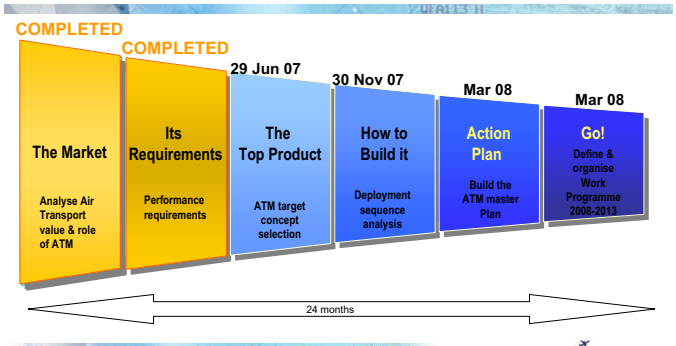
SESAR Definition Phase Deliverable 2

The Air Transport Framework - Performance Target

Welcome

Christian Dumas
SESAR Project Director

Milestones of the SESAR Definition Phase



SESAR Consortium Agreement on D2

including EUROCONTROL

SESAR – Paving the way for the Single European Sky

An ATM performance based approach is considered essential to drive management decisions towards achieving the 2020 Vision.

Your feedback is essential for the performance targets to become the agreed European ATM System Performance targets .....

We support your involvement !

Thank you for all comments received on D1 report after the last Forum. D1 Feedback report available on www.sesar-consortium.aero

Objectives of today

Provide us with your feedback reflecting on your view

- **TODAY** :
  - **Plenary sessions (10:30-12:15) -** Listen and Prepare your questions/comments using the question form in your package
  - **Breakout sessions (13:45-15:15)** - Raise your comments and discuss !
  - **Conclusions (15:45- 17:15)-** Presentation of your comments and conclusion
- **Until the 16th February :**
  - Comment on the D2 report using the on-line feedback form www.sesar-consortium.aero

End of March D2 Feedback report will be available

- **Will be annexed to D2 & picked up in next milestone deliverables**

What Comes next after D2 Forum ?

Next Milestone Deliverable - D3 - "Top Product" Definition

- **Finalized end of July 2007**
- **Presented in the next SESAR Stakeholder Forum on the**

26th of September 2007

Please don't forget to fill in the Event feedback form to tell us about the D2 Forum today!

Lunch Buffet and coffee break courtesy of

Air Traffic Alliance & BOEING

SESAR IN THE FUTURE

Patrick KY, European Commission

(see separate slides)

Double click here to visualise the presentation

D2_forum_presentation_of_PKy

KEY NOTE ADDRESS

Jeff POOLE, IATA

(no slides presented)

D2 Outline & The 2020 Vision of the Air Transport Industry

G.O'Connell, IATA, ExCom Member

D2 – The Performance Target - Objectives

D2 OBJECTIVES

OBJECTIVE 1 - Vision of the Air Transport Industry in 2020

OBJECTIVE 2 - Performance Targets and requirements for the ATM Concept-Short-, Mid- and Long- term

OBJECTIVE 3 - 'Best practice', ongoing activities and principles for the way forward

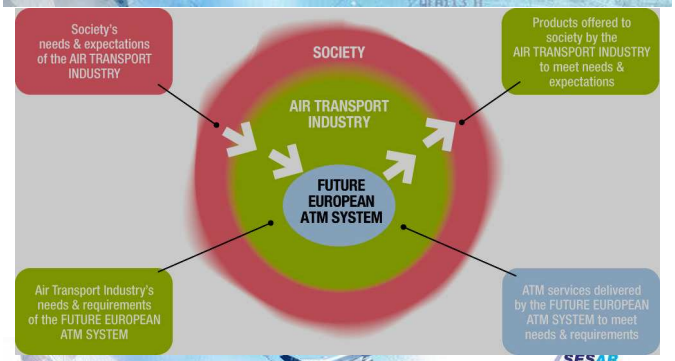
D2 REPORT ATM Transport Framework - The Performance Target

- **D2 Structure:**
  - Executive Summary
  - The 2020 Vision of Air Transport Industry
  - Performance Framework and Targets
  - Short-term Improvements Baseline
  - Principles for the Way Forward to 2020
  - Annex I: SESAR Solution Risks
  - Annex II: Specific Process Assessment in D2

The SESAR Vision

To achieve a performance based European ATM System, built in partnership, to best support the ever increasing societal and States', including military, expectations for air transport with respect to the growing mobility of both citizens and goods and all other aviation activities, in a safe, secure and environmentally sustainable and cost-effective manner.

Principal Relationships between Society, Air Transport Industry and the ATM System



Societal Expectations - Market Development

GLOBAL TRENDS

- Growth in GDP
  - Average of ~3.5 % per annum
  - Rate highest for developing economies in Asia
- Demographics of Population
  - Major proportion of people living in cities
  - Average age increasing
- Evolution of Tourism
  - Traditional destinations not yet saturated
  - New destinations being opened
  - Greater disposable incomes across wider societal groups will fuel demand
  - Growth rate expected to be between ~2% per annum (Europe, N. America, W. Africa) & ~7.5% per annum (Far East, Middle East, S. Africa)

