Introduction

This document provides the Catalogue of Performance Indicators which describe all the performance indicators compiled and derived from SESAR by WP 2.4.1.
It is also provided the traceability between the OIs Steps (Operational Improvement Steps) and the PIs (Performance Indicators) defined in the WP241.

The validation exercises held inside the Episode 3 project will validate the OIs that come from SESAR in order to validate the Concept of Operations. Each exercise will implement an OI step or a set of OI steps. The initial sets of PIs per OI were defined, and refined by WP241 partners. The gathering of the PIs groups per OI Step was based on SESAR 224 list of OI Steps version 1.3, the influence diagrams developed by the Assessment Task Force in D3, which assessed the impact of the OCEs in the SESAR KPAs and KPIs, and the influence diagrams developed by T2.3.1 in D4 were also used as inputs for this task.

These are the definitions of the spreadsheets in this Excel file:

1. Introduction --> This spreadsheet
2. Traceability OI Step - ECAC PIs --> It shows the ECAC PIs linked with an OI Step and the OI Step impact (High, Medium or Low) on the ECAC PI
3. ECAC PIs Summary --> This spreadsheet lists all the PIs at ECAC level in order to help the reader as a quick reference.

The following spreadsheets compile the Catalogue of Performance Indicators developed by EP3 WP241

4. Capacity PIs --> List all the Capacity PIs at ECAC level, at Airport, TMA and En-Route ECAC level and at Local level.
5. Efficiency PIs --> List all the Efficiency PIs at ECAC level, at Airport, TMA and En-Route ECAC level and at Local level.
6. Flexibility PIs --> List all the Flexibility PIs at ECAC level, at Airport, TMA and En-Route ECAC level and at Local level.
7. Predictability PIs --> List all the Predictability PIs at ECAC level, at Airport, TMA and En-Route ECAC level and at Local level.
8. Environment PIs --> List all the Environment PIs at ECAC level, at Airport, TMA and En-Route ECAC level and at Local level.
9. Safety PIs --> List all the Safety PIs at ECAC level, at Airport, TMA and En-Route ECAC level and at Local level.

Matrix Definition and Legend

This matrix shows the impact that the Operational Improvements Steps (OI Steps left side of the matrix) developed in SESAR have in the in the Performance Indicators at ECAC Level (ECAC PIs upper side of the matrix) developed by the EP3 WP 2.4.1. It is only show the ECAC PIs related with the operational SESAR KPAs (Key Performance Areas).

KPAs showed:	Capacity	Flexibility	Flexibility	Predictability

	The red colour means that the related OI Step has a **bad impact** in the associated ECAC PI
	The yellow colour means that the related OI Step has a **positive but low impact** on the ECAC PI
	The green colour means that the related OI Step has a **positive and high impact** on the ECAC PI
	The white colour means that the related OI Step has **no impact** in the associated ECAC PI

