Table of Contents

01 SESAR explained 04
02 SESAR Releases 05
03 Meeting ATM business needs 06
04 Release 4 overview 08
05 Release 4: A detailed look 11
06 Conclusions and outlook 18
07 Glossary of terms and abbreviations 19
SESAR explained

SESAR is a 2.1 billion euro research and development (R&D) programme until 2016 which aims to modernise the European ATM system. SESAR does so by pooling together the knowledge and resources of the entire ATM community through a public-private partnership - SESAR Joint Undertaking.

As the technological pillar of the Single European Sky, SESAR aims to deliver the capabilities needed for EU skies to handle more traffic with more cost efficiency, while ensuring that the highest safety standards are maintained and the environmental impact per flight is reduced.

Guided by the European ATM Master Plan, the SESAR work programme (2009-2016) is implemented by 3,000 experts working on more than 300 projects to deliver a solid stream of technological and operational solutions. These solutions have been developed to meet the needs of the ATM industry both for today and the future, which undergo rigorous testing in preparation for deployment.

Thanks to this work, SESAR is proving to be a powerful catalyst in transforming Europe’s ATM network into a modern, cohesive and performance-based operational system.

For more information, visit: www.atmmasterplan.eu

SESAR Releases

As a performance-based R&D programme, SESAR systematically validates the work of its technological and operational projects.

The mechanism used to validate these solutions is known as the Release process. This process involves solutions undergoing thorough pre-industrial development and integration testing within a given timeframe in order to establish their readiness for industrialisation and subsequent deployment.

Since 2011, SESAR has been carrying out one release every year and has so far completed 68 exercises, consisting of a range of flight trials and simulations. This brochure gives an overview of Release 4, which comprises 20 validation exercises, which are planned over the course of 2014.

Thanks to this incremental approach to developing and validating solutions, the aviation community are benefiting early on from improvements made to ATM operations:

- **Airlines** will see savings through improved routings, as well as the reduction in operating costs through increased predictability.
- **Air Navigation Service Providers (ANSP)** can provide a better quality of service at a lower unit cost for airspace users, thanks to better integration, improved human/machine interfaces for controller working positions, enhanced tools and advanced working procedures.
- **Airports** will be more integrated in the overall ATM system, benefiting from technology advances enabling capacity increase, and operations optimisation, even under adverse network and/or weather conditions.
- **Passengers** will profit from improved punctuality and shorter flight duration.
- **Suppliers and manufacturers** in Europe will be better prepared to follow tomorrow’s technical standards.
- **Environment** gains will be achieved, thanks to fewer CO₂ emissions as a result of shorter and more efficient routes, and lower noise pollution.
The SESAR Programme develops its solutions according to a set of essential operational changes for the ATM industry, as outlined in the European ATM Master Plan (Key Features). These six Key Features have been defined to capture the operational improvements and technical enablers required to deliver SESAR’s contribution to Single European Sky. In each Release, solutions are clustered in line with these Key Features, which are as follows:

1. Traffic synchronisation
2. Airport integration and throughput
3. Moving from airspace to 4D trajectory management
4. Network collaborative management and dynamic capacity balancing
5. Conflict management and automation
6. System Wide Information Management

Meeting ATM business needs

4. Network Collaborative Management and Dynamic/Capacity Balancing

‘Collaborative Management of the ATM Network’ relies on successive phases of operation planning from long to medium and short term. In this context, all involved ATM stakeholders progressively share more and more precise data to build a common traffic and operational environment picture called the Network Operations Plan (NOP). This NOP is updated in real time to reflect any changes in ATM operations. The NOP also covers military activity, taking full account of the needs of mission trajectories and military airspace demands.

Throughout the lifecycle of the flights, the traffic demand/available capacity is monitored by the different ATM actors. When an imbalance occurs, capacity shortfall scenarios are collaboratively agreed and implemented. When required, the Aircraft Operators submit the revised user-preferred trajectories, integrating the ATM constraints.

5. Conflict Management and Automation

‘Conflict Management and Automation’ aims at substantially reducing controller task load per flight through a significant enhancement of integrated automation support, whilst simultaneously meeting the safety and environmental goals of SESAR. Human operators will remain at the core of the system (overall system managers) using automated systems with the required degree of integrity and redundancy. In addition, this Key Feature covers the evolution of Ground and Airborne Safety Nets (and their mutual compatibility) through the use of new surveillance means and system wide information sharing. They will be fully adapted to SESAR future trajectory management systems and new separation modes, thus ensuring their continuing effectiveness as a last safety layer against the risk of collision (and other hazards).