TRENDS IN EUROPE

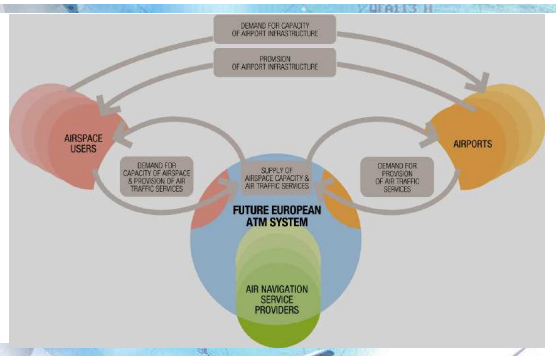
- Mobility demand & modal split
  - Share of passenger air traffic expected to increase from 8% in 2000 to 11% in 2020
- Revenue Passenger Kilometres (RPK)
  - Expected to increase by ~4.4% per annum
- Market segmentation & Fleet Development
  - More very small jets & more very large jets
  - Different growth rate across different segments
- Overall demand for flight movements
  - Expected to increase by ~4.2% per annum
- Network adjustment due to constraints
  - Lack of infrastructure at Airports may constrain growth to ~3.4% per annum

Societal Expectations - Market Development

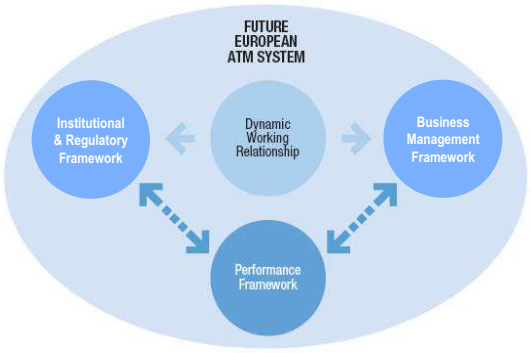
- **Assumption is greater globalisation & economic growth will occur at fastest rate estimated (Ref.: Eurocontrol : *Challenges to Growth Study*)**
- **Air Transport's added value to European GDP estimated to be €470Bn by 2020**
- **Traffic demand by 2020 expected to be twice that of today (i.e., 9.1M in 2005 to 18M)**
- **Airport capacity could limit this to about 16M, resulting in €50Bn loss of added value per annum, rising to €90Bn in 2025**

constrain growth to ~3.4% per annum

The Tri-partite Relationship for the Future European ATM System



The Overall ATM System Governance Structure



Strengthening Air Transport Value Chain

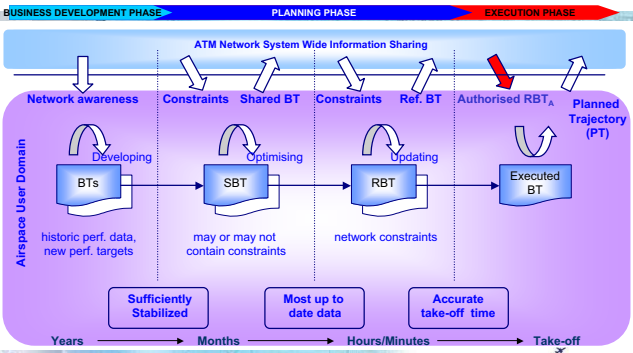
"Business Trajectory" Concept

- **Central to the way in which the Future ATM System will perform**
- **Supported by both the Business & Regulatory Management Frameworks of the Future ATM System**

Structure & Scope of Airspace Users' Needs, together with relevant Characteristics are translated into the Performance Requirements of the Future ATM System

Performance Requirements are expressed using the 11 Key Performance Areas (KPAs) as developed by ICAO

Business Trajectory Lifecycle



Future Business Management Framework

Vision is of Coherent Business Management Framework

- **which manages *all aspects* across *full system lifecycle***
- **Relative to today, major changes envisaged are:**
  - ***ATM Performance Partnership*** will be created as basis to manage performance-driven Future ATM System; this built upon shared set of Values, Goals, Priorities, Network Inter-actions & Rules
  - ***Major restructuring of air traffic service provision*****,** so developing stronger co-operative relationships
  - Progressive development of ***flexible capacity to deliver future air traffic services*** to meet demand

Future Institutional & Regulatory Framework

De-regulation at National level & reduction of burden at European level

Recent trends in general e.g.:

- Progressive liberalisation of activities
- Need for additional technical regulation

Expect adaptation of regulatory framework as business develops

- E.g. via EC formed High Level Group who is investigating the future regulatory framework for Europe

Classic forms of regulatory oversight will continue to depend upon cooperation between EU & Member States

Possible additional areas for regulation over & above the safety, environmental & security regulatory functions (e.g., economic, spectrum policy, framework design, operational performance)

Future Institutional & Regulatory Framework

Some Specific Aspects

- Human
  - To be reflected & firmly embedded in European social policy & legal structures with the full involvement of social partners at all levels
- Finance
  - Mixture between Public & Private Approaches
  - Building of Assets within ATM Business Framework to Attract Investment Capital for ATM Performance Improvements
- Standardisation
  - One European Focal Function to Ensure Effective Standardisation Process & Global Interoperability

Performance Partnership is Key !

Establish the Performance Management Framework:

All stakeholders have to establish an ATM Performance Partnership incl. roles and responsibilities based on a shared set of values, priorities and network interactions.

→ Goal: from fragmented decision making process to the execution of a common ATM strategic planning.

The ATM – Performance Framework & Performance Targets

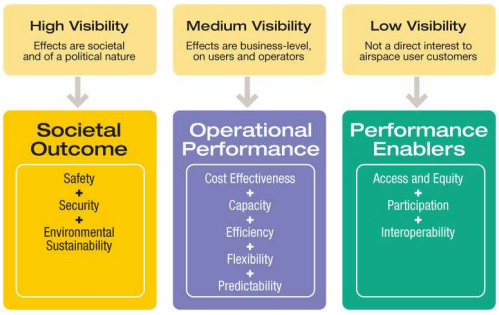
Michael Standar, LFV
ExCom Member

Application of a Performance-based Approach

Introduce a performance driven approach in the future European ATM system.