OI Step Code	ECAC PIs																							OI Step Title	OI Step Description
	CAP.ECAC.PI 1	CAP.ECAC.PI 2	CAP.ECAC.PI 3	EFF.ECAC.PI 1	EFF.ECAC.PI 2	EFF.ECAC.PI 3	EFF.ECAC.PI 4	EFF.ECAC.PI 5	EFF.ECAC.PI 6	FLX.ECAC.PI 1	FLX.ECAC.PI 2	FLX.ECAC.PI 3	FLX.ECAC.PI 4	FLX.ECAC.PI 5	FLX.ECAC.PI 6	FLX.ECAC.PI 7	FLX.ECAC.PI 8	PRED.ECAC.PI 1	PRED.ECAC.PI 2	PRED.ECAC.PI 3	PRED.ECAC.PI 4	PRED.ECAC.PI 5	PRED.ECAC.PI 6	PRED.ECAC.PI 7		
DCB-0301																								Improved Consistency between Airport Slots, Flight Plans and ATFM Slots	Convergence is ensured between airport slots, ATFM slots together with airport slot monitoring process in order to improve consistency on a daily basis and to reduce delays.
DCB-0302																								Collaborative Management of Flight Updates	The interface between airports and ATFCM is reinforced at the tactical level in order to improve predictability of operations through exchanges of accurate departure and arrival times, CFMU providing airports with arrival estimates up to 3 hours prior landing (taking account of updated information on flight progress) whilst airports provide CFMU with flight data updates before take-off.
IS-0101																								Improved Flight Plan Consistency Pre-Departure	Airspace users, airport and ATM have a consistent view of the filed flight plan including late updates until departure.
IS-0102																								Improved Management of Flight Plan After Departure	ATFCM is aware of deviations from flight plan incl. Route changes, diverting flights, missing flight plans, change of flight rules (IFR/VFR) or flight type (GAT/OAT). This enables a better assessment of the impact of airspace changes on aircraft while in flight, an improved monitoring of actual traffic situation and, if necessary, the triggering of revisions to the network and airports operations plan.
IS-0201																								Integrated Pre-Flight Briefing	The data required during the pre-flight phase are provided and presented in an integrated and flexible manner. The user can access various/information sources such as AIS, ARO, MET and ATFM which provide NOTAM, SNOWTAM, MET messages, FPL and related messages or network management messages.
IS-0401																								Automatic Terminal Information Service Provision through Use of Datalink	Compiled ATIS information specifically relevant to the departure, approach and landing phases of flight (such as runway in use, current weather, airport and facility conditions) is transmitted to the aircrew by datalink. ATIS messages (synthesised voice) can be generated fully automatically or at the controller's request.
IS-0402																								Extended Operational Terminal Information Service Provision Using Datalink	Current meteorological and operational flight information derived from ATIS, METAR and NOTAMs/SNOWTAMs, specifically relevant to the departure, approach and landing flight phases is transmitted to pilots by datalink. The flight crew has real-time access to the relevant airport operational parameters applicable to the most critical phases of flight (ATIS, METAR and OFIS).
IS-0202																								Improved Supply Chain for Aeronautical Data through Common Quality Measures	Common data quality measures are implemented with a view to improving the end-to-end integrity of aeronautical data throughout the data chain, encompassing all actors involved from origination through to publication, and potentially up to the end user of Aeronautical Information.
IS-0203																								Harmonised Aeronautical Information through Common Data Model	A common Aeronautical Information Conceptual Model (AICM) is used by the European aviation community to describe aeronautical features such as airports, runways, obstacles, routes, terminal procedures, airspace structures, services and related aeronautical data. The portraying of these features both on screen and paper is ensured through the eAIP the common, ICAO compliant, electronic AIP format.
IS-0204																								Facilitated Aeronautical Data Exchanges through Digitalised Information	The provision of aeronautical information is supported by electronic publication (eAIP). Updates to the dynamic aeronautical information are disseminated in electronic form (XNOTAM) and processed by systems in real time.
IS-0701																								SWIM - baseline an initial common information model based on existing and consistent standards	An initial common information model covers the existing information models such as AIXM (AIS static part), WXXM (weather information), AMXM (airport mapping). FOIPS (flight information), ASTERIX (Surveillance Information). It also addresses the information models for Demand & Capacity and ATFCM scenario. It ensures the overall consistency between all these models. It also look for an agreement on the data quality requirements for the different partners and different data types/elements. This OI step forms a commonly agreed initial model baseline but the model will continously evolve from the IOC date onwards (e.g. to complement it with the dynamic aeronautical information, ENXM, Terrain data, aircraft information, etc ...). It does not mean that further OI steps need to be defined after that one which is just provided to show a pre-requisite on which SWIM will be implemented.
IS-0702																								SWIM - European Ground Communication Infrastructure	In order to implement SWIM services and move from a product centric to a data centric approach, SWIM will have to be supported by a Communication network on top of which some basic services provided through an IOP middleware will have to be made available and integrated within each EATMS system having a role & responsibility (at least one of the main ones identified during D3 : User, Contributor, Publisher). The communication network can be made available through interconnected national networks first, then through the Pan-European Network (PEN).
IS-0703																								SWIM - governance & supervision	The SWIM Interoperability concept will define the rules, roles and responsibilities for each of the Stakeholders involved in the SWIM process. It is anticipated to SOA principles (at least some) will be applied to the ATM world so that the rules for governance as well as the necessary applications will be made available to orchestrate and supervise the services made available and used by the various stakeholders. It is considered that the governance and supervision aspects apply, for this OI step, more to the ground part of the SWIM.
IS-0704																								SWIM - Ground-Ground limited services	This represents the first implementation of some SWIM services between at least 2 ACCs to exchange flight data information. In order to ensure the efficiency of the information exchanges also the necessary meteo and aeronautical information needs to be shared. It is envisaged also that Surveillance information will start to be shared through dedicated SWIM services.
IS-0705																								SWIM - Ground-Ground extended services	This represents either enriched services (e.g. Flight Information services) or a new generation of services such as NOPrelated services(related to Demand & Capacity, ATFCM scenario), provision of Terrain & Obstacle data, Airspace static & dynamic data. At least one representative system for each of the domain concerned will be using these SWIM services.

Matrix Definition and Legend

This matrix shows the impact that the Operational Improvements Steps (OI Steps left side of the matrix) developed in SESAR have in the in the Performance Indicators at ECAC Level (ECAC PIs upper side of the matrix) developed by the EP3 WP 2.4.1. It is only show the ECAC PIs related with the operational SESAR KPAs (Key Performance Areas).

KPAs showed:	Capacity	Flexibility	Flexibility	Predictability

	The red colour means that the related OI Step has a **bad impact** in the associated ECAC PI
	The yellow colour means that the related OI Step has a **positive but low impact** on the ECAC PI
	The green colour means that the related OI Step has a **positive and high impact** on the ECAC PI
	The white colour means that the related OI Step has **no impact** in the associated ECAC PI

