Directorate-General for Energy and Transport

Single European Sky

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EUROPEAN COMMISSION

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N34

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15th ✦✦✦ IFIS

EC Community Aviation Policy

- To overcome fragmentation through a <u>Single Aviation Market</u> which guarantees full access without discrimination

- To ensure the proper functioning of the Single Market through <u>common rules and standards</u>

- To attain an <u>efficient and sustainable</u> European air transport system

EU Single Aviation Market some key figures

- A €140bn business in 2006
- Carrying over 730 million passengers in 2006 (of which 480 million within EU)
- ~11 million tons of cargo in 2005
- ~35% of world air passenger traffic (2006)
- +150 airlines (scheduled passenger carriers)
- +400 airports (scheduled services)
- ~5,300 aircrafts in service (2006)
- 2.8 million indirect jobs (3% of EU workforce), Europe's 30 largest airlines alone employ 360,000 staff

EU Single Aviation Market some major achievements

● Based on a comprehensive body of common legislation implemented over past 15 years since 1992 "Third Package":

» Fares, market access (1992)
» Air passenger rights (1991 + 2004)
» Computerized Reservation Systems CRS (1999)
» Noise (1992 + 2002)
» Safety (2002 + 2005 + 2006)
» Social issues (licences, flight times 1992 + 2007)
» Insurance (2004)
» Allocation of slots (1993 + 2004)
» Airport Ground Handling (1996)
» Airport Security (2002 + 2006 + IRs)
» Strict competition and state aid rules (EC Treaty)
» ATM - Single European Sky (2004 + IRs) – SESAR
  • **No 549/2004:** *Framework*
  • **No 550/2004:** *Service Provision*
  • **No 551/2004:** *Airspace*
  • **No 552/2004:** *Interoperability*

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 need to build the Single European Sky as a single airspace continuum with a single regulatory framework and performance standards

Single European Sky

Pan-European dimension also beyond EU-27
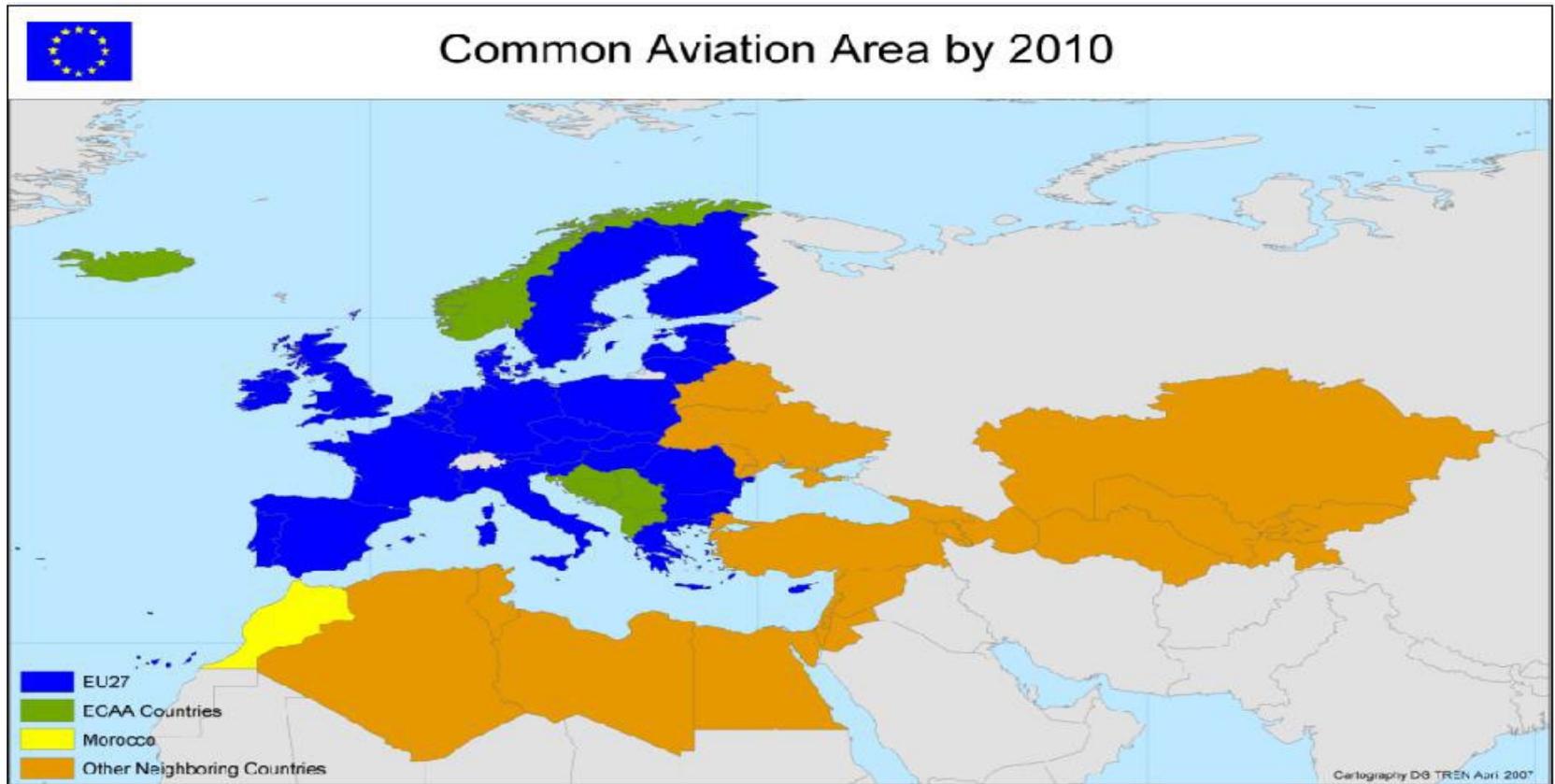
Single European Sky
Where are we today…I