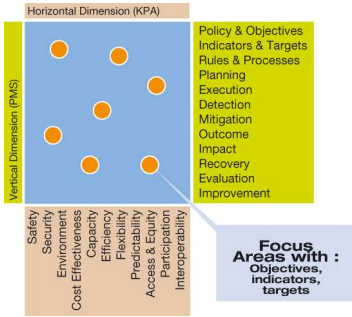
- System development level**: the aim is to develop the future ATM system in a performance driven manner**
  - **High level strategic objectives and targets**
- System management level**: the aim is to** operate **the future ATM system in a performance driven manner**
  - **General guidance in the form of a performance framework, and an initial list of proposed objectives and indicators**

Key Performance Areas in SESAR (ICAO compliant)



Application of a Performance-based Approach : Two dimensional Performance Framework

- **Vertical dimension addressing the maturity of performance process : Performance Management Stages (PMS)**
- **Horizontal dimension : 11 KPAs**



Application of a Performance-based Approach : Analytical 4-Step Approach

Step 1 – Division of the performance problem

- **A Single Key Performance Area (KPA) at a time, and within each KPA, focusing on well defined understandable subjects called Focus Areas.**

Step 2 – Integration of the performance problem

- **Once the scope of performance is divided into specific, precisely scoped, manageable chunks, develop an understanding of their interdependencies (cause-effect relationships, impacts and benefit mechanisms).**

Step 3 – Validation

- **Verify that the interdependencies actually have the predicted effect (including assessment of the degree of uncertainty in the relationships).**

Step 4 – Impact Assessment

- **Final step : assessing the impact of the validated focus areas, including interdependencies on initial indicative targets.**

The Vision for European ATM Performance in 2020

Nov 2005, EC Vice-President Jacques Barrot expressed the objectives of the SESAR programme : define a future European ATM System for 2020 and beyond which can, relative to today's performance:

- **Enable a 3-fold increase in capacity which will also reduce delays, both on the ground and in the air,**
- **Improve the safety performance by a factor of 10,**
- **Enable a 10% reduction in the effects flights have on the environment and**
- **Provide ATM services at a cost to the airspace users which is at least 50% less.**

Those objectives are the basis for the vision and have led to the establishment of specific initial indicative targets for 2020.

Vision and goals have been broadened by considering the whole set of eleven KPAs defined in ICAO Global ATM OCD.

KPA : Capacity

Definition & Scope

- Ability of the ATM system to cope with demand (in number & distribution through time & space)

Focus Areas

- **Airspace Capacity :**
  - Capacity of any individual or aggregated airspace volume
- **Airport Capacity:**
  - Aircraft movements throughput of individual airports. Includes both air and landside constraints
  - Throughput of individual congested airports in all weather conditions
- **Network Capacity :**
  - Overall network throughput, taking into account the ATM System network effect of the airspace & airport capacity in function of traffic patterns

KPA : Capacity

Initial Indicative Strategic Design Targets

Capacity x 3

2006 — 2010 — 2020

9,1 to 16 million flights p.a.

50,000 flights/day around 2022 on busy months

- **Regional differences will exist. The system should be able to support a tripling (or more) of traffic where required**

Airports capacity in IMC conditions:
750 mov/day for 1 runway,
1150 mov/day for crossing runways,
1350 mov/day with parallel runways

KPA : Safety

Definition & Scope

- Risk, Prevention and Occurrence and mitigation of air traffic accidents

Focus Areas

- ATM related Safety outcome : covers the occurrence and prevention of accidents involving aircraft with a MTOW > 2.25 tonnes, operating under IFR, with a direct and/or indirect ATM contribution. This includes collisions on the ground and in the air, CFIT etc.

Initial Indicative Safety Performance Objective

- **Overall safety level would gradually have to improve, so as to reach an** improvement factor 3 **in order to meet the safety objective in 2020.**
- **Assumption: safety needs to improve with the square of traffic volume increase, in order to maintain a constant accident rate. In the longer term safety levels would need to be able to increase by a factor 10 to meet a possible threefold increase in traffic, in accordance with the political vision and goal.**

KPA : Environmental Sustainability

Definition & Scope : Role of ATM in the management and control of environmental impacts:

- **reduce adverse environmental impacts**
- **ensure that air traffic management related environmental considerations are respected**

Focus Areas

- Environmental constraint management
- Best ATM Practice in Environmental Management
- Compliance with environmental rules
- Atmospheric Impacts
- Noise Impacts

KPA : Environmental Sustainability

Initial Indicative Strategic Design Target

- **Transparent assessment of proposed environmentally related ATM constraints.**
- **→ Adoption of the best alternative solutions from a European Sustainability perspective**
- **Local environmental rules affecting ATM are to be 100% respected. (e.g. aircraft type restrictions, night movement bans, noise routes and noise quotas, etc.). Exceptions are only allowed for safety or security reasons.**
- **Minimise noise emissions and their impacts for each flight to the greatest extent possible.**
- **Achieve the implicit emission improvements through the reduction of gate-to-gate excess fuel consumption addressed in the KPA Efficiency. However no specific separate target could be defined at this stage for the ATM contribution to atmospheric emission reductions.**
- **Minimise other adverse atmospheric effects to the greatest extent possible. Suitable indicators are yet to be developed.**

KPA: Cost Effectiveness

Definition & Scope :

- **Cost of Gate-to-Gate ATM in relation to the volume of traffic managed**

Focus Areas :