6. System Wide Information Management

The concept of ‘System Wide Information Management’ - SWIM - covers a complete change in paradigm of how information is managed along its full lifecycle, involving stakeholders from across the whole European ATM network. SWIM is an advanced concept designed to facilitate greater sharing of ATM system information, such as aeronautical, flight trajectory, aerodrome operational and meteorological (MET) information. It consists of standards, infrastructure and governance enabling the management of ATM information and its exchange between qualified parties via interoperable services.
Operational improvements planned for Release 4.

The Release 4 exercises are expected to demonstrate that the solutions have achieved a sufficient level of complexity and maturity so that a decision can be made for their industrialisation and subsequent deployment.

A summary of the operational improvements expected from the Release 4 validation exercises, grouped by Key Feature, are as follows:

**Traffic Synchronisation**
- Integration of airborne spacing manoeuvres (ASAS) within an environment using initial four dimensional (i4D) trajectory management, Controlled Time of Arrival (CTA) and Extended AMAN Horizon with a view to enhancing Arrival Manager (AMAN) procedures
- Combined use of AMAN, Departure Manager (DMAN) and Advanced Surface Movement Guidance and Control System (A-SMGCS) to reduce delays and increase predictability
- Assessment of the operational and environmental requirements, as well as the technical feasibility of implementing i4D+CTA operational procedures for air traffic controllers (ATCO) and flight crews in a Terminal Manoeuvring Area (TMA) environment
- Validation of two Airborne Spacing manoeuvres to increase synchronisation of traffic in TMA
- Assessment of aircraft behaviours, situational awareness and efficiency of crew and air traffic controllers when performing advanced approach procedures with vertical guidance

**Airport Integration & Throughput**
- Use of Ground Based Augmentation System (GBAS) stations enabling Category II/III approaches with a view to improving operations in low visibility conditions and increasing runway capacity

**Network Collaborative Management and Dynamic Capacity Balancing**
- Real-time airspace data exchange, in particular for airspace reservation/restrictions, between civil and military ATM systems to assess the technical feasibility and safety of a Collaborative Decision Making (CDM) process between these systems
- Assessment of Short Term Air Traffic Flow Management (STAM) procedures and a tool to allow for better predictability and ATC efficiency in complex traffic scenarios
- Evaluation of the feasibility, cost effectiveness and flexibility of a slot-swapping procedure between airlines

**System Wide Information Management (SWIM)**
- Provision of Digital NOTAM (Notice to Airmen) and digital MET data to enhance pre-flight briefing services (ePIB), with a view to improving information transfer.

**Conflict Management and Automation**
- Assessment of the performance delivered by a set of Medium Term Conflict Detection and Resolution (CD/R) tools for the Planner and Tactical Controllers in the en-route phase of a flight
Figure 2: Map of Release 4 validation sites

Release 4 is expected to make contributions to essential operational changes as detailed below:

TRAFFIC SYNCHRONISATION

Airborne spacing manoeuvres (ASAS) and Enhanced Arrival and Departure Manager (AMAN/DMAN)

Real-time simulations in Toulouse and Rome will validate the feasibility of integrating airborne spacing manoeuvres within an i4D & CTA, Extended AMAN Horizon environment with a view to enhancing procedures.

The main focus of the exercise will be to see if there is operational compatibility between i4D+CTA and Airborne Spacing operations in an Extended TMA (E-TMA).

The exercise will also assess whether the AMAN can provide a sufficiently stable time that can become a CTA to further enhance network operations.

Expected outcomes:
• Increased controller efficiency through smoother arrival flows
• Improved traffic predictability in terms of difference between actual flight duration and estimated flight duration (time variability).

Enhanced AMAN and DMAN

Three exercises, including flight trials and real-time simulations, will assess the technical feasibility and the operational and environmental requirements for implementing i4D&CTA operational procedures for ATCOs and flight crews in a TMA environment. The live trials in Reims and London Heathrow will specifically evaluate the use of an Extended AMAN Horizon for cross-border arrival management.