> **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

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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 establishement of air navigation service charges

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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 4 implementing rules & 3 Community specifications have been adopted

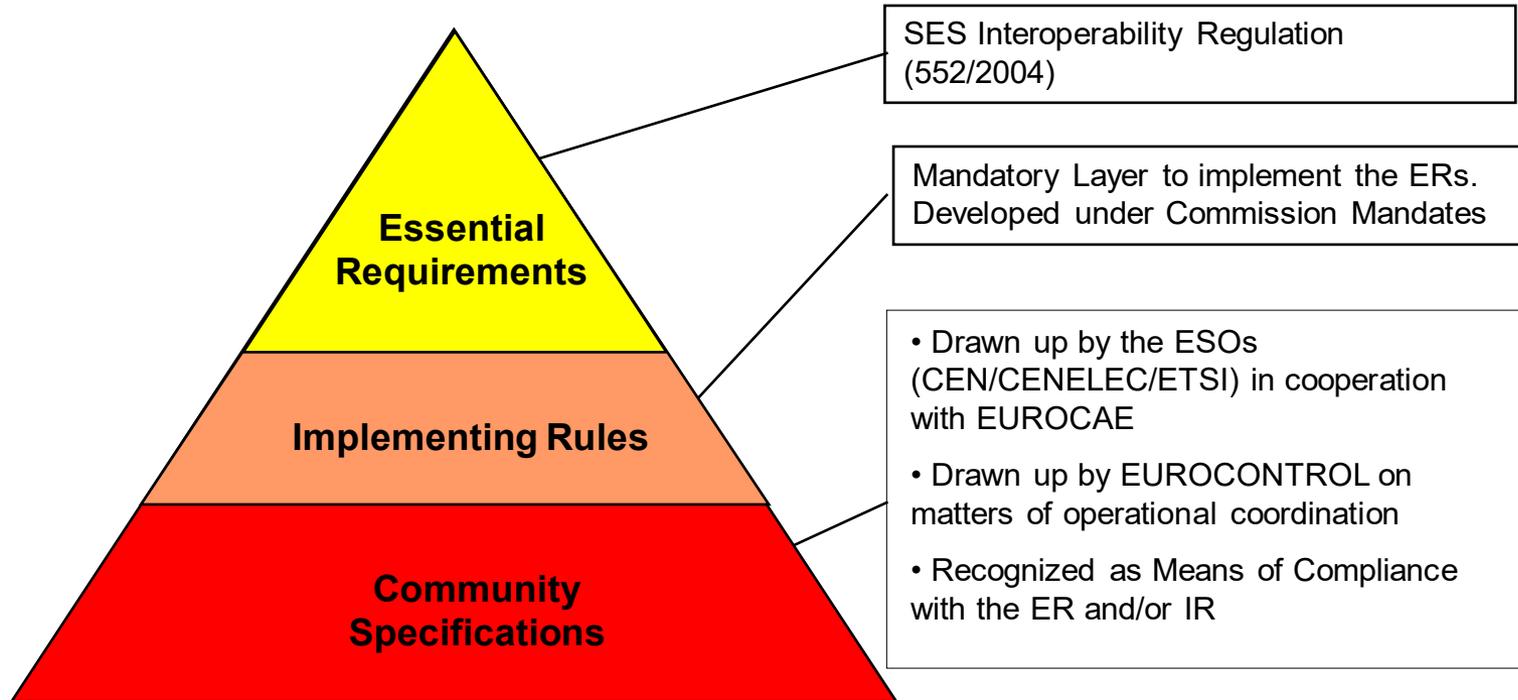 » Indispensable mechanism for the efficient implementation of SESAR (Single European Sky ATM Research)