OI Step Code	ECAC PIs																							OI Step Title	OI Step Description
	CAP.ECAC.PI 1	CAP.ECAC.PI 2	CAP.ECAC.PI 3	EFF.ECAC.PI 1	EFF.ECAC.PI 2	EFF.ECAC.PI 3	EFF.ECAC.PI 4	EFF.ECAC.PI 5	EFF.ECAC.PI 6	FLX.ECAC.PI 1	FLX.ECAC.PI 2	FLX.ECAC.PI 3	FLX.ECAC.PI 4	FLX.ECAC.PI 5	FLX.ECAC.PI 6	FLX.ECAC.PI 7	FLX.ECAC.PI 8	PRED.ECAC.PI 1	PRED.ECAC.PI 2	PRED.ECAC.PI 3	PRED.ECAC.PI 4	PRED.ECAC.PI 5	PRED.ECAC.PI 6	PRED.ECAC.PI 7		
IS-0706																								SWIM - European Air-Ground Communication Infrastructure	SWIM services in order to be used between air and ground systems need the inter-connection between ground system(s) in charge of the connectivy to the aircraft and the SWIM available services on the ground. This will allow to uplink the appropriate up-to-date information, available through the SWIM information sharing ground pool, onboard the aircraft. In the other direction, this will allow to redirect the airborne information to the appropriate ground system (e.g. ACC having the aircraft under its responsibility)
IS-0707																								SWIM - Air-Ground limited services	SWIM services will be replacing the Air-Ground message-based exchanges using the legacy architecture (meaning message-based datalink mechanisms such as CPDLC and AGDL applications spread in all ground units connected to the aircraft in charge of the connectivity to the aircraft). The services will be made transparently available onboard the aircraft and the concerned ground systems but they will be using the SWIM ground infrastructure and the AGDL ground dedicated system(s) - one single or one per FAB -.
IS-0708																								SWIM - Ground-Ground full services	This represents the full deployment of the SWIM services as the only single means to share all the relevant ATM information throughout all the concerned ATM stakeholders.
IS-0709																								SWIM - Air-Ground extended services	Enriched Air-Ground Services (Downlink trajectory with TMR, Meteo Broadcast)
IS-0710																								Air-Air Exchange services	Exchange of Meteo, Wake vortices, trajectory information between Aircraft for Self-separation
IS-0301																								Interoperability between AOC and ATM Systems (FDPS)	Use of trajectory data as available from AOC (initially probably on a low periodicity basis) incl. ATOW, engine variant, actual wind profiles, possibly intent data (next waypoint(s)) and airline thrust setting policy, as a complement to ICAO flight plan/ surveillance data /qualified extrapolation, for improved accuracy of ground TP computations.
IS-0302																								Use of Aircraft Derived Data (ADD) to Enhance ATM Ground System Performance	Continued improvement of ground TP accuracy using ADD (state vector, weight, wind, then intent data - next N waypoints) subject to quick variations and/or frequent updates.
IS-0303																								Use of Predicted Trajectory (PT) to Enhance ATM Ground System Performance	The trajectory sharing process is automatic and transparent to the crew and the controller unless the update results in a new interaction for the aircraft. RBT revision is triggered at air or ground initiative when constraints are to be changed (modified by ATC, or cannot be achieved by a/c)
IS-0305																								Automatic RBT Update through TMR	The event-based Trajectory Management Requirements (TMR) logic is specified by the ground systems on the basis of required time interval and delta of current PT versus previously downlinked PT. TMR parameters can be static/globally defined or dynamic/flight-specific. This process is transparent to ATCOs and pilots (deviation alerts that are relevant for the ATCO should be associated with larger tolerance than ground-managed TMR).
IS-0406																								Aircraft Dissemination of Information on Weather Hazards to Other Aircraft	Significant weather events captured by onboard system such as wake vortices or severe turbulence are broadcast to other airspace users.
IS-0407																								Interoperability between AOC and Weather Information Systems	Use by meteorological service of airborne-derived weather information as available from AOC in order to improve weather forecast.
IS-0501																								Use of Airborne Weather Data by Meteorological Service to Enhance Weather Forecast	Specified weather data are captured by airborne aircraft and downlinked to the meteorological service in support of forecasting, significant weather reporting and data collection. (This may be "contract" or "event" driven).
AOM-0101																								Harmonised ICAO Airspace Classification at FL195 and below	The airspace below FL195 and associated traffic handling are reorganised in each State to ensure common adoption and uniform application of ICAO ATS Classification in the ECAC Region.
AOM-0102																								Three Categories of Airspace	The current airspace classification is replaced by a new model consisting of 3 airspace categories (N, K and U) defined in accordance with the following Traffic Environment Model:□ - N iNtended Traffic Environment within which all traffic is known to ATS, both with position and with flight intentions,□ - K Known Traffic Environment within which all traffic is known to ATS either with position only or with flight intentions as well,□ - U Unknown Traffic Environment within which not all traffic is known to ATS.
AOM-0103																								Two Categories of Airspace	Gradual removal of Category K airspace to be changed into:□ - Category N, when ATS systems are capable of providing real-time data on the position and intentions of all aircraft within the applicable airspace;□ - Category U, in other cases.
AOM-0201																								Moving Airspace Management Into Day of Operation	The Flexible Use of Airspace (FUA) process is improved with more dynamic airspace management enabling dynamic responses to short notice military airspace requirements (up to 3 hours before operations) or very short term changes (e.g. bad weather). This relies in particular on increased collaboration between ASM/ATFCM partners, and scenarios providing flexibility with regard to daily airspace and route requirements.
DCB-0203																								Enhanced ASM/ATFCM Coordinated Process	Collaborative activities within the planning and execution phases between ASM and ATFCM to optimise the utilisation of the available capacity based on the continuous assessment of network impact of the expected airspace allocations. The collaborative activities also consist on the day of operations in making a better usage of the opportunities (increase of route availability) and in ensuring more airspace use flexibility to fully respond to ad-hoc military needs in accordance with defined time parameters (e.g. 3 hours before operations).
AOM-0202																								Enhanced Real-time Civil-Military Coordination of Airspace Utilisation	Real-time coordination is further enhanced through ¿what-if¿ functionalities and automated support to airspace booking and airspace management (e.g. integrated toolset allowing AMC and other parties to design, allocate, open and close military airspace structures on the day of operations).

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

Matrix Definition and Legend

This matrix shows the impact that the Operational Improvements Steps (OI Steps left side of the matrix) developed in SESAR have in the in the Performance Indicators at ECAC Level (ECAC PIs upper side of the matrix) developed by the EP3 WP 2.4.1. It is only show the ECAC PIs related with the operational SESAR KPAs (Key Performance Areas).

KPAs showed:	Capacity	Flexibility	Flexibility	Predictability

	The red colour means that the related OI Step has a **bad impact** in the associated ECAC PI
	The yellow colour means that the related OI Step has a **positive but low impact** on the ECAC PI
	The green colour means that the related OI Step has a **positive and high impact** on the ECAC PI
	The white colour means that the related OI Step has **no impact** in the associated ECAC PI