These exercises will review new or refined technical and functional features, in particular:
• A cockpit simulator with an upgraded i4D+CTA related functionality
• Ground systems with an upgraded i4D+CTA and AMAN functionality to accommodate findings from previous flight trials, simulations and requirements
• Increased automation in the 4D trajectory negotiations between air and ground, as well as ground and ground agencies
• The ATC multi-sector planner.

Expected outcomes:
• Proven technical feasibility and operability of the i4D+CTA concept, with validated safety and human performance requirements
• Improved data exchange between air and ground systems, due to a shared trajectory
• Better flow/queue management.

Integrated arrival and departure management

This exercise, taking place in London Gatwick, will aim to validate the benefits of combining AMAN, DMAN and Advanced Surface Movement Guidance Control System (A-SMGCS) and Time Based Separation (TBS). In real-time simulations, air traffic controllers will assess the performance of a TBS tool in selecting the arrivals and departures pattern with the fewest delays. Controllers will follow the same procedures as today, i.e. follow Target Start-up Approval Time (TSAT) for establishing pre-departures sequences and follow a target time for metering fix for metering traffic into the TMA. Additionally the TBS tool will be validated for its use in mixed mode operations.

Expected outcomes:
• Lower fuel burn and improved ATCO efficiency due to the calculation of an integrated arrival and departure sequence
• Increased predictability and stability of actual times and target times for taxi-out.
Airborne Separation Assistance System (ASAS) Spacing Applications

The flight trials, which are planned to take place in the Toulouse and Rome approach environments, will validate two additional ASAS S&M manoeuvres to increase synchronisation of traffic in a TMA, namely “vector then merge” and “follow route then merge.” The exercise will also assess the correlated benefits for controllers and pilots.

Air traffic controllers will use TBS to calculate the actual and predicted headwind and the target runway throughput, as well as to initiate the appropriate manoeuvres.

Expected outcomes:
- An increase in controllers’ efficiency per flight thanks to greater automation
- Increased safety and better situational awareness of flight crew during the arrival sequence
- Improved runway throughput thanks to TBS, which ensures an optimised traffic sequence in strong headwind conditions.

Approach procedures with vertical guidance

Two flight tests performed in Turin will assess the performance of regional aircraft fitted with upgraded avionics when performing advanced approach procedures with vertical guidance. The tests will also evaluate the efficiency and situational awareness of the flight crew and ATCOs when these procedures are used.

Specifically the tests will determine whether the aircraft is capable of adhering to a given flight path throughout the entire approach. They will also evaluate the aircraft’s ability to remain stabilised following the transition from the Required Navigation Performance (RNP) mode to the Localizer performance with vertical guidance (LVP) mode. Furthermore, safety aspects, mainly related to flight path monitoring by ATCOs, will be qualitatively investigated.

Expected outcomes:
- Increased flight efficiency and fuel efficiency, with a better adherence to the nominal flight track
- Increased predictability, with better punctuality of arrival traffic
- Increased ATCO efficiency due to better compliance by aircraft to their flight path.

AIRPORT INTEGRATION AND THROUGHPUT

Low visibility procedures using of Ground Based Augmentation System (GBAS)

A real-time simulation in Brétigny will evaluate the use of Ground Based Augmentation System (GBAS) stations and their impact on runway capacity. GBAS offers an alternative to Instrument Landing System (ILS), the tool currently used to provide lateral and vertical guidance but which has limitations, such as its sensitivity to bad weather and uneven terrain. The exercise will assess how GBAS can facilitate Cat I/III approaches (e.g. 1000 feet or less of runway visual range) at several runway ends (which are not ILS equipped). It will also see whether GBAS will allow for reduced arrival spacing during low visibility, which is currently necessary because of the sensitivity of ILS in interperate weather.

Meanwhile, a flight trial in Blagnac will aim to validate a flight’s autoland performance using GBAS Cat I/III airborne equipment and ground station. Autoland, an automated landing system, is considered a prerequisite for increasing runway throughput during low visibility operations. The exercise will aim to show that unlike ILS, GBAS is capable of managing complex simultaneous approaches across multiple runways.

Expected outcomes:
- Increased predictability with better punctuality of arrival traffic
- Increased ATCO efficiency due to better compliance by aircraft to their flight path.

CWP Airport

Through real-time simulations, this exercise will validate the usability of an integrated HMI for an advanced Tower CWP using new features for surface management operations related to routing and guidance, Airport Ground Light procedures and data link-taxi (D-Taxi).