Single European Sky Interoperability

● **<u>Objective and scope</u>**

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

» Interoperability between the different **<u>systems</u>**, their **<u>constituents</u>** and associated **<u>procedures</u>** of the European ATM network

» Coordinated introduction of new agreed and validated concepts of operations or technology

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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

- Drawn up by the ESOs (CEN/CENELEC/ETSI) in cooperation with EUROCAE

- Drawn up by EUROCONTROL on matters of operational coordination

- Recognized as Means of Compliance with the ER and/or IR

- ## Conformity Assessment

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Single European Sky Interoperability ERs

- **Essential Requirements (ERs) are compulsory** (reference Annex 2 of the interoperability regulation)

  - » Seamless operation,
  - » Safety,
  - » Civil-military coordination,
  - » Support of new concepts of operation,
  - » Environmental constraints,
  - » Principles governing the logical architecture,
  - » Principles governing the construction of systems

Single European Sky Interoperability IRs

- **Implementing Rules (IRs) are developed by Eurocontrol in conformity with a mandate issued by the EC and**

  » shall determine any specific requirement that complements or refines the Essential Requirements

  » shall also describe the coordinated introduction of new, agreed and validated concepts of operation or technology

  » shall specify the conditions of implementation, including dates

  » shall be adopted by the Commission after the formal opinion of the Single Sky Committee (SSC), published in the Official Journal and shall also be compulsory (for interoperability)

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Single European Sky Interoperability CSs

- **<u>Community Specifications (CSs) are possible means of compliance and will be mandated by the EC being either</u>**

  - ➢ **European standards**
    (drawn up by European Standardisation Organisations CEN/CENELEC/ETSI in cooperation with EUROCAE)

  - ➢ **Eurocontrol specifications**
    (for operational coordination purposes)

  Systems, procedures and constituents which meet Community Specifications are presumed to be compliant

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Single European Sky CS Development Steps

Industry Consultation Body ICB

ICB Interoperability Sub Group

ATMSCG
Air Traffic Management Standards Coordination Group
CEN - CENELEC - ETSI - EUROCAE - EUROCONTROL - EASA - *EC/EFTA*

Interoperability Regulation 552/04
Article 4.1.a …European standards for systems or constituents, together with the relevant provisions, drawn up by European Standardisation bodies in cooperation with EUROCAE

Interoperability Regulation 552/04
Article 4.1.b …Specifications drawn up by Eurocontrol on matters of operational coordination between Air NavigationService Providers

Presentation to **COMMITTEE ON « STANDARDS & TECHNICAL REGULATIONS » (98/34 COMMITTEE)** and mandate in accordance with **Standardisation Directive 98/34**

European Commission requests Eurocontrol to draw up specifications following the **Single Sky Committee (SSC)** advisory procedure in accordance with **Framework Regulation 549/04**

European Standardisation Organisation development (drafting and consultation) of European standards (Community Specification) and ESOs EN approval process (including publication)

Development of Community Specifications within the Eurocontrol regulatory framework

EC publishes references to European Standards in the Official Journal of the European Union

After the SSC advisory procedure, EC publishes references to Eurocontrol specifications in the Official Journal of the European Union

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Single European Sky Interoperability CS content

- **CS can contain the following elements:**

  » **Technical** part

  » **Operational** part

  » **Procedural** part

  » **Certification** and/or **Institutional** part

  » **Maintenance** and **Operation** part

  » **Implementation guidance material**

  » **Compliance matrix** (Annex SA) referring to the applicable requirements in terms of (ERs and/or IRs)

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Single European Sky Interoperability CS (mandate M/408)

Development of European standards for Approach with Vertical Guidance up to the level of detail required for the implementation, for the following types of operations:

1. APV Baro-VNAV operations, where the vertical guidance is derived from the aircraft Flight Management Systems (FMS) with position derived from onboard (barometric referenced) air data information and the lateral guidance is derived from a RNAV multi-sensor positioning solution within the FMS, taking into account DME/DME/Inertial and GNSS Airborne Based Augmentation System (ABAS) augmented position.

