – Nicolas Warinsko

It is currently the 5th May 2015. The Deployment Manager was selected 5 months ago with operations starting up 4 months ago.

We have organised and coordinated the 2014 CEF call, and the DM is working hard on the first version of the Deployment Plan to deliver to the European Commission at the end of June. This is the first view of the Pilot Common Project, duly suited in cooperation with all stakeholders with an additional round to consult with the main stakeholders in the room today.

The DM maybe too young to express a vision, but we would like to share some views.

As the DM, our priority is for implementation, and this should also be a SES priority. We aim to improve the life of EU citizens and if we stay with Research & Development we will never see the benefits or results of the SES. This is crucial and any idea or vision, if it is useful, needs to be implemented. Solutions need to be practical and deployment orientated.

As DM, we have already learned some lessons:

- We should learn from implementation to bring new knowledge about ATM and how to implement in a coordinated manner. We need to be ready for change and understand the way we work in the SES framework
- Our first challenge is that we need to make sure industry is the driving force for success
- We also believe that implementation in a synchronised manner should be a common challenge and needed for performance. This requires:
 - Correct regulation
 - EU funding (private decisions – right environment for right decision)
- The PCP will introduce new functionalities, but there is still a question mark over how to implement, made more confusing the more we work on the DP. I would also like to stress that infrastructure is still fragmented and we should use SESAR as a way to modernise, bring new functionalities and rationalise this fragmentation.

A.3 **Speech given by European Defence Agency – Roland Van Reybroek**

Let me start by stating that the European Defence Agency clearly recognizes and acknowledges the crucial importance of the Single European Sky initiative of the European Commission, which aims at achieving, in the foreseeable future, improved efficiency, increased capacity, enhanced aviation safety, diminished environmental impact of flights and reduced costs of air traffic services.

It is after all in the mutual interest of all airspace users, private and public, commercial and governmental, civil and military, to reach these objectives which will contribute to increased efficiency, flexibility and safety, for all.

It is, I dare say, a shared vision. With this I could in fact conclude my remarks ... However things are of course not quite that simple, as all of us do realize.

It is clearly understood that, seen from the point of view of civil air space users and air navigation service providers, Single European Sky essentially remains an economic necessity, even-though over the last few years the focus has shifted from capacity and delay, to cost efficiency.

The long-term forecasts with regard to air traffic growth may have been revisited and considerably reduced following the recent years' economic downturn, but the pressure on the SESAR programme to deliver results, enabling performance improvements and organisational or structural changes, has only increased given the impact of the economic crisis on the profitability of European Airlines.

The defence community, from its point of view, has always emphasized the prerequisite for military forces to have free and safe access to European airspace for training purposes, air policing and air defence missions; as well as the need to safeguard the ability of the military to deploy to external operation theatres from within the European airspace, as and when required. This does not mean that the military are blind to economic reality. On the contrary, they are confronted with it just as much as their civil counterparts.

After nearly two decades during which European defence organisations were prompted to deliver peace dividends, defence budgets have increasingly come under pressure at times when governments all over Europe are faced with tough economic choices. And today Single European Sky already affects military operations in European airspace, through financial impacts on Member States' defence budgets in all areas of military aviation, starting from technical upgrade programmes to human factors like education and training.

Meanwhile, evolutions in the wider European security and defence environment and recent events in the eastern and southern neighbourhood of the European Union are increasingly pointing out the need for synergies between internal and external security on the one hand, and defence and security research on the other.

This means that civil and military stakeholders alike, be they airspace users, air navigation service providers, airport operators, regulators or policy makers, are facing similar challenges, whether economic, financial, technological, or operational in nature, or related to safety and security.

We have to tackle the same hurdles and are therefore bound to work together, taking into account each other's objectives and constraints in a responsible way.

On the side of the military this starts, in concrete terms and at a very practical level of airspace management, with using only the strictly needed airspace structures and releasing them as quickly as possible. Flexible use of airspace, achieved in close cooperation with civil aviation, today already contributes to significant performance gains for the European ATM Network. And the military have been an active partner in the implementation of functional airspace blocks.

From the side of the civil stakeholders, in much broader terms, it involves the acknowledgement that economic development and prosperity in Europe, which are key for the expansion of commercial air space usage, cannot be durably achieved without guaranteeing the necessary level of internal and external security for European citizens.

This implies that it is vital for Single European Sky that the system accommodates equitable access to fulfil both civil and military needs, ensuring optimum airspace allocation for all airspace users while preserving the capacity of the military to safely operate across national and European airspace, including in the most dense and complex areas. In other words, achieving SES performance objectives AND enhancing military mission effectiveness. The latter involves both operational and general air traffic, and ranges from logistic air transport, through air policing and urgent military interventions in case of contingency situations, to operational deployments originating from within the European airspace; and, in the hopefully not so distant future, safe and efficient integration of Remotely Piloted Aircraft Systems, on a routine basis.

With this in mind, adverse impacts on both military and civil stakeholders should be avoided through systematic and enhanced civil-military dialogue at the earliest possible stage, first at national levels and then at a European level. Both parties should, side-by-side, willingly engage in the cooperative development of harmonised solutions and common mitigation actions.

