The SESAR Programme: An Update

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ACP/WGT/1
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A New ATM System is Needed

- Traffic forecast to double by 2025
- Air Traffic growth must come with:
  - Significant reduction in safety incidents
  - Maintaining delays at economic optimum
- Issues
  - ATC pushed to its limits
  - Airspace fragmentation
  - Obsolescent technologies

Closing the capacity gap

Traffic forecast to double by 2025

Air Traffic growth must come with:

- Significant reduction in safety incidents
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Issues

- ATC pushed to its limits
- Airspace fragmentation
- Obsolescent technologies
SESAR – European ATM Master Plan: Committing to Make Future Happen

**Needs:**
- **Turn off** fragmented approach
- **Accelerate** evolution in response to challenges
- **Synchronise plans and actions**
  - from research to operations
  - airborne and ground deployments

**SESAR**
- Technical/operational change, supported by Single European Sky legislation
- Address European needs and Global interoperability
SESAR Cohesive Programme for Stepwise Implementation

- **Definition**
- **Development**
- **Deployment**

**SESAR Phases**

- European ATM Master Plan
- Current work
- Implementation
- Development work
- Planning work
SESAR Definition Phase

- Under the responsibility of EUROCONTROL
- Co-funded by EC through TEN-T
- Industry wide consortium
  ➔ with substantial EUROCONTROL effort contribution

€ 60 Million
2 years
300 man-year

+ Project Associates:
  ATM Research Centres,
  UK CAA, EURAMID,
  ECA, IFATCA, ETF,
  ATC-EUC, IFATSEA, US Industry (Boeing, Honeywell, Rockwell)
+ Sub-Contractors
SESAR Definition Phase

Main Milestones and Deliverables

**Air Transport Framework:** The Current Situation

- Reference to derive technical requirements for architecture & enabling systems
- Change steps with performance gains from agreed baselines (now, 2013, 2020)
- Actions of all stakeholders to achieve the performance benefits

T0: 6 March 2006

**ATM Performance Targets**

- COMPLETED

**ATM Target Concept**

- COMPLETED

**ATM Deployment Sequence**

**ATM Master Plan**

- Actions of all stakeholders to achieve the performance benefits
- Reference to derive technical requirements for architecture & enabling systems
- Change steps with performance gains from agreed baselines (now, 2013, 2020)

**Work Programme for 2008-2013**

- ATM MASTER PLAN
  - Shorter term: Implementation actions
  - Longer term: R&D actions
Quantified Performance Targets

Derived from needs of society and airspace users

2020 targets:
- **Capacity**: +73% overall
- **Safety**: improvement factor 3
- **Costs to airspace users**: -50%

Design Goals for scalable future capability:
- **Safety**: factor 10
- **Capacity**: handle 3 times traffic
- **Environment**: -10% effects per flight

Also addressed:
- Security, Efficiency, Flexibility,
- Predictability, Global Interoperability,
- Access, Equity, Participation

(Reference: 2005)
D3 Message: A Paradigm Shift

**Past**

Procedural

*Estimate* the current and planned a/c positions

**Today**

Radar

*Know the current and estimate planned a/c positions*

**Future**

Trajectory

*Know & share the current and planned a/c positions*
D3 findings: The Future System Features

- Airspace configured according to operations
- (4-D) Trajectory Management
- New separation modes (incl. self-separation)
- Collaborative planning (Network Operations Plan)
- Service oriented architecture
- Automated control functions to support humans
- Information sharing
- System Wide Information Management (SWIM)
- Air-Ground data link
- Integrated airport operations with advanced tools
- Satellite navigation

Performance Targets
**SWIM: Information at the Heart of the System**

- **Ground-Ground Information Management Principles**
  - Interoperability embedded in technical systems
  - Supervision of the SWIM infrastructure at various levels
    - local (per element)
    - regional (overall management & performance monitoring)
  - Security commensurate to increased access

- **Air-Ground Information Management Principles**
  - Aircraft part of SWIM via A/G Data link Management System, requiring
    - filtering of needed information
    - high availability for safety reasons

For all in the network:
- incl. a/c,
- ATM subsystems,
- Military

- Net-centric operations,
- Exploiting internet technologies,
- Adapted to aviation
Communication elements: The “2020 Baseline” (i.e. elements to be fully operational by 2020)

- Mobile communications:
  - 8.33
  - VDL Mode 2/ATN
  - WIMAX 802.16 based (on airport surface)

- IP based ground/ground network supporting VoIP services and SWIM
Deployment of Communication elements beyond 2020: further work required including R/D

Data link becomes the primary means, Voice remains as a back-up.

- Mobile communications:
  - 2 independent & complementary means: New terrestrial (narrow-band? Wide-band?) + space-based to support advanced services (e.g. 4D) – Recommendation to expedite the research

- Common inter-networking transport protocol managing QoS over all communication media
Conclusion for communication aspects

- Much R&D work is already underway
  - But more is needed NOW
- Outstanding issues include
  - Spectrum availability for new communication solutions
  - Ensuring global interoperability
  - Minimising solution costs
- Some key decisions are still pending including
  - Final selection of optimum technologies
  - Time line for deployment of specific solutions
Beyond the SESAR Definition Phase
SESAR Joint Undertaking: a Public-Private Partnership

- Founding Members: EC & EUROCONTROL
- Other members: industry, third States

- Budget: € 2,100 million over 8 years
  - Around 1/3 EC, 1/3 EUROCONTROL, 1/3 industry/3rd parties
27 Feb. 07: JU Regulation adopted

9 June 07: EU Transport Council made JU “operational”

Practical JU set up is underway
- Definition of JU organisation & processes discussed by Admin Board
- End June: Call for expression of interest in membership (closing date: 15 Sept.)
- Work programme:
  - Contents to be determined by Definition Phase outcome
  - work allocation to be negotiated progressively with potential members
SESAR JU Next Steps

- **Autumn 2007**
  - Selection of members’ core group
  - Appointment of Executive Director and initial staff
  - Finalisation of management/financial processes & set-up

- **By Summer 2008**
  - JU staff recruitment
  - Negotiation of Membership agreements
    - On the basis of the ATM Master Plan
■ EC
  ➔ TEN-T and FP7 contributions reserved
  ➔ Initial payment made to support set-up and initial actions

■ EUROCONTROL
  ➔ Agreement in principle by PC (8 Feb. 07) to be confirmed in November

■ Other Members
  ➔ Initial intentions to be converted in firm commitments as a result of the selection and negotiations with potential members
Conclusion

- SESAR brings a new dimension to European ATM
  - European needs and global interoperability

- SESAR is on track

- EUROCONTROL is committed to SESAR