2. APV SBAS I/II operations, where the vertical and horizontal guidance is provided by GNSS with a Satellite Based Augmentation System (SBAS).

3. Future APV operations, where the vertical and horizontal guidance will be provided Global Navigation Satellite Systems like Galileo that are currently under development.

and in particular:

• Minimum Operational Performance Specifications (MOPS) for the APV SBAS I/II airborne equipment in coordination with EUROCAE;

• Detailed guidelines on APV procedure development and implementation;

• Detailed Guidelines on the APV procedure certification/approval issues (in cooperation with the EASA Rulemaking Task (20.003) for the airborne systems developing AMC material for RNAV (GNSS) approach operations – both airworthiness and flight operations guidance);

• Test and validation procedures including guidelines on calibration flights.

Development of standardization deliverables for the implementation of the APV standard.

Single European Sky CS Process
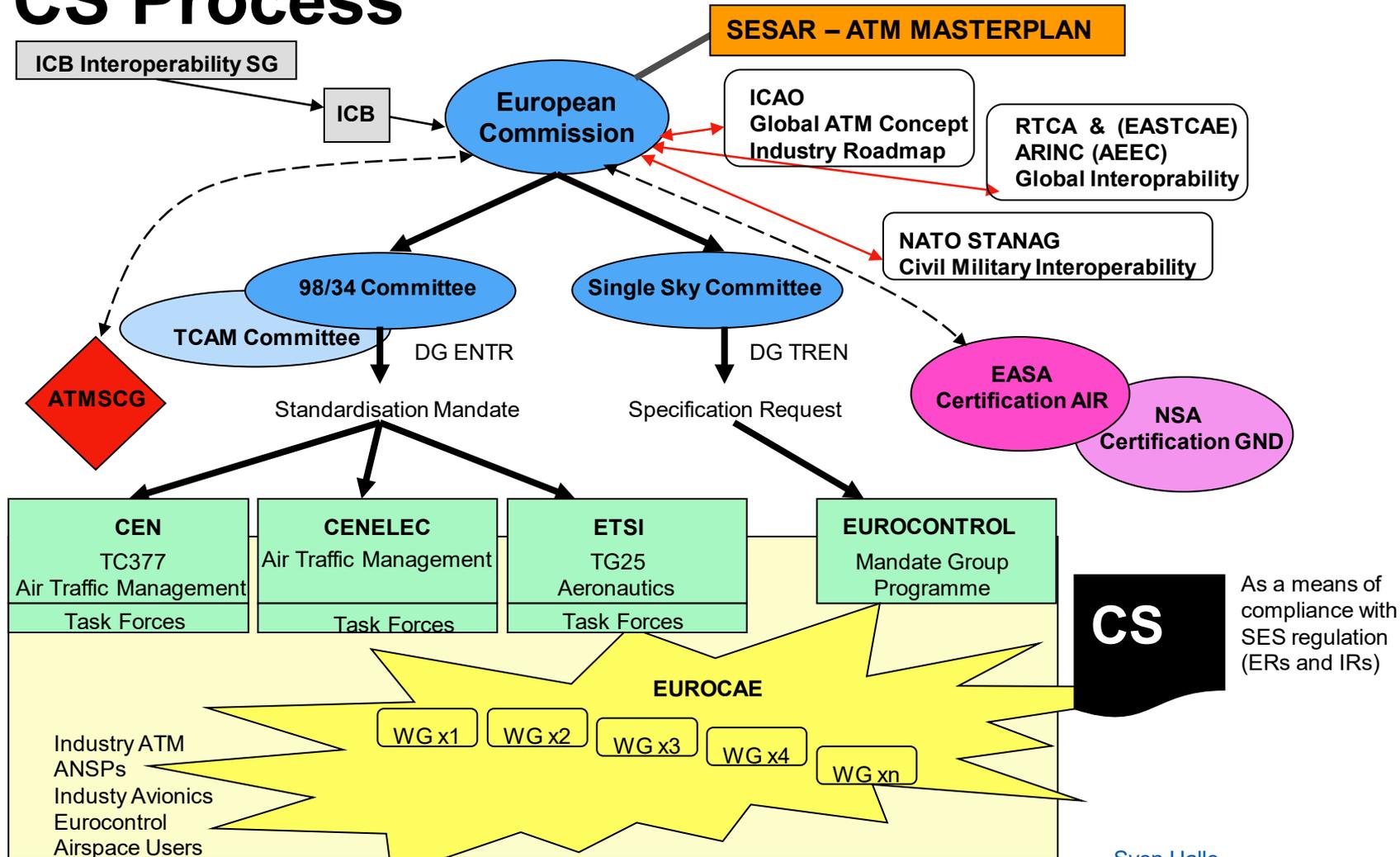
Single European Sky
The key challenges in the future:

- **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**
  - » 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 2nd package What are our goals…

➢ put the emphasis on the right <u>governance</u> using the <u>Community method</u> as driving force of aviation regulation

➢ ensure the <u>highest safety standards</u> by implementing a comprehensive <u>Total System Approach</u>

➢ focus on a <u>more efficient and performing air transport network</u> including the pan-European perspective

➢ establish a <u>sustainable</u> European air transport system reducing the effects of aviation on the climate change

Single European Sky 2nd package will be based on 4 pillars

➢ **PERFORMANCE**

➢ **TECHNOLOGY**

➢ **SAFETY**

➢ **CAPACITY**

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PERFORMANCE

» Introduction of a **performance-driven approach** and **framework** (including **independent performance review)** on <u>safety</u>, <u>environment</u>, <u>capacity</u> and <u>cost efficiency</u>, with the appropriate incentives / disincentives 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/regional targets

- Ensure coherence between regional and EU targets

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

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PERFORMANCE
The Performance Regulation

- ➤ Will address **key performance areas for the network**
  - ▪ Safety, Capacity / Delays, Flight Efficiency / Environment, Cost Efficiency…

- ➤ Will make use of
  - ▪ a **Performance Review** capacity assisting the Commission in the setting of Europe-wide targets and in ensuring coherence between local/regional and European targets
  - ▪ **NSAs** with enhanced role (SES local level implementation) and independence

- ➤ Will be based on a balance between local level and European decision-making
  - ▪ **Proposals** on performance plans done at National/Regional level (by NSAs), ensuring access to local expertise and specificities
  - ▪ Final **decision** or **arbitration** at European level
  - ▪ This will allow ensuring **consistency** of local performance plans with network targets

PERFORMANCE

» Acceleration of the **creation and integration of Air Navigation Services in Functional Blocks of Airspace (FABs)** towards dates politically committed by States (2010 commitment, 2012 implementation) and **elimination of national obstacles** to make FABs really happen

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

» Ensure **full separation between service provision and regulation**

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

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PERFORMANCE

» Ensure appropriate **involvement of all stakeholders** and a more effective **civil/military cooperation**

» Establish an effective **social dialogue**

» Support to the **reform of Eurocontrol** towards better integration with the SES architecture:
- Develop synergy with the European Community as the political centre and Eurocontrol as the technical centre
- Support internal change process to empower and focus towards the SES logic
- Improve governance to involve industry in operational tasks
- Provide clear Community requirements for network functions
- Focus on SESAR related activities
- Eurocontrol budget must reflect priorities

