



SESAR development and deployment

Global Challenges to Improve Air
Navigation Performance
Asilomar Conference Grounds,
Pacific Grove, CA
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SESAR – Technological pillar of the SES

3 interrelating phases



The political long term vision

Improving safety
by a factor of 10

Enabling EU skies
to handle **3 times
more traffic**

Reducing
the **environmental
impact** per flight by
10%

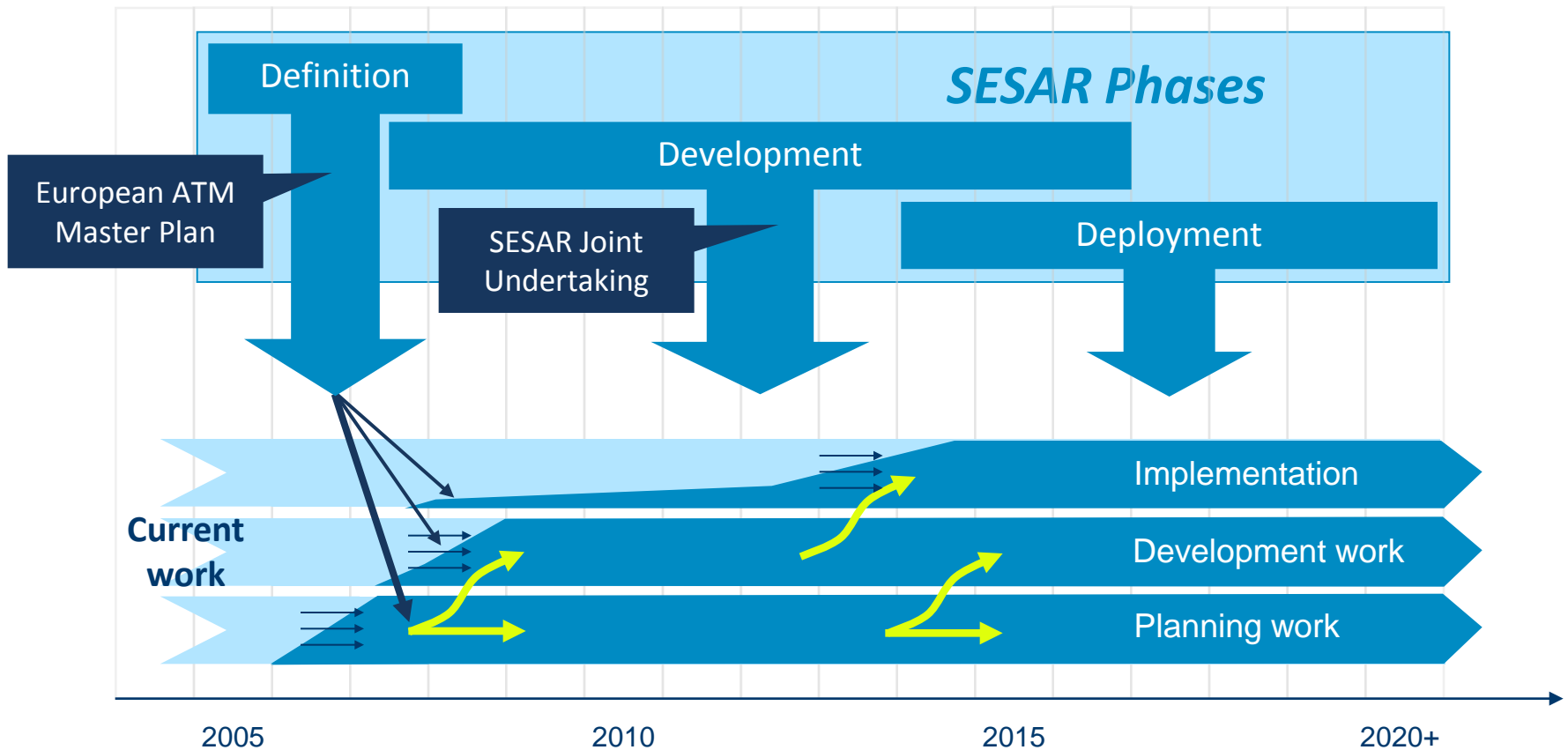
Cutting ATM
cost per flight
by 50%

The SESAR Joint Undertaking – Public Private Partnership



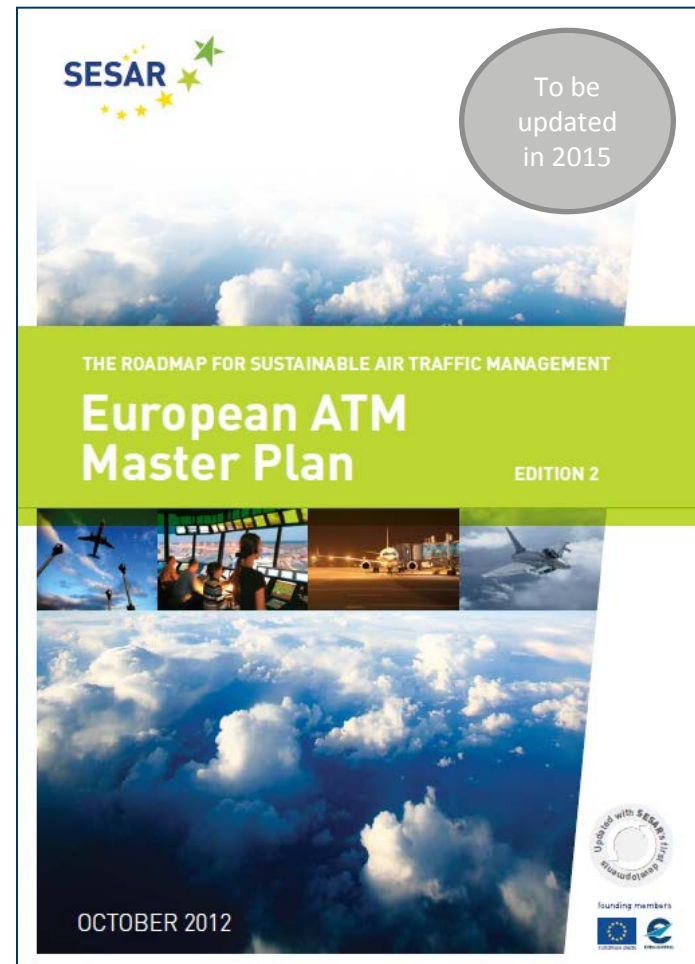
- EUR 2.1 bio
- 15 other members
- 13 associate partners = 110 companies in total
- 20+ countries
- 3000 people working on SESAR
- 300+ projects

SESAR is organized along three main phases



