NATS

Performance through Innovation

SESAR'S Vision for 2020 Safety

Richard Schofield (for SESAR JU)
Safety Director NATS Operations

OPTICS – "Aviation Safety Research and Innovation: time to take-off"

Contents

- SESAR Programme
- SESAR Safety Assessments Process
- NATS commitment to SESAR
  - What have we done to date
  - What are our plans
- NATS Safety Strategy
- Priorities for Future Research

SJU Members

Aena

AIRBUS
AN EADS JOINT COMPANY WITH BAE SYSTEMS

AleniaAeronautica

DFS Deutsche Flugsicherung

dgac
DSNA

ENAV S.p.A.
ITALIAN COMPANY FOR AIR NAVIGATION SERVICES

FREQUENTIS

Honeywell

Indra

NATMIG

NATS

NORACON

SEAC

SELEX
Sistemi Integrati

THALES

founding members

EUROPEAN COMMISSION

EUROCONTROL

SESAR Targets

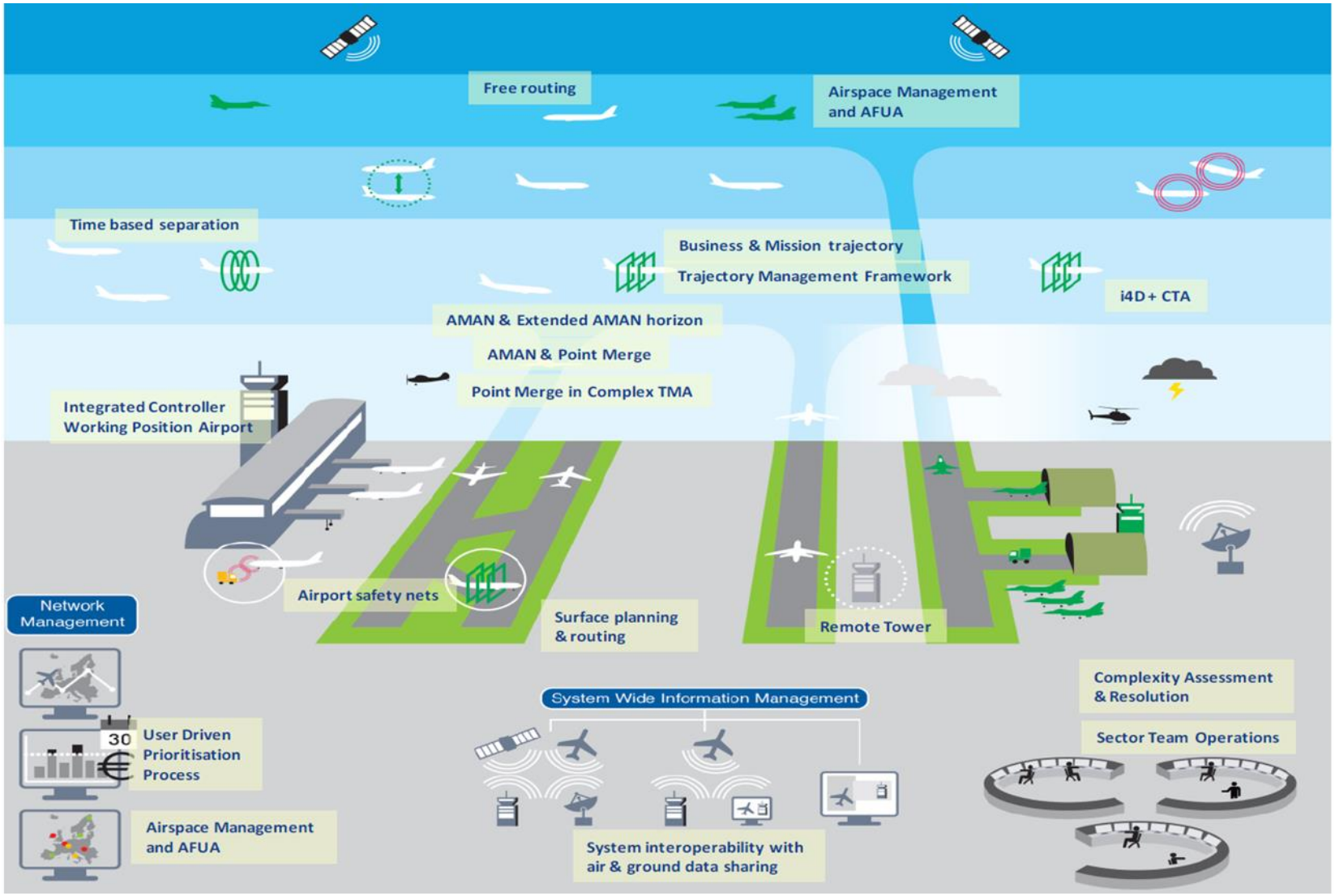
Enabling EU skies to handle **3 times more traffic**