- Direct cost of gate-to-gate ATM incurred by ATM stakeholders
  - en-route & terminal costs
  - ATM/CNS costs, MET costs, payments to regulatory & gov authorities, European ATM design function costs (e.g. EUROCONTROL now)
  - Staff costs, infrastructure, equipment, software, maintenance, training
- Direct cost of ATM providers **: the part born by service providers**
- Indirect costs attributable to non-optimal gate-to-gate ATM performance

Initial Indicative Strategic Design Target:

- **Direct gate-to-gate ATM total costs / 2 from €800/flight* to €400/flight in 2020**
- **Via a 3% p.a. reduction until 2010 and 5% p.a. reduction until 2020**

** 2005 constant euros*

KPA : Efficiency

Definition & scope:

- **Actually flown 4D trajectory of aircraft in relationship to their Shared Business Trajectory**

Focus Areas

- Temporal Efficiency :
  - Magnitude and causes of deviations from planned (on-time) departure time and deviations from Shared Business Trajectory durations (taxi time, airborne time)
- Fuel Efficiency :
  - Magnitude and causes of deviations from optimum fuel consumption
- Mission Effectiveness :
  - Following military trajectory models focus is to reflect the economic impact of transit times associated with military mission & training activities.

KPA : Efficiency

Initial Indicative Strategic Design Target:

- On-time departure performance **(off-block departure +/- 3 minutes compared to planned departure time)**
  - Occurrence (punctuality): **at least 98%** of on-time departing flights
  - Severity : average departure delay of delayed flights **less than 10 min**
- Flight Duration efficiency :
  - normal flight duration = actual block-to-block time less than 3 minutes longer than planned
  - Occurrence : **more than 95%** of flights with normal flight duration
  - Severity : average flight extension **less than 10 min**
- Gate-to-Gate fuel efficiency **(actual compared to shared business trajectory)**
  - Occurrence : **less than 5%** of flights with additional fuel consumption (of more than 2,5%)
  - Severity : average additional fuel consumption not to exceed 5%

KPA : Flexibility

Definition & scope

- **Ability of the ATM system and airports to respond to "sudden" changes in demand and capacity**

Focus areas

- Business Trajectory update flexibility for scheduled and non scheduled flights
- Flexible access-on-demand for non-scheduled flights
- Service location flexibility
- Suitability for military requirements

KPA : Flexibility

Initial Indicative Strategic Design Target (1)

For Scheduled flights with request for change in

→ **A maximum of** 2% of flights **with delay penalty than** 3 min

→ **Average delay: less** than 5 min.

- **For full Reference Business Trajectory Redefinition of scheduled and non-scheduled flights :**

→ **At least 95% of valid demands will be accommodated, albeit possibly with a time penalty**

→ **No more than 10% of flights will suffer a delay penalty of more than 3 min**

Flexibility

Initial Indicative Strategic Design Target (2):

- **The average delay of such scheduled and non-scheduled flights with a successfully accommodated request for full Reference BT redefinition (with a delay penalty of more than 3 minutes) will be less than 5 minutes.**
- **At least 98% (European-wide annual average) of the non-scheduled flight departures will be accommodated with a delay penalty less than 3 minutes**
- **The average delay (European-wide annual average) of such non-scheduled flight departures (with a delay penalty of more than 3 minutes) will be less than 5 minutes**
- **At least 98% (European-wide annual average) of the VFR-IFR change requests will be accommodated without penalties**

KPA : Predictability

Definition & scope :

- **Ability of the ATM system to ensure a reliable and consistent level of 4D trajectory performance.**

Focus Areas :

- On-Time operations
- Service Disruption Effect
- Knock-on effect

KPA : Predictability

Initial Indicative Strategic Design Target

- Arrival punctuality: less than 5% **of flights suffering arrival delay of more than 3 minutes.**
- Arrival delay: **the average delay of delayed flights (with a delay penalty of more than 3 minutes) will be** less than 10 minutes.
- **Variability of flight duration (off-block to on-block): for a 100-minute flight duration** more than 95% flights **arrives on-time, according to arrival punctuality target.**
- Service Disruption:
  - reduce cancellation rates **by 50%** by 2020 compared to 2010 baseline,
  - reduce diversion rates **by 50%** by 2020 compared to 2010 baseline
  - reduce total disruption delay **by 50%** by 2020 compared to 2010 baseline.
- Knock-on effect:
  - reduce reactionary delay **by 50%** by 2020 compared to 2010 baseline
  - reduce cancellation rate **by 50%** by 2020 compared to 2010 baseline

Vision for an Improved Organizational Structure of the Overall Performance Management Process

- A well-defined, mature, politically accepted policy for each KPA exists, and it is adequately translated into initial, indicative, strategic performance objectives/indicators/targets.
- A **vertically** and **horizontally** coordinated performance management process is implemented throughout Europe.
- A considerable help to the transition to a performance based ATM System can come from the EUROCONTROL Performance Review Commission (PRC).
- **ATM Performance Review** addresses performance in an adequate manner, and is able to develop 'lessons learned' to **derive continuous improvement.**

Conclusion

There is a need to apply a performance based approach to the design of the future European ATM System

The approach is outlined in the D2 Deliverable

Now SESAR must make it happen

SESAR consortium

Short-Term Improvements

Olaf Dlugi, ERA
ExCom Chairman

SESAR consortium

OBJECTIVES & METHODOLOGY

Objectives

- Short timeframe (2008-2013) solutions

Methodology

- +- 200 initiatives assessed
- Focusing on
  - **Fragmentation reduction**
  - **ATM network flexibility enhancement**
  - **Integrated approach**
  - **Performance-based approach**

