Single European Sky Interoperability Regulation
EU Single Aviation Market based on high common EU standards

The Commission has worked towards

- establishing a single aviation market,
- adopting common rules in most relevant areas of the air transport system,
- enhancing competition and efficiency throughout the whole value chain of aviation,
- developing an external dimension of the EU single aviation market,

but we still have not achieved to build the Single European Sky with a single regulatory framework and subsequent performance standards
Single European Sky

Towards a Common Aviation Area
Single European Sky
Where are we today…I

SES started in 2004 with its 4 Regulations by laying down the foundations for

Legal and institutional framework

- Single Sky Committee assists the Commission in adopting the enabling legislation through comitology with civ/military participation, EASA, ICAO and 3rd countries

- Industry Consultation Body enables all industry stakeholders and social partners to contribute to legislation

- Technical support from Eurocontrol in the rulemaking process through mandates
Single European Sky
Where are we today…II

- Separation of service provision from regulation
  - Each Member State has established a National Supervisory Authority (NSA) to ensure effective regulation and for avoiding conflict of interests. NSAs are also exercising a safety oversight function.
  - Since 20 June 2007, air navigation service providers have become subject to certification by the NSAs (Regulation 2096/2005).

- Transparency of charges
  - Regulation 1794/2006 on a common charging scheme ensures full transparency in the establishment of air navigation service charges.
Single European Sky
Where are we today…III

- **Harmonisation in licensing of controllers**
  - Adoption of Directive 2006/23/CE that will achieve a harmonised level of competence and an improved mobility of workers (Important social dimension as there are i.e. 20,000 ATM controllers within the EU)

- **Advances in the efficient use of airspace**
  - Common provisions for the flexible use (civil and military) of airspace in accordance with Regulation 2150/2005
  - Harmonisation of airspace classification in the upper airspace in accordance with Regulation 730/2006
Single European Sky
Where are we today...IV

Towards interoperable equipment

- An effective interoperability mechanism has been established to adopt implementing rules (Regulations) and to develop Community specifications (Standards)

- So far 6 implementing rules & 4 Community specifications have been adopted

- Indispensable framework for the efficient implementation of SESAR (Single European Sky ATM Research) and incorporated in the ATM Masterplan
Single European Sky Interoperability

Objective and scope

» Interoperability means a set of functional, technical and operational properties required of the ATM systems in order to enable its safe, seamless and efficient operation

» Interoperability between the different systems, their constituents and associated procedures of the European ATM network

» Coordinated introduction of new agreed and validated concepts of operations or technology
Single European Sky Interoperability

Legislative Tools

SES Interoperability Regulation (552/2004)

Mandatory Layer to implement the ERs. Developed under Commission Mandates

Essential Requirements

Implementing Rules

Community Specifications

European standards for systems, or constituents, together with the relevant provisions, drawn up by European Standardisation bodies in cooperation with EUROCAE

Specifications drawn up by Eurocontrol on matters of operational coordination between Air NavigationService Providers

Recognized as Means of Compliance with the ER / IR

Conformity Assessment
Single European Sky
and what are challenges in the future:

- **Environment**
  - Aviation’s share of EU greenhouse gas emissions (currently 3%) is predicted to increase.
  - Network improvements could save up to 4.8 mio tons of CO\(^2\) per year

- **Fragmentation**
  - Significant additional costs for airspace users (€2 bn per year could be saved by reducing fragmentation)

- **Economics**
  - Cost efficiency efforts are not sufficient
  - Liberalization of aviation market vs. Harmonization of ATM
  - Current European route network is an amalgamation of national routes that makes intra-European flights 15% less efficient than domestic flights, resulting in additional costs of €1.4 bn per year

- **Safety**
  - Cannot be compromised and must be enhanced with increased traffic levels

- **Capacity**
  - Delay still accumulate to €1.3 bn per year and further increase of traffic (250% increase within the next 20 years, growth rate of new EU States exceeds 10%) with enlargement and Open Skies
Single European Sky Fragmentation Example

Sectors and routes are designed according to national borders rather than traffic flows.

ACCs below optimal economic size, duplication of systems & piecemeal procurement, high contingency costs, support costs on research, training & admin too high.
Single European Sky 2nd package
What are our goals...

- put the emphasis on the right governance using the Community method as driving force of aviation regulation
- ensure the highest safety standards by implementing a comprehensive Total System Approach
- focus on a more efficient and performing but also still human centered air transport network including the pan-European perspective
- establish a sustainable European air transport system reducing the effects of aviation on the climate change
Single European Sky 2nd package is based on 4 pillars

- PERFORMANCE
- SAFETY
- CAPACITY
- TECHNOLOGY
PERFORMANCE

» Introduction of a **performance-driven approach** and **framework** (including **independent performance review**) on **safety**, **environment**, **capacity** and **cost-efficiency**, with the appropriate elements (incentives) to drive the change process

» **Economic and performance regulation** with specific **targets at Community level**:
  • Performance Target Setting for the Network
  • Translate EU targets into national/local targets
  • Adopt local targets and ensure coherence between local/EU targets

» Involvement of all stakeholders, more **effective civil/military cooperation** and **social dialogue**, support to the **Eurocontrol reform**
PERFORMANCE

» Acceleration of the creation and integration of Air Navigation Services in Functional Blocks of Airspace (FABs) towards dates politically committed by States (2012 implementation) and elimination of national obstacles

» Enable Air Navigation Service Providers to perform their services in a more business-oriented and transparent manner

» Network Management Function, improving management/coordination of network functions and optimising the use of the network (including airport and en-route slot coordination)