The simulations will aim to validate the logic and functionality of the HMI prototype when the Advanced CWP is exercising surface-in and surface-out procedures. Specifically they will assess its usability to support the ATCO in coping with various conflict and hazardous scenarios.

The simulations will help to identify the operational, human factor and safety requirements, as well as assess the suitability of the prototype for use at small-to-medium sized airports.

Expected outcomes:
- Limited impact on ATC workload.
- Improved interoperability between air and ground during approach and landing.

NETWORK COLLABORATIVE MANAGEMENT AND DYNAMIC CAPACITY BALANCING

Airspace management and Advanced Flexible Use of Airspace (AFUA)

Two exercises, real-time and fast-time simulations in Brétigny and Langen, will evaluate real-time airspace data exchange between civil and military ATM systems in order to assess the technical feasibility and safety of a CDM process between these systems.

In the real-time simulation, the CDM will be made possible by connecting three systems, the Network Manager, Langen CWP and Airspace Management tool and the Maastricht Airspace Management tool. The aim is to validate the technical feasibility and safety of automatically updating airspace reservation/restrictions (ARES) on the CWP!

Expected outcomes:
- Identification of a core set of functionalities needed to provide air traffic control to airports with small-to-medium sized traffic density
- Improved traffic handling capacity, in the case of bad weather conditions, and a more efficient use of human resources.

Remote Tower

A shadow mode trial planned at Saarbrücken airport will assess the basic functionalities needed to provide air traffic control remotely to an airport with low-to-medium density traffic (e.g. 20,000 movements a year or less). The trial will assess whether the Remote Tower concept, which was validated in Release 3 at several Scandinavian airports, can be applied to the remote control of traffic in a medium traffic density airport environment in Germany.

A second shadow mode trial at Rost airport and Vaerøy Helsport will validate the feasibility of providing simultaneous air traffic services to multiple remote aerodromes by a single operator. The trial will assess, in a variety of conditions, how the use of a remote tower for multiple locations can affect service provision, safety and aerodrome and ATCO efficiency.

Expected outcomes:
- Identification of a core set of functionalities needed to provide air traffic control to airports with small-to-medium sized traffic density
- Improved traffic handling capacity, in the case of bad weather conditions, and a more efficient use of human resources.

In a fast-time simulation within a free route environment, new procedures will be assessed that deal with planning ARES according to the Variable Profile Area (VPA) principle. The principle seeks to offer a flexible use
of portions of airspace to fulfill mainly military needs, restricting airspace use for other airspace users by only a necessary minimum. Ultimately, the exercise will evaluate the feasibility of the VPA supported by business-to-business applications.

**Expected outcomes:**
- Safe and better CDM between civil and military ATM systems as a result of real-time airspace data exchange
- Increased airspace available to airspace users, enabling optimum trajectories and improved flow management due to better Demand and Capacity Balancing
- Better fuel efficiency due to more optimum trajectories.

### Enhanced Air Traffic Flow and Capacity Management (ATFCM) processes

Taking place in Toulouse, Bretigny and Brussels, these exercises will focus on validating a prototype aimed at reducing sector complexity and ATCO efficiency.

The exercises will assess the use of STAM procedures for arrival flows, and their impact on traffic counts. They will also determine the roles and responsibility-sharing between various STAM actors, and evaluate a prototype that supports STAM coordination workflow.

**Expected outcomes:**
- Feasibility of introducing STAM in environments currently not practising these procedures
- Validation of pre-industrial prototype tool supporting the STAM co-ordination workflow
- Improvement to air traffic flow through harmonised operational procedures and processes
- Better predictability and ATCO efficiency in complex traffic scenarios.

#### User Driven Prioritisation Process

The exercise will evaluate the cost effectiveness and flexibility of swapping pre-allocated slots between airlines. Known collectively as User Driven Prioritisation Process (UDPP), the procedure aims to expand the slot swapping process, which was previously only feasible within one and the same airline.

**Expected outcomes:**
- Greater equity by increasing the swapping opportunity to all airlines
- Optimised Air Traffic Flow and Capacity Management (ATFCM) network performance.

### SYSTEM WIDE INFORMATION MANAGEMENT (SWIM)

Aeronautical Information Management/Meteorological Information (AIM/MET)

Using real-time simulation, this exercise in Vienna will validate whether the provision of Digital NOTAM (Notice to Airmen) and digital MET data can enhance electronic pre-flight information bulletin services (ePIB) with a view to improving information transfer.