Table 4.3: Assessment of the level of contribution of selected solutions to KPAs and their maturity

	Societal Outcome			Operational Performance					Performance Enablers			
Selected solution	Safety	Environmental Sustainability	Sustainability Security	Efficiency	Predictability	Flexibility	Capacity	Cost-Effectiveness	Access & equity	Participation	Interoperability	Maturity
ATFCM	+	+	+	++	++	+	++	+	+	++	+	Mature
DMEAN	+	+	+	++	++	++	++	+	++	++	+	Mature
New FDPS	+	+		+	+	+	+	+			++	Mature/Promising
AIM Activities	+			+				+	++	++	++	Mature
CASCADE	++	+		+	+	+	+	+		+	++	Promising
CHAIN	++		+					+		++	++	Mature
FASTI	+	+		+	+	+	+	+		++	++	Promising
LINK 2000+	++	+		+	+	+	+	+		+	++	Mature
P-RNAV	++	++		++	+	+	+	+		+	++	Mature
European Safety Programme	++							+		++		Mature
A-SMGCS level I and II	++	+		+	+		+	+				Mature
EAPPRI	++											Mature
AMAN/DMAN	+	+		+	+		++	+				Mature
ACE	+	+		+	+	+	++	++				Mature
Collaborative environmental management systems		++										
CDA		++		+	+	+						Mature
RNAV / RNP	+	++		++		+		++				Mature/Promising
SMAN		+		+	+	+	+					Promising
8.33	+			+	+	+	+	+		+	+	Mature
CDM	+	+		+	++	+	+	++		++		Mature

Legend
blank = neutral; + = positive impact; ++ = substantially positive impact

Identified Solutions to be further consolidated

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CAPACITY - AIRSPACE

Airspace Capacity

- Support the implementation of DMEAN and ATFCM Strategy and Evolution Plan **– Mature**
- States/ANSPs to share their experience of local implementation best practices across the European network **– Mature**
- Support 8.33 programme, while tackling GA and military retrofit issues **– Mature**
- Support frequency assignment and promote frequency management improvement **– Mature**
- Support implementation of P-RNAV, Link2000+, CASCADE **– Mature to promising**

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CAPACITY - AIRPORT

Airport Capacity

- Implement EUROCONTROL ACE recommended best practices – **Mature**
  +20% average runway capacity increase
- Implement or complement / support airport management airside, AMAN / DMAN / SMAN Arrival, Departure and Surface Manager (including apron management and stand /gate management)
  – AMAN and DMAN : **Mature**, SMAN – **Promising**
- Promote EC funded R&D on improved accuracy of weather forecast for ATM purposes

EFFICIENCY & PREDICTABILITY

AIRSPACE

- **Implement ARN V5 and V6 – Mature**
- **Promote FUA and civil/military coordination best practices implementation – Mature**

AIRPORTS

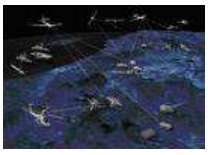
- **Implement Airport CDM – Mature**
- **Support the DMEAN programme and implement recommended best practices as a way of building further bridges between the airport and the network operations – Mature**

COST EFFECTIVENESS

- **Measures taken at local and network level will reduce the direct unit cost per km flown (users costs) by approximately 15% by 2010.**
- **Lack of common systems and coordination at the ATS Units' interfaces accounts for approximately 23% (€190-325Mn) of the entire cost resulting from fragmentation → potential for cost effectiveness**
- **Many of the solutions described under other Key Performance Areas**
- **Functional Blocks of Airspace**

INTEROPERABILITY

- **Support implementation of initiatives addressing interoperability of ATCO support tools and system wide information management like for instance FDPS, FASTI, AIM, CHAIN, which enable the move toward advanced operational concepts**
  – Mature to promising



Key Enablers – Safety & Security

Safety

- **Deployment of the European Safety Programme for an early implementation of a common safety management system – Mature**
- **A-SMGCS – Levels I and II coordinated with European Action Plan for the Prevention of Runway Incursions – Mature**

Security

- **NATO/EUROCONTROL ATM Security Coordination Group NEASCOG: Programme of Work to enhance ATM Security.**

Key Enablers - Environment

Environment

- **Implement procedures, based on existing technical enablers in current aircraft, which improve flight efficiency, navigational accuracy and flexibility (CDA, P-RNAV/RNP, GBAS, leading to 4D approaches) – Mature to promising**
- **Stakeholders should adopt a challenging and robust sustainability policy, achieving the optimum possible balance between social, environmental and economic impeditive – Mature**
- **Implement Collaborative Environmental Management and tools between ATC, users, airport and surrounding communities – Concept is mature, the processes are less mature**

CONCLUSIONS

Fully integrated European ATM Network

- **Potential of significant savings (€0.5-1Bn/year)**
- **Full commitment**

However

- **Political commitment needs to be improved**
- **Persistence and consistency in the validation efforts resulting in insufficiently conclusive results need to be ensured**
- **Complex individual transition paths**
- **Possibly diverging commercial interests**

A political commitment at European as well as at national level is required to support the necessary changes for the short time frame

The Way Forward to the 2020 Vision & D2 Conclusions

Roger Cato, BAA
ExCom Member

The Way Forward to 2020

The Way Forward to the 2020 vision based on:

•Some identified first steps

•Principles which recognise the transition issues

•Seven Key areas which need to be addressed

- Easy to say, tough to deliver !