OI Step Code	ECAC PIs																							OI Step Title	OI Step Description
	CAP.ECAC.PI 1	CAP.ECAC.PI 2	CAP.ECAC.PI 3	EFF.ECAC.PI 1	EFF.ECAC.PI 2	EFF.ECAC.PI 3	EFF.ECAC.PI 4	EFF.ECAC.PI 5	EFF.ECAC.PI 6	FLX.ECAC.PI 1	FLX.ECAC.PI 2	FLX.ECAC.PI 3	FLX.ECAC.PI 4	FLX.ECAC.PI 5	FLX.ECAC.PI 6	FLX.ECAC.PI 7	FLX.ECAC.PI 8	PRED.ECAC.PI 1	PRED.ECAC.PI 2	PRED.ECAC.PI 3	PRED.ECAC.PI 4	PRED.ECAC.PI 5	PRED.ECAC.PI 6	PRED.ECAC.PI 7		
AOM-0203																								Cross-Border Operations Facilitated through Collaborative Airspace Planning with Neighbours	National collaborative civil-military airspace planning process is extended with neighbouring States by harmonising, where needed, the ASM rules and procedures for the establishment, allocation and use of airspace structures. National high level airspace policy bodies will enhance their cooperation with neighbours, when so required, to commonly address cross-border activities and to seek to allocate at pre-tactical level on a sub-regional rather than a national basis.
AOM-0204																								Europe-wide Shared Use of Military Training Areas	TSA/TRA sharing concepts - including cross-border operations (CBO) and cross-border areas (CBA) - are extended at European level subject to political endorsement, especially in regard to the dependency on other States (e.g. reciprocity of training opportunities, need to identify and mitigate regulatory and procedural differences).
AOM-0205																								Modular Temporary Airspace Structures and Reserved Areas	A modular design for new airspace requirements is introduced to enable sub-divisions, new areas or revised airspace requirements closer to air bases (100 NM radius) and define different airspace scenarios to address local, regional and network impact.
AOM-0206																								Flexible Military Airspace Structures	The possibility for ad-hoc structure delineation at short notice is offered to respond to short-term airspace users' requirements not covered by pre-defined structures and/or scenarios. Changes in the airspace status are uplinked to the pilot by the system.
AOM-0208																								Dynamic Mobile Areas (DMA)	DMA are temporary mobile airspace exclusion areas. The size and duration of the volumes of airspace will be kept to the absolute minimum required.
AOM-0301																								Harmonised EUROCONTROL ECAC Area Rules for OAT-IFR and GAT Interface	OAT operation across Europe is improved by harmonising relevant national OAT arrangements for pan-European use.
AOM-0302																								Harmonised OAT Flight Planning	Filing of flight plans is done in a common format (=ICAO FPL format) for military flights i.e. GAT, mixed OAT/GAT and all OAT flights for which a filed flight plan is required (Military Authorities might have to revisit their existing flight planning regulations and procedures for pure OAT flights). OAT flight plans are not subject to any flow management provisions or restrictions.
AOM-0303																								Pan-European OAT Transit System	A pan-European OAT-IFR Transit System (OATTS) is in place, which connects national structures and arrangements to form a flexible system facilitating OAT-IFR flights across Europe. OATTS provides timely and flexible availability of adequate routing and airspace options according to military mission requirements for short transit into military training/exercise areas, and long-haul transit across States. Additionally, pre-defined scenarios are available to facilitate increased military OAT transit demands in the event of large-scale military operations and exercises (ATM Contingency Plans).
AOM-0304																								OAT Trajectories	Interfacing Military Mission Trajectories with Business Trajectories
AOM-0401																								Multiple Route Options & Airspace Organisation Scenarios	More route options and a greater freedom in profile selection is offered. Cross-border sectorisation is enabled where appropriate to meet changing traffic flows across FIR boundaries reflecting the move towards Functional Airspace Blocks envisaged within the Single European Sky. The revised route structure continues to provide connectivity with major TMAs and accommodates expected traffic demand. The airspace design and pre-determined scenarios provide viable options to airspace users with multiple route options and modular temporary airspace structures. Airspace scenarios are agreed by airspace users, ANSPs, military to enable more efficient routings on the day of operation (e.g. where airspace released by the military is not fully utilised).
AOM-0402																								Further Improvements to Route Network	The route network continues to be developed in accordance with Advance Airspace Scheme principles and taking into account military requirements, with the aim to further optimise airspace structures (route/sector and terminal airspace) across airspace boundaries, to better align routes and sectors with traffic flows and to accommodate more efficiently the various types of airspace users (e.g. specialisation of routes and sectors to enhance productivity and reduce controller workload).
AOM-0403																								Pre-defined ATS Routes Only When and Where Required	The route network will evolve to fewer pre-defined routes with the exploitation of advanced navigation capabilities and generalisation of FABs not constrained by FIR boundaries, allowing for more direct routes and free routing. Route constraints are removed along with the development of 4DT based operations. However, it is assumed that some form of route network will be retained to cater for specific requirements (e.g. non capable aircraft, transition of medium complexity operations to/from TMA lower airspace, segregation between managed and unmanaged airspace, military flight planning, etc.).
AOM-0501																								Use of Free Routing for Flight in Cruise Inside FAB Above Level XXX	The goal is to allow free routing inside FAB independent from route network in cruise above level XXX.
AOM-0502																								Use of Free Routing from ToC to ToD	The free routing is from Top of climb to top of descent.
AOM-0503																								Use of Free Routing from Terminal Area Operations-exit to Terminal Area Operations-entry	The free routing is implemented from exit from/ to entry into Terminal Area Operations.
AOM-0601																								Terminal Airspace Organisation Adapted through Use of Best Practice, PRNAV and FUA Where Suitable	Terminal Airspace is adapted in line with the availability of airspace, runway configuration and SID/STAR schema in use.
AOM-0602																								Enhanced Terminal Route Design using P-RNAV Capability	PRNAV may facilitate improvements in the efficiency and capacity of Terminal Airspace through the provision of increased flexibility and reduced route separation. Includes also the development environmental-friendly procedures like steep and curved approaches.
AOM-0701																								Continuous Descent Approach (CDA)	Under specific circumstances (low traffic density), simple Continuous Descent Approach (CDA) is used at airport through adapted procedures (no need for further ground system automation).
AOM-0702																								Advanced Continuous Descent Approach (ACDA)	This improvement involves the progressive implementation of harmonised procedures for CDAs in higher density traffic. Continuous descent approaches are optimised for each airport arrival procedure. New controller tools and 3D trajectory management enable aircraft to fly, as far as possible, their individual optimum descent profile (the definition of a common and higher transition altitude would be an advantage).

