Episode 3

Single European Sky Implementation support through Validation

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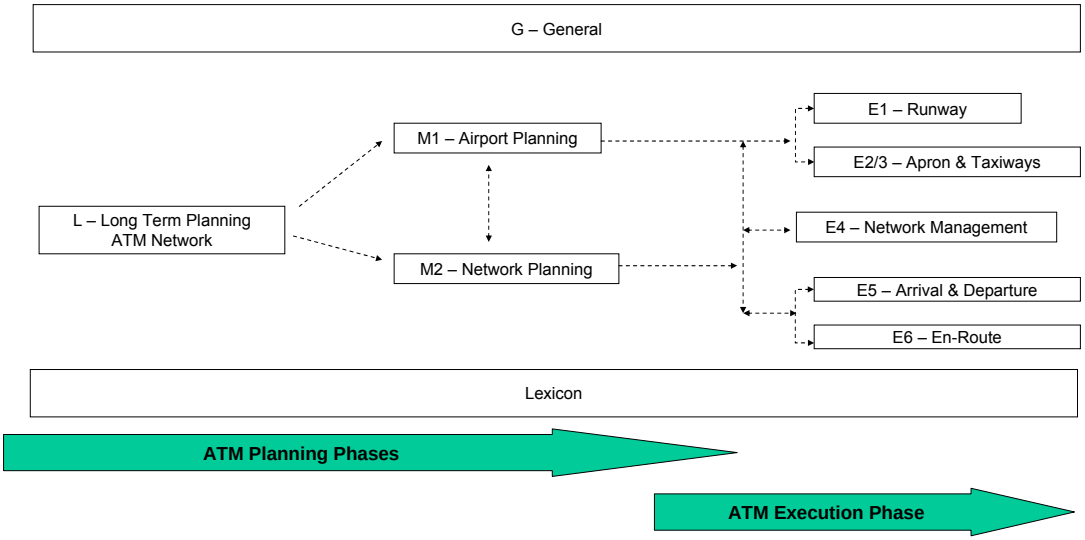
TABLE OF CONTENTS

LIST OF FIGURES

EXECUTIVE SUMMARY

The aim of Episode 3 is to conduct validation activities with the objective of developing a better understanding of the SESAR Concept. The scope on concept detailing was to describe the ATM operational aspects of the concept planned for 2020. This scope excluded the aspects related to operation of the underlying information systems - i.e. System Wide Information Management (SWIM) and the Network Operations Plan (NOP), and the transitional and the end state concepts.

A set of Detailed Operational Description (DOD) documents has been built according to the nine phases defined by SESAR for breaking down the ATM Life Cycle, as well as the actors and their level of collaboration needed at the network level - i.e. airport, regional, sub-regional or local. In order to complement this approach, the list of DODs has been finalised according to a top-down process analysis of the ATM system.



This document is a complementary document which provides the glossary of terms - i.e. acronyms, as well as the description of the main definitions and terms used in the set of DODs.

1 INTRODUCTION

1.1 PURPOSE OF THE DOCUMENT

This document contains complementary information to the set of DODs such as the glossary of terms - i.e. acronyms, and the description of the main definitions and terms used in the set of DODs. These documents refine and clarify the high level SESAR concept description provided by the ConOps in order to support the Episode 3 exercises, which have the objective of developing a better understanding of the SESAR Concept. This set of DODs can be considered as step 0.2 of E-OCVM [1] - i.e. the description of the ATM Operational Concept(s). The DOD document structure and content is derived from the one of the OSED (Operational Service and Environment Definition) described by the ED-78A guidelines [2]. According to the ED-78A: "*the OSED identifies the Air Traffic Services supported by data communications and their intended operational environment and includes the operational performances expectations, functions and selected technologies of the related CNS/ATM system*". The structure has been defined considering the level of details that can be provided at this stage – i.e. the nature and maturity of the concept areas being developed.

The set of documents (available from the Episode 3 portal home page [3]) has been built according to a top down analysis of the ATM system. This analysis has taken into account the nine phases[1] defined by SESAR for breaking down the ATM Life Cycle (refer to Figure 1 & [29]) and, the various actors and the level of collaboration they need at the network level (i.e. airport, regional, sub-regional or local).

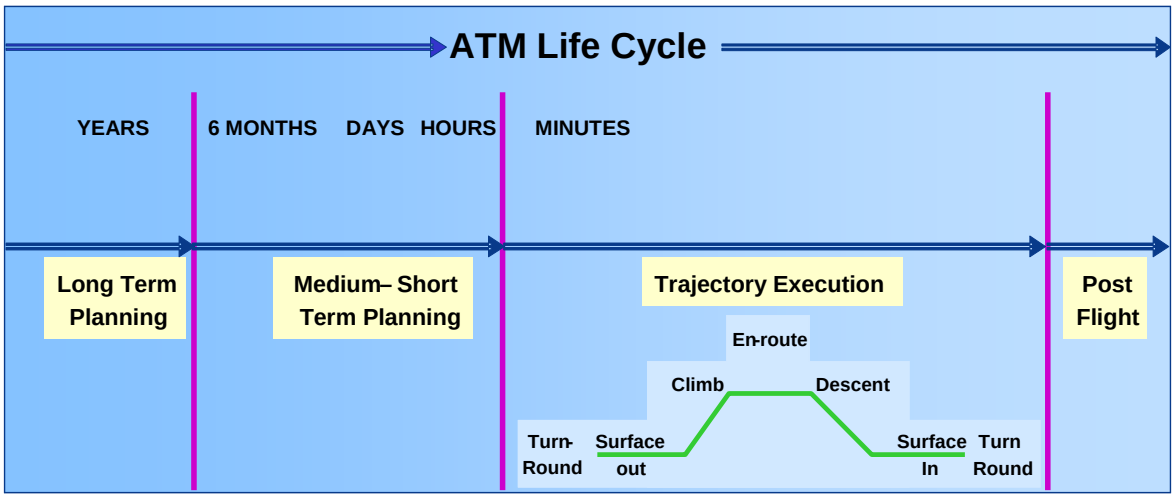


Figure 1: ATM Phases (from SESAR ATM Operational Concept Framework)

The Long Term Planning phase has been considered as a whole, interactions between partners are quite weak and the trajectory sharing is only initiated near to the Medium term boundary. In the case of the Medium/Short Term planning phase considering airport as a full partner/node of the system is one of the leading characteristics of the ATM concept. A specific document has been then developed for the airport operations, concurrently to the one dedicated to network operations and Demand & Capacity Balancing (DCB). Finally, Trajectory Execution phases have been detailed through the trajectory operations, flight phases and the actors involved in collaboration process: considering ground operations – i.e. gate & taxi ways

[1] The intrinsic process for Turn-round (only connections/impacts of it on ATM have been explored) and Post Flight phases are out of the scope of Episode 3.

on one hand and runway on the other hand, airborne tactical operations – i.e. manoeuvring phase and cruise phase and network supporting tactical operations – i.e. Dynamic DCB.

The complete detailed description of the mode of operations is composed of 10 documents:

- The General DOD (G DOD) [4];
- The Long Term Network Planning DOD (L DOD) [5];
- The Collaborative Airport Planning DOD (M1 DOD) [6];
- The Medium & Short Term Network Planning DOD (M2 DOD) [7];
- The Runway Management DOD (E1 DOD) [8];
- The Apron & Taxiways Management DOD (E2/3 DOD) [9];
- The Network Management in the Execution Phase DOD (E4 DOD) [10];
- The Conflict Management in Arrival & Departure High & Medium/Low Density Operations DOD (E5 DOD) [11];
- The Conflict management in En-Route High & Medium/Low Density operations DOD (E6 DOD) [12];
- The Episode 3 Lexicon (Glossary of Terms and Definitions), this document.