The Way Forward to 2020

Addresses the following subjects:

1. **Societal Expectations (Environment, Security)**
2. **Performance Framework**
3. **ATM Business Management Framework**
4. **ATM Institutional and Regulatory framework**
5. **Subject of Common Interest (Standardisation and Financing)**
6. **The future architecture of ATM**
7. **The role of the Human**

The Way Forward to 2020

1. **Societal Expectations**

- **Environment:**
  - Dissemination of best practice
  - A pan-European cross industry platform for aviation sustainability
  - Decision-making process for sustainable airport development based on trust and mutual understanding
- **Security**
  - EC regulation 2096/2005 and ICAO regulation gives the current framework
  - Identified set of promising initiatives and general principles for the ATM system security and its co-operation with the NGA
  - Develop and implement an ATM Security Management Plan with appropriate targets

The Way Forward to 2020

2. **Performance Framework**
   - The SESAR definition phase to continue the development of the Performance Framework at operational and system level
   - ATM Master Plan to identify how to manage the future ATM system in a performance based manner i.e KPAs and their interdependencies
   - Development of performance data collection
3. **ATM Business Management Framework**
   - Cross border approaches building on FABs initiatives
   - Restructuring of CNS operations
   - Collaborative procurement
   - Potential restructuring of ANSP service provision
4. **ATM Institutional and Regulatory framework**
   - EC High level group results
   - The Joint Undertaking: supervise/steer the Development Phase
   - Continue development of the ATM regulatory framework and principles for the safety regulatory framework - trends and options have been identified

The Way Forward to 2020

5. **Subject of Common Interest:**
   - **Standardisation:**
     - Standardisation programme to support the SES IR as a baseline
     - Master plan to identify Europe and worldwide standardisation activities
   - **Financing**
     - Reasonable estimated future investment volume of 22Bn
       PPP models and industry venture structures a possibility
     - Identified pre-financing - scheme postponing repayments

6. **The future architecture of ATM**
   - A set of high level principles established for the 2020 ATM architectures
   - Use of QoS indicators to derive the performance requirements
   - Scaleable, gradual and adaptable

The Way Forward to 2020

7. **The role of the human:**
   - **Social factors and Change Management**
     - Legislated social dialogue experiences examples of best practices
     - European Sectorial Social Dialogue Committee for Civil Aviation is a promising initiative: recent FABs report
     - Coordination to be set with other aviation social partners on dedicated subjects (Just culture, ATM Air-Ground integration..)
   - **Human factors**
     - Framework for human performance improvement
     - HF best practices translated into regulations (EU directives, ESARRs as appropriate..)
   - **Recruitment, Training, Competence and Staffing**
     - Enhanced staffing and rostering processes based on best practices and guidance material
     - Harmonisation of the operational competence to enable mobility of workforce (free movement to overcome local temporary shortages)

D2 Conclusions

"Future Vision of the ATM system"

- **A new performance-based concept – with clear targets**
- **Customer oriented approach e.g. business trajectory**
- **Based on three new Frameworks**
- **Sensitive to the needs of the Society, neighbours and staff**
- **Safe, secure, cost effective and sustainable**

D2 Conclusions

"Future Vision of the ATM system"

New performance-based concept

Clearly define **What (targets)** is needed

Customer-oriented service

Giving focus to the **Business Trajectory** **within** the context of a Network Operation

ATM partnership

All Stakeholders have to play their part in the decision making process, be it design, planning, operation or investments

Activities after lunch

Activities – after lunch

4 Break out sessions

- 2020 Vision
- Performance Framework & Targets
- Short Term Improvements
- The way forward

Everyone has the opportunity to participate in every session

Meet in your designated room at 13.45

- Red group: Geneva 1
- Blue group: Geneva 2
- Green group: Zurich
- Yellow group: Bale

Lunch Buffet and coffee break courtesy of

Air Traffic Alliance & BOEING

D2 Stakeholder Forum

Breakout Session Results

The 2020 Vision of Air Transport Industry

K. Van den Boogaard

The 2020 Vision of Air Transport Industry
SESAR vision is to achieve a Performance based European ATM, built in partnership:

Capacity enhancement and flight efficiency? is it an achievable objective?

We have to agree on the meaning of the performance framework e.g.: Safety what are we looking for? Which kind of indicators/targets

Safety how to come to a global approach ensuring the overall improvement in Safety

Airports: are separated from the ATM System how to best integrate them in the future ATM system

The 2020 Vision of Air Transport Industry
SESAR vision is to achieve a Performance based European ATM, built in partnership:

Concerns about how to allocate enough capacity to handle different type of traffic at airport level

There is a need for a more strategic planning for DEP/ARR traffic at airport level

Concerns about how to solve limitations at airport level (physical constraints, environmental impacts…)

Quality of Service from the user point of view

How the performance framework partnership will work to handle constraints

The 2020 Vision of Air Transport Industry
Business trajectory: the core of the vision

Punctuality of scheduled/non scheduled traffic, is GA included in it?

are all the users going to be accomodated in the same way as airlines will be (while maintaining appropriate levels of Safety, flexibility,…)?

Lot of coordination issues involved between different actors, how to ensure it will be possible to gather the best economic outcome?

Will BT ensure the basis for the expected and needed enhancement in Capacity, Safety and the other performance areas)

FPL is already a form of BT… if we lock an acft to fly the RTB this will not ensure enough flexibility

The 2020 Vision of Air Transport Industry
Business trajectory: the core of the vision

SWIM and CDM context: which will be the level of involvement of the Airlines in exchanging information on the BT (monitoring of the BT?)

