NATS

The UK's leading Air Navigation Services Provider

Enterprise Architecture: Generating the European Conversation

Integrated EA
1st March 2011

NATS

NATS En Route plc - Overview

- Fully-integrated civil/military en-route air traffic services within UK airspace (> 2 million flights p.a.)
- Oceanic air traffic services for the North Atlantic (~400,000 flights p.a.)
- Consolidated from 4 operational centres to 2 in early 2010
- Controlling some of the busiest and most complex airspace in the world
- ~1000 programmes, technical and scientific staff

Oceanic and Area Control Centre, Prestwick

London Area and Terminal Control Centre, Swanwick

ATC Training College, Hurn

Corporate and Technical Centre, Whiteley

NATS En Route plc - Overview

- NATS is the main UK Air Navigation Service Provider (ANSP)
- NATS is a for-profit PPP with a consortium of UK airlines as its major shareholder
- NATS provides air traffic services for UK airspace, major UK airports and the North Atlantic
- NERL, the en route air traffic services part of NATS, is regulated by the CAA over 5-year Control Periods
- NATS is subject to increasing European regulation, performance and convergence requirements through the European Commission Single European Sky (SES) initiative

The Changing Face of Aviation

» Aviation is changing Globally and this will affect us all
  » Greater Punctuality
  » Improved Safety
  » Lower Environmental Impact
    » More Efficient Fuel Burn!
  » Reduced Costs
    » Lower cost of Travel

» The future is performance based
  » The ATM Performance Partnership

» Innovation lead by the USA and Europe
  » FAAs NextGen Programme
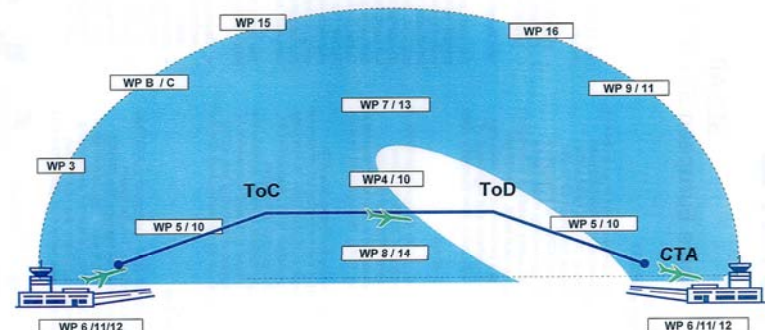 » The European Single Sky
    » SESAR Programme

The SESAR Programme

» 2 Billion Euros of Investment in a 10 year long Research and Development programme

» 4 Billion Euros of Investment in the transformation of European Aviation in the first 30 years of the 21st Century

» 300 separate Projects with participation from the entire European Aviation Industry

> » Over 1000 people working on it in 2011

» A Major undertaking which can benefit from the use of an Enterprise Based Approach

WP B	Target Concept and Architecture Maintenance
WP C	Master Plan Maintenance
WP E	SESAR Long Term and Innovative Research
WP 3	Validation Infrastructure Adaptation and Integration
WP 4	En-Route Operations
WP 5	Terminal Operations
WP 6	Airport Operations
WP 7	Network Operations
WP 8	Information Management
WP 9	Aircraft Systems
WP 10	En-Route & Approach ATC Systems
WP 11	Flight and Wing Operations Centres/ Meteorological Services
WP 12	Airport Systems
WP 13	Network Information Management System

SESAR PROGRAMME

WP 15   WP 16
WP B / C   WP 9 / 11
WP 7 / 13
WP 3
WP4 / 10
ToC   ToD
WP 5 / 10   WP 5 / 10
WP 8 / 14   CTA
WP 6 /11/12   WP 6 /11/12

SJU WORKING TOGETHER
A unique 'PPP' Involving all actors

Making a Difference!

Fuel-efficient flight profile

Altitude (FT)

Distance (Nm)

Step climbs require an increase in fuel consumption

Slower speeds result in an increased rate of climb, Fuel used to gain altitude

Levelling off during descent requires an increase in thrust resulting in extra fuel being burned