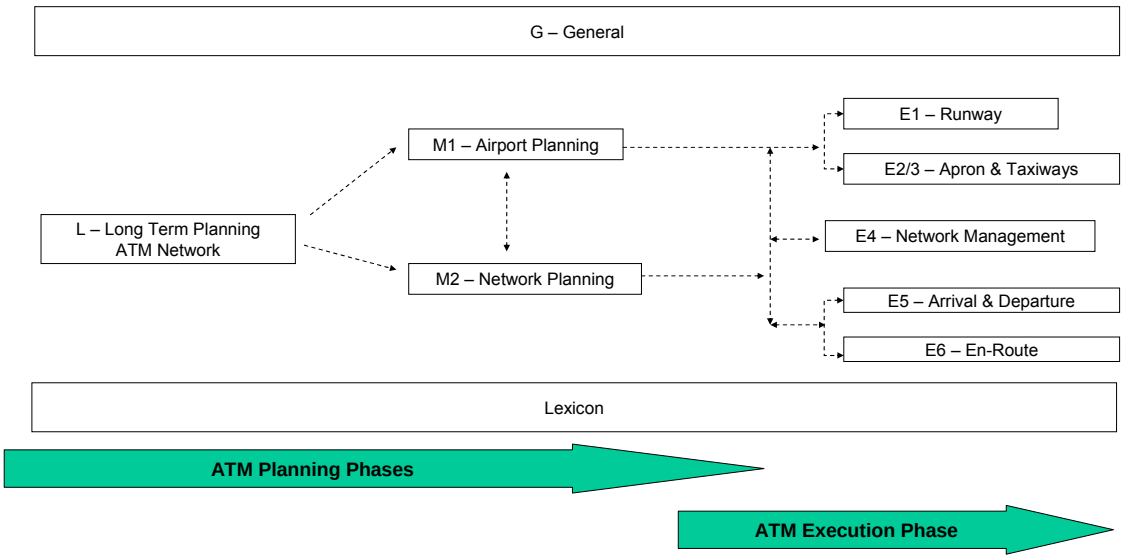


Figure 2: Overview of the Episode 3 DODs

1.2 INTENDED AUDIENCE

The intended audience includes:

- Episode 3 partners;
- The SESAR community.

1.3 DOCUMENT STRUCTURE

The structure of the document is as follows:

- Section 2 of this document provides the list of the acronyms used in the set of the DODs;
- Section 3 provides the descriptions of the terms and definitions used in the DODs;
- Section 4 gives the references to the documents used in the Lexicon.

1.4 BACKGROUND

The Episode 3 project, also called "Single European Sky Implementation Support Through Validation", was signed on 18th April 2007 between the European Community and EUROCONTROL under the contract N° TREN/07/FP6AE/S07.70057/037106. The European Community has agreed to grant a financial contribution to this project equivalent to about 50% of the cost of the project.

The project is carried out by a consortium composed of EUROCONTROL, Entidad Publica Empresarial Aeropuertos Espanõles y Navegacion Aérea (AENA); AIRBUS France SAS (Airbus); DFS Deutsche Flugsicherung GmbH (DFS); NATS (EN Route) Public Limited Company (NERL); Deutsches Zentrum für Luft und Raumfahrt e.V.(DLR); Stichting Nationaal Lucht en Ruimtevaartlaboratorium (NLR); The Ministère des Transports, de l'Equipement, du Tourisme et de la Mer de la République Française represented by the Direction des Services de la Navigation Aérienne (DSNA); ENAV S.p.A. (ENAV); Ingenieria y Economia del Transporte S.A (INECO); ISA Software Ltd(ISA); Ingeneria de Sistemas para la Defensa de Espana S.A (Isdefe); Luftfartsverket (LFV); Sistemi Innovativi per il Controllo del Traffico Aereo (SICTA); THALES Avionics SA (THAV); THALES AIR SYSTEMS S.A (TR6); Queen's University of Belfast (QUB); The Air Traffic Management Bureau of the General Administration of Civil Aviation of China (ATMB); The Center of Aviation Safety Technology of General Administration of Civil Aviation of China (CAST); Austro Control (ACG); Luchtverkeersleiding Nederland (LVNL). This consortium works under the co-ordination of EUROCONTROL.

With a view to supporting SESAR Development Phase activities whilst ensuring preparation for partners SESAR JU activities, Episode 3 focuses on [13]:

- Detailing key concept elements in SESAR;
- Initial operability through focussed prototyping exercises and performance assessment of those key concepts;
- Assessment of impact of key initial supporting technology;
- Analysis of the available tools and gaps for SESAR concept validation; and
- Reporting on the validation methodology used in assessing the concept.

The main SESAR inputs to this work are:

- The ATM Target Concept (deliverable D3) [24], which recommended the use of the SESAR Concept of Operations (ConOps): T222 [20] for further detailed work;
- The description of scenarios developed: T223 [21] & [22];
- The list of Operational Improvements allowing to transition to the final concept: T224 [26];
- The definition of the implementation packages: T333 [25]& [26];

- The list of performance assessments exercises to be carried out to validate that the concept delivers the required level of performance: T232 [27];
- The ATM performance framework, the list of Key Performance Indicators, and an initial set of performance targets: T212 [23].

Evolutions and updates of these various inputs – including the EC/S-JU/ECTL Joint Working Group on IP1 Refinement [30], have been taken into account through the life cycle of DOD development described below.

The objective of detailing the operational concept [28] is achieved through the development of the DODs. These documents are available for the SESAR development phase and are produced through the System Consistency work package of Episode 3. The life cycle of the DOD documents has passed through three main steps:

- Initial DODs provided as the first inputs to the Episode 3 project;
- Interim DODs containing first refinement and consolidation from Episode 3 partners aligned to the prototyping/evaluation work, provided by mid-project duration;
- Final DODs updated by the findings and reports produced by the prototyping/evaluation activities, provided at the end of the project.

The present document has been produced during the third step of the process and represents the final document delivery.

2 GLOSSARY OF TERMS

The acronyms for which a definition is provided in §3 are marked by **the following font and background** and direct to the relevant section through hyper text link.

A B C D E F G H I J K L M N O P Q R S T U V W X

Terms	Explanation
A	*Go to Top*
ABAS	Aircraft Based Augmentation System
A/C	Aircraft
ACAP	Arrival Capacity
ACAS	Airborne Collision Avoidance System
ACC	Air Traffic Control Centre / Area Control Centre
A-CDA	Advanced Continuous Descent Approach
A-CDM	Airport Collaborative Decision Making
ACG	Austro Control Österreichische Gesellschaft
ADAS	Advanced Data link & ASAS
ADD	Airborne Derived Data
ADF	Air Defence
ADS-B/-C	Automatic Dependent Surveillance -Broadcast / -Contract
AEM	Advanced Emission Model
AENA	Entidad Publica Empresarial Aeropuertos Espanõles y Navegacion Aérea
AFIS	Airport/Aerodrome Flight Information Service
AFUA	Advanced Flexible Use of Airspace concepts
AGDL	Air Ground Data-Link
AI	Aeronautical Information
AIM	Aeronautical Information Management
AIP	Aeronautical Information Publication
AIS	Aeronautical Information Service
AIXM	Aeronautical Information Exchange Model (AIS Static part)
ALAQS	Airport Local Air Quality Studies
ALDT	Actual Landing Time
AMAN	Arrival Manager
AMC	Airspace Management Cell Airspace Manager

Terms	Explanation
AMM	Airport Moving Maps
AMXM	Airport Mapping Exchange Model
ANCAT	Abatement of Nuisances Caused by Air Transport (the group of experts on the)
ANSP	Air Navigation Service Provider
ANXM	Airport Operations Information Exchange Model
AO	Airline Operator / Aerodrome Operations
AOC	Airline Operational Control / Airlines Operations Centre
AOM	Airspace Organisation and Management
AOP	Airport Operations Plan
AoR	Area of Responsibility
APO	Airport Operations
APOC	Airport Operations Centre
APP	Approach
APR	Automatic Position Report
APU	Auxiliary Power Unit
APV	Approach Procedure with Vertical guidance
AS	Airborne Surveillance
ASAS	Airborne Separation Assistance Systems
ASEP	Airborne Separation
ASEP-ITP	ASEP – In Trail Procedure
ASEP-CSPA	ASEP – Closely Spaced Parallel Approach
ASEP-C&P	ASEP – Crossing and Passing
ASM	Airspace Management
A-SMGCS	Advanced Surface Movement Guidance and Control System
ASPA	Airborne Spacing
ASPA-S&M	ASPA - Enhanced Sequencing and Merging operations
ASTERIX	All Purpose STructured EUROCONTROL SuRveillance Information EXchange
ATA	AMAN Time of Arrival
ATC	Air Traffic Control
ATCC	ATC Centre
ATCM	Air Traffic Complexity Management
ATCO	Air Traffic Control Officer / Air Traffic Controller
ATFCM	Air Traffic Flow and Capacity Management