Is the BT concept feasible? How it will be integrated in the Performance based Partnership?

If the BT outcome will not be measured only in terms of money, then it might the basis for the future system

How to manage the moltitude of different BT that are going to interest the same airspace at the same moment?

Where is the Airport operation centre to integrate different BT at airport level?

Is BT just a concept or do you think it will provide the real basis for the future system?

Is BT the proper terminology/name?

The 2020 Vision of Air Transport Industry

Business trajectory: the core of the vision

- **How can be possible to integrate helicopter coming from North-Sea platforms in the future system?**
- **BT shall be available under all conditions (including time critical situation) so appropriate technological enablers shall be available to ensure trajectory management**
- **How to incentive the "on time, first to serve" without application of penalties?**
- **Is BT the proper terminology/name?**

The 2020 Vision of Air Transport Industry

Three Frameworks to govern the future ATM System:

- **ANSPs Business is not covered well (business model not enough developped) how do ANSPs are going to accomodate business trajectory adopting a similar business approach**
- **The Social framework is missed in the overall description**
- **Concerns for the transition phase from short improvements to long term improvements (how to handle the technology changes in a business oriented framework)**
- **Governance issue: needs for harmonisation are leading to more (costly) "restrictive" regulation… what will be the SESAR ideal situation?**

The 2020 Vision of Air Transport Industry

Three Frameworks to govern the future ATM System:

- **Concern: adopt Regulation only where needed**
- **The relations between the three framework are missed (not well described)**

It is a basic principle that everyone works in partnership to ensure the best possible results

The ATM Performance Framework & Target

Agree with recommendations ?
Any issues missing ?
What should come next ?

11 Key Performance Areas (KPAs) to represent the ATM Performance spectrum

Four KPAs, directly linked to the achievement of the proposed SESAR Vision

Performance Target "Capacity" – Handle traffic growth well beyond 2020

Performance Target "Safety" - Proactively manage safety with the goal of no ATM related accidents

Performance Target "Environment" - ATM will deliver its maximum contribution to the environment

Performance Target "Cost-Effectiveness" - Halve the total direct ATM costs

Performance Framework & Targets

- **Future Concept of Operations → based on Performance Framework ?**
  - How is this accomplished?
  - Are all KPAs covered? Trade off within one KPA possible ?
  - Identification & Measurement of the root problems
- **Weather related issues -> How taken into account? Use ongoing activities!**
- **D2 is too commercial user oriented why are smaller aircrafts excluded?**
- **NGATS versus SESAR – difference in scope**
- **Definition of baseline for the KPAs / performance targets necessary**
- **Cost Effectiveness: should we drive down costs or ATM charges?**
- **Predictability:**
  - aircraft equipment improvement not included ?
  - Analysis of service disruption: what is included e.g. Weather, Maintenance
- **Environment –10% Baseline? per flight! per year!**
  - Does it include airports?
  - ACARE 2020 alignment? Limits of aircraft versus ATM

Performance Framework & Targets

- **Quality of Service –**
  - Definition / Roles per stakeholder group
  - Availability of the new architecture / technical systems should be one of the indicators since it is the backbone of the future system
- **Set priorities between all KPAs – not all can be achieved at the same time:**
  - **Focus on environment & noise**
- **The interest of the public should always be considered**
- **Safety target should be at the highest level – take incidents into account**
- **What are the cost for the airlines to reach the targets e.g. retrofit for avionics?**
- **Trade - Off: Who is doing it? How will it be done?**
- **Noise at airports – zero noise restrictions in the future ?**
- **Sensitivity: the 2020 traffic is an estimate – How do the performance targets change if the capacity forecast / estimate changes?**

Performance Framework & Targets

- **Better definition of KPA Capacity + Target is needed**
  - **What are the solutions to achieve 3x capacity at the airports?**
  - **Capacity can also be expressed in the numbers of passengers (tons) instead of the numbers of flights e.g. due to larger aircrafts e.g. A380**
- **Airports expansion should be supported**
- **Is there a contradiction between the KPA Cost-Effectiveness and e.g. Environment?**
- **Capacity and Cost Effectiveness: what are the links in case e.g. the actual demand is less of what is expected?**
- **Are intermediate steps for each performance target foreseen / defined?**
- **What kind of tools should be used to validate new KPAs e.g. flexibility?**

D2 – Short-term Improvements

Solutions are generally agreed

Some doubts :

- **Urgency to implement**
- **Commitment**
- **Cost/benefits ratio**
- **Lack of concrete evidence to support the selection of initiatives**
- **Short-term benefits of FABs**

D2 – Short-term Improvements – Missing

Meteo

- **Inventory of capabilities**
- **Better use of Meteo information**
- **Special tools for mitigating MET risks (e.g. Flysafe program)**

Bad weather Operations

Missing the views from Airport system supply industry

Need for better access to information for all pilots

Link with FAA/NGATS (Interoperability)

8.33 : ANSPs have not fully adapted sectorisation to 8.33 to provide full advantage

SBAS

D2 – Short-term Improvements – **Next steps**

Full integration in performance framework (targets, measurements, updat etc)

Integration with target concept

Marketing to all stakeholders of selected solutions and benefits

Who will be in charge : assign Short-term solution “manager”

Integration with ECIP/LCIP

Consider usage of SES Regulation (performance orientated)

COMMITMENT BY ALL IS KEY

Break-out
Group D

The Way Forward to the 2020 Vision & D2 Conclusions

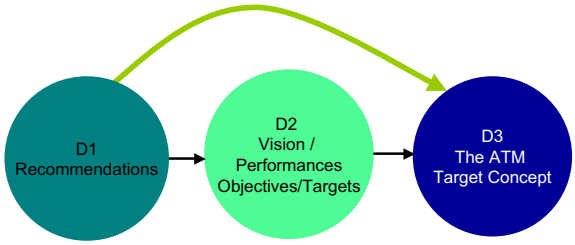
- Security is not being taken seriously
- How do you address robustness of the system.
- How does the SESAR Vision include future technologies.
- From the human side there seems to be focus from the JU on the social side and not on the professional/technical input.
- Should the performance target metric be based on passenger numbers rather than the numbers of flights.
- What is the SESAR ATM scope
- How will UAV's be handled in the SESAR 2020 vision.