Higher speeds provide greater range. Fuel used to gain distance

Cruise climb – altitude increases as aircraft mass falls

Continuous climb with constant acceleration

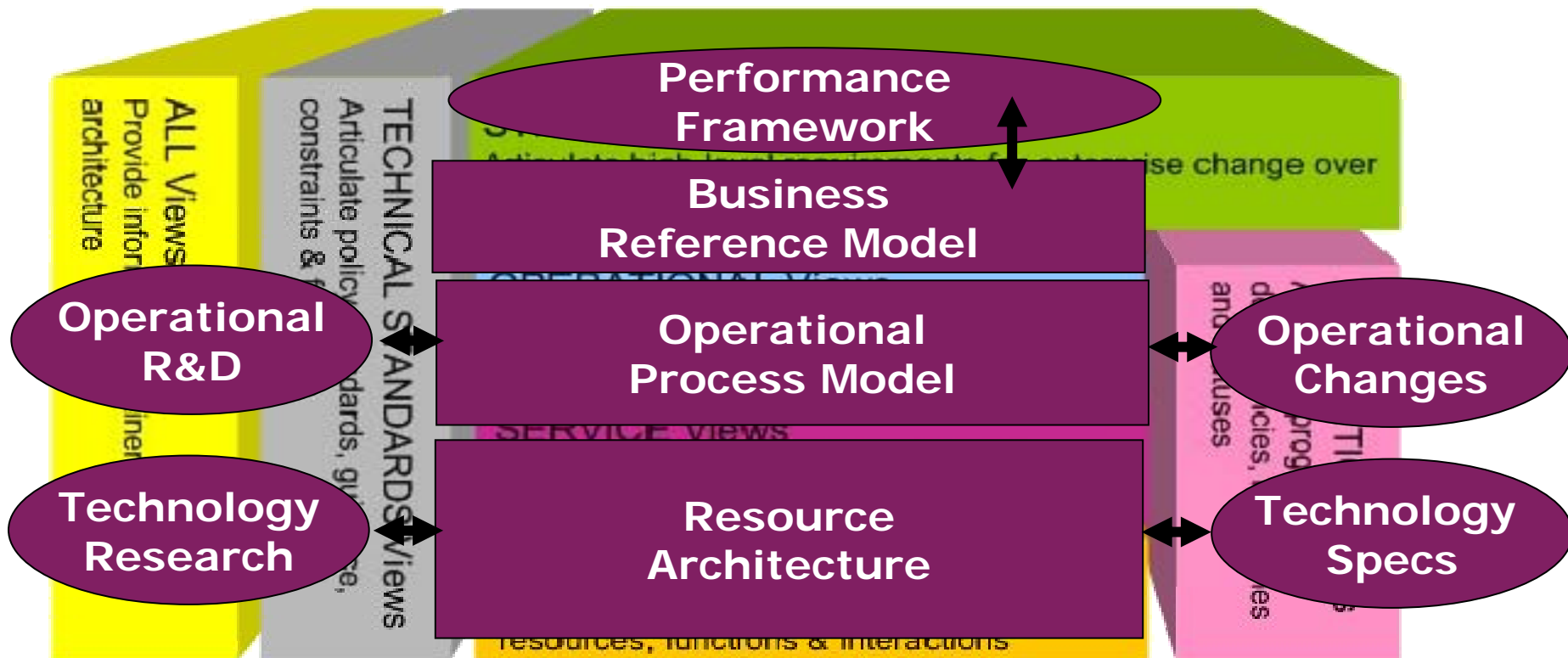Continuous descent from cruise altitude using minimum idle descent angle
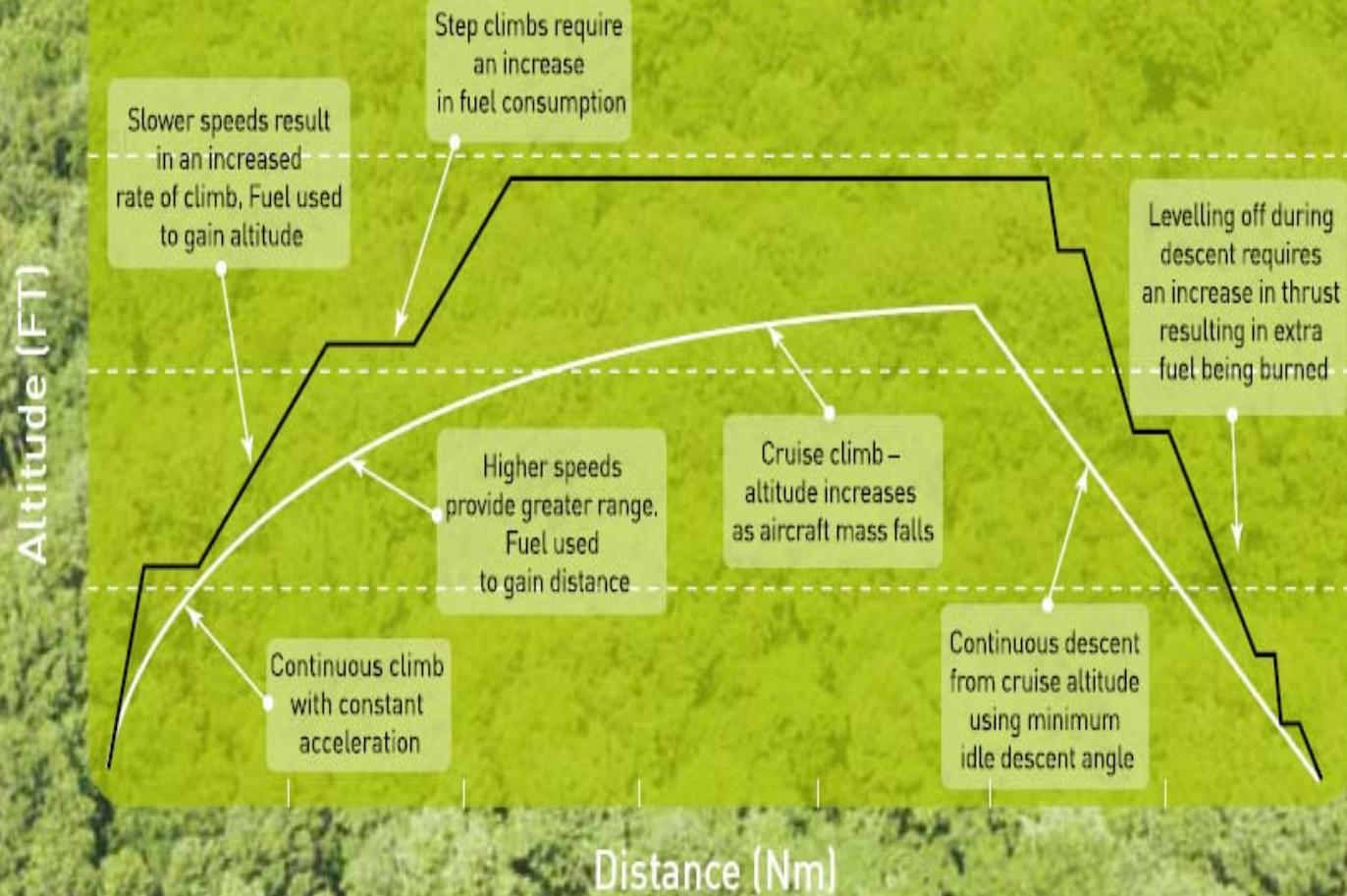
# The Role of Enterprise Architecture in the future of European ATM