Terms	Explanation
ATFM	Air Traffic Flow Management
ATIS	Automatic Terminal Information Service
ATM	Air Traffic Management
ATM-n[2]	ATM Capability Level n (0 ≤ n ≥ 5)
ATMB	Air Traffic Management Bureau of the General Administration of Civil Aviation of China
ATOT	Actual Take Off Time
ATS	Air Traffic Service
ATSA	Airborne Traffic Situation Awareness
ATSA-ITP	ATSA – In-Trail Procedure
ATSA-SURF	ATSA - Enhanced Traffic Situational Awareness on Airport Surface
ATSA-VSA	ATSA - Enhanced Visual Separation Approach
ATSAW	Airborne Traffic Situational Awareness
ATSU	Air Traffic Service Unit
AU	Airspace User
AUO	Airspace User Operations
AUP	Airspace Use Plan
AW	Aerial Work
B	*Go to Top*
BA	Business Aviation
BADA	Base of Aircraft Data
B-CDA	Basic Continuous Descent Approach
BDT	Business Development Trajectory
BM/T	Business/Mission Trajectory
BIC	Best In Class
BLN	BaLaNce
BOD	Bottom of Descent
B-RNAV	Basic Area Navigation
BT	Business/Mission Trajectory
BTV	Brake to Vacate

[2] ATM capability level 5 is not within the scope of Episode 3 project.

Terms	Explanation
C	*Go to Top*
C&P	Crossing and Passing
CAA	Civil Aviation Authority
CAATS(-II)	Cooperative Approach to Air Traffic Services (II)
CAEP	Committee on Aviation & Environmental Protection (ICAO)
CAS	Calibrated Airspeed
CASA	Computed Assisted Slot Allocation
CAST	Center of Aviation Safety Technology of General Administration of Civil Aviation of China Comprehensive Airport Simulation Technology
CAT I, II, III	Category Precision Approach (I, II or III)
CAT	Commercial Air Transport
CATS	Contract-based Air Transportation System
Cb	Cumulonimbus
CBA	Cross Border Area
CCD	Continuous Climb Departure
C-CDR	Complex Conflict Detection & Resolution for ATM
CDA	Continuous Descent Approach
CDM	Collaborative Decision Making
CDM-A	CDM Airports
CDR	Conditional Route
CDTI	Cockpit Displays of Traffic Information
CFIT	Controlled Flight Into Terrain
CFMU	Central Flow Management Unit
CFN	Configuration
CHILL	Collaborative Human in the Loop Laboratory
CM	Conflict Management
CNS	Communication, Navigation and Surveillance
ConOps	SESAR Concept of Operations
CORA	Conflict Resolution Assistance
CPDLC	Controller Pilot Data-Link Communication
CRE	Concept Refinement Exercise
CREDOS	Crosswind Reduced Separations for Departures
CSBT	Coordinated Shared Business Trajectory

Terms	Explanation
CSPRs	Closely Spaced Parallel Runways
CTA	Controlled Time of Arrival
CTFM	Collaborative Traffic Flow Management
CTO	Controlled Time of Over-fly
D	*Go to Top*
DAPs	Downlinked Airborne Parameters
DARTIS	Decision Aid to Real Time Synchronisation
DCB	Demand and Capacity Balancing
DCDU	Data Communication Display Unit
DCMAC	Directorate of Civil-Military ATM Coordination
DFS	Deutsche Flugsicherung GmbH
DG	Direction/Director General
D/L	Data Link
DLR	Deutsche Zentrum für Luft und Raumfahrt
DMA	Dynamic Mobile Area
DMAN	Departure Manager
DMEAN	Dynamic Management of the European Airspace Network
DOD	Detailed Operational Description document
DOW	Description of Work document
DPI	Departure Planning Information
DSNA	Direction des Services de la Navigation Aérienne
DST	Decision Support Tool
DTG	Distance To Go
E	*Go to Top*
EA	Environmental Assessment
EAD	European AIS Database
EAEA	European ATM Enterprise Architecture
E-AMAN	Extended AMAN
EATCHIP	European Air Traffic Control Harmonisation and Integration Programme
EATMS	European Air Traffic Management System
EBT	Executed Business Trajectory
EC	Executive Controller European Commission

Terms	Explanation
ECAC	European Civil Aviation Conference
ECHOES	EUROCONTROL - Consolidation of HMI for Operations, Evaluations & Simulations
ECTL	EUROCONTROL
EEC	EUROCONTROL Experimental Centre
EG	Expert Group
EIBT	Estimated In Block Time
EIS	Electronic Instrument System
EMMA	European airport Movement Management by A-SMGCS
ENAV	Ente Nazionale di Assistenza al Volo
ENXM	Environmental Information Exchange Model
EOBT	Estimated Off Block Time
E-OCVM	European Operational Concept Validation Methodology
EP3	Episode 3 project
ER	en-route
ERASMUS	En-Route Air traffic Soft Management Ultimate System
ERC	EUROCONTROL
1090 ES	1090 Extended Squitter
ESARR	EUROCONTROL Safety Regulatory Requirements
ESCAPE	EUROCONTROL Simulation Capability & Platform for Experimentation
ETA	Estimated Time of Arrival
E-TMA	Extended TMA
ETO	Estimated Time Over
EU	European Union
EUROCAE	The European Organization for Civil Aviation Equipment
EVI	European Validation Infrastructure
F	*Go to Top*
FA	Focus Area
FAB	Functional Airspace Block
FAF	Final Approach Fix
FAP	Future ATM Profile
FASTI	First ATC Support Tools Implementation
FCU	Flight Control Unit

Terms	Explanation
FDP	Flight Data Processing
FDPS	Flight Data Processing System
FG	Flight Guidance
FIR	Flight Information Region
FL	Flight Level
FMD	Flight Management Display
FMP	Flow Management Position Flow Management Planning
FMS	Flight Management System
FOC	Flight Operations Centre
FOD	Foreign Object Debris
FOIPS	Flight Object Interoperability Proposed Standard
FPL	Flight Plan
FPM	Flight Path Monitoring
FTS	Fast Time Simulation
FUA	Flexible Use of Airspace
FUM	Flight Update Message
G	*Go to Top*
G2G	Gate-to-Gate
GA	General Aviation
GAME	General Aircraft Modelling Environment
GBAS	Ground Based Augmentation System
GAES	Global Aviation Emission Studies (EUROCONTROL)
GAT	General Air Traffic
GE	Gaming Exercise
GHG	Green House Gas
GIS	Geographical Information System
GMC	Ground Movement Control
GND	Ground
GNSS	Global Navigation Satellite System
GPM	Global Performance Manual
GPS	Global Positioning System

Terms	Explanation
H	*Go to Top*
HC	Hydrocarbons
HLO	High Level Objective
HMI	Human Machine Interface
HTA	Hierarchical Task Analysis
HUD	Head up Display
I	*Go to Top*
IAA	Irish Aviation Authority (Irish ATC Corporation)
IAF	Initial Approach Fix
IAS	Indicated Airspeed
IATA	International Air Transport Association
ICAO	International Civil Aviation Organisation
ICT	Information Communication Technology
IEEE	Institute of Electrical and Electronics Engineers
iFACTS	interim Future Area Control Tools Support
IFR	Instrumental Flight Rules
ILS	Instrument Landing System
IMC	Instrument Meteorological Conditions
INECO	Ingenieria y Economia del Transporte
INM	Integrated Noise Model
IOC	Initial Operating Capability
IOP	Interoperability Protocol
IP	Internet Protocol / SESAR Implementation Package
IRP	Integrated Risk Picture
IS	Industrial Support
ISA	ISA Software Ltd Instantaneous Self Assessment (workload assessment method)
ISBT	Initial Shared Business Trajectory
Isdefe	Ingeneria de Sistemas para la Defensa de Espana S.A
IT	Information Technology
iTEC-FDP	Flight Data Process
ITP	In Trail Procedure

