SESAR: European ATM Master Plan developments of interoperable enablers

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European ATM Master Plan

- Representation from all partners:
  - Eurocontrol, ANSPs, Airspace Users, Airport Operators, Military/Defence stakeholders, Manufacturing Ground/Airborne Industry…

- Wide Expert Consultation
- Master Plan update endorsed October 2012
A Pragmatic Approach to modernising EU ATM Systems

The Master Plan 2012 embeds major updates which mark a clear distinction compared to the previous:

- prioritises a set of essential changes that provides performance
- prepares SESAR deployment by developing roadmaps per stakeholder
  - ATM technology changes up to 2030
  - updated Business Views
  - timely and synchronised deployments
- ensures interoperability at global level, in particular with ICAO.
Performance View

"What are the performance needs and targets?"

A Performance-Driven Approach

- **SES High-Level Goals** = performance outcome resulting from the implementation of SES pillars and service/manufacturing industry developments

- **SES Strategic Performance Objectives** = definition of 4 specific and measurable KPIs with associated targets to serve as a basis for both R&D and deployment planning (SESAR, FAB, SES Performance scheme…)

- **SESAR Contribution (Validation targets for R&D)** = to drive capability development and validation activities. Relate to Concept Step capability enhancements
Deployment View

“What is required to be deployed to achieve performance needs and targets?”

- Essential Operational Changes
  - provide significant performance benefits to meet the performance needs associated with Concept evolutionary Steps
  - or essential change toward implementation of the target concept
  - description of each essential operational change for Step 1- its dependency on the Deployment Baseline and expected evolution through Steps 2 and 3

- Focused Deployment
  - allocation of Essential Operational Changes to Operational Environments to deliver the performance needed
  - deployment Roadmaps per Stakeholder Group showing Baseline, Step 1 (focus), Step 2/3

- Relation to the ICAO “Aviation System Block Upgrades” initiative
  - mapping between SESAR Operational Changes and the ICAO ASBUs.
Business View

“What are the costs and the benefits?”

High level view updated costs & benefits of SESAR Step1 and deployment baseline:

- benefits based on expected performance (not yet on validated results)
- costs for ANSP (and NM), AU (airlines, BA and GA), Airports and Military
- high level CBA for Scheduled airlines
- required Investments between 2014 and 2022

2 scenarios

- synchronised scenario: only Essentials deployed
- de-synchronised scenario: all improvements deployed
Regulatory and Standardisation Roadmaps

- **Standardisation roadmap:**
  - step 1 - Identified activities as critical to support short/medium term
  - steps 2 & 3 – need to be further defined (content and dates)
  - focused on ICAO and ESOs (*European Standardisation Organisations*) and supported by Standardization Case analysis

- **Regulatory roadmap:**
  - activities foreseen in support of the ATM modernisation effort
  - identification of both mandatory and voluntary material
  - only when necessary and duly supported by early Regulatory Impact Assessments (eRIA)
SESAR mapped to ICAO Aviation System Block Upgrades (ASBU)
### SESAR DEVELOPMENT

#### MASTER PLAN
- PERFORMANCE NEEDS
- OPERATIONAL IMPROVEMENTS & ENABLERS
- HIGH LEVEL DEPLOYMENT & DEVELOPMENT TIMELINE

#### PROGRAMME
- PERFORMANCE VALIDATION TARGETS
- CONCEPT & ARCHITECTURE
- OPERATIONAL & TECHNOLOGY SOLUTIONS
- CASES
- STANDARDISATION & REGULATION PREP.

#### R&D PROJECTS
- OPERATIONAL REQUIREMENTS
- SYSTEM PROTOTYPES
- VALIDATION ACTIVITIES & RESULTS
<table>
<thead>
<tr>
<th>Year</th>
<th>MATURITY</th>
<th>R&amp;D PROJECTS</th>
</tr>
</thead>
<tbody>
<tr>
<td>2011</td>
<td>Concept</td>
<td>MATURITY</td>
</tr>
<tr>
<td>2012</td>
<td>Requirements</td>
<td>R&amp;D PROJECTS</td>
</tr>
<tr>
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<td>Prototype</td>
<td>R&amp;D PROJECTS</td>
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<tr>
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<td>Validation</td>
<td>R&amp;D PROJECTS</td>
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<tr>
<td>2020+</td>
<td>Safety and Business Cases</td>
<td>R&amp;D PROJECTS</td>
</tr>
</tbody>
</table>

**MASTER PLAN**

- **2010**
- **2011**
- **2012**
- **2013**
- **2014**

**Programme**

- **2011**
- **2012**
- **2013**
- **2014**

**R&D Projects**

- **Performance**

**Time Based Operations**

- **2014**

**Trajectory Based Operations**

- **2017**

**SESAR DELIVERY**
KEY CANDIDATE ENABLERS UNDER CONSIDERATION FOR DEPLOYMENT

- Moving from Airspace to 4D Trajectory Management
  - iSWIM
  - Datalink Systems and Services (ATN B2)
  - Enhanced CWP
  - Enhanced FDP
  - Enhanced Monitoring Aid
  - Enhanced Conflict Management Tool

- Traffic Synchronization
  - iSWIM
  - Datalink Systems and Services (ATN B2)
  - Enhanced CWP
  - Enhanced FDP
  - Enhanced Monitoring Aid
  - Enhanced Conflict Management Tool

- Network Collaborative Management & Dynamic Capacity Balancing
  - iSWIM
  - Enhanced CWP
  - Datalink Systems and Services (ATN B2)
  - Enhanced FDP
  - Enhanced Monitoring Aid
  - Enhanced Conflict Management Tool
  - AMAN+AMAN+SMAN+DMAN Integration

- Airport Integration & Throughput
  - iSWIM
  - Datalink Systems and Services (ATN B2)
  - Enhanced CWP
  - Enhanced FDP
  - Enhanced Conflict Management Tool
  - AMAN+AMAN+SMAN+DMAN Integration
  - Surface Management

- Conflict Management & Automation
  - Datalink Systems and Services (ATN B2)
  - Enhanced CWP
  - Enhanced FDP
  - Enhanced Conflict Management Tool
  - Surface Management
Standards built on SESAR and NextGen developments will support harmonised Implementation and Regulation. Programme level coordination enhanced by interoperability and wider industry buy-in.
Thank You

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