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

Matrix Definition and Legend

This matrix shows the impact that the Operational Improvements Steps (OI Steps left side of the matrix) developed in SESAR have in the in the Performance Indicators at ECAC Level (ECAC PIs upper side of the matrix) developed by the EP3 WP 2.4.1. It is only show the ECAC PIs related with the operational SESAR KPAs (Key Performance Areas).

KPAs showed:	Capacity	Flexibility	Flexibility	Predictability

	The red colour means that the related OI Step has a **bad impact** in the associated ECAC PI
	The yellow colour means that the related OI Step has a **positive but low impact** on the ECAC PI
	The green colour means that the related OI Step has a **positive and high impact** on the ECAC PI
	The white colour means that the related OI Step has **no impact** in the associated ECAC PI

OI Step Code	ECAC PIs																						OI Step Title	OI Step Description
	CAP.ECAC.PI 1	CAP.ECAC.PI 2	CAP.ECAC.PI 3	EFF.ECAC.PI 1	EFF.ECAC.PI 2	EFF.ECAC.PI 3	EFF.ECAC.PI 4	EFF.ECAC.PI 5	EFF.ECAC.PI 6	FLX.ECAC.PI 1	FLX.ECAC.PI 2	FLX.ECAC.PI 3	FLX.ECAC.PI 4	FLX.ECAC.PI 5	FLX.ECAC.PI 6	FLX.ECAC.PI 7	FLX.ECAC.PI 8	PRED.ECAC.PI 1	PRED.ECAC.PI 2	PRED.ECAC.PI 3	PRED.ECAC.PI 4	PRED.ECAC.PI 5	PRED.ECAC.PI 6	PRED.ECAC.PI 7		
AOM-0703																								Continuous Climb Departure	When traffic permits, Continuous Climb Departure is used to reduce noise by a higher altitude trajectory around the airport. Fuel consumption is reduced by flying optimized profile (no vertical containment required).
AOM-0704																								Tailored Arrival	Tailored arrival procedures are defined from Top of descent to Initial Approach Fix (IAF) or to runway taking in account the other traffic and constraints, to optimize the descent. The concept is based on the downlink to the ANSP of actual aircraft information (like weight, speed, weather etc.) and the uplink of cleared route (STAR) calculated by the ANSP.
AOM-0705																								Advanced Continuous Climb Departure	Use of continuous climb departure in higher density traffic enabled by system support to trajectory management.
AOM-0801																								Flexible Sectorisation Management	Sector configuration management is improved as a function of airspace management (Network Operations Plan) to ensure balance between demand and capacity at European network level through more effective resource utilisation, improved flexibility in staff rostering, adaptation and synchronisation of opening schemes across centres, and more generally speaking through harmonisation of working practices.
AOM-0802																								Modular Sectorisation Adapted to Variations in Traffic Flows	Airspace is apportioned to small elementary sectors or modules. Modules are grouped in control sectors according to grouping principles and pre-defined sectorisation scenarios adapted to the main traffic flows predicted for each day of operation. The appropriate sectorisation scenario is activated based on the assessment of the predicted traffic demand.
AOM-0803																								Dynamically Shaped Sectors Unconstrained By Predetermined Boundaries	ATC sectors shape and volumes are adapted in real-time to respond to dynamic changes in traffic patterns and/or short term changes in users' intentions.
AOM-0804																								Dynamic Management of Terminal Airspace	Benefits may be gained by dynamic adjustment of airspace boundaries of terminal airspace in order to respond in real time to changing situations in traffic patterns and/or runway(s) in use.
CM-0102																								Automated Support for Dynamic Sectorisation and Dynamic Constraint Management	This improvement relates to the dynamic management of airspace/route structure. The system provides support for decision making based on pre-defined sector sizing and constraint management in order to pre-deconflict traffic and optimise use of controller work force.
SDM-0201																								Remotely Provided Aerodrome Control Service	Tower control service is delivered, where applicable, from an ATC facility elsewhere than at an affected airport. Air traffic controllers in this facility use information collected from remote tower sensor systems to perform real-time tower operations.
SDM-0202																								Transfer of area of responsibility for trajectory management	Improved interoperability allows areas of responsibility to be transferred between ATSUs according to demand identified through the publication of the RBT.
SDM-0203																								Generic' (non-geographical) controller validations	Advanced automation support allows controllers to hold more generic validations (e.g. validation according to airspace type and tool-set) rather than validations for specific (geographic) sectors.
DCB-0101																								Enhanced Seasonal NOP Elaboration	The contents of Summer and Winter versions of the NOP - consolidating the existing information on traffic demand and capacity plans - are improved using feedback from previous season. Stakeholders contribute more efficiently to the elaboration of the NOP and updates are integrated more dynamically.
DCB-0102																								Interactive Rolling NOP	The Network Operation Plan provides an overview of the ATFCM situation from strategic planning to real time operations (accessible from 6 months to the day of operation) with ever increasing accuracy up to and including the day of operations. The data is accessible online by stakeholders for consultation and update as and when needed, subject to access and security controls. The elements and formats of the NOP will be established taking into account the requirements of the users of these plans. It will be possible for them to access and extract data for selected areas to support their operation and, if required, to create their specific operations plan. The NOP will also be updated taking into account the actual traffic situation and real time flow and capacity management.
DCB-0103																								SWIM enabled NOP	The NOP is in fact a 4 dimensional virtual model of the European ATM environment. It is a dynamic, rolling picture that provides a relational image of the state of the ATM environment for past, present and future. The user, via the appropriate applications, is able to view this image, moving the window along the timeline and focusing on any particular aspect or aspects he or she is interested in.
DCB-0201																								Interactive Network Capacity Planning	Up-to-date and comprehensive capacity data and information from ANSPs and airports is available. The process offers an interactive support to stakeholders in the development of medium-term plans. Capacity planning information, data and tools are available on-line. Latent capacity is used to relieve bottlenecks through consolidated capacity planning process based on coordination and network synchronisation of ANSPs/airports enabling the adaptation of the capacity delivery where and when required.
AUO-0101																								ATFM Slot Swapping	Aircraft Operators' tactical priorities are introduced in a cooperative process with the CFMU through ATFM slot exchanges (such slot exchange could be for instance between flights within a single company or within a strategic alliance of companies). CFMU may propose slot exchanges between flights to minimise the overall inconvenience to the community as a whole with the objective of minimising the total ATFM delay.
AUO-0102																								User Driven Prioritisation Process (UDPP)	In the absence of any capacity shortfall, reference trajectories are handled on a first come first served basis. Prioritisation for departure in the event of reduced capacity is the result of a collaborative process involving all partners. Airspace users among themselves can recommend to the Network Management a priority order for flights affected by delays caused by an unexpected reduction of capacity. The airspace users will respond in a collaborative manner to the Network Management with a demand that best matches the available capacity.