In this regard, it is recognized that a lot of progress has been achieved since the Military Statement on SES made by the Member States in 2004, which has enabled the military over the last 10 years to contribute to the goals set for SES. The representation of the defence community has considerably improved, allowing the military to be heard, whenever necessary, as a unique stakeholder representing, at the same time, airspace users, air navigation service providers, airports operators, regulators as well as policy makers.

The European Defence Agency has been given various responsibilities regarding the military implications of SES, and the SESAR programme in particular. This engagement started in 2010, when EDA was tasked to support participating Member States in the identification of operational and financial risks expected from the implementation of SESAR. Since then, EDA has been asked to contribute to the European ATM Master Plan which is shaping the SESAR Programme. Our involvement can be considered as recognition of the role of the military community in shaping the future way of flying and we very much value the excellent cooperation with the SESAR Joint Undertaking in this context.

In 2013, through the adoption of EU Implementing Regulation 409, EDA was assigned the specific role and responsibility to facilitate the coordination of military views on SESAR deployment, from Member States and relevant international military organisations.

The creation early last year, of a dedicated cell within EDA, involving seconded national experts from 4 Member States, provides us with a strong platform for interaction with all parties involved in the military implementation of SESAR.

Since his appointment by the Commission, end of last year, our cooperation with the Deployment Manager is developing at a very high pace and becoming more efficient and effective day by day. It is clear that the commitment of the Deployment Manager in this is key and I salute his dedication in joining our efforts.

End of 2014 Ministers of Defence welcomed the proposal for EDA to facilitate the coordination of military views in the whole of SES and tasked EDA to define the related modalities in close coordination with Member States and the Commission, pursuing dialogue with relevant international organisations.

It goes without saying that, in support of the roles we have been given, EDA is closely coordinating with the EU Military Committee and EU Military Staff, especially with regard to operational implications and requirements, as well as training aspects.

EDA also has an observer status in the Single Sky Committee and is attending Rulemaking Advisory Groups (RAG) and Thematic Advisory Groups (TAGs) hosted by EASA, allowing us to provide feedback to Member States and to draw their attention to issues of particular importance.

In addition to that, a three step consultation mechanism was established with the aim to involve NATO and EUROCONTROL, who as you know include military airspace users and ANSPs beyond the ones of the European Union. This mechanism entails early staff-to-staff coordination and access to relevant expertise available in both organisations. The military impact assessments of the deployment programme jointly elaborated in this context are submitted to States for comments. The outcome of the mechanism is a consolidated opinion exported by EDA as a collective view of the military.

We believe that the roles which have been given to EDA in SES/SESAR and the coordination mechanisms which have been established in support of these roles constitute an excellent basis to further develop and improve civil-military cooperation.

What can civil and military stakeholders jointly do better in the context of existing cooperation models?

- Sharing information on relevant research and technology programmes at the earliest possible stage.
- Developing harmonised and coordinated civil-military implementation roadmaps governing the introduction of new technology or organisational and structural change, to ensure sustained compatibility if not interoperability.
- Effectively ensuring the incorporation of military requirements in future SES development & SESAR deployment through appropriate mechanisms, taking into account the need for early alignment of budgetary planning.
- Ensuring fair and equitable access to EU-funding in the context of INEA-calls for civil and military projects alike.
- Further improving coordination in the fields of regulation and standardization, giving preference to using civil or so called 'hybrid' standards (applicable to security and defence areas) to the largest extent possible.
- Avoiding duplication of effort and reducing potential investment burdens, by recognizing that certain military systems are sufficient and robust enough to face SESAR requirements, based on equivalent level of performance.
- Developing mitigation measures for the military, as and when required, including in the regulatory domain.
- Developing air traffic insertion solutions for RPAS, with a view to exploiting all potential synergies and developing common standards. But also, considering common education and training solutions for basic RPAS operations in non-segregated airspace, relying on existing experience and expertise from various operational environments.
- And obviously, jointly addressing cyber and security issues in the broader context of network management and airspace usage.

EDA is ideally placed to facilitate cooperation in all of these areas with relevant military stakeholders and to provide access to a number of existing cooperation platforms for the development of harmonised civil/military solutions.

Let me name just a few examples of such cooperation platforms, before concluding:

- the MAWA or Military Airworthiness Authorities Forum, addressing certification requirements for conventional military aircraft and RPAS, notably building on very valuable work from EASA;
- the Material Standardisation Group, identifying best practice standards and developing dual-use and hybrid standards, taking advantage of the dedicated mechanism which was developed together with the Commission and operationalised earlier this year;
- or the Defence Test and Evaluation Base, harmonising qualification and test procedures and contributing to strengthening the European Defence Technological and Industrial Base.

As I said, these are just a few examples of existing cooperation platforms which could contribute to identify potential areas of synergy and to jointly develop harmonised civil/military solutions, to which EDA can facilitate access.

By means of conclusion I would like to reiterate that the necessity to put into practice the legislative framework for the Single European Sky in a coherent and consistent way is fully shared, taking full account of economic necessities, but also of the requirements resulting from common and national security and defence policies.

The military will strive to be compliant to all extents possible, but may need to rely on equivalence and/or exemptions when absolutely necessary. In other words they will strive to be “as civil as possible”, but will remain “as military as required”.