» Identify where changes are needed deliver performance improvements

» Views to support communication with all stakeholders.

» Provide a Governance reference

» Ensure Consistency and full coverage

» Based on the NATO Architectural Framework

ALL Views
Provide information pertinent to an architecture

TECHNICAL STANDARDS Views
Articulate policy, standards, guidance, constraints & forecasts

STRATEGIC Views
Articulate high-level requirements for enterprise change over time – capabilities, goals, enduring tasks

OPERATIONAL Views
Articulate operational scenarios, activities, and information flows

SERVICE Views
Articulate services, their interfaces, behaviour and policy

SYSTEM Views
Articulate the solution specification – resources, functions & interactions

ACQUISITION Views
Articulate programme dependencies, milestones and statuses

The Role of the European ATM Enterprise Architecture in the SESAR Programme

The ATM Enterprise and the Performance Partnership
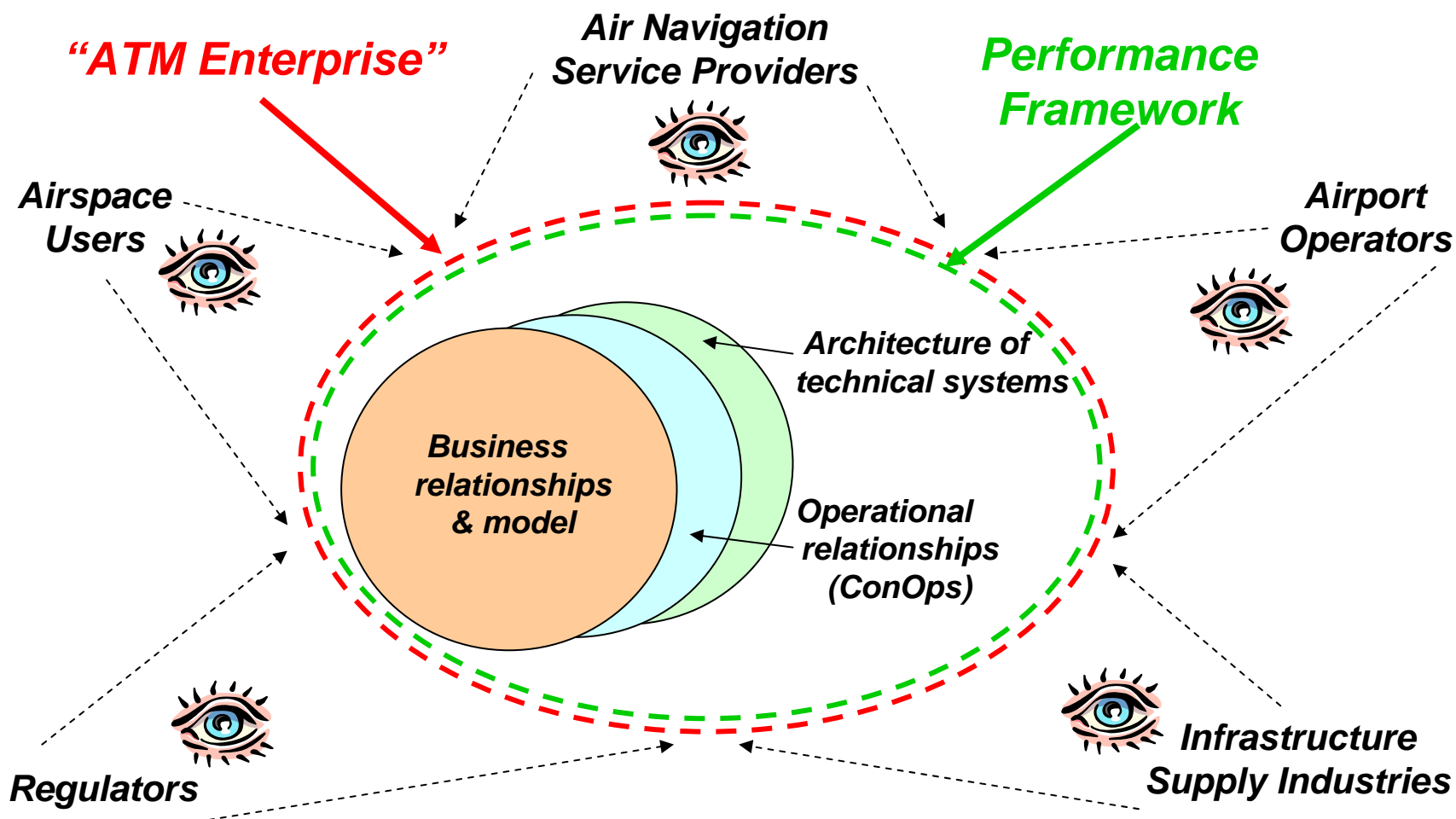
ATM Business Reference Model
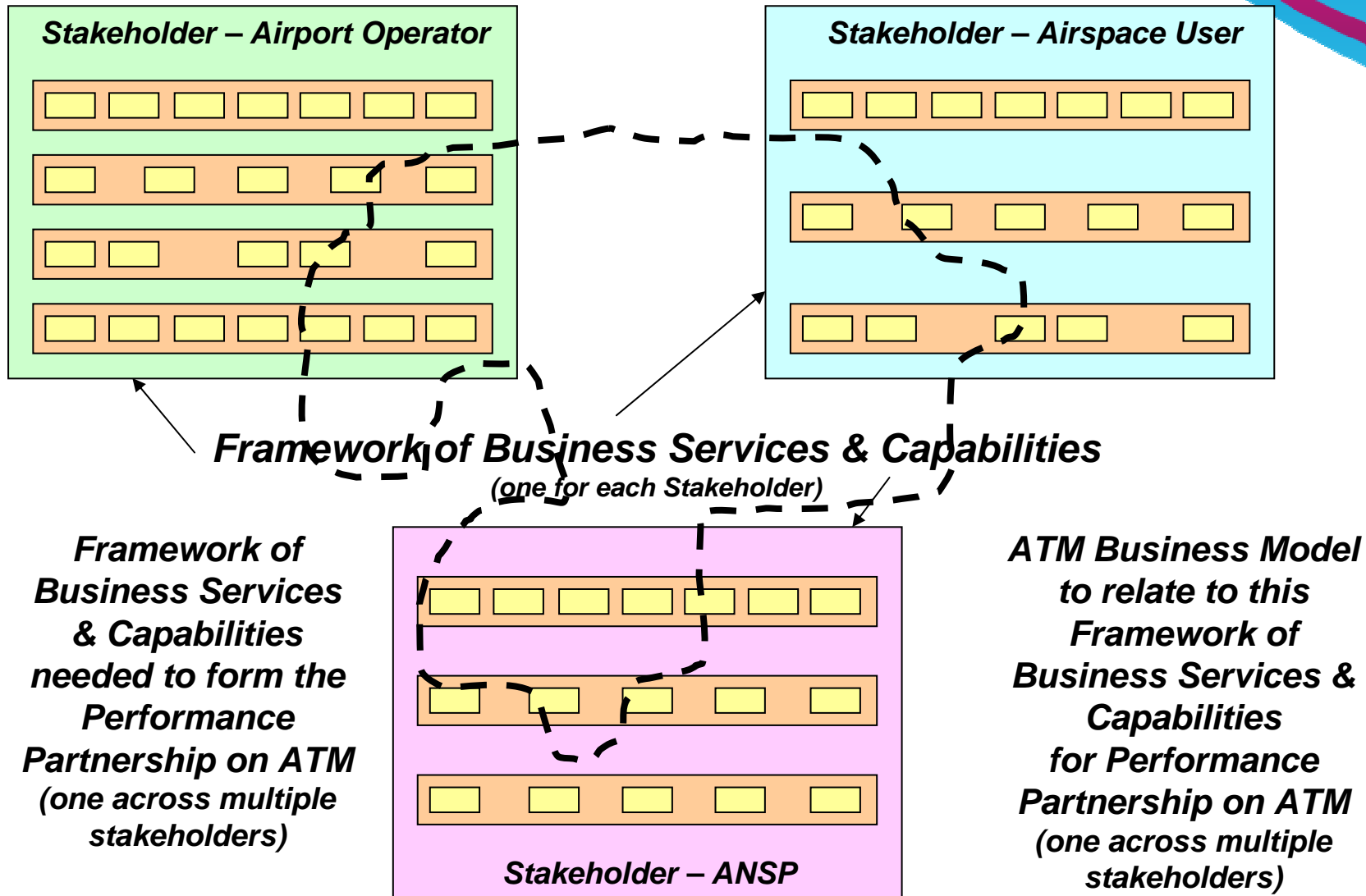
NATS involvement in SESAR