TECHNOLOGY

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

» **Improvements** to be delivered by SESAR in **2013**

» **SESAR program** in 3 phases

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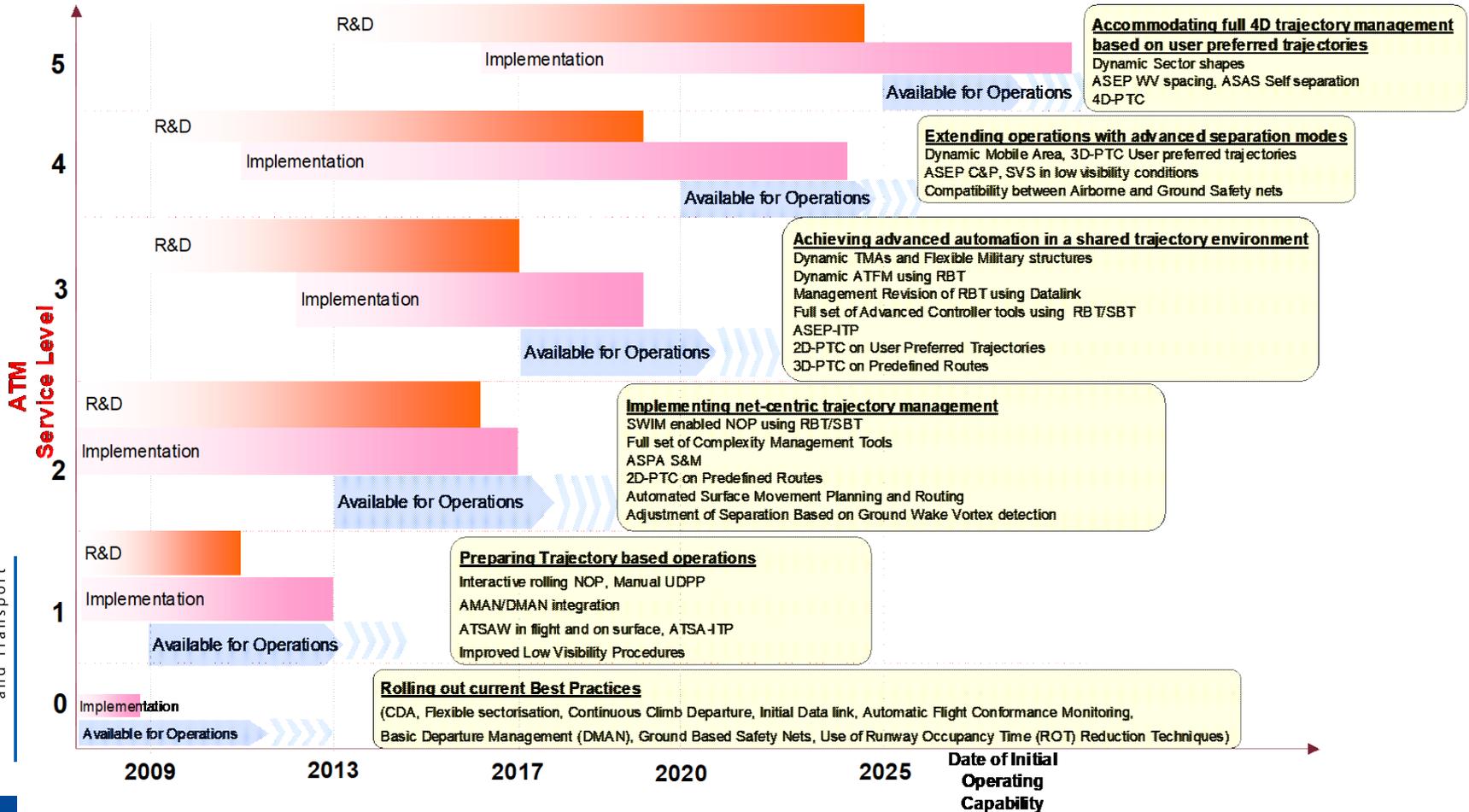
TECHNOLOGY

SESAR

» **SESAR Joint Undertaking (JU)** established in 2007
» 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 tools after validation of improvements/performance targets

TECHNOLOGY
SESAR concept

» 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.

» 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
ATM-Masterplan

TECHNOLOGY
ATM service level changes

Moving from Airspace to Trajectory Based Operations

- Enhanced Terminal design using P-RNAV
- Improved Low Visibility Procedure
- Visual Separation on Approach (ATSA-VSA)
- Reduced aircraft separations
- Parallel runway operations