The shared vision of a Single European Airspace, offering improved efficiency, increased capacity, enhanced aviation safety, diminished environmental impact of flights and reduced costs of air traffic services, can be achieved through constructive cooperation between civil and military stakeholders, based on the collective willingness to achieve the SES performance objectives, while at the same time enhancing military mission effectiveness.

This endeavour should start at national levels between civil and military airspace users, service providers and operators, through joint deployment projects that will concretely help building the Single European Sky piece by piece. It is clear that the aviation industry can also play a key contributing role in this perspective.

The European Defence Agency, for its part, is reaching out and ramping-up its coordination with all relevant stakeholders, in order to be a strong and reliable partner for civil-military cooperation and harmonisation, with a view to jointly building a Single European Sky in which the views and needs of the defence community are duly taken into account.

I thank you for your attention.

B Group discussions

B.1 Technical Framework

Question A1: Evolution of ATM Infrastructure

A1a. How should the future ground ATM infrastructure, in particular ATM systems be harmonised, based on European standards, open source and modular systems, common ATM system architecture, common support services and common procedures, in order to ensure the desirable level of capability, reliability, interoperability and upgradeability at minimum cost? How should this harmonisation be achieved?

Technical harmonisation is the answer to Europe's problems

There was variation in opinion in terms of the percentage contribution of technology to the success of the Single European Sky (SES).

EUROCONTROL believed that technology only contributes to approximately 10% of the success to the SES, the most important factor for improving economic performance being the social dimension. The *SE CAA* agreed and quotes Remote Towers as an example, stating that a lot of human resource is used even at management level.

EDA provided a counter-argument where last summer a faulty SSR caused interference leading to lost tracks on the screens of controllers in the Czech Republic. In investigating the issue, *EASA* highlighted that aircraft in Cologne are tracked by 28 different radars. There is clearly room for rationalisation, but this needs political agreements to share data and the required service level to be defined. Rationalisation is possible; but we need to work together to make to cost savings real.

CANSO and the *IT CAA* disagreed with *EUROCONTROL*, believing that technology has significantly more influence than 10% to the success of SES, although *CANSO* acknowledged the importance of the social dimension. In addition, both *CANSO* and *IT CAA* agreed that standardisation of technology, particularly in CONOPS, is a key driving force for harmonisation. It was also noted by *CANSO* that these standards should be created with a view to moving towards global interoperability in the future.

EUROCONTROL noted that Europe should strive towards common system architecture, because without such a vision, very little change will happen.

To move towards this vision, the *BG ANSP* agreed that mature standards are required that are globally accepted. These standards need to be developed under ICAO and should be industry driven. *CANSO* added that the standards should also be user driven to achieve a common operational concept and harmonise the underlying technology.

The *FR CAA* believe that business models can only change when the technology changes, making technology the key success factor for defragmentation. Within standardisation, they mentioned defining the desirable level of standardisation to ensure that it is not just limited to Europe, and be the correct level of detail to be effective.

What is the role of industry in setting standards?

The *IT CAA* used phone operational systems as an example to iterate that it is important to set the right level of interoperability that means systems can talk to each other, while still enabling development of the technology. However, unlike in the mobile phone industry, they also believed that there should only be one HMI across all systems. The *UK CAA* added that a common standard would allow more buying flexibility in the marketplace. It was also mentioned that there are already examples of standardisation in the form of COOPANS and iTEC, which should help speed up the process.

The *SE CAA* made the point that there should be a decision to standardise either the technology, or the environment in which the technology operates, to ensure that all member states operate in the same way. Standardising the operating environment and procedures may take care of harmonising the technology.

IFATSEA mentioned that the costs of the harmonisation need to be synchronised with passenger demand. The passengers themselves are not represented in this discussion. *EUROCONTROL* complemented this point by suggesting that CEF funding should be used to good effect to incentivise ANSPs into investing in technological harmonisation.

Easyjet added that airlines are the closest representatives to passengers and that we clearly need harmonisation of technology to deliver efficient airspace. However, harmonisation of organisational structures is also required to ensure efficiency.

AIRBUS made the point that strong leadership is required from our own institutions, and that the relationship between industry and regulators needs to be strengthened to ensure appropriate standards.

Question A2: Funding the renewal of ATM infrastructure

A2a. How could the process of harmonisation (referred to in point 1.1) and the financing mechanisms support the defragmentation of ATC system infrastructure?

The *IT CAA* pointed out that there are differences in cost scale between ground infrastructure and air infrastructure. This is important to understand to ensure appropriate distribution of funding.

The *SE CAA* cautioned against optimism from the CEF call, where there were applications for four times the amount of funding that there was.

EUROCONTROL mentioned that there is already a lot of technology on aircraft, and asked whether much investment was needed in this area. *Easyjet* noted that they can't use half of the equipment currently on their aircraft, and recommended that the focus should be on making the best use of the money available to invest in valuable technology that will be used.

CANSO advocated the view that public money should be used to help those ANSPs that will struggle to get the payback from technological investment through traffic income. If they are unable to fund the technology, technical harmonisation will never be achieved. In addition, the *FR CAA* supported an intelligent way to use funding to help 'fringe' ANSPs that may not need certain functionalities that are required in the regulation. In addition, *IFATSEA* proposed a comparison of ANSP models across Europe to identify those ANSPs that receive the most help from the state, and those that do not and so require the most help in implementing technology.