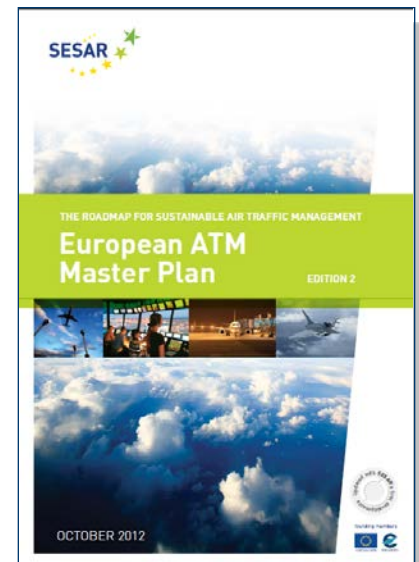
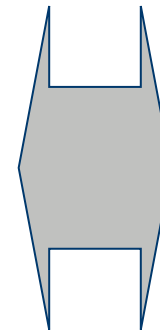
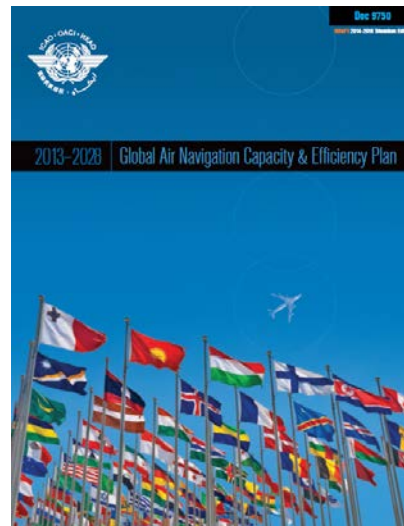
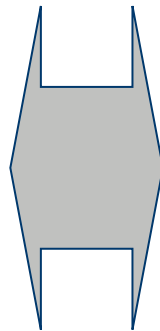
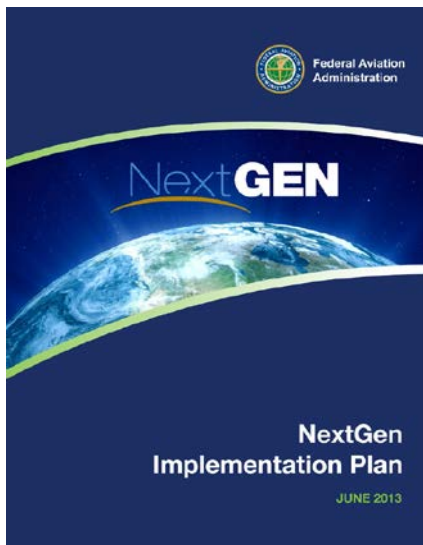
The central role of the ATM Master Plan

- The most recent update of the ATM Master Plan, **approved in 2012**, identifies the "Essential Operational Changes" that need to be implemented to lead to the full deployment of the new SESAR concept by 2030
- Contains:
 - Performance objectives (The **Why**)
 - Description and prioritization of technical solutions (The **What**)
 - Deployment scenarios per stakeholders (The **Where** and **When**)
 - Investment needs and performance gains over time (The **How Much**)
 - Standardization and regulatory roadmap, Risk Management Plan (The **How**)