Improving safety by a factor of 10

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

Cutting ATM costs by 50%

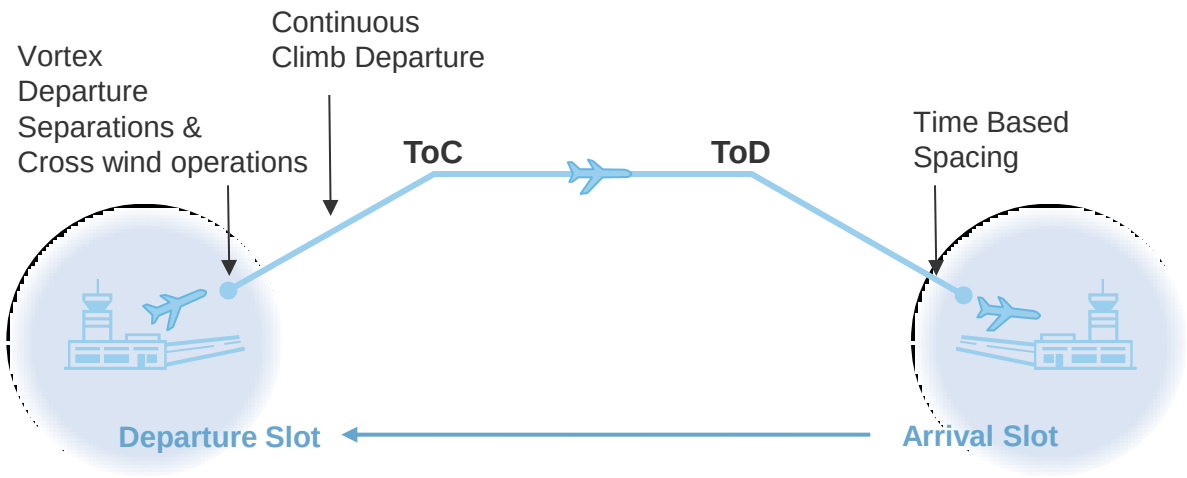
SESAR Changes



STEP 1 - TIME BASED OPERATIONS

Example:

- "Rolling" Network Operations Plan
- 2D-RNP routes (Performance based navigation)
- AMAN Metering / Sequencing
- Controlled Time of Arrival
- Point Merge Arrivals
- Data Link – Aircraft Derived Data

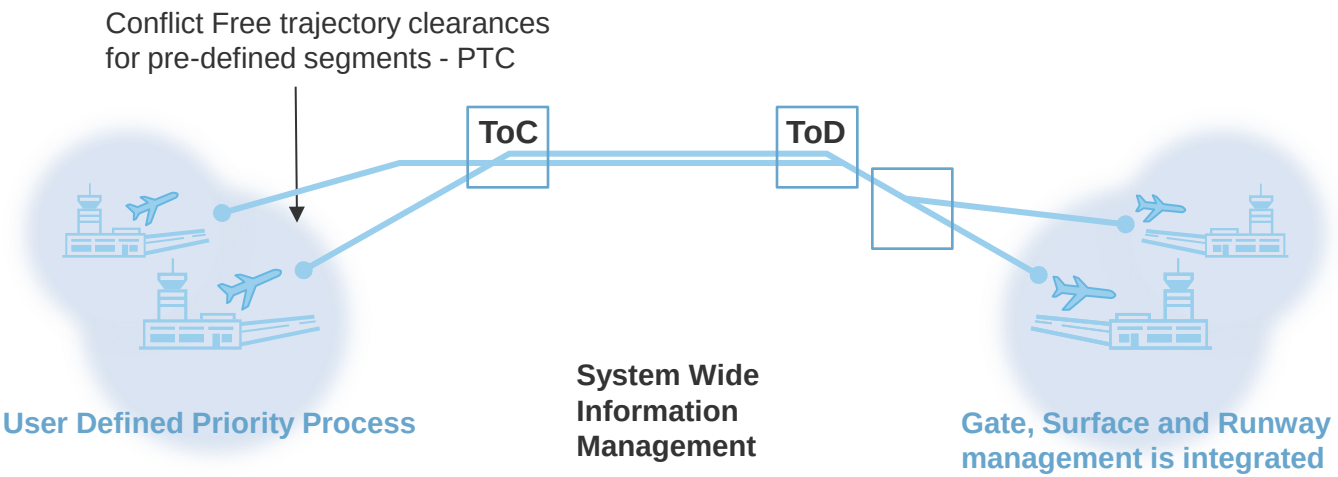


STEP 2 - TRAJECTORY BASED OPERATIONS

Example:

- 3D-RNP Routes
- Extensive tools support, ATCOs and Network Managers
- Operations Plan (integrated with **SWIM**)

- Trajectories revised by Data Link
- Integrated AMAN/DMAN
- Multi Airport arrival & departure Management

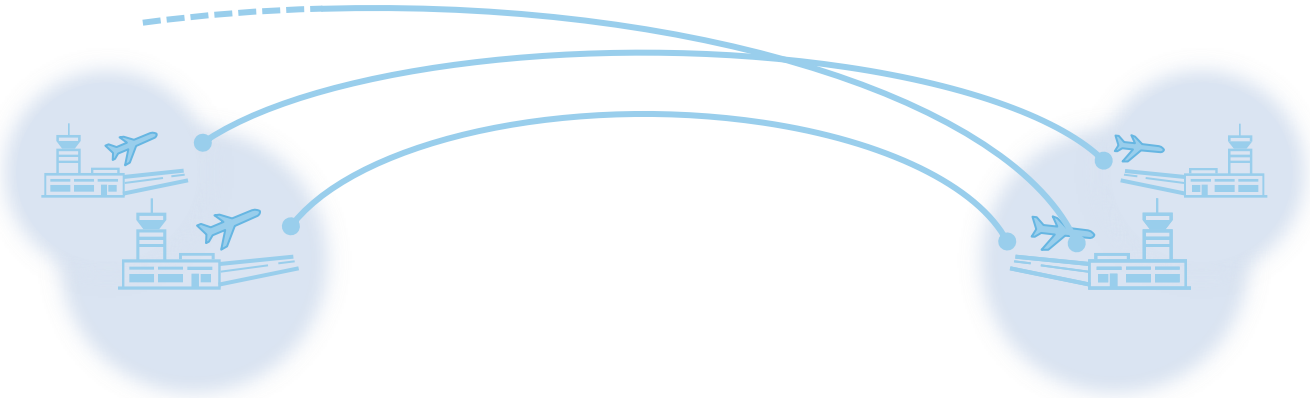


STEP 3 - PERFORMANCE BASED OPERATIONS

Example:

- User Preferred Trajectories
- Full SWIM
- Advanced ASAS

- Integrated Multi Airport arrivals
- Virtual Towers
- Pilot manages time based and vortex spacing



Key Safety Questions

- Will the system have sufficient safety functionality & performance?
- Will it work properly, under all normal conditions of the operational environment that it is likely to encounter?
- What happens under abnormal conditions of the operational environment?
- What happens in the event of a failure within the system?
- Are the Safety Requirements realistic – i.e. could a system be built to deliver them?
- Can SESAR be safely transitioned into operation?

Safety Assessments - 4 fundamental components of enrichment

1. Broader success-based approach
2. Considering Resilience in design
3. System engineering approach
4. HF integration in safe(r) design

NATS SESAR Implementation Progress to date

- Point Merge
  - Procedures for London City included as part of LAMP Phase 1A
- Extended AMAN horizon
  - Descent Phase procedures in operation at Swanwick
  - Extended horizon trial in Spring 14 with Reims, Maastricht, Shannon and Prestwick using AMAN info supplied using SWIM
- Time Based Spacing (TBS)
  - Now being taken forward within NATS as an LTIP project, expected to be introduced at Heathrow in Spring 2015
- Using improved Airline Flight plan information into the ATC Trajectory Prediction tool
  - Use of additional airline data, e.g. aircraft weight, is being implemented through the 4% CO_2 Programme

NATS Safety Strategy –

"The Future of Safety in ATM"

4 Key Themes

Conclusions Priorities for Safety Research

- Applying a total ATM approach – considering the increasingly dependent relationship between the ground and airborne systems
- Designing and maximising safety benefit
- Designing in resilience and flexibility to address increasing complexity
- Establishing a proper mechanism for determining what should automated
- Understanding the change in controller roles and responsibilities with increasing automation

Questions