Loan finance was suggested as a way to boost funding for 'good' projects. *Easyjet* mentioned that they already use this method to buy their aircraft, while *CANSO* agreed that it was necessary at a European ATM network level.

To promote defragmentation and competition among ANSPs, the *IT CAA* mentioned that that infrastructure is not owned by the service provider, but instead by an airport, or even the state for example. The *SE CAA* said that this had been done in Sweden where the infrastructure ownership was changed from the service provider to the airports themselves, aiding the competitive market. However, they noted that they still do not have the correct legislation in place for a competitive market where it is still currently written for a monopolistic situation.

CANSO stated that they had investigated placing the main infrastructure under private companies and urged the need for clear specifications based on standards and an operational concept based on interoperability.

The *IT CAA* and *CANSO* also agreed that it is the larger ANSPs that have the influence to trigger big changes in technology, but that standardisation will allow smaller ANSPs to come in and gain in influence.

Question A3: Renewal of ATM Infrastructure

A3a. How to accelerate the pace of change in the way air navigation services are provided by triggering the deployment of new systems in a synchronised manner based on harmonised infrastructure?

EUROCONTROL identified two legal frameworks that appear to be conflicting: the Performance Scheme and the Charging Regime. ANSPs are meant to deliver a certain level of performance as per the performance plans, but in parallel, there is a legal framework that tells an ANSP to carry it out in a certain way. This conflicting regulation needs to be rectified.

The *BG ANSP* recommended that money is not just spent on technology, but is also spent on people and organisations to make change and deployment happen. In this way, even small ANSPs will be able to have a decent say in SESAR2020 if they have enough resources to contribute.

Generally the Deployment Manager is well received by stakeholders where its remit is well defined, and where the function is needed to bring about infrastructure renewal. *CANSO* reiterated this fact by expressing that the role of the DM is to ensure harmonised or synchronised deployment using the public money to best effect.

The discussion turned to whether the best equipped aircraft should be the best served (best equipped; best served). *Easyjet* believed this to be the case, but altered it slightly to emphasise that aircraft should have a minimum level of equipment to be served. *CANSO* mentioned that they are developing this concept with ICAO, and the more detail described, the more complex it is. Overall, the concept is promising but requires better definition.

EUROCONTROL expressed concerns that technical harmonisation might impose a technology choice and emphasised that harmonisation has to be done to an appropriate level. The *European Commission* wanted to be clear that the Deployment Manager is implementing that which is imposed by the *Commission* in the PCP. The performance plans are then supposed to be aligned with the Deployment Plan.

ELFAA highlighted that the nine old interoperability implementing rules, which are the basis of the DP, should not be ignored. Without these rules implemented, we are unable to move forward with the common project.

The *FR CAA* mentioned that the pace of change within technical harmonisation should not be accelerated unnecessarily, running the risk of foregoing appropriate tests before regulation. Both *CANSO* and the *IT CAA* finished the discussions by re-arguing a point made earlier by *AIRBUS*, and the case for clear leadership in deployment with a clear regulatory framework to ensure success.

Finally, the *European Commission* noted that much of the discussion in this group centred around discussions on topics that are applicable today. They were surprised to find that there were no new ideas to the future and urged participants to think about this.

B.2 Service Provision framework

Question B1: The role of industrial partnerships vs the FAB approach

B1a. Is the FAB approach consistent with the development of industrial partnership? How can it be improved?

IACA noted that the question is an odd starting point – it should be about the ‘how’, not ‘what’. The main debate is that we are in a fragmented system and we need to deliver more efficiency and assess how to get there. If FABs are not the right tool for achieving efficiency then we should not proceed.

LPS/CANSO stated that the highest priority is safe ANS, and the cost cutting comes after. Maintaining or increasing safety sometimes increases cost.

What is an industrial partnership? *ENAIRE* stated that it is important to first understand what the meaning of industrial partnerships is. The focus should be what are we looking for compared to the FAB. *ACI Europe* also questioned the objective of an industrial partnership and the scope of what it covered (ie en-route traffic, or also approach and departure, and airports?). For example, the DM is an industrial partnership, with clear objectives. *ACI Europe* suggested that all stakeholders in general should discuss objectives of FABs and industrial partnerships.

The *SESAR DM* is an industry partnership made up of airspace users, airport operators and air navigation service providers.

Are the approaches consistent? *AENA* highlighted confusion - FABs are only three years old, and now industrial partnerships are being discussed. FABs are the tool for less fragmented airspace and related initiatives and should be the framework for industrial partnerships.

The *PRB*, *ICB*, *IFATCA*, *Borealis*, *CANSO*, *IE CAA* and *AT CAA* agreed that FABs and industrial partnerships should be complementary; FABs are a state dimension, and industrial partnerships are outside legislations. The latter will evolve when groups of like-minded ANSPs see the benefits for it, ie to reduce costs. The following points were also raised:

- The *PRB*, *IE CAA* and *DFS/CANSO* do not see the need for European regulation for industrial partnerships. They should not be legislated, which would remove the flexibility, but should be left alone to flourish.
- *AT CAA* noted that the sector doesn't need a new goal by introducing industrial partnerships – they are just another tool.
- *Borealis* and *DFS/CANSO* highlighted the individual hurdles that must be overcome for industrial partnerships - these are not always regulators, but mostly because of the business model and operating restrictions of the ANSP. Also procurement legislation makes it very difficult to buy things collaboratively.
- The *ICB* stated that if we do have an industrial partnership, they are built on a business base, working together for a collective benefit; whereas FABs are an artificial construction, even though originally they were meant to be an area of common operation.
- *IFATCA* noted that industrial partnerships have more potential than FABs, but that they have a common relationship, a common role.
- *ELFAA* noted that industrial partnerships could become a barrier within a FAB.