» Better flight-efficiency to be achieved through improvement of the network performance and more efficient use of resources
SAFETY

» Effective use of the **Community approach**

» **Extension of EASA competence** to airports, air navigation services and air traffic management

» Implementation of the **Total** (gate-to-gate) **System Approach**

» **Strengthen** the oversight of National Supervisory Authorities
CAPACITY

» **Action Plan for** airport capacity, efficiency and safety in Europe

» Establishment of an **Observatory** (Nov 2008) to exchange and monitor data/information on capacity (capacity assessment, capacity planning, co-modality, inter-modality)

» Implementation of an integrated **Capacity Management** with an increased predictability (airport capacity management determines ATM capacity) and evolution to time based operation

» Airports must be seen as an **integral part of the ATM network**
  - Entry and Exit points of the network
  - Effective use of capacity depends on all elements of transport chain
  - ‘Green’ operations require real-time flow of information (e.g. SWIM) between all stakeholders
TECHNOLOGY

» SESAR the **technological / industrial component**
  of the Single European Sky

» **Improvements** to be delivered by SESAR from **2013** onwards

» **SESAR program** in 3 phases

  • Definition phase (2004 – 2008) – 60 M€
  • Development phase (2008 -2013) – 2,1 BN€
  • Deployment phase (2013 -2020) – 25 BN€

» SESAR JU will drive technological improvements (converge fragmented R&D efforts) in line with the ATM-Masterplan

» JU membership negotiations with industry and stakeholders

» Completion of Definition phase and endorsement of the ATM-Masterplan by the Transport Council in 2008

» Close cooperation between SESAR and CLEAN SKY

» Global interoperability (SESAR / NextGen)

➢ Adoption of implementation elements through SES legal framework after validation of improvements/performance targets
Key to the SESAR concept is the business trajectory principle in which the users of the airspace and controllers define together, through a collaborative process, the optimal flight path.
TECHNOLOGY SESAR concept

- Taking full advantage of existing and newly developed technologies (such as in GALILEO) SESAR’s target concept relies on a number of new key features:

- the Network Operation Plan, a dynamic rolling plan for continuous operations that ensures a common view of the network situation.
- Full Integration of Airport operations as part of ATM and the planning process.
- Trajectory management, reducing the constraints of airspace organisation to a minimum.
- New aircraft separation modes allowing increased safety, capacity and efficiency.
- System wide information management (SWIM) securely connecting all the ATM stakeholders which will share the same data.
- Humans as the central decision makers: controllers and pilots will be assisted by new automated functions to ease their workload and enable complex decision making processes.
TECHNOLOGY
SESAR Future ATM Concept

The driver: Performance Based Approach

ATM intranet  Collaborative Decision Making  Airports as Integrated Partners  Network Management

The foundation: Trajectory Based Operations

Source: SESAR JU
TECHNOLOGY

Achieving advanced automation in a shared trajectory environment
- Dynamic TMA and flexible military structures
- Dynamic ATFM using RB T
- Management revision of RB T using datalink

Extending operations with advanced separation modes
- Dynamic Mobile Area, 3D-PTC user preferred trajectories
- ASEP C&P, SVS in low visibility conditions
- Compatibility between airborne and ground safety nets

Implementing net-centric trajectory management
- SWIM enabled NOP using RB T/SBT
- Full set of complexity management tools
- ASPA & M
- 2D-PTC on predefined routes
- Automated surface movement planning and routing
- Adjustment of separation based on ground wake vortex detection

Preparing trajectory based operations
- Interactive rolling NOP, Manual UDP
- AMAN/DMAN integration
- ATSA in flight and on surface, ATSA-ITP
- Improved low visibility procedures

Rolling out current Best Practices
- CDA, flexible sectorisation, Continuous Climb Departure, Initial Data link, Automatic Flight Conformance Monitoring,
- Basic Departure Management (DMAN), Ground based safety nets, Use of Runway Occupancy Time (ROT) Reduction Techniques

Available for Operations

Date of Initial Operating Capability

2009 2013 2017 2020 2025

Directorate General for Energy and Transport

ETSI Single European Sky Workshop, December 2008
ATM Masterplan

- **Interoperability and standardisation**
  Interoperability requires internationally agreed standards and norms. The SESAR development phase will deliver the technical ground for defining them. A standardisation roadmap shall be developed and kept up to date as a specific chapter of the ATM Master Plan. It will allow ATM stakeholders to anticipate and coordinate their efforts to ease the adoption of SESAR technical proposals as standards and norms by the relevant standardisation bodies.

- **Deployment**
  The deployment phase of SESAR consists of a succession of three Implementation Packages coming with Operational Improvements. Implementation Packages deployment shall be supported by existing Community legal framework (Implementing Rules and Community Specifications). This will form a regulatory roadmap to be developed by the Commission and kept consistent with the ATM Master Plan.
TECHNOLOGY Goals

The ultimate goal of SESAR is to ensure sustainable air transport development in Europe in a safe and efficient manner through a performance driven approach. The key performance targets are:

- enabling a three-fold increase in capacity
- improving safety by a factor of 10
- reducing by 10% the environmental impact per flight
- cutting ATM costs by 50%
At the end we all need to achieve the Single European Sky...

✓ in order to develop a global policy approach and to enhance performance, safety, capacity, cost-efficiency and environmental contribution of the European air transport system

✓ with a Community performance framework in order to tackle fragmentation, reduce flight inefficiencies and to ensure a sustainable development of aviation

✓ including the pan-European dimension and the integration of societal requirements in line with the objectives of the Lisbon agenda
THANK YOU!

http://ec.europa.eu/transport/air_portal/index_en.htm