Terms	Explanation
J	*Go to Top*
JAA	Joint Aviation Authority
JU	Joint Undertaking
K	*Go to Top*
KIM	Key Intermediate Metric
KPA	Key Performance Area
KPI	Key Performance Indicator
L	*Go to Top*
LAQ	Local Air Quality
Lden	Load during Day, Evening, Night (Noise)
Lnight	Load during Night (Noise)
LoA	Level of Acceptance Letter of Agreement
LoC	Line of Change
LRC	Long Range Cruise
LTF	Long Term Forecast
LTM	Local Traffic Manager
LTo	Landing and Take-Off cycle (ICAO)
LVC	Low Visibility Conditions
LVNL	Luchtverkeersleiding Nederland
LVP	Low Visibility Procedures
M	*Go to Top*
MAC	Mid-Air Collision
MANTAS	MAastricht New Tools And Systems
MCC	Minimum Cost Cruise
MCDU	Multi-purpose Control and Display Unit
MET	Meteorological Information Service
METAR	Meteorological Aerodrome Report
MIL	Military
MLS	Microwave Landing System
MRTS	Multi-Radar Tracking System (Thales EUROCAT)
MSP	Multi-Sector Planner

Terms	Explanation
MSPSR	Multi-Static Primary Surveillance Radar
MTCD	Medium-Term Conflict Detection
MTCD/R	Medium-Term Conflict Detection and Resolution
MTOT	Managed Take-Off Time
MTOW	Maximum Take-Off Weight
MTV	Mid-Term Concept Validation
MUAC	Maastricht Upper Airspace Control Centre
MVPA	Military Variable Profile Area
MWM	Multi Workload Model
N	*Go to Top*
NAP	Noise Abatement Procedure
NAT	North Atlantic Region
NATS	National Air Traffic Services (UK)
NAV	Area Navigation
ND	Navigation Display
NERL	NATS En Route Public Limited Company
NG	New Generation
NLR	Stichting Nationaal Lucht en Ruimtevaartlaboratorium
NM, nm	Nautical Mile
NOP	Network Operations Plan
NOPLA	Network Operations Planner
NOTAM	Notice to Airmen
NPA	Non Precision Approach
O	*Go to Top*
OACI	Organisation de l'Aviation Civile Internationale
OAT	Operational Air Traffic
OCE	Operational Concept Element
ODS	Operator Display System
OFIS	Operational Flight Information System
OI	Operational Improvement
OLDI	On-Line Data Interchange
OPTIMAL	Optimised Procedures & Techniques for the Improvement of Approach & Landing

Terms	Explanation
OR	Operational Research
OS	Operational Scenario
OSED	Operational Service and Environment Definition
P	*Go to Top*
PANS	Procedures for Air Navigation Services
PBN	Performance-Based Navigation
PC	Planning Controller
PCA	Air Defence Planning and Control Authority
PCO	Project Coordinator
PEN	Pan European Network
PF	Performance Framework
PFD	Primary Flight Display
PI	Performance Indicator
PIC	Pilot in Command
PID	Performance Influence Diagram
PM	Particulate Matters
PMO	Project Management Office
PMS	Point Merge System
PRC	Performance Review Commission
PRM	Precision Runway Monitoring
P-RNAV	Precision Area Navigation
PROMAS	Process Management Simulator
PRR	Performance Review Report (EUROCONTROL)
PRU	Performance Review Unit
PSR	Primary Surveillance Radar
PT	Predicted Trajectory Performance Target
PTC	Precision Trajectory Clearances
PWP	Pilot Working Position
Q	*Go to Top*
QAR	Quick Access Recording
QoS	Quality of Service
QTA	Queuing Time of Arrival

Terms	Explanation
QUB	Queen's University of Belfast
R	*Go to Top*
RBT	Reference Business/Mission Trajectory
RCS	Risk Classification Scheme
RESET	Reduced Separation Minima
RET	Rapid Exit Taxiways
RFG	Requirements Focus Group
RHP	Runway Holding Position
RNAV	Area Navigation
RNP	Required Navigation Performance
RPK	Revenue Passenger Kilometres
ROC	Rate Of Climb
ROD	Rate Of Descent
ROT	Runway Occupancy Time
R/T	Radio Telephony
RTA	Required Time of Arrival
RTS	Real Time Simulation
RVR	Runway Visual Range
RVSM	Reduced Vertical Separation Minima
RWY	Runway
S	*Go to Top*
SA	Situation Awareness
SADT	Structured Analysis and Design Technique
SAIP	Single European AIP
SAP	Segregated Airspace Probe
SAT	SATuration
SBAS	Space/Satellite Based Augmentation System
SBT	Shared Business/Mission Trajectory
SEA	Strategic Environmental Assessment
SES	Single European Sky
SESAR	Single European Sky ATM Research programme
SESAR PD	SESAR Definition Phase

Terms	Explanation
SID	Standard Instrument Departure (Route)
SIGMET	Significant Meteorological Information
SII	Sourdine II
S-JU	SESAR Joint Undertaking
SLA	Service Level Agreement
SMAN	Surface Manager
SME	Subject Matter Expert
SNET	Safety Nets
SNOWTAM	NOTAM on Snow Conditions
SPOR	Services, Procedures and Operational Requirements
SRNM	Sub Regional Network Management
SSEP	Self Separation
SSR	Secondary Surveillance Radar
STATFOR	Specialist Panel on Air Traffic Statistics & Forecasts
STAR	Standard Terminal Arrival Route
STCA	Short Term Conflict Alert
SUA	Special Use of Airspace
SWIM	System Wide Information Management
SYSCO	System Assisted Coordination
T	*Go to Top*
TA	Tailored Arrival Task Analysis
TAAM	Total Airspace and Airport Modeller
TACCS	Tactical Airborne Command Control and Surveillance
TAM	Total Airport Management
TAS	True Air Speed
TBEC	Thrust Based Emission Calculator
TBO	Trajectory Based Operations
TBS	Time Based Separation Time Based Spacing
TC	Traffic Computer
TCM	Traffic Complexity Management tool
TCT	Tactical Controller Tool
TC-SA	Trajectory Control by Ground Based Speed Adjustments

Terms	Explanation
TGL	Temporary Guidance Leaflet
TGMS	Trajectory Guidance Management System
THAV	THALES Avionics S.A
TIS-B	Traffic Information Service -Broadcast
TLS	Target Level of Safety
TMA	Terminal Area Terminal Control Area Terminal Manoeuvre Area Terminal Manoeuvring Area
TMR	Trajectory Management Requirement
TOBT	Target Off Block Time
TOC	Top of Climb
TOD	Top of Descent
TOG	Total Organic Gases
TOM	Take-Off Mass
TP	Trajectory Predictor
TR6	THALES Air Systems S.A
TRA	Temporary Restricted Area
TREN	Transport and Energy (General Directorate EU)
TRL	Technology Readiness Level
TS	Traffic Synchronisation
TSA	Temporary Segregated Area Traffic Situation Awareness
TSAT	Target Start-up Approval Time
TSD	Traffic Situation Display
TSE	Traffic/Specific Event
TTA	Target Time of Arrival Tabular Task Analysis
TTO	Target Time of Over-fly
TTOT	Target Take-Off Time
TWL	Total WorkLoad
TWR	Aerodrome Control Tower
TWY	Taxiway

Terms	Explanation
U	*Go to Top*
UAC	Upper Airspace Control Upper Area Control Centre
UAS	Unmanned Aircraft System
UC	Use Case
UDPP	User Driven Prioritisation Process
UIR	Upper Flight Information Region
UPT	User Preferred Trajectory
USA	United States of America
UUP	Updated (Airspace) Use Plan
V	*Go to Top*
VA	Validation Area
VDL	VHF Data-Link
VDR	Validation Data Repository
VFR	Visual Flight Rules
VGA	Variable Geometry Area
VLJ	Very Light Jet
VMC	Visual Meteorological Conditions
VNAV	Vertical Navigation
VOC	Volatile Organic Compounds
VRNP	Vertical Required Navigation Performance
W	*Go to Top*
WAM	Wide Area Multi-lateration
WL	WorkLoad
WOC	Wing Operations Centre
WP	Work-Package
WV	Wake Vortex
WX	Weather
WXXM	Weather Information Exchange Model
X	*Go to Top*
XAIP	XML AIP
XML	Extensible Mark up Language

Terms	Explanation
XNOTAM	XML NOTAM
XSNOWTAM	XML SNOWTAM

3 DEFINITIONS

The following terminology is used throughout the Episode 3 documents. This section is not intended to give an exhaustive list of definitions but aims to share and agree the same understanding of the main topics associated to the SESAR Concept within Episode 3. Where possible SESAR definitions are used, where there are no existing definitions, the definition agreed within Episode 3 is provided.