The following points were also noted specifically about the FABs:

- The *ICB* stated that the FABs were supposed to be functional by today, but what benefits do they bring to the airspace users? If there is agreement that FABs are a proper means to deliver benefits, then there is a problem with the regulation supporting the concept.

- *LPS/CANSO* noted that FABs are not a waste of time, and they are there to do what cannot be done in the free market perspective, and changing legislation to enable states to work together.
- The *AT CAA* noted Europe is not ready for SES, but cooperation to work together to improve performance is working. What happened with FABs, is that the process was micromanaged: a goal was set and the Commission said what and how to do it.
- *IFATCA* indicated that the mind-frame of the sector has been changed by FABs, but they need good regulation and governance. However they can still go in nine different directions so we will then talk about defragmentation of FABs.
- The *NO CAA* noted that we already have FABs in the regulatory framework, and although we are not seeing performance delivery yet ANSPs now have to demonstrate this at state level. Member States should not put up barriers for ANSPs.

B1b. What should we learn from Airbus industry partnership experience? Could it be applied to the ATM supplying industry?

ELFAA is not convinced we want the ATM model to be based on the Airbus model, because we don't want just one big supplier - we want competition. You can't have it both ways - competition, and comfort of current regime.

B1c. What should be the ideal relationship between ANSPs and ATM supplying industries?

This question was not discussed in detail, but was touched on in the answers to B1a above and in competition (QB3). The *ICB* and *Borealis* noted that it is important for ANSPs to have freedom to operate.

Question B2: The role of the Central Service Provider (next generation NM)

B2a. Is there a need for a stronger central service provider? What additional functions/measures would be needed in RP3 and beyond for the NM to ensure an equitable, effective delivery of network-wide performance?

All stakeholders that contributed to discussions (*DFS/CANSO*, *ENAIRES*, *Borealis*, *IE CAA*, *IACA*, *ELFAA*, *Netherlands MOT*) agreed that the Network Manager is a good thing to have. For example, *DFS/CANSO* considered the creation of the Network Manager to be an important regulatory step to enhance coordination between stakeholders. *ELFAA* stated that there is a strong case for the network function - it is the sole point where there is no fragmentation.

With regard to the next generation Network Manager:

- *IACA* noted that it is first important that the Network Manager exercises the powers it already has, and then the Network Manager should seek to gain more power to achieve a better network. However, it is important to first define what the network is and determine how we can have cost effective NM.
- *DFS/CANSO* thought that Europe should continue to have a balanced European network with balanced responsibilities focusing on the NM services that are best provided centrally. The Network Manager is a service provider to industry, not a regulator.
- *Borealis* noted that states see their airspace as a sovereign issue, which is the basic problem with expanding the scope of the Network Manager.

B2b. Should stronger authority, including incentives, be attributed to the NM, for airspace design and management, ATC capacity/demand balancing, airport capacity/demand balancing? Should NM distribute the incentives to the relevant stakeholders based on their performance?

Suggestions included:

- *ELFAA* suggested that the NM should support the Commission and PRB in casting a critical eye on the investments made by ANSPs, as an advisory function on their operational contribution to the network – defending the network interest.
- The *Netherland MOT* queried whether the NM should be the governor of the ANSPs? Instead of having all 28 ANSPs, get them out of the state system and put them under the governance of the NM instead of the other way around.
- *Borealis* and *IE CAA* stated that the NM itself should be part of the SES Performance Scheme and subject to performance regulation.
- The *CH CAA* noted that we have to make a good use of EUROCONTROL expertise for RP3.

B2c. Should institutional arrangements be streamlined so that the Deployment and Network Manager are governed by a single body (e.g. integration of DM and NM)?

Discussion on institutional arrangements included:

- *IACA*, *Borealis* and *ENAIRE* noted that the future Network Manager should be independent and autonomous, outside of EUROCONTROL with industry-led governance. *DFS/CANSO* also thought that the Network Manager should ideally be governed by the operational stakeholders.
- *ENAIRE* noted that we need control over the development of the Network Manager – management and steering.
- *Borealis* stated that there must be separation between service provider and regulator – this is the basis problem of EUROCONTROL being the NM.
- *ELFAA* noted that it is fully behind the NM giving advice to the SESAR Deployment Manager as at the moment.

Question B3: Scope for competition in the provision of ANS

B3a. Which parts of ANS could and should be opened to competition for the market? Is competition in the market feasible in the longer term?

B3b. What is the right balance between competition and cooperation?

B3c. How could industrial partnerships coexist with competition?

A vision for the sector.

The *ICB* stated that when ANSP A is willing to control the traffic at price A, and ANSP B at price B - then we have true competition, and we have to have a quality system that ensures safety etc.

The *SESAR DM* sees a vision in which we should be able to shift from one provider to another in the same geographical space, with otherwise no change. There was support for performance driven changes, done in a transparent manner.