Managing Business Trajectories in Real Time

- Optimised Route Network using A-RNP 1
- Terminal Airspace for RNP-based Operations
- Advanced Continuous Descent Approach (ACDA)
- Advanced Continuous Climb Departure (ACCD)
- Tailored Arrival procedures
- Improved LV Operations (GBAS, EVS)
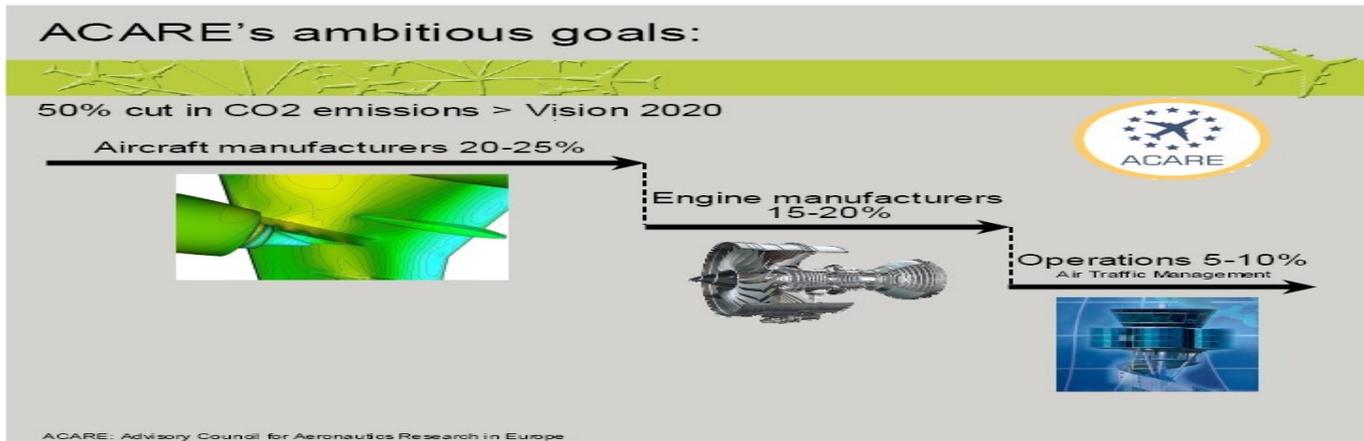
Airport Throughput, Safety and Environment

Precision Navigation elements including:
- Continuous Climbing Departure and Cruise,
- CDA & Enhanced CDA & Long Term CDA,
- Initial GBAS CAT II-III (GPS L1) & GBAS CAT II-III,
- Steeper final Approach & Wake Vortex Free Approach
- RNP-RNAV lateral & Enhanced low RNP-lateral
- Approach with Vertical Guidance,
- Improved Vertical Navigation

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%

ACARE's ambitious goals:

50% cut in CO_2 emissions > Vision 2020

Aircraft manufacturers 20-25%

Engine manufacturers 15-20%

Operations 5-10%
Air Traffic Management

ACARE

ACARE: Advisory Council for Aeronautics Research in Europe

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
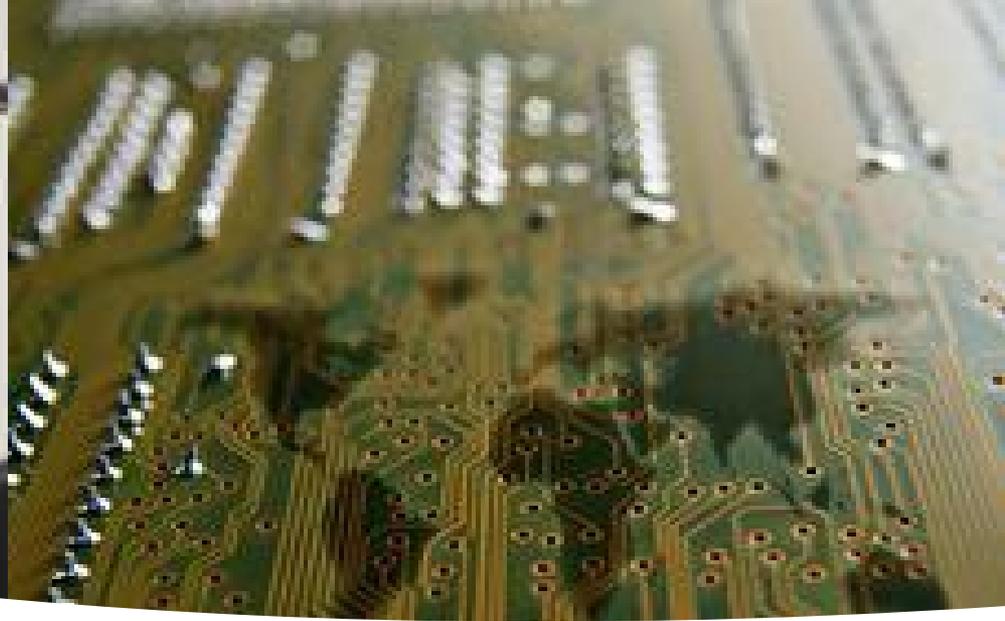
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CAPACITY

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

» Establishment of an **Observatory** 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)

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At the end we all need to achieve the Single European Sky by 2012 …

- ✓ 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

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THANK YOU !

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