3.1 4-D TRAJECTORY

A set of consecutive segments linking waypoints and/or points computed by FMS (airborne) or by TP (ground) to build the vertical profile and the lateral transitions; each point defined by a longitude, a latitude, a level and a time.

The Business/Mission Trajectories (refer to §3.14) will be described as well as executed with the required precision in all 4 dimensions. The trajectories will be shared and updated from the source(s) best suited to the prevailing operational circumstances and capabilities and the sources include the aircraft systems, flight operational control systems and ANSP trajectory predictors. The ability to generate trajectories in the ATM system from flight plan data will be retained for those flights that are unable to comply with SESAR trajectory management requirements.

Source: SESAR

3.2 4-D TRAJECTORY MANAGEMENT

It is the process that captures the overall traffic situation in the NOP and controls the development of the business or mission trajectories (BDT to SBT to RBT) in 4 dimensions (latitude, longitude, flight-level and time). Specifically, 4-D Trajectory Management is the process by which the Business Trajectory of the aircraft is established, agreed, updated and revised. This is achieved through Collaborative Decision Making processes between the aircraft operator, ATM and Airports, where applicable, except in time-critical situations when only Flight Crew and Controller are involved.

Source: Episode 3

3.3 ADVANCED SURFACE MOVEMENT GUIDANCE AND CONTROL SYSTEMS (A-SMGCS)

A system providing routing, guidance and surveillance for the control of aircraft and vehicles in order to maintain the declared surface movement rate under all weather conditions within the aerodrome visibility operational level while maintaining the required level of safety.

Source: EMMA/Episode 3

3.4 AIRPORT OPERATIONS PLAN (AOP)

The Airport Operations Plan provides the common data set to be used by all major aircraft operator, airport, aerodrome ATC and ground handling processes. It contains applicable operational information which is continually refined as more accurate information becomes available. It facilitates the airport collaborative decision making process within the agreed performance framework. Airport performance monitoring in relation to the commonly agreed plan will be performed through direct access to the pertinent elements of the AOP.

Source: Episode 3

3.5 AIRSPACE CLASSIFICATION

The SESAR programme identifies only two types of airspace with respect to ATM: managed and un-managed airspace.

- Managed Airspace:
  - Physical dimensions;

    From a specified lower level regionally harmonised in the SESAR area, extending to an unlimited upper level. Managed airspace may extend down to ground level where service provision considerations require this, in particular around aerodromes. The dimensions of Managed Airspace will be kept to the minimum required for safe and efficient service provision.
  - Internal Subdivision/organisation;

    The internal design and organisation of managed airspace will be optimised to ensure the safe and efficient management of the trajectories concerned. Temporary airspace structures to protect certain types of operation will continue to exist and will be managed in co-operation between the partners concerned - e.g. military, police, General Aviation.
  - Managed airspace is a user preferred routing environment, i.e. users can define their trajectory without having to take any pre-existing route structure into account. However where traffic complexity or the need to maximise capacity require, structured routes will be implemented. Their use will be suspended when they are not required.
- Un-managed Airspace:

  All airspace not designated as Managed.

Source: SESAR

3.6 AIRSPACE AND CONTROL PHASES

The phases are defined as:

Tower, Apron and Ground Control Phase

This control phase starts when traffic requests pushback from the gate and start up. It includes the taxi to the runway and the take-off clearance.

Departure Control Phase

The departure phase starts when traffic is airborne in the initial climb out on the SID. It ends once the traffic is leaving the TMA, or passing a defined flight level - i.e. Top of Climb.

En-route Control Phase

En-route operations are considered to encompass the flight segments between the Top of Climb and Top of Descent events.

Approach Control Phase

The approach phase can start at the TOD in an E-TMA but certainly in the descent phase of a flight into the TMA. It includes the control of traffic to final approach and to landing of traffic on the runway.

Source: Episode 3

3.7 AREA NAVIGATION (RNAV)

RNAV is “a method of navigation which permits aircraft operation on any desired flight path within the coverage of station-referenced navigation aids or within the limits of the capability of self-contained aids, or a combination of these”. A further development of the concept of area navigation within the European region, Precision Area Navigation (P-RNAV) is being implemented in terminal airspace as an interim step to obtain increased operating capacity together with environmental benefits arising from route flexibility. No ECAC-wide mandate for the carriage of P-RNAV is foreseen; however European States will progressively introduce P-RNAV requirements for Terminal Area RNAV procedures, as defined in already published AIPs.

Note: recently, the Performance Based Navigation concept (PBN) was introduced for harmonization purposes at the ICAO level. In particular, there was a need to address confusion and inconsistencies due to a number of local/regional specific definitions and solutions for RNP/RNAV applications. In addition, where RNP provided a limited statement of required performance accuracy, PBN specifies more extensively RNAV system performance - i.e. accuracy, integrity, continuity, availability and functionality.

PBN is divided along:

- “RNAV X” specifications, which do not require on-board performance monitoring and alerting;
- “RNP X” specifications, which do require these functions.

The “Performance Based Navigation Manual” [15] replaces the “Manual on Required Navigation Performance (RNP)” [17].

Formally, under the PBN concept, P-RNAV is designated as ”RNAV 1”.

Source: ICAO, EUROCONTROL

3.8 ARRIVAL MANAGER (AMAN)

AMAN is a Decision Support Tool (DST) that provides the controller with information on a calculated sequence to the runway and supports the delivery of an optimised arrival sequence for an aerodrome – i.e. advisories to maximise throughput. It calculates times for aircraft to arrive at designated fixes and in particular at the Initial Approach Fix (IAF).

Source: Episode 3

3.9 ARRIVAL MANAGEMENT

In SESAR context, the traffic will be considered much earlier for the preparation of the sequence and required spacing to enable an optimal approach to be flown. The aim is to ensure an efficient descent portion of the RBT, undisturbed by tactical actions that might jeopardise the lateral or vertical efficiency of the arrival.

The airport will be served by a set of optimised arrival routes. The arrival manager function will be able to allocate arrival routes and set constraints such as Controlled Time of Arrival (CTA) related to merging points with the objective of building an optimum sequence. The CTA technique fits well with Time Based Spacing (TBS) which would follow after passing the CTA point.

Source: Episode 3

3.10 Arrival Management Horizon

The AMAN is an airport based tool used by the Arrival Manager. Its operation has three horizons:

Eligibility Horizon

This range includes all flights which are relevant for consideration by the AMAN function. These inbound flights are inserted into a natural sequence (AMAN) based on the first-come-first-served rule. The “natural sequence (AMAN)" serves the controller as a kind of "sector load forecast" for the inbound traffic.

Active Advisory Horizon

For flights proceeding within this area, an optimised arrival sequence will be generated and time advisories (AMAN) are provided to the controller. Time to lose or gain or holding advisories are given within the active advisory horizon but outside the common path horizon. A CTA is one of the instructions that could be used at this horizon.