ICAO GANP, SESAR & NextGen

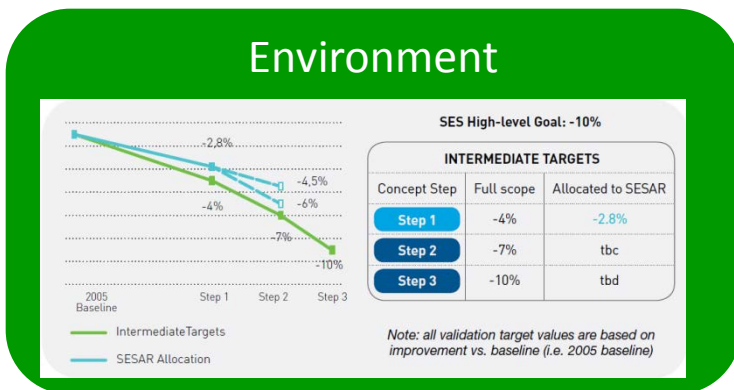
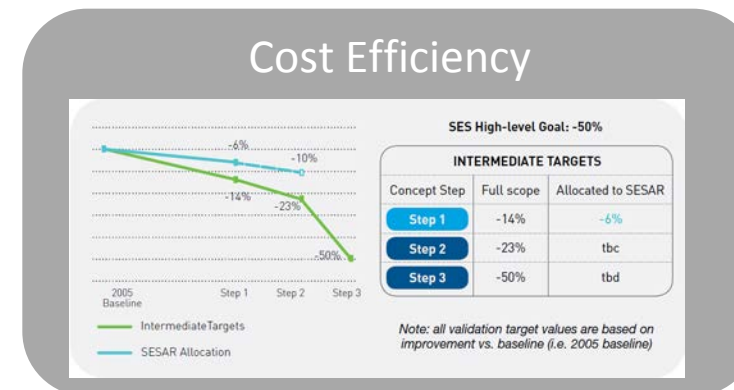
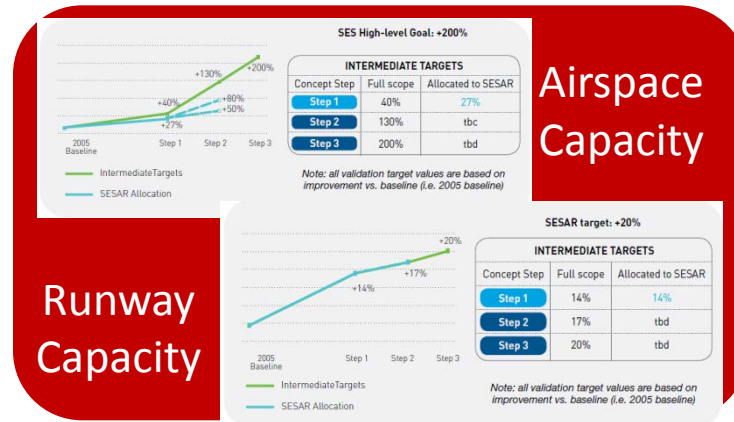
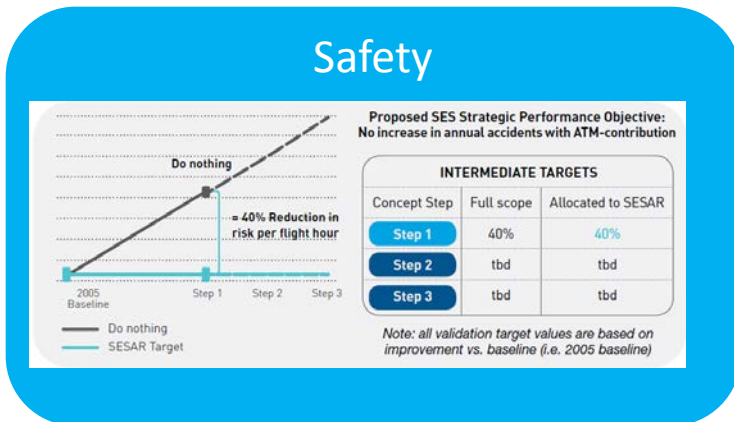
- Same philosophy
 - Need to improve ATM performance
 - Aim at the Global ATM Operational Concept
 - Through deployment of a series of step changes
- Mutual impact, Global ↔ Regional
 - From concept definition to operations
 - For timely and useful standards
 - With all other national programmes