» Over 100 staff involved in a large number of projects across the entire programme:

  » R&D specialists
  » Enterprise and System Architects
  » Engineers
  » Strategic Specialists

» NATS Leads the Business Architecture and Terminal Manoeuvring Area Projects

The NATS Enterprise approach

» NATS have adopted an Enterprise Architecture approach to Strategy Development
  » Built around a Strategic Framework based on MODAF

» The framework brings together NATS':

  » Future Vision
  » Business Goals
  » Business Values
  » Strategies
  » Action Plans

» It provides a rich set of data to support Investment decisions.

Delivering the European Future

» 4 Billion Euros of Investment in Systems and Operational change

» This Investment will be made by the Stakeholders to meet their business needs and the needs of the overall European ATM Enterprise.

» The Investment Blueprint will come from the SESAR Programme.

» A properly structured and supported EA will give the models and context required.

» Organisations will need to take this on board and use it effectively!

The Way Forward!

» NATS has a Strategic Model which is tuned and refined to NATS' needs.

» SESAR is developing the Strategic Model to improve European ATM performance

» NATS will be reflecting on its model and toolset to ensure that it develops a strategy which will help deliver the European Future by

  » Closely aligning its model with the SESAR Model.

  » Identifying the investments it needs to make

  » Identifying Collaborative Opportunities with Industry Partners

» This can only be achieved by the use of EA techniques.

Summary

We'd like to leave you with the following key messages:

This is Big, Important and Global
- c.€6Bn in total, involves over 20 major organisations across Europe touching airports, Air Traffic Control service providers, airline operators and the military, over a 10 year period
- If you fly, it affects you! Getting it right is vital – there's no 'second chance'
- Co-financed by the European Commission
- It is harmonised with the USA's corresponding transformation programme - NEXTGEN

It's also Difficult
- It's pan-European with many stakeholders which use different business models
- Some participants are more advanced than others – there's no common starting point

Summary

Enterprise Architecture is the key tool to address the challenges of this paradigm shift
- EA and allied modelling frameworks provide a common language to enable us to rise to these challenges and address cross-cultural issues
- It provides a framework to model possible architectures and assess costs, benefits and risks of future development to achieve business outcomes
- It supports collaborative working across the various stakeholders
- NATS are leading the EA work

Where are we on this Journey?
- We have developed the Business Reference Model that covers all actors in a transparent manner
- We have agreed on a common framework and use common / compatible models
- Over 200 projects have been launched over the past year

What is the Ultimate Outcome?
- A performance-based outcome that improves safety, reduces costs and provides more capacity to service demand

Questions