Common Path Horizon

The Common Path horizon is the final part of the sequence, linking to the runway axis, where no arrival management actions (including sequence changes) are normally needed anymore - only longitudinal separation towards the runway is then considered.

Source: Episode 3

3.11 Assumption

It is a proposition that is taken for granted, as if it were true, for the purposes of performing demonstrations or assessments in specific contexts.

For the results to be subsequently used in another context, the assumption must be applicable in that context.

Source: Episode 3

3.12 ATM Service and Capability Levels

The notion of ATM Service Level and ATM Capability Level will be used as the top-level, System-wide basis to establish the performance characteristics with which all components of the future European ATM System will be linked.

Capability levels

They are associated with Stakeholder systems, procedures, human resources etc. Upgrading a Stakeholder to a higher capability level means deployment of new enablers, and this requires investments - i.e. costs.

Service levels

They are associated with operational services offered by a service provider and consumed by a service user. Upgrading a service to a higher service level means deployment of operational improvement steps, and this leads to benefits - i.e. performance improvements.

Source: SESAR

3.13 AUTHORISATION OF THE RBT

Authorisation allows the aircraft to fly the RBT and covers both the issue of clearances by a controller and similar aircraft functions (crew/systems) depending on the designated separator.[3]

Source: Episode 3

3.14 BUSINESS/MISSION TRAJECTORY (BM/T)

It is a 4D trajectory which expresses the business or mission intentions of the user with or without constraints. It includes both ground and airborne, gate-to-gate, segments of the aircraft operation and is built from, and updated with, the most timely and accurate data available - e.g. FOC, FMS.

Source: SESAR

3.15 CONTINUOUS DESCENT APPROACH (CDA)

In the absence of an internationally agreed definition of Continuous Descent Approach, EUROCONTROL proposes the following [16]: "Continuous Descent Approach is an aircraft operating technique in which an arriving aircraft descends from an optimal position with minimum thrust and avoids level flight to the extent permitted by the safe operation of the aircraft and compliance with published procedures and ATC instructions".

As local conditions require, CDA may comprise any of the following:

- Standard Terminal Arrival Routes (STARs), including transitions, which may be designed with vertical profiles. The routes may be tailored to avoid noise-sensitive areas as well as including the vertical profile and the provision of Distance To Go (DTG) information;
- Provision of "distance from touchdown", also referred as "Distance To Go" (DTG), information by Air Traffic Control during vectoring; or
- Combination of these: STARs being used in low traffic density, and DTG estimates being issued by ATC as and when radar intervention is required - e.g. during busy periods.

Basic CDA

The tactical procedure where ATC provides DTG information during vectoring is also known as "Basic CDA" or "B-CDA".

Advanced CDA

The term "Advanced CDA" (A-CDA) is generally referring to further developments of CDA, involving P-RNAV procedures, and appropriate sequencing tools to allow their use even in high density traffic situations.

Source: EUROCONTROL

[3] This definition is derived directly from SESAR D3, but has been defined as a hot topic by Episode 3 as it is incompatible with use of the terminology in other SESAR documentation.

Issued by the Episode 3 consortium for the Episode 3 project co-funded by the European Commission and Episode 3 consortium.

3.16 COLLABORATIVE DECISION MAKING (CDM)

The concept of Collaborative Decision Making consists of two high level elements; the sharing of information related to progress of flights and priorities and acting on the shared information.[4]

Experience in the airport environment has shown that just by sharing relevant information between partners, common situational awareness and understanding of a situation increases the quality of decisions sufficiently to enable a better use of resources, allow partners to set priorities and improve the predictability of operations, not only in the airport itself, but system wide.

CDM requires trust in the quality of the information being shared and the legitimate business and other interests of the partners being properly protected. This is ensured via a combination of procedures and information communications technology.

Benefits are achieved through better quality decisions enabled by shared information, while preventing any one partner gaining a competitive advantage.

Making collaborative decisions does not only imply actually talking to other partners. Better decisions can be made taking all of the newly available information into account rather than basing decisions on a limited view. Collaborative decisions may also involve two or more systems comparing data and generating advice to the human operators.

CDM can work equally effectively in all circumstances where ATM decisions need to be made and through global information sharing CDM does have powerful network effects. This means that the more widespread CDM becomes, the greater the measurable benefits to individual partners.

Source: Episode 3

3.17 COLLABORATIVE LAYERED PLANNING

Collaborative layered planning, mediated by network management and based on Collaborative Decision Making, has the goal of achieving an agreed, stable, demand and capacity situation. Planning is assisted by the Network Operations Plan (NOP). The aim of the NOP is to facilitate the processes needed to reach agreement on demand and capacity. It is a set of collaborative applications providing access to traffic demand, airspace and airport capacity and constraints and scenarios to assist in managing diverse events.

Source: SESAR

3.18 CONSTRAINT

An ATM constraint is an external factor that needs to be taken into account by the user when constructing the S B/MT for a flight or revising the R B/MT during flight execution. The ATM constraints can come from infrastructural and environmental restrictions or regulations. An S B/MT can only be agreed as an R B/MT when these constraints have been taken into account.

Source: Episode 3

[4] Episode 3 has made this term a hot topic as it causes difficulty in usage, many concept experts do not believe that CDM includes information sharing, but understand that it should include some kind of interaction between all stakeholders involved in a decision.

3.19 Controlled Time of Arrival (CTA)

An ATM imposed time constraint on a defined merging point associated to an arrival runway.

TTA is assigned for planning reasons whilst CTA is assigned only when the aircraft is flying. The assigned CTA will be reasonably close to TTA and will be assigned in order to specify the landing sequence in the AMAN airport. The CTA sequence will be different from the TTA sequence due to the fact that CTA sequence includes the delay.

Any time constraints will be agreed as part of RBT negotiation. Once a flight is airborne, the estimates will be more precise, and constraints (CTO or CTA) will be applied if needed.

Source: Episode 3

3.20 Controlled Time of Over-fly (CTO)

An ATM imposed time constraint over a point.

Source: SESAR

3.21 Demand and Capacity Balancing (DCB)

Demand and Capacity Balancing is one of the ICAO Operational Concept Components.

DCB will be accomplished through a layered planning process applied at the ECAC level - i.e. the regional level, in close cooperation both with Sub-Regional and Local levels.

DCB starts with the long-term planning phase, several years in advance, and finishes during the flight execution phase, through the medium and short term planning phases. It is Airspace User oriented meaning that the new ATFM process shall do its utmost to offer as much as required en-route capacity so that Airspace Users can meet their business objective.

Compared to today DCB, and more generally every ATM process, is based on a rolling Network Operations Plan that allows access to every authorised entity. In addition, DCB is enhanced to manage flights after departure, filling the gap between ATFM and ATC. In addition, the User Driven Prioritisation Process will be triggered in case of severe capacity drop so that Airspace Users can favour the flights of high marginal cost.

DCB is now mainly business/mission trajectory oriented. Precision of trajectory planning and execution should allow capacity increase while maintaining the required safety target.

Source: Episode 3

3.22 Departure Manager (DMAN)

DMAN is a planning tool developed to improve the departure flows at airports and increase the predictability. As a result the DMAN provides a planned departure flow with the goal to maintain an optimal throughput at the runway, reduce queuing at holding point and distribute the information to various stakeholders at the airport - i.e. the airline, ground handling and Air Traffic Control.

If aircraft take-off within the arrival manager horizon, there will be interactions between the departure management and the arrival manager functions. Their agreed RBT will be influenced by the arrival manager, which might apply a time constraint on a point in the vicinity of destination with the aim of preparing the arrival sequence. When the aircraft becomes airborne, this constraint becomes a CTA.

Source: Episode 3

3.23 Estimated Time of Arrival (ETA)

It represents the time computed by the FMS for the flight arriving at a point related to the destination airport. When an aircraft is flying to a TTA, the FMS will still provide an estimated ETA. When an aircraft is flying to a CTA, the ETA will be replaced by the RTA.

When negotiating a CTA with the ground, the FMS provides the bounds for a feasible RTA, expressed as ETA(max)/ETA(min).