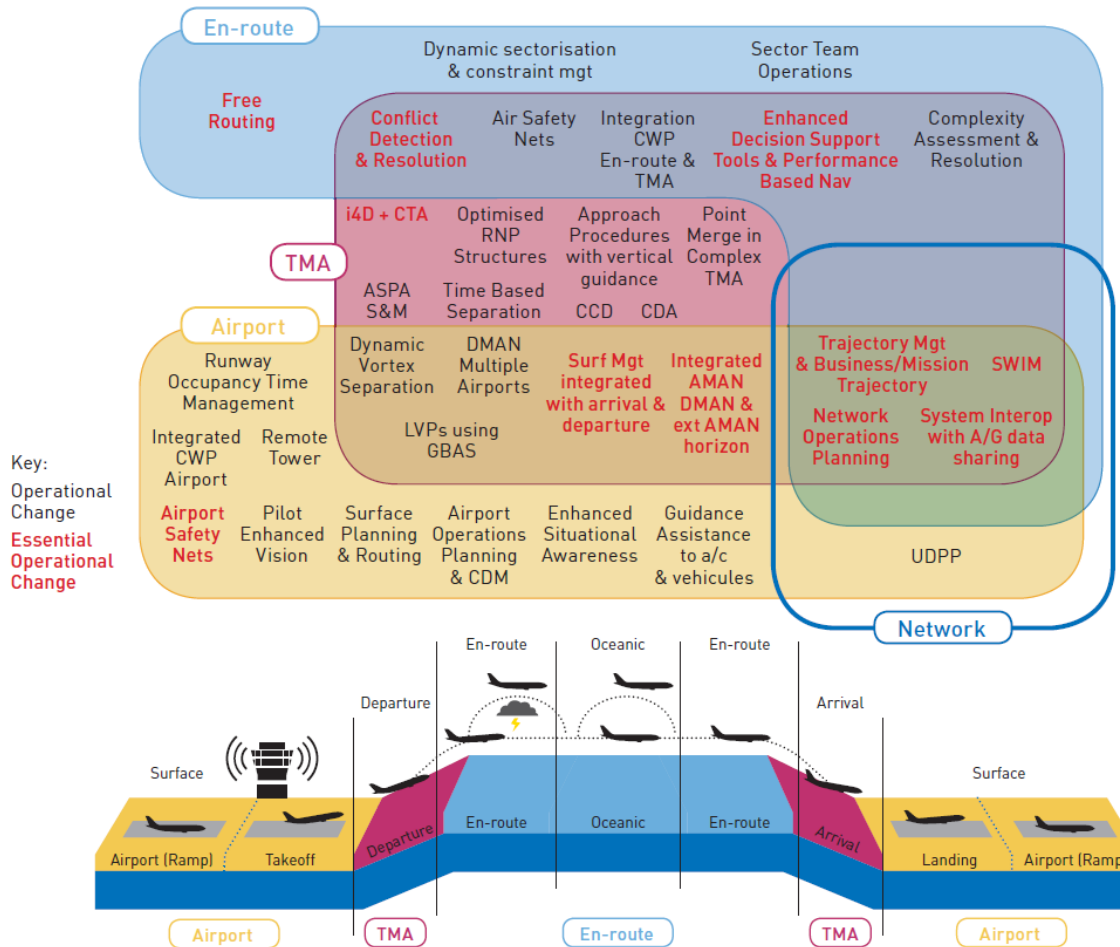
Performance targets in the Master Plan

Baselines overall **performance needs** required at network level at a given point in time on the basis of traffic forecasts and business priorities; defines SESAR **performance targets** in four KPAs:

To be updated in 2015

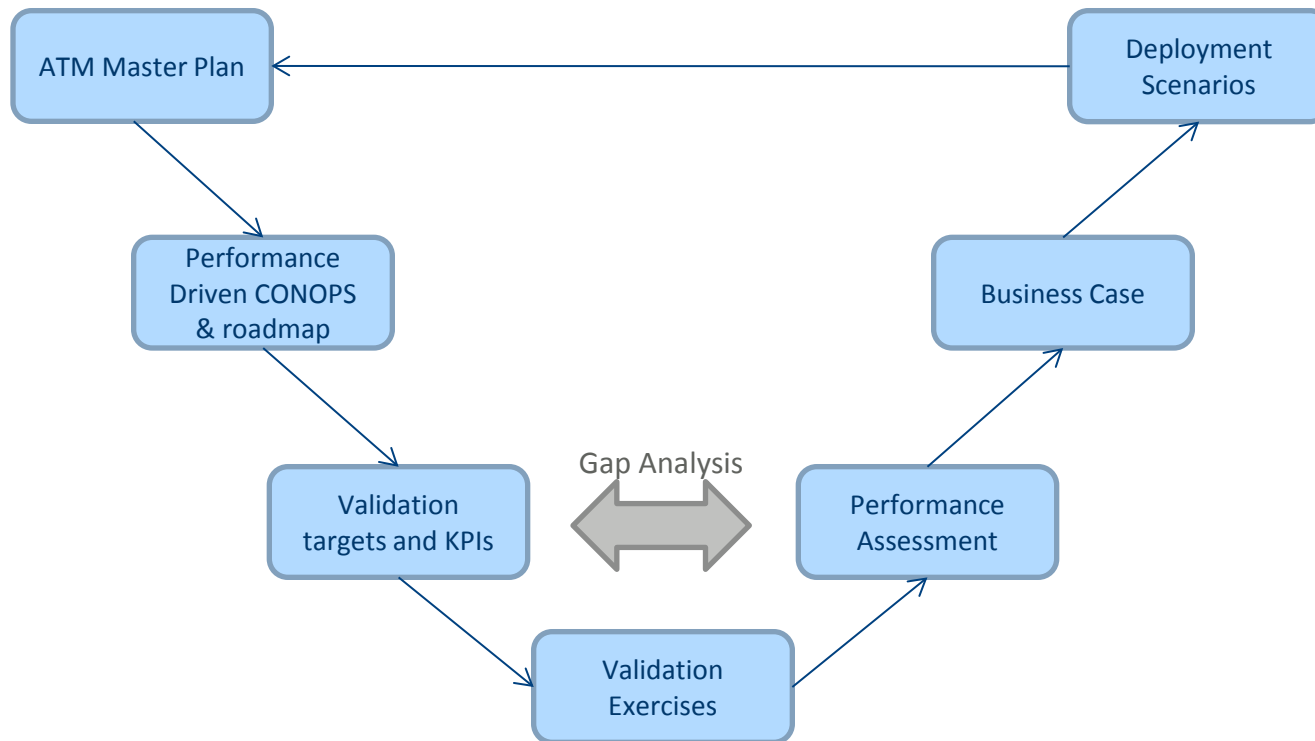


SESAR development – gate to gate



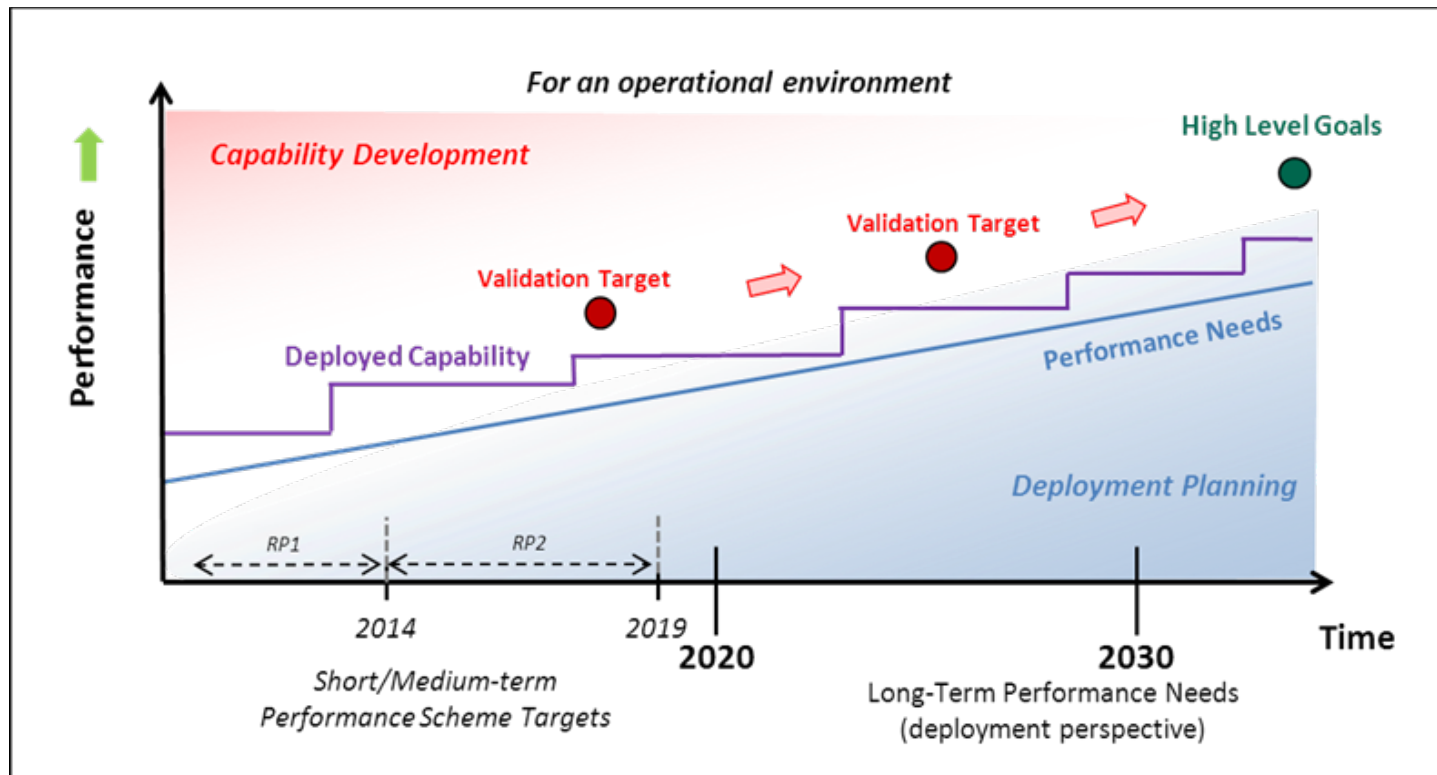
V-cycle system approach to development

- SESAR primary projects carry out validation exercises to:
 - validate the operational improvement against operational requirements
 - evaluate the benefit to be expected from the operational change