Competition in the market, or for the market?

IACA stated that the only real competition should be competition in the market, not for the market. Until we can have real competition in the market, they would like to have strong economic regulation.

The *PRB* stated that everybody agrees we should improve performance, but it is very slow. A comparison was made to the taxi sector – the sector was very regulated, but Uber has shaken up the

market and improved the service. ATM needs a similar disrupter – introducing competition will allow new entrants and the potential for disruptive business models/technology to bring better service. The emphasis should be on competition in the market, if possible, but for the market still gives new entrants a possibility. *IACA* responded that the focus should be on competition in the market. Today the Performance Scheme is not delivering - why would we trust tomorrow that Member States will choose the right service providers (competition for the market)? *ELFAA* agreed with *IACA*, noting that we live by people that live without competition, so we think competition should be introduced. New entrants are the ideal.

DFS/CANSO did not think there was a vision for competition in the market apart from areas such as coordinated supply, and maybe also infrastructure. But would this model provide the necessary performance? Can a central organisation provide this?

The *IE CAA* noted that competition is great as long that it provides what it is supposed to deliver. Concern was raised that small Service Providers could be driven out with competition, and bigger doesn't always mean better.

ENAIRE stated that the sector just has to follow the Performance Scheme to create a level playing field.

A public service?

ENAIRE noted that ANSPs are a public service, and the integrity and accountability of the service must be preserved. Competition could lead to more costs. When we talk about consolidation, this leads to less competition. They don't want double regulation, to have on top of performance scheme, to tell ANSP the way they are providing it. *IE CAA* also noted that the performance scheme makes them provide the service 24/7. *ELFAA* responded that it is not really a public service – we have the slowness of public service but none of the comforts.

Defined systems and interfaces

Skyguide emphasised the need for a clear set of definitions of what the ATM systems are, with clearly defined interfaces to allow the competition in and for the market. Otherwise we end up in today's technical mess because taking over functions is almost impossible, you have to take over everything, including systems, staff etc.

The *SESAR DM* sees industrial partnership and competition as a type of progress, but a threat if it is not under clear standardisation.

B.3 Regulatory Framework

Question C1: Better and smart regulation (how to reduce administrative burden)

C1a. How can the principles of better regulation of ANSPs be applied?

Reducing State burden: *DE CAA* stated that the tasks of NSAs should be reformed to move away from State regulation and to allow more freedom to ANSPs. Since ANSPs know their business better than anyone else, they are best placed to negotiate price and service provision elements. The role of an NSA should be to ensure fairness, equal access and to control the risk of monopolies, with a particular emphasis on ensuring adequate performance in terms of environment and safety.

Lufthansa stated that the current form of regulation might be perceived as administrative burden by some stakeholders, but given the absence of market and market mechanisms there is an urgent need for regulation. Any vision of SES should therefore include regulatory elements, which in the best case create elements of competition to drive performance and lower costs for airspace users. And in this regard airspace users are not only the airlines benefitting from lower ATC charges, it are mainly passengers because in a level playing field airlines pass those benefits to their customers, competition forces us to do so. Effective Regulation is hence also an important element in terms of consumer protection.

Stability of regulation: *CZ CAA* noted that regular changes in the regulation created difficulties for NSAs and ANSPs, and created an additional level of administrative burden and cost in terms of maintaining compliance.

Better and smart regulation: *DE CAA* highlighted that the problem was not the form of regulation, but rather the level of detail. There is currently too much detail, creating administrative burden. NSAs and ANSPs should be trusted to implement in the appropriate way, depending on the local environment.

EASA noted that no stakeholder would be against better and smart regulation. Whilst they were supportive of performance based regulation, certain indicators and metrics would be required. This naturally creates a high quantity of rules, guidance material and acceptable means of compliance. Building trust between the regulator and implementing actors is important to simplify the regulatory system. There is a need to find a balance.

PRB added that there were several examples of regulations which were too detailed (RP2, FABs, etc) but that the level of detail was necessary if the regulation was to have any chance of achieving its objectives. Better and smart regulation with less detail relies on stakeholders behaving in a way to support the regulation as a whole, setting aside their own interests.

EUROCONTROL questioned the purpose of regulation – to put in place a market (eg economic regulation) or to deal with behaviours (eg safety regulation).

EDA noted that *EASA* Regulation could have some impact on the military, which means that it raises a question on the need to define if and how the military aviation authorities could liaise with the European Aviation Agency.

Safety: *EASA* noted that a performance scheme had implications on safety, and that a separate performance regulation would need a mechanism to monitor safety, without necessarily setting targets.

Designing a competitive market: *IATA* questioned whether a competitive market referred to competition within a market or to competition for a market. The form of regulation required for each scenario would be different – if a market is being competed for, a robust degree of regulation would be required. A lighter layer of regulation would be required to regulate within a market.

DE CAA noted that discussions to open up the ATM market were often halted due to the issue of State's sovereignty, and that this would take a long time to overcome if the market was to be fully opened. The impact of opening up competition should also be explored, to avoid any adverse effects – the provision of public infrastructure means that economic interest must be set aside.

C1b. How can financial and non-financial incentives give the right economic signals to both users and providers replacing hard targets?