Matrix Definition and Legend

This matrix shows the impact that the Operational Improvements Steps (OI Steps left side of the matrix) developed in SESAR have in the in the Performance Indicators at ECAC Level (ECAC PIs upper side of the matrix) developed by the EP3 WP 2.4.1. It is only show the ECAC PIs related with the operational SESAR KPAs (Key Performance Areas).

KPAs showed: Capacity | Flexibility | Flexibility | Predictability

- The red colour means that the related OI Step has a **bad impact** in the associated ECAC PI
- The yellow colour means that the related OI Step has a **positive but low impact** on the ECAC PI
- The green colour means that the related OI Step has a **positive and high impact** on the ECAC PI
- The white colour means that the related OI Step has **no impact** in the associated ECAC PI

OI Step Code	CAP.ECAC.PI 1	CAP.ECAC.PI 2	CAP.ECAC.PI 3	EFF.ECAC.PI 1	EFF.ECAC.PI 2	EFF.ECAC.PI 3	EFF.ECAC.PI 4	EFF.ECAC.PI 5	EFF.ECAC.PI 6	FLX.ECAC.PI 1	FLX.ECAC.PI 2	FLX.ECAC.PI 3	FLX.ECAC.PI 4	FLX.ECAC.PI 5	FLX.ECAC.PI 6	FLX.ECAC.PI 7	FLX.ECAC.PI 8	PRED.ECAC.PI 1	PRED.ECAC.PI 2	PRED.ECAC.PI 3	PRED.ECAC.PI 4	PRED.ECAC.PI 5	PRED.ECAC.PI 6	PRED.ECAC.PI 7	OI Step Title	OI Step Description
AUO-0201																									Enhanced Flight Plan Filing Facilitation	Airspace users are assisted in filing their flight plans and in re-rerouting according to the airspace availability and ATFM situation, through collaboration with CFMU, ANS providers and airports. Airspace users can make more informed decisions when compromises are needed between delay, re-routing, trajectory limitations or costs. On the basis of the offered routings, they can select the offered routing which is best suited to their company policy for optimising flight time, fuel burn or other parameters.
AUO-0203																									Shared Business / Mission Trajectory (SBT)	The conventional flight planning process is complemented by the development and publication by airspace users of a Shared Business / Mission Trajectory (SBT) made widely available for ATM planning purposes to authorized users subject to appropriate subscription mechanisms.
AUO-0204																									Agreed Reference Business / Mission Trajectory (RBT) through Collaborative Flight Planning	Airspace users can refine the Shared Business / MissionTrajectory (SBT) in a number of iterations taking into account constraints arising from new and more accurate information. They access an up-to-date picture of the traffic situation with the level of detail required for planning (incl. Historical data, forecasted data, already known intentions, MET forecast, current traffic, ASM situation). The collaborative planning process terminates when the Reference Business / Mission Trajectory (RBT) is published.
DCB-0204																									ATFCM Scenarios	Pre-defined scenarios (incl. Modus Operandi) are established at strategical and/or pre-tactical levels taking into account partners' requirements (ATC, airports, military) for usage of the network in relation to ATC sector configuration, route and airspace availability, social events, etc.
DCB-0205																									Short Term ATFCM Measures	In order to close the gap between ATC and ATFCM, operational procedures are developed requiring dynamic coordination between more than one ACC, the AOs and the CFMU. The aim is to maximise the efficiency of the system using flow management techniques close to the real time operations.
DCB-0206																									Coordinated Network Management Operations Extended Within Day of Operation	After analysis of anticipated capacity shortfalls at local, regional or network wide levels, responses are selected from pre-defined scenarios and adjusted to the planned situation until day of operation. This relies on improved working relationship and processes between CFMU/FMPs/ATC supervisor especially during the anticipating and reacting phases to optimise capacity throughput in sector groups.
DCB-0207																									Management of Critical Events	Critical events refers to a sudden and usually unforeseen event leading to a high drop in ATFCM capacity, involving many partners and requiring immediate action to minimise consequences and to retrieve network stability. A pan-European procedure is established for managing Industrial Action events which can be tailored to individual countries needs/requirements thus leading to better utilisation of limited available capacity.
DCB-0208																									Dynamic ATFCM	Use of 4D trajectory updates in the ATFCM process in order to optimise the network usage.
DCB-0303																									Improved Operations at Airport in Adverse Conditions Using ATFCM Techniques	Integrate ATFCM measures with optimised collaborative procedures at airports to manage cases of significant changes to airport capacity, and in particular sudden capacity shortfalls and recovery from that situation.
DCB-0305																									Network Management Function In Support of UDPP	A delay management function is implemented at ATFCM network level to assist airspace users in the UDPP process.
SDM-0101																									Network Performance Assessment	Key Performance Indicators are developed and monitored to determine how effective ATM is meeting users' demand and to act as driver for further improvements of the ATM system. Both users and providers are able to assess the actual operation (routes flown, usage of allocated airspace, runway utilisation, etc.) against the forecast operation and to assess the adequacy of the capacity provision.
SDM-0102																									Civil-Military Cooperation Performance Assessment	Implement and monitor Military KPIs on Airspace Efficiency, Mission Effectiveness and Flexibility and agree civil-military KPIs. Agreed civil-military Key Performance Indicators and military Key Performance Indicators on airspace usage are monitored, deviations are highlighted and used to take suitable actions as to continuously enhance civil-military cooperation and coordination.
SDM-0103																									Sustainability Performance Management of the ATM Network	Network efficiency indicators are developed and monitored to describe the environmental performance of the ATM network.
AUO-0301																									Voice Controller-Pilot Communications (En Route) Complemented by Data Link	Voice communications are complemented (not replaced) by services allowing flight crews and controllers to conduct operational exchanges through datalink. Data com are intended for use in non-time critical situations and may be applied instead of or in combination with voice communications.
AUO-0302																									Successive Authorisation of Reference Business / Mission Trajectory (RBT) Segments using Datalink	Controller's clearances are sent to the pilot by datalink for the successive segments of the Reference Business / MissionTrajectory (RBT) along the flight progress (this includes taxi route in case of surface operations). Pilot's requests to controller for start-up, push back, taxi, take-off clearances, etc. are also transmitted by datalink.
AUO-0303																									Revision of Reference Business / Mission Trajectory (RBT) using Datalink	The pilot is automatically notified by datalink of trajectory change proposals (route including taxi route, altitude, time and associated performance requirements as needed) resulting from ATM constraints arising from, for example, ad hoc airspace restrictions or closing of a runway. ATM constraints may also be expressed in terms of requests such as RTA in support of AMAN operation or runway exit in support of BTV operation. On the other hand, the controller is notified by datalink of aircraft preferences in terms of STAR, ETA, ETA min/max, runway exit, etc.
AUO-0304																									Initiating Optimal Trajectories through Cruise-Climb Techniques	An optimal thrust setting is selected for the climb and the aircraft climbs as weight is decreased though fuel burn.
CM-0101																									Automated Support for Traffic Load (Density) Management	Automated tools provide support for managing traffic load per network node (e.g. sector, waypoint, route, route-segment, etc) according to declared capacities.