Source: Episode 3

3.24 Flight Management System Trajectory

The FMS representation of the flight path of an aircraft describes the lateral and vertical profile over time, including:

- A series of consecutive segments linking several waypoints defined in terms of latitude, longitude and altitude or flight level;
- Waypoints (from ICAO flight plan), pseudo waypoints (to build the vertical profile, such as TOC, TOD) and lateral transitions (to build the lateral path taking into account turn radius);
- Predictions over waypoints - e.g. FMS ETO, speed, wind, remaining fuel;
- Possible constraints over waypoints - e.g. RTA, speed, altitude;
- Additional information - i.e. figure of merit, navigation accuracy.

The lateral profile consists in a smooth lateral path including turns around waypoints (from ICAO flight plan and input in the FMS) and is made of straight and curved segments built with various lateral transition types computed by the FMS.

The vertical profile consists in the optimal flyable vertical path (built with additional pseudo waypoints computed by the FMS) respecting the ATC constraints (altitude and speed constraints from selected terminal procedure or aircrew input such as cruising flight level, cost index, wind on waypoints) and aircraft limits in the forecast environment (flight envelope, passenger comfort, performances and limitations). It is the reference for guiding the aircraft from origin to destination along the longitudinal axis. It is recomputed upon flight plan or context changes - e.g. pressure, temperature and wind changes from aircraft sensors, or cost index, flight level, wind or take-off parameter from aircrew input.

Source: Episode 3

3.25 Line of Change (LoC)

Identifiable and well defined operational areas of the ATM environment, including all its aspects (procedures, practices, processes, systems, institutions, etc), that will need to undergo change in order to meet declared performance objectives and arrive at the SESAR ConOps end-state.

Source: SESAR

3.26 Medium Term Conflict Detection (MTCD)

Medium-Term Conflict Detection is a predictive tool monitoring the aircraft's progress against the trajectory, the detection of conflicting trajectories and the presentation of this information to the controllers, currently up to 20 minutes ahead.

Source: Episode 3

3.27 NAVIGATION DISPLAY (ND)

The FMS Navigation Display is a cockpit system display. It enables visualisation by the flight crew of the:

- Flight Plan in a graphical view (current position up to arrival runway depending on the visualisation scale);
- Selected Radio navigation means;
- Selected/actual dynamic flight parameters – e.g. heading, speed, altitude, vertical rate;
- Surrounding traffic – e.g. supported by ADS-B in;
- Terrain and meteorological data.

It can be used as a what-if probe during the negotiation process in order to validate route modifications either entered manually by the flight crew or received by data-link from the ground.

Source: Episode 3

3.28 NETWORK OPERATION PLAN (NOP)

The Network Operations Plan works with a set of collaborative applications, the NOPLA applications, providing access to traffic demand, airspace and airport capacity and constraints and scenarios to assist in managing diverse events. The aim of the NOP is to facilitate the processes needed to reach agreements on demand and capacity.

Source: SESAR

3.29 NETWORK OPERATION PLANNER (NOPLA)

The NOPLA applications represent a highly automated environment offering users the possibility to initiate complex tasks which the applications carry out making sure that the proper context is used and results are returned based on the best available actual, archive, planned and expected information, formulated as proposals and/or complex decision support information, as appropriate, to help users develop plans and make decisions. In some cases, the NOPLA applications (remote or local) may actually complete negotiations between each other fully automatically.

Source: SESAR

3.30 OPEN & CLOSED LOOP

Air Traffic Controllers may have to vector aircraft on their course, e.g. in the frame of a tactical intervention involving a deviation from the planned route for safety reasons, or in a more systematic way - as is often the case in terminal airspace, to sequence aircraft towards the runway(s).

“Open-loop” vectors, as opposed to “closed-loop” vectors, correspond to the case when no indication is given as to the duration or limit of the ATC vector instruction, nor how the aircraft will re-join its initial route. Typically, a simple heading instruction is an open-loop vector, while a “Direct To” instruction is a closed-loop vector.

Throughout the documents, the terms “vector(s)” and “vectoring” without additional indication refer to open-loop vectors.

Source: Episode 3

3.31 Operational Improvement (OI)

It is any operational measure or action taken through time in order to improve the current provision of ATM operations.

Operational improvements are not necessarily related exclusively to the effect of a change in technology, they can relate to procedures, working methods or routines and human factor aspects. An “operational improvement” is always associated to an operational benefit. An ”operational improvement” is associated to one or more “strategic objectives” and is part of one or more “directions of change”. It could also mean the “improvement of an existing capability” and/or the introduction of a new capability.

Source: SESAR

3.32 Operational Service

The term “service”, or “operational service”, in the context of this document refers to “a set of related Air Traffic Management transactions, both system-supported and manual, which have a clearly defined operational goal and begin and end on an operational event”.

Source: Episode 3

3.33 Precision Trajectory Clearances (PTC)

The objective of a Precision Trajectory Clearance is to authorise the execution of a segment of trajectory with the required precision. Although they are described as “clearances” they should be thought of as “rolling authorisation” ahead of the passage of the aircraft and will be heavily supported by automation. PTC may be in terms of 2D (lateral route portion only), 3D (lateral and vertical trajectory) or a 4D Contract in which the precision with which all 4 dimensions of flight are to be executed is described with high precision[5].

Precision Trajectory Clearance - 2D (2D-PTC)

2D-PTC will be used to authorise the execution of 2D route with the required precision. The route may be predefined - i.e. published, user defined as part of a user preferred trajectory or created on an ad-hoc basis by an ANSP - i.e. a closed-loop route portion to resolve a conflict. The precision with which the 2D route should be flown will be specified and combined with the lateral spacing of the routes to ensure separation between the subject aircraft and other aircraft on adjacent 2D routes, subject also to ground and airborne monitoring requirements. The 2D-PTC will be complemented by level instructions and may include other constraints such as speed, CTA or relative instructions such as ASPA-S&M.

Precision Trajectory Clearance - 3D (3D-PTC)

3D-PTC will be used to authorise the execution of a trajectory defined both laterally and vertically. The route may be pre-defined - i.e. published such as a 3D SID or STAR, or user defined as part of a User Preferred Trajectory. The precision with which the 3D trajectory should be flown will be specified. This, combined with continuous airborne and ground monitoring will ensure separation between the subject aircraft and other aircraft on adjacent 3D trajectories. The 3D-PTC may include other constraints such as speed, CTA or relative instructions such as ASPA-S&M.

Source: SESAR

[5] 4D Contract is out of scope of the DOD.

3.34 PRIMARY ACTOR

The primary actor is the stakeholder that calls on the system to deliver one of its services. It has a goal with respect to the system[6] - one that can be satisfied by its operation.

The primary actor can be supported by other actors - i.e. support actor(s).

Source: Episode 3

3.35 PSEUDO RBT

It represents the elements of BT that are loaded into the FMS prior to agreement of the RBT[7].

Source: Episode 3

3.36 QUEUE MANAGEMENT

The queue management provides the tactical establishment and maintenance of a safe, orderly and efficient flow of traffic. It includes the handling of queues, both in the air and on the ground. It operates on individual flights and is closely related to, and sometimes indistinguishable from, the Separation Provision process. It aims to facilitate the highest achievable capacity of the ATM System and to manage delays in a fuel-efficient and environmentally acceptable manner.

Source: SESAR

3.37 REFERENCE BUSINESS TRAJECTORY (RBT)

The RBT represents the business/mission trajectory which the airspace user agrees to fly and the ANSP and Airports agree to facilitate, subject to separation provision.

Most times indicated in the RBT are estimates, some may be target times (TTA) to facilitate planning and some of them may become control times (CTA, CTO) to assist in queue management when appropriate - e.g. at AMAN horizon. The RBT consists of a 2D route, altitude and time constraints when required, altitude, time and speed estimates at way points and trajectory change points.

Source: SESAR

3.38 REQUIRED TIME OF ARRIVAL (RTA)

The RTA is an FMS parameter. In the full managed mode, when no performance constraints are applied (RTA, forced Mach), the FMS optimises speeds using the cost index value in order to minimize fuel consumption or optimise time/speed criteria fixed by airline economic considerations[8].