It will also assess whether ePIB that contain Digital NOTAM and Digital MET data can:
- Assist pilots in creating a mental map of the status and condition of the airports, airspace and the Communications, Navigation, Surveillance (CNS) environment, as relevant for their flight
- Reduce risks of misunderstood or missed information in the pre-flight briefing phase;
- Increase the pilots’ confidence that all the information required for pre-flight briefing was seen and understood
- Facilitate an enhanced filtering mechanism that can be customised based on pilot needs (such as trajectory-based filtering, time-based filtering) and to prevent information overflow.

**Expected outcomes:**
- Improved efficiency of information transfer to pilots
- Improvements in the quality of information transferred by reducing irrelevant notifications
- Reduction in the risk of misinterpretation of messages by pilots thanks to machine interpretable NOTAM
- Increased satisfaction experienced by pilots, dispatchers and other users when retrieving and browsing ePIB information.

### CONFLICT MANAGEMENT AND AUTOMATION

Conflict detection, resolution and monitoring

This real-time simulation in Southampton will assess the performance delivered by a set of Enhanced Medium Term Conflict Detection and Resolution (CD/R) tools for the Planner and Tactical Controllers operating in en-route sectors and taking into account i4D flights, mixed flights environment (i4D and non-i4D flights) and what-if capability.

Specifically, the exercise will assess how these CD/R tools improve efficiency and quality of service; en-route capacity; flight efficiency and predictability. It will also evaluate the safety and cost effectiveness of introducing such tools.

**Expected outcomes:**
- Better precision and earlier identification of conflicts by controllers, leading to fewer conflicts and false alarms taking place, and ultimately increased safety
- Increased cost-effectiveness and capacity, and better fuel efficiency due to tools that allow for more accurate trajectory prediction and the use of “what-if” functionalities to look at what happens when routes deviate.

Integrating of Airborne Collision Avoidance System (ACAS) alerts into CWP

Taking place in Langen, this real time simulation will evaluate a set of requirements for the display and use of ACAS Resolution Advisories (alerts) downlinked on the CWP.

During the replay of real encounters, Resolution Advisories will be displayed on the CWP, while Short Term Conflict Alert (STCA) will also be integrated, so ground-based and airborne-based alerts can be evaluated simultaneously to assess their ability to work together.

**Expected outcomes:**
- Increased safety due to enhanced controller situational awareness, as a result of the use of a downlink of Resolution Advisories.
### Key Feature

#### Moving from Airspace to 4D Trajectory Management

- Approach procedures with vertical guidance (APV)
- Integrated controller working position

#### Traffic Synchronisation

- P-RNAV in a complex TMA (full implementation)
- Point Merge in a complex TMA
- Enhanced Airborne Collision Avoidance System (ACAS)
- AMAN & Extended Horizon
- AMAN/DMAN Integration
- Controller working position enhancements
- Initial 4D (4D) & Controlled Time of Arrival – initial operations

#### Network Collaborative Management & Dynamic/Capacity Balancing

- Short-term Air Traffic Flow and Capacity Management (ATFCM) measures improvements
- Airspace Management and Advanced Flexible use of Airspace – sharing of real time airspace usage
- Enhanced flight planning considering 4D profiles or 4D data
- Network Operation Plan update with Airport Target Time of Arrival data

#### System Wide Information Management

- Controller working position - Data entry to CFMU
- Remote Tower
- Situation awareness improvements at controller working position
- Airport Safety Net tool supporting clearances for the runway controller
- Use of Time-Based Separation Minima
- Surface Planning and Routing
- Remote Tower, single airport ATS

#### Airport Integration & Throughput

- Sector Team Organisation & task sharing
- Enhanced Short Term Conflict Alert (STCA)
- Complexity Assessment & Resolution
- Controller working position enhancements

#### Conflict Management & Automation

- Enhanced Conflict Detection & Resolution tools for high density operations
- Tooling for complexity and density assessment related to capacity
- Sector Team Operations – multi-sector planner

### Key Feature

#### Release 1

- Free Routing
- Business and Mission Trajectory Flight Planning

#### Release 2

- Airborne Spacing, Sequencing and Merging
- Initial 4D Trajectory (4D) & Controlled Time of Arrival – Time management
- Approach Manager (AMAN) and Extended AMAN Horizon with precision Navigation in complex TMA
- AMAN and Point Merge in extended TMA
- Point Merge in a complex TMA using P-RNAV for Continuous Descent Approaches (CDA)