Matrix Definition and Legend

This matrix shows the impact that the Operational Improvements Steps (OI Steps left side of the matrix) developed in SESAR have in the in the Performance Indicators at ECAC Level (ECAC PIs upper side of the matrix) developed by the EP3 WP 2.4.1. It is only show the ECAC PIs related with the operational SESAR KPAs (Key Performance Areas).

KPAs showed:	Capacity	Flexibility	Flexibility	Predictability

	The red colour means that the related OI Step has a **bad impact** in the associated ECAC PI
	The yellow colour means that the related OI Step has a **positive but low impact** on the ECAC PI
	The green colour means that the related OI Step has a **positive and high impact** on the ECAC PI
	The white colour means that the related OI Step has **no impact** in the associated ECAC PI

OI Step Code	ECAC PIs																							OI Step Title	OI Step Description
	CAP.ECAC.PI 1	CAP.ECAC.PI 2	CAP.ECAC.PI 3	EFF.ECAC.PI 1	EFF.ECAC.PI 2	EFF.ECAC.PI 3	EFF.ECAC.PI 4	EFF.ECAC.PI 5	EFF.ECAC.PI 6	FLX.ECAC.PI 1	FLX.ECAC.PI 2	FLX.ECAC.PI 3	FLX.ECAC.PI 4	FLX.ECAC.PI 5	FLX.ECAC.PI 6	FLX.ECAC.PI 7	FLX.ECAC.PI 8	PRED.ECAC.PI 1	PRED.ECAC.PI 2	PRED.ECAC.PI 3	PRED.ECAC.PI 4	PRED.ECAC.PI 5	PRED.ECAC.PI 6	PRED.ECAC.PI 7		
CM-0103																								Automated Support for Traffic Complexity Assessment	Automated tools continuously monitor and evaluate traffic complexity (in a certain airspace volume) according to a predetermined scale (e.g. high-medium-low) facilitating information on upcoming congestions and allowing to switch to the correspondent "airspace sub-category" and applicable operating procedures.
CM-0104																								Automated Controller Support for Trajectory Management	Automated tools developed to support ATCOs in identifying and resolving local complex situations: assessment of evolving traffic patterns and evaluation of opportunities to de-conflict or to synchronise trajectories.
CM-0301																								Sector Team Operations Adapted to New Roles for Tactical and Planning Controllers	Depending on local needs, new operating procedures are in place such as the Planning Controller providing support to a number of Tactical Controllers operating in different adjacent sectors. In this configuration, the Planning Controller filters predicted conflicts with a focus on conflict-free trajectories to alleviate or smooth the tactical workload of the Tactical Controllers, thus ensuring that potentially critical traffic situations and the associated workload are manageable for the TCs at the time of occurrence.
CM-0302																								Ground based Automated Support for Managing Traffic Complexity Across Several Sectors	The system provides support for smoothing flows of traffic and de-conflicting flights in a multi-sector/multi-unit environment. Controllers are assisted in alleviating traffic complexity, traffic density, and traffic flow problems.
CM-0201																								Automated Assistance to Controller for Seamless Coordination, Transfer and Dialogue	The system permits controllers to conduct screen to screen coordination between adjacent ATSUs / sectors reducing workload associated with coordination, integration and identification tasks. The system supports coordination dialogue between controllers and transfer of flights between ATSUs, and facilitates early resolution of conflicts through inter ATSU/sector coordination.
CM-0402																								Coordination-free Transfer of Control through use of Shared Trajectory	A single version of the current aircraft clearance and its RBT is simultaneously available at all sectors. The aircraft's current trajectory when down linked permits the each receiving ATCO to identify any inconsistencies between the expected (as per flight plan) aircraft performance and its actual.
CM-0202																								Automated Assistance to ATC Planning for Preventing Conflicts in En Route Airspace	The system assists the controller in conflict identification and planning tasks by providing automated early detection of potential conflicts; facilitating identification of flexible routing/conflict free trajectories; identifying aircraft constraining the resolution of a conflict or occupying a flight level requested by another aircraft.
CM-0203																								Automated Flight Conformance Monitoring	The systems provides the controller with warnings if aircraft deviate from a clearance or plan, and reminders of instructions to be issued.
CM-0204																								Automated Support for Near Term Conflict Detection & Resolution and Trajectory Conformance Monitoring	The system provides assistance to the Tactical Controller to manage traffic in his/her sector of responsibility and provides resolution advisory information based upon conflict alert tool information within the tactical ATC environment.
CM-0401																								Use of Shared 4D Trajectory as a Mean to Detect and Reduce Potential Conflicts Number	The use of shared trajectory (RBT/4DT) will increase the performance of conflict detection tools, reduce the number of false conflicts and reduce the controller workload.