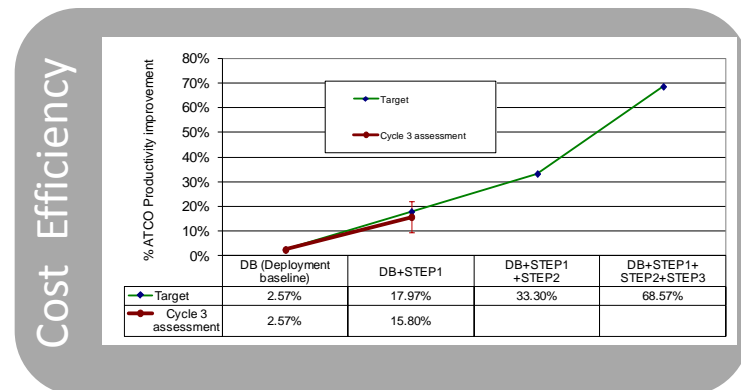
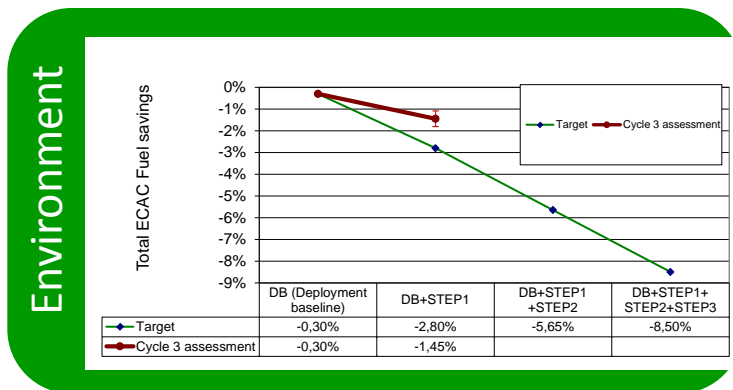
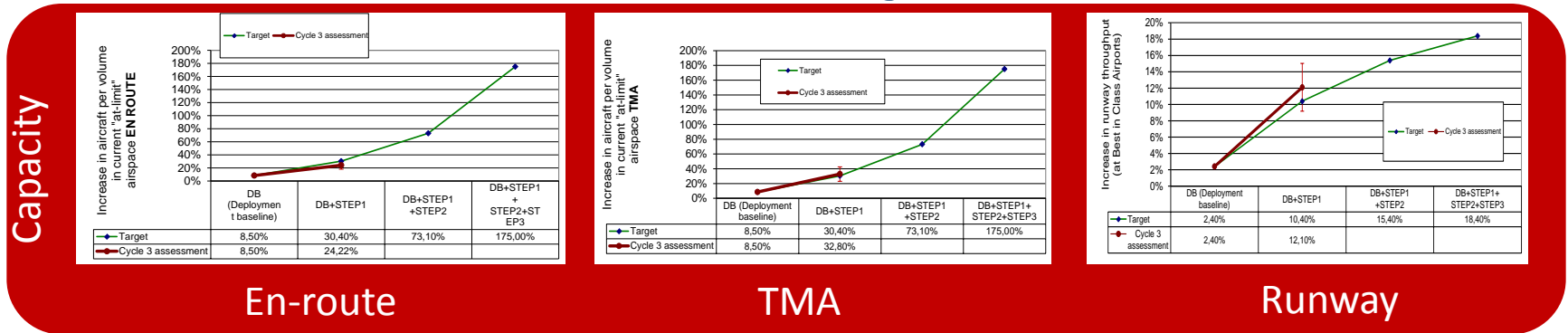
SESAR validation targets: Basis for R&D performance

- Validation activities are driven by Validation Targets for a set of selected KPAs and development phases of the SESAR Concept Steps



Consolidated performance assessment

- The final objective is to ensure that developed solutions appropriately contribute to the achievement of the targets



Safety: Qualitatively Assessed

Linking development to deployment

- The **ATM Master Plan** is for the European Union the sole source of ATM technology development and implementation
- **Common projects** are the tools chosen to deploy those selected ATM functionalities that will achieve the **Master Plan's Essential operational changes** (Article 4.1 of Common projects IR (EU)No 409/2013)
- Common projects aim at deploying in a coordinated and timely manner technology this “essential technology” when it is:
 - Mature
 - Bringing significant performance benefits at network level
 - Requiring coordination at European level