Break-out
Group D

The Way Forward to the 2020 Vision & D2 Conclusions

- What are differences between short term improvements and the first steps of the way forward.
- How will independent research be considered in SESAR development.
- How do we ensure that future ATM systems will develop with current (possibly changing) societal expectations.
- What sort/profile of people should we be recruiting now for 2020 SESAR Vision
- Will competition be managed fairly in SESAR development

An Outline View of the Way Forward to D3
Traceability of D1 Recommendations



D1 Recommendations directly applicable to D3

- **Interoperability at service & functional levels - single functional architecture**
- **Design a future ATM System with :**
  - functional architecture defining information flows between principal entities (Air & Ground treated as one)
  - Clear distinction between ATM services, support services (technical) & physical assets of technical infrastructure
- **Strong European standardisation & certification institutional framework in place**
- **Single European ATM System "design authority"**
- **Focus applied R&D :**
  - applications needed to achieve System performance
  - technological solutions to deliver them
- **Increased Integration of Security aspects - commensurate with threat**
- **Proactive approach to maintaining minimal impact of air transport on environment**

Development of Future ATM Target Concept

Focus on the ATM Target Concept which is composed of :

- **Concept of Operations**
  - Made up of most beneficial Operational Concept Elements to meet Future Performance Requirements (D2) & Overcome Deficiencies of Current System (D1)
- **System Architecture**
  - Design based upon "Best Practice" Principles (D2) & detailing Logical/Functional & Technical Structures
  - Meets Needs of Operational Concept Elements
- **Set of Supporting Technologies**
  - Meet Architectural Needs

Must be feasible, safe, affordable, achievable

M3 Milestone Objectives

Long-Term ATM Target Concept

- **Meets D2 Performance Objectives & Addresses D1 Recommendation**
- **Long-term horizon : ~ 2020 & Beyond**

Mid-Term ATM Concept

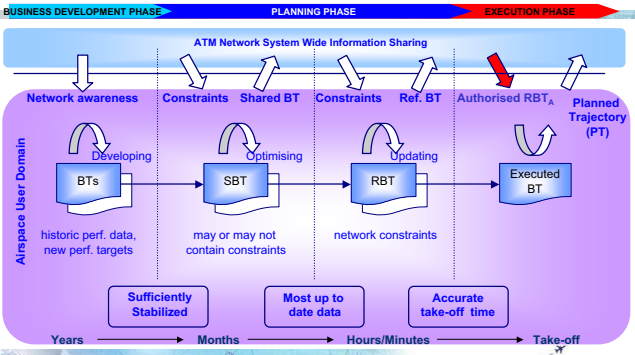
- **Mid-term horizon: ~ 2012**

Architecture Principles & Supporting Technologies

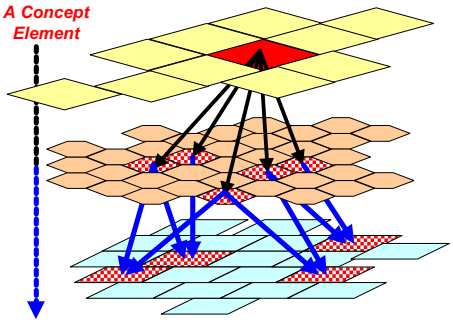
Feasibility of the Future ATM Target Concept

- **Feasible, affordable, safe and can be implemented through a series of realistic, beneficial transition steps from today's situation**

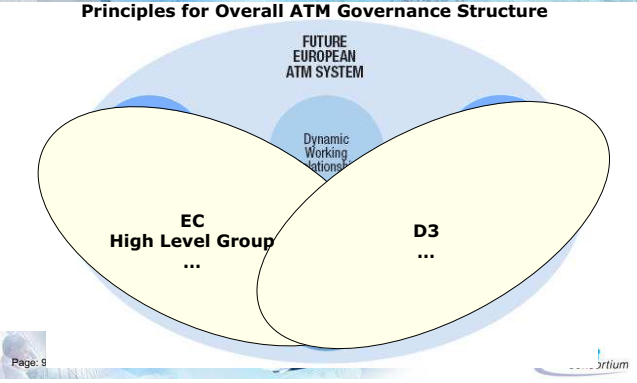
Development of How to Use Business Trajectory



Traceability across Concept of Operations, Architecture & Technologies



Development of Inter-relationships



Conclusions and Way Forward to D3

Olaf Dlugi, ERA
ExCom Chairman

A KEY factor of success :

One ATM Master Plan → shared by EVERYBODY

➡ **One Single European Sky implementation strategy**

SESAR is important for the future of air transport

All stakeholders need to be involved!

What comes after D2 ?

- **The next Milestone Deliverable will be D3:**

The future ATM System

- **Finalized in July 2007**
- **Presented in the next SESAR Stakeholder Forum on the**

26th of September 2007

- **Please book it in your calendar.**

Thank you for your Attention !