DE CAA highlighted that stakeholders liked to take advantage of public funding, and that financial support was important. However, funds should be directed to support big step changes such as the transition from a situation where ATM infrastructure was implemented based on ANSP investment plans, to a situation with SESAR based systems deployed Europe-wide.

C1c. Would a performance scheme still be needed at European level in the long term?

IATA stated that the role of an Independent Economic Regulator should be to set targets, measure performance, and to incentivise/penalise where appropriate. Citing examples of performance plans being developed by ANSPs, an Independent Economic Regulator should be independent from the ANSP and State. Having a central entity with real expertise could be a way forward, and would also alleviate pressure on generally under-resourced NSAs (see Q C2).

CANSO agreed that NSAs were generally under-resourced, but noted that the performance scheme/economic regulation were especially burdensome at European level. *CANSO* believe the future economic regulator should be a framework of Independent Economic Regulators, separate from the legislators.

PT CAA did not agree with the need for a single Independent Economic Regulator, rather supporting a series of regulators. The local dimension should be considered, as the European ATM market is made up of several local markets.

NATO highlighted the need to consider the military dimension, particularly the safety and security aspects, when defining a performance based approach to economic regulation.

Question C2: The evolution of national capabilities (NSA) in face of the ramping up of EASA

C2a. Should additional tasks and responsibilities be attributed to EASA?

C2b. What would be the evolution of local supervisory role, working methods and organisation in the long term as opposed to the central role of EASA as single aviation regulator?

These questions were not directly addressed, but were touched upon in the course of discussions of issues facing NSAs and how they could evolve to find solutions, as described below.

Under-resourced NSAs: *DE CAA* highlighted the problems that NSAs are facing, particularly the difficulties in attracting qualified personnel due to the salary gap between ATCOs and NSAs staff. Time and trust from all the various stakeholders will provide the solution.

CZ CAA agreed, adding that the level of pay in an NSA is four times less than that of a senior ATCO.

PT CAA shared their experience from becoming entirely independent from the State/Ministry, with their own financial resources. This has enabled competitive salaries.

Evolution of NSAs: building trust for a level playing field: *FI CAA* stated that detailed regulation was required in order to ensure equivalent application of regulation at national level. The importance of collaboration was highlighted; a more high level form of regulation would necessitate cooperation between NSAs. They also noted that industrial partnerships at ANSP level would also change the behaviour of the NSAs, but could be supported through enhanced cooperation.

EASA agreed, adding that NSA cooperation could support the role-out of new concepts by reducing duplication of work – for example in the case of remote/virtual towers.

CANSO highlighted that trust was a key element for a level playing field, this would be supported by a strong regulator. In the Swedish ANSP's experience (an open market position with a monopolised service provider), there was a strong need for regulation – but only where necessary. It was also

noted that increased regulation translates to higher costs, conflicting with the trend towards cost reduction.

DE CAA reminded participants about the NSA Cooperation Platform. This is a strong working group, and could evolve into an institutionalised common body of NSAs (not necessarily like EASA). There is still a role for both regulators at local level and EASA in order to ensure a level playing field. For example, the EU-wide targets are currently an average of national targets. A better approach could be to set EU-wide targets under the responsibility of EASA, and national targets under the NSAs.

Question C3: Human resources

C3a. What initiatives do you recommend in this respect eg enhanced social dialogue, workforce observatory, virtual mobility, common training curriculum, more flexible employment conditions, incentives such as sharing of productivity gains between users, providers and staff, subcontracting support and maintenance services, etc.?

C3b. What should be regulated? What should be addressed through competition and outsourcing?

These questions were not discussed explicitly, but were explored through conversations on human factors and social dialogue, as described below.

The importance of the fifth pillar: ETF stated the importance of human factors in achieving SES. A social impact assessment should be performed in the development of regulatory procedures. There is a need for stable regulation with adequate consideration of social aspects – particularly given the interest in opening markets and increasing competition.

Improving social dialogue: ETF stated that improving social dialogue should be a priority – this is a topic which industry is already preparing a position on.

CANSO explained that difficult initiatives could only be achieved with buy-in from social partners. A local and continuous social dialogue throughout the process was needed for success.

Conditions of work: PT CAA suggested that EASA should develop a set of recommendations on conditions of work for ATCOs (going beyond current licensing rules). There was general agreement that the Government should not interfere in the relationship between industry and the trade unions.

Enabling ATCO mobility: Whilst in favour of enabling ATCO mobility, ETF stated that this should be on a voluntary basis for medium to long-term periods. It should not be a solution to short term capacity problems. Addressing cultural and language barriers at industry level is an enabler to ATCO mobility.

Lufthansa added that increased mobility could improve performance and lower costs, and bring an element of competition. IATA stated that this would increase complexity which would not be easily assessed by the consumer – this should be borne in mind.

CANSO stated that enabling mobility was not an easy process. Whilst regulation has provisions for the movement of workers, there are a number of other legal aspects and barriers put in place by regulations, such as ATCO licensing rules.

DE CAA raised the issue that, when moving ACC, an ATCO only retains their basic ab initio training. All other training must be completed from the beginning. A more pragmatic approach could be taken to ease the process.

EUROCONTROL raised the possibility of virtual mobility, referring to the provision of ATC in the Serbia/Montenegro FIR by HungaroControl. It is possible, but heavily reliant on the right technology.