ATM Master Plan
Planning view



Common project
Business view



Transport

Deployment programme
Project view

Implementation projects

P1

P2

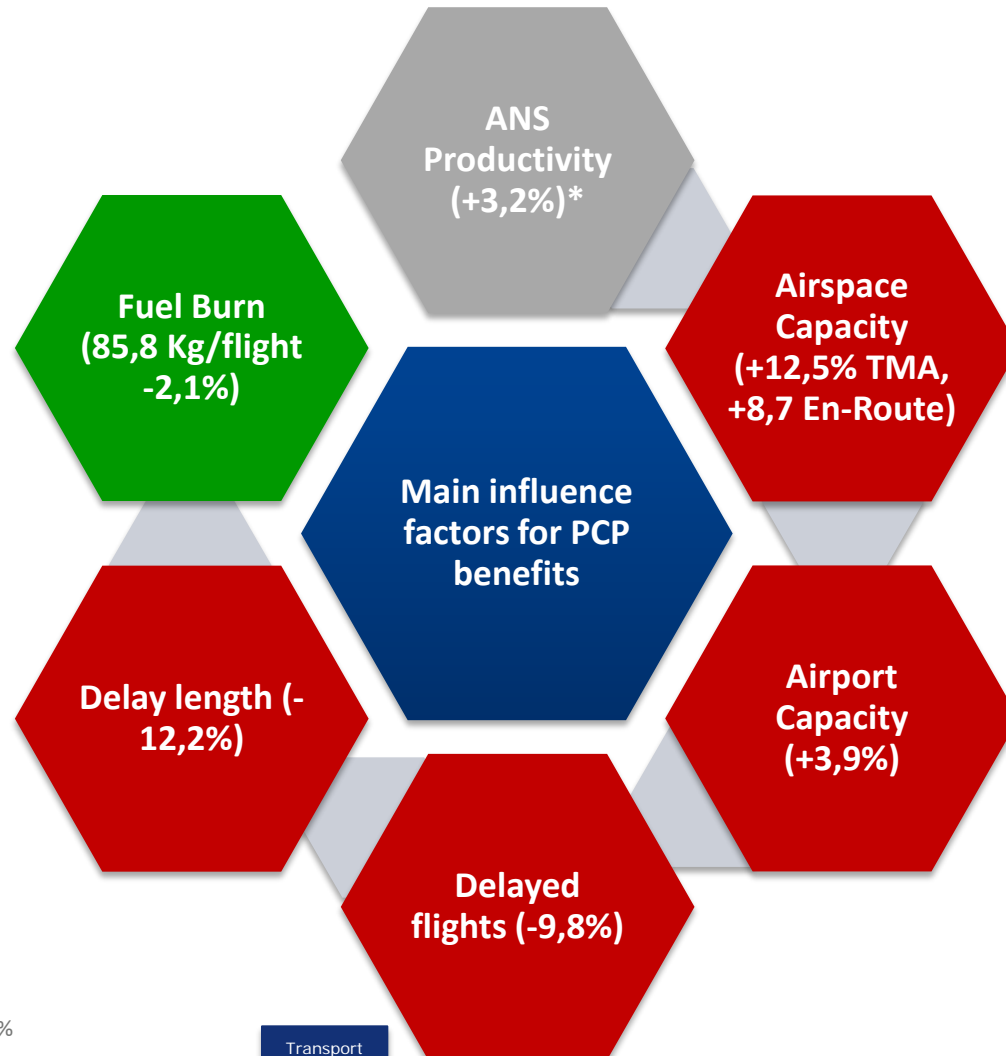
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Pn

Pilot Common Project: first set of functionalities ready for deployment

- The PCP aims at coordinating and synchronizing the implementation of the most relevant ATM functionalities (AF) developed by SESAR.
- AF are logical groupings of essential operational / technical changes identified in the ATM Master Plan that imply an overall global positive CBA
- The Commission adopted on 27 June 2014 the Regulation (EU) 716/2014 , making binding the implementation of the six first AF:
 - **AF # 1:** Extended AMAN and PBN in high density TMAs
 - **AF # 2:** Airport Integration and Throughput Functionalities
 - **AF # 3:** Flexible Airspace Management and Free Route
 - **AF # 4:** Network Collaborative Management (Flow & NOP)
 - **AF # 5:** iSWIM: Ground-ground integration and aeronautical data management and sharing
 - **AF # 6:** Initial Trajectory Information Sharing: air-ground integration towards i4D with enhanced Flight Data Processing performances

Pilot Common Project: final impact assessment



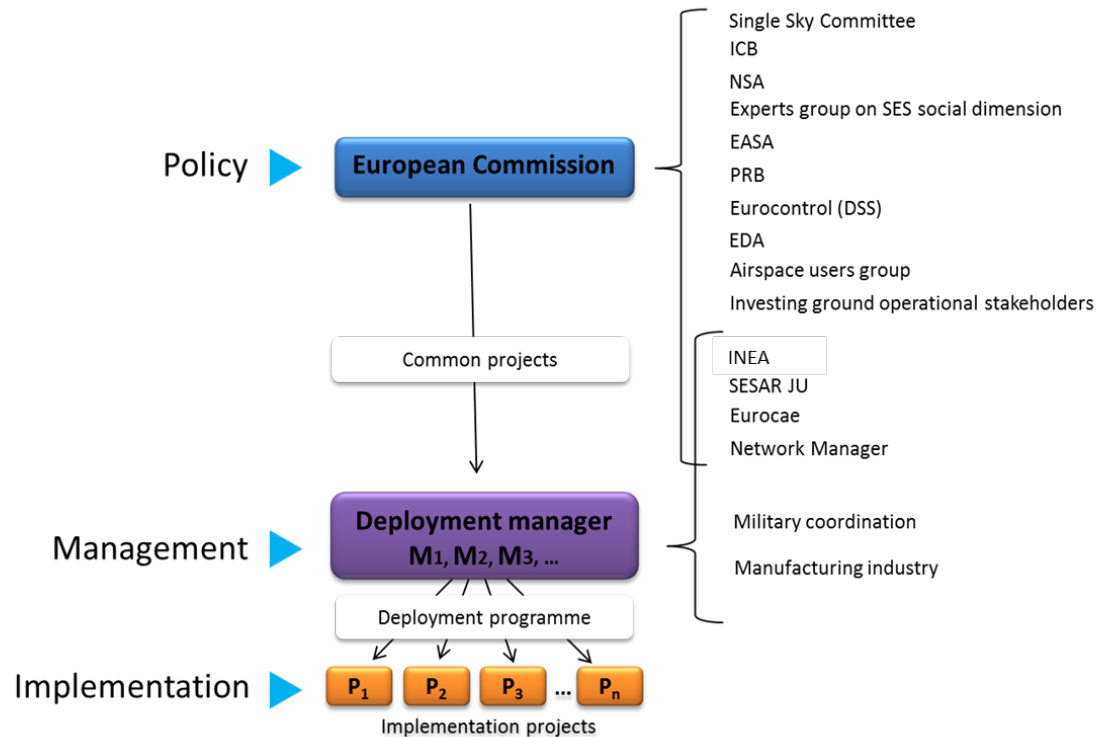
*Result of ATCO productivity gains of : 12%