When an RTA is applied, the FMS computes its predictions along the trajectory through a back-tracking from the RTA. The RTA may be set on:

- The P-RNAV STAR entry point - e.g. for major airports;
- The IAF - e.g. for regional airports;

[6] The primary actor is often, but not always, the actor who triggers a Use Case.

[7] The main element of the RBT not agreed at this time is the TOBT.

[8] The cost index allows for time/speed optimisation of the flight, mainly relatively to the cruising phase where there are no constraining intermediate altitudes and speed regimes imposed by ATC.

- The FAF - e.g. for minor airports;
- Another specific way point - e.g. before a congested sector.

The speed is automatically adjusted by the FMS to meet the RTA. If the RTA cannot be met within the aircraft speed limits, the FMS warns the aircrew - i.e. RTA missed.

The RTA window should provide sufficient accuracy for DCB and to minimise the need for frequent revision of RTA. The FMS should be capable of speed management to keep the ETA within the RTA window.

Source: Episode 3

3.39 Service Level

Best practice and/or operational services delivered in a particular timeframe (as referred to in the SESAR Master Plan).

Source: SESAR

3.40 Shared Business Trajectory (SBT)

Published business/mission trajectory that is available for collaborative ATM planning purposes. The refinement of the SBT will be an iterative process.

Source: Episode 3

3.41 SBT to RBT agreement

In a CDM airport, an SBT is agreed to be the RBT for a flight when the event ”Delivery of start up approval“(triggered by the User Request) occurs, provided that all the prerequisite actions on the SBT are complete, including compliance with ATM constraints. At a non-CDM airport the equivalent event is the ”Delivery of the departure clearance”, following the user's request for a departure clearance.

Source: Episode 3

3.42 Strategic Deconfliction

Today, strategic deconfliction is achieved by the allocation of separated routes or levels. Traffic is separated tactically using such techniques as headings and temporary levels.

In SESAR, this clear differentiation no longer exists with the elimination of current tactical intervention techniques wherever possible. SESAR techniques include deconfliction by the deployment of advanced P-RNAV 2D and 3D route structures in dense traffic situations. But in all the other situations separation is ensured by the use of new trajectory-based separation modes in which aircraft is provided with conflict-free trajectory segments to be flown.

Source: Episode 3

3.43 Support actor

Support actor by definition do not gain value from the system, it is the system that gains value from them. Thus he/she provides support to the primary actor in order to achieve his/her goal.

Source: Episode 3

3.44 System Wide Information Management (SWIM)

SWIM provides the mechanisms which support the partners in managing the Rules, Roles and Responsibilities (the 3R’s) of information sharing. This determines which kind of

information is shared by whom, with whom, where, when, why, how, how much, how often, at which quality level, in what form, for which purpose, at which cost, under which liability, under which circumstances, information security levels. The 3R's must also be properly addressed both in terms of institutional and Information Communication Technology (ICT) aspects.

Source: SESAR

3.45 Target Off Block Time (TOBT)

The TOBT is defined in the context of SESAR[9] as the time that an aircraft operator/handling agent estimates that an aircraft will be ready, all doors closed, boarding bridge removed, push back vehicle connected, ready to commence push back and start up immediately upon reception of an ATC clearance.

Source: Episode 3

3.46 Target Time of Arrival (TTA)

An ATM computed arrival time[10], it is a planning time into a capacity constrained airport that books a place within the arrival queue if within the AMAN horizon. It is a progressively refined planning time that is used to coordinate between arrival and departure management applications.

The TTA may be entered into the FMS (as an RTA or on the scratchpad), or the Electronic Flight Bag, or maintained by the Airline Operations Centre.

Source: Episode 3

3.47 Target Time of Over-fly (TTO)

A TTO is an ATM computed time at a point, it is a planning time for a constrained network resource (sector or group of sectors). All the change points in the RBT have associated ETO, TTO or CTO. When the only times in the RBT are estimates, they will be updated whenever the trajectory deviates beyond a specific limit. For equipped aircraft these limits are the SESAR Trajectory Management Requirements (TMR), and for other aircraft the estimates will be updated if the flight is not within ±3 minutes of them, just as required by ICAO rules today. When the RBT includes TTO, these should be respected and if they cannot be met, a revision process with ATC is required which may result in a more extensive change to the RBT.

The TTO is part of the RBT so will be in the NOP. Episode 3 has made no assumptions on where it is held physically on the aircraft, it could be in the FMS, the aircraft avionics (the scratch pad), the Electronic Flight Bag, or maintained by the Airline Operations Centre.

Source: Episode 3

[9] This SESAR definition of the TOBT is based on the "EUROCONTROL CDM project" 2008 definition [18]. It differs in the two following areas: the push back vehicle should be "connected" to the aircraft (and not only "available") and the aircraft should be ready to commence "push back and start up" (instead of "taxi").

[10] This definition is in line with [20], and does not reflect the need for a "TTA-like" mechanism applicable to flights already airborne when entering the AMAN horizon.

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3.48 TOLERANCE WINDOW

The tolerance window defines the authorised threshold(s) of a constraint outside of which the revision mechanism shall be triggered - e.g. time tolerance for the Controlled Time of Arrival.

Source: Episode 3

3.49 TOTAL AIRPORT MANAGEMENT (TAM)

The future "integrated" method of airport management is referred to as "Total Airport Management" (TAM). Within the TAM concept, the Airport Operations Centre (APOC) is seen as the heart of the operation. Within the APOC, operators will constantly communicate and co-ordinate, develop and maintain dynamically joint plans and execute those in their respective area of responsibility. Different possible APOC-implementations are expected, ranging from a distributed virtual APOC to a high-tech physical APOC, even with new operator roles.

Source: Episode 3

3.50 TRAJECTORY CONTROL BY GROUND BASED SPEED ADJUSTMENTS (TC-SA)

This is an automated de-confliction method that supports conventional surveillance based operations. In this mode automation support tools impose speed adjustments (horizontal and/or vertical) within a limited range and constrained to the medium term time horizon in order to tactically de-conflict traffic and reduce complexity and controller task load.

Source: ERASMUS (refer to [19] for more details)

3.51 TRAJECTORY MANAGEMENT REQUIREMENT (TMR)

Trajectory Management Requirements are associated with the Reference Business Trajectory for ATM Level 3 and upper capable aircraft. The TMR specify the aircraft requirement to share the revised trajectory in the event that the flight detects a "delta" from previous predictions. The purpose of TMR is to maintain synchronisation between the on-board trajectory (flight intent) and the Ground Systems trajectory, and not to maintain the flight within the bounds expressed by the TMR.

The TMR can be expressed in terms of time, climb rate, lateral/vertical deviation or any combination of these. The TMR may be tight for a portion of the trajectory where the traffic is dense and looser elsewhere. Also, the TMR could be loose for a long look ahead time and tight where the look ahead is short, for example the TMR for the time at the FAF could be 5 minutes when the aircraft is 3 hours from the airport, but reduce to 30 seconds when it is 45 minutes away.

Source: Episode 3

3.52 USER DRIVEN PRIORITISATION PROCESS (UDPP)

In the absence of any capacity shortfall, reference trajectories will be handled on a first come first served basis. However, it will continue be necessary to manage acute losses of capacity, such as sudden temporary runway closures or extreme weather events. To do so, it will be the responsibility of the users to respond in a collaborative manner to the Network Management Function with a demand that best matches the available capacity. This is known as the User Driven Prioritisation (UDPP) process.

Source: SESAR

3.53 USER PREFERENCES

The Airspace User is defining the Business Trajectory by using routeing/trajectory – i.e. user preferred trajectory[11], or part of a routeing/trajectory without any requirement to follow pre-defined route.

In managed airspace, particularly in the cruising level regime, user preferences will apply without the need to adhere to a fixed route structure.

Source: Episode 3

[11] The user preferred trajectory is dissociated from the notion of the User Preferred Routes as defined by SES I [14].

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