C Attendance list

Surname	First name	Group	Organisation
Speakers from the SES-related bodies			
DLUGI	Olaf	-	ICB
GRIFFITHS	Peter	-	PRB
GUILLERMET	Florian	-	SJU
SULTANA	Joe	-	NM
TYTGAT	Luc	-	EASA
VANREYBROECK	Roland	-	EDA
Industry Experts in the afternoon panel			
BARTOS	Miroslav	Service	CANSO
CURRAN	Peter	Regulation	IATA - panel
CURTIS	Aaron	Service	ETF - panel
EICHINGER	Andreas	Service	FRAPORT - panel
HAMY	Marc	Technology	Airbus - panel
HEERBAART	Adriaan	Regulation	Eurocontrol - panel
GADSDEN	Chris	Technology	Easyjet - panel
KALIVODA	Michal	Technology	NATO - panel
LALLOUETTE	Luc	Regulation	Thales - panel
Workshop Participants			
BIDLO	David	Regulation	CZ MIL
BOUVIER	Denis	Regulation	EDA
DE ANDRADE	Paolo	Regulation	PT CAA
DE WITTE	Freek	Regulation	SDM
DEMETRIOU	Panayiota	Regulation	CY CAA
DER	Erika	Regulation	HU CAA
DICK	Volker	Regulation	ATCEUC
d'IDDIO	Luigi	Regulation	ETF
ERIKSSON	Jan	Regulation	AEA
GOURG	Stephane	Regulation	FR MIL
GULDER	Alfred	Regulation	AT NSA
HANLON	John	Regulation	ELFAA
HERMANN	Nikolaus	Regulation	DE NSA
Holtzrin-Kjellander	Carin	Regulation	CANSO/LFV
HUTCHINS	Marja	Regulation	PRB
KEREKGARTO	Emese	Regulation	HU CAA
KNAUER	Jannik	Regulation	DE MIL
KOCJAN	Sabina	Regulation	SI CAA
LAVELLE	James	Regulation	IE CAA
LOPEZ URQUIZA	Itziar	Regulation	ES CAA
MYLLARNIEMI	Jussi	Regulation	EASA
NEUBERTOVA	Renata	Regulation	CZ CAA
NITSCHKE	Dirk	Regulation	DE CAA
PETIGNAT	Philippe	Regulation	CH MIL
RAGNARSSON	Anne-Marie	Regulation	SE CAA
ROSENBERG	Erik Rosenberg	Regulation	NO CAA
SCHIEDER	Moritz	Regulation	Austrian Airlines

Surname	First name	Group	Organisation
SCHWABE	Marc	Regulation	Lufthansa
SIEKKINEN	Kari	Regulation	FI CAA
SIMONSSON	Peter	Regulation	CANSO/NATS
VEITAS	Vilius	Regulation	LT CAA
ZALEWSKA	Anna	Regulation	UK CAA
ALONSO	Gonzalo	Service	ENAIRE
ANDREASON	Kurt	Service	Borealis/ICB
BENITO-SALATTI	Pedro-María	Service	ES MIL
DE VRIES	Eric	Service	NL CAA
GOROG	Michel	Service	SDM
HAND	Stephen	Service	UK CAA
HUBERT	Ivan	Service	ANS CZ
HUET	Francois	Service	SJU
JACOB	Christophe	Service	EUMETNET
JANKOVEC	Oliver	Service	ACI
KAIRYS	Vidmantas	Service	LT CAA
LAMBERT	Anne	Service	PRB
LUST	Sylviane	Service	IACA
MENNELLA	Stefan	Service	Skyguide
MUTHMANN	Joern	Service	FRAPORT
NEERING	Paul	Service	IFATCA
NIRSCHL	Franz	Service	AT CAA
SAGUD	Ozren	Service	SI CAA
SCHWENK	Ruediger	Service	CANSO/DFS
SIMONNÆS	Tor	Service	NO CAA
SPARPAGLIA	Ferdinando	Service	IT MIL
SPILIOTIS	Panos	Service	ACI
USHER	David	Service	IE CAA
ZIMMERMANN	Francine	Service	CH CAA
BAUMGARTNER	Marc	Technology	PRB
BIER	Patricia	Technology	CANSO/LVNL
CREMERS	Leon	Technology	NL MIL
FALESSI	Luca	Technology	IT CAA
FRON	Xavier	Technology	Eurocontrol
ILIEV	Ivan	Technology	BG ANSP
LAHTINEN	Antero	Technology	PRB
LUENGO	David	Technology	Indra
MAGISTER	Tone	Technology	SI CAA
MANTOUX	Gilles	Technology	FR CAA
MARTIS	Guenter	Technology	CANSO
MIAILLER	Bernard	Technology	Eurocontrol
MULLER	Romain	Technology	EBAA
PRUMM	Pierre Dominique	Technology	FRAPORT
O'DRISCOLL	Stephen	Technology	EIB
WARINSKO	Nicolas	Technology	SDM
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Workshop Facilitators			
CHANNON	Emma	Technology	Helios - rapporteur
DAVIES	Claire	Service	Helios - facilitator
FRANKE-CHAUDET	Isabel	Service	Helios - rapporteur
PHELPS	David	Regulation	Helios - rapporteur
RAVENHILL	Paul	Regulation	Helios - facilitator
SHORTHOSE	Mike	Technology	Helios - facilitator/moderator