Link between performance and charging scheme and SESAR

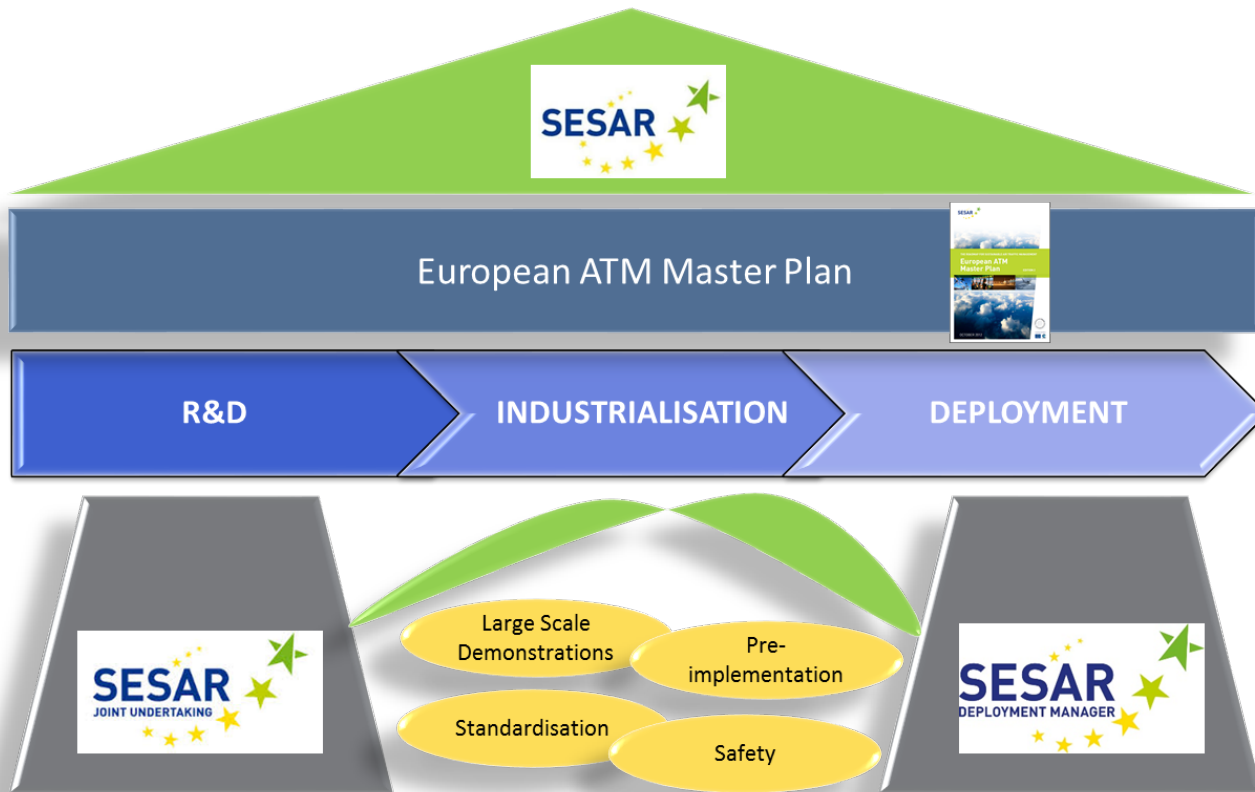
- Performance plans shall include a description of the investment, including that necessary to achieve the performance targets, detailing their relevance to the ATM Master Plan and the common projects
 - ➔ **This description is submitted to Commission scrutiny**
- User charges may be modulated to optimise the use of air navigation services, reduce the environmental impact of flying, reduce congestion and **to accelerate the deployment of SESAR ATM capabilities.**

Pilot common project - deployment

Deployment governance



SESAR JU and SESAR Deployment Manager: two pillars, one project



SESAR Deployment Manager

- SDA has been selected by EC on **5 December 2014**
- High ambition to implement SESAR timely, in a **performance driven** and **coordinated manner**
- An equal partnership between** 40 European investing operational stakeholders organised in 3 groupings:

25 Airports

SESAR Deployment related
Airport Grouping (SDAG)

11 ANSPs

Austrocontrol -
Croatiaccontrol
DSNA – DFS - ENAIRE
ENAV – IAA – LFV - NATS
NAVIAIR - PANSAs

4 Airlines

Air France
British Airways
easyJet
Lufthansa

Conclusions

- The Single European Sky initiative aims at improving ATM performance through a set of interrelated activities
- The ATM Master Plan is the roadmap towards technology deployment and has a **structuring** impact on both development and deployment activities now running in parallel
- Technology development and deployment are directly hooked to ATM Master Plan **performance** expectations and to the **SES policy**