#### Release 3

- ATS coordination procedures for ATS Units including coordination & transfer of flights
- Airborne spacing (ASPA) Sequencing and Merging (GBAS) for TMA
- Traffic sequencing assistance for Initial 4D Trajectory Management and Controlled Time of Arrival

#### Release 4

- Integration of Airborne Sequencing manoeuvres into an AMAN extended horizon environment
- Integrated arrival and departure management
- Extended AMAN horizon for cross border arrival management
- Airborne Separation Assistance System (ASAS) Sequencing Applications
- Approach procedures with vertical guidance

---

*Figure 3: How the SESAR Release process contributes to the Master Plan Key Features*
Conclusions and outlook

Release 4 builds on the knowledge and experience gained in previous releases to produce a comprehensive validation plan. This incremental approach to validating solutions allows SESAR to stay in tune with and responsive to the needs of the aviation industry, as they evolve. The 20 exercises are expected to demonstrate that the solutions included in Release 4 are sufficiently mature, allowing for a decision to be taken for their industrialisation and subsequent deployment.

At the same time, the Release work is guided by the European ATM Master Plan, which provides a well-defined roadmap on how to make change happen in the ATM system in the long term. Release 4 will undoubtedly add to the solutions that have already been developed, of which 15 are mature enough to be considered for deployment (end of 2013), thus delivering further concrete benefits to the entire ATM community, both today and in the future.

Release 4 involves a significant amount of coordination and planning between SESAR Members and validation sites across Europe. It is therefore also proof of the strong partnership that underpins the SESAR Programme. SESAR Members show that, by working together, real changes in the ATM domain are achievable.

Glossary of terms and abbreviations

| ACAS      | Airborne Collision Avoidance System |
| AFUA      | Advanced Flexible Use of Airspace  |
| AIM       | Aeronautical Information Management|
| AMAN      | Arrival Manager                     |
| ANSP      | Air Navigation Service Provider     |
| APV       | Approach Procedure with Vertical guidance |
| ARES      | Airspace Reservation                |
| ASAS      | Airborne Separation Assistance System|
| ASRMCS    | Advanced Surface Movement Guidance and Control System|
| ASPA      | Airborne Spacing                    |
| ATC       | Air Traffic Control                 |
| ATCO      | Air Traffic Controller              |
| ATFCM     | Air Traffic Flow and Capacity Management|
| ATFM      | Air Traffic Flow Management         |
| ATM       | Air Traffic Management              |
| AU        | Airspace User                       |
| CAT       | Category (ILS)                      |
| CDM       | Collaborative Decision Making       |
| CNS       | Communications, Navigation, Surveillance|
| CTA       | Controlled Time of Arrival          |
| CWP       | Controller Working Position         |
| DCS       | Demand and Capacity Balancing       |
| DMAN      | Departure Manager                   |
| E-TMA     | Extended Terminal Manoeuvring Area  |
| EUROCAE   | European Organisation for Civil Aviation Equipment |
| GBAS      | Ground Based Augmentation System    |
| GNSS      | Global Navigation Satellite System  |
| GUI       | Graphical User Interface            |
| HF        | High Frequency                      |
| HMI       | Human-Machine Interface             |
| HD        | Initial 4 Dimension                 |
| ILS       | Instrument Landing System           |
| LVP       | Low Visibility Procedure            |
| MET       | Meteorological Services             |
| MTCD      | Medium-Term Conflict Detection      |
| NOP       | Network Operations Plan             |
| NOTAM     | Notice to Airmen                    |
| R&D       | Research and Development            |
| RA        | Resolution Advisories               |
| RNP       | Required Navigation Performance     |
| S&M       | Sequencing & Merging                |
| SMGCS     | Surface Movement Guidance and Control System |
| STAM      | Short-Term ATFM Measures            |
| STCA      | Short-Term Conflict Alert           |
| SWIM      | System-Wide Information Management  |
| TBG       | Time-Based Separation               |
| TMA       | Terminal Manoeuvring Area           |
| TSAT      | Target Start-Up Approval Time       |
| UDPP      | User Driven Prioritisation Process  |
| VPA       | Variable Profile Area               |