CM-0403																								Conflict Dilution by Upstream Action on Speed	The system - through use of better navigation accuracy, FMS performance and air/ground communication facilities - is able to 'dissolve' conflicts by minor adjustments of flight parameters (vertical/horizontal speed, rate of climb/descent) not directly perceivable by the controller and not conflicting with their own action and responsibility.
CM-0404																								Enhanced Tactical Conflict Detection/Resolution and Conformance & Intent Monitoring	Advanced automation support for controllers including conflict detection and resolution, conformance monitoring (CM), intent monitoring (INT) and complexity monitoring. In combination these tools detect almost all aircraft/aircraft conflicts, aircraft penetrations of segregated airspace and potential task overloads with sufficient time to allow an orderly resolution. The tools also effectively monitor the ATM system for human error.
CM-0405																								Automated Assistance to ATC Planning for Preventing Conflicts in Terminal Area Operations	Ground system route allocation tools that automatically select the optimum conflict-free route when triggered by a specific event are implemented to assist the ANSP in managing the potentially large number of interacting routes.
CM-0406																								Automated Assistance to ATC for Detecting Conflicts in Terminal Areas Operations	Ground system situation monitoring, conflict detection and resolution support is deployed to ensure safety and assist with task identification in Terminal Area Operations.
TS-0102																								Arrival Management Supporting TMA Improvements (incl. CDA, P-RNAV)	Arrival Management support is improved to facilitate the use of PRNAV in the terminal area together with the use of CDA approaches. Sequencing support based upon trajectory prediction will also enhance operations within the terminal area thus allowing a mixed navigation capability to operate within the same airspace and provide a transition to eventual 4D operations.
TS-0103																								Controlled Time of Arrival (CTA) through use of datalink	The CTA (Controller Time of Arrival) is an ATM imposed time constraint on a defined merging point associated to an arrival runway. The CTA (which includes wake vortex optimisation) is calculated after the flight is airborne and published to the relevant controllers, arrival airport systems, user systems and the pilot. All partners in the system work towards achieving the CTA.
TS-0104																								Integration of Surface Management Constraint into Arrival Management	More stable arrival sequence thanks to a better awareness of traffic situation on ground.
TS-0106																								Multiple Controlled times of Over-fly (CTOs) through use of data link	The CTOs (Controlled Times of Over-fly) are ATM imposed time constraints set on successive defined merging points for queue management purposes. The CTOs are computed by the ground actors on the basis of the estimated times provided by the airspace user (airline operation center or flight crew). They have to be met by the aircraft with the required performance.
TS-0303																								Arrival Management into Multiple Airports	The system provides support to coordination of traffic flows into multiple airports in the vicinity to enable a smooth delivery to the runways.
TS-0305																								Arrival Management Extended to En Route Airspace	The system integrates information from arrival management systems operating out to a certain distance (e.g. 200 NM) to provide an enhanced and more consistent arrival sequence. The system helps to reduce holding by using speed control to absorb some of the queuing time.

Matrix Definition and Legend

This matrix shows the impact that the Operational Improvements Steps (OI Steps left side of the matrix) developed in SESAR have in the in the Performance Indicators at ECAC Level (ECAC PIs upper side of the matrix) developed by the EP3 WP 2.4.1. It is only show the ECAC PIs related with the operational SESAR KPAs (Key Performance Areas).

KPAs showed: Capacity | Flexibility | Flexibility | Predictability

- The red colour means that the related OI Step has a **bad impact** in the associated ECAC PI
- The yellow colour means that the related OI Step has a **positive but low impact** on the ECAC PI
- The green colour means that the related OI Step has a **positive and high impact** on the ECAC PI
- The white colour means that the related OI Step has **no impact** in the associated ECAC PI

OI Step Code	ECAC PIs																						OI Step Title	OI Step Description
	CAP.ECAC.PI 1	CAP.ECAC.PI 2	CAP.ECAC.PI 3	EFF.ECAC.PI 1	EFF.ECAC.PI 2	EFF.ECAC.PI 3	EFF.ECAC.PI 4	EFF.ECAC.PI 5	EFF.ECAC.PI 6	FLX.ECAC.PI 1	FLX.ECAC.PI 2	FLX.ECAC.PI 3	FLX.ECAC.PI 4	FLX.ECAC.PI 5	FLX.ECAC.PI 6	FLX.ECAC.PI 7	FLX.ECAC.PI 8	PRED.ECAC.PI 1	PRED.ECAC.PI 2	PRED.ECAC.PI 3	PRED.ECAC.PI 4	PRED.ECAC.PI 5	PRED.ECAC.PI 6	PRED.ECAC.PI 7		
TS-0201																							Basic Departure Management (DMAN)	The system determines the optimum runway for departure (if appropriate) and the optimum order for the departure sequence taking into account departure times, slot constraints, runway constraints such as departure rate, wake vortex separation, distance in trail, etc.
TS-0202																							Departure Management Synchronised with Pre-departure Sequencing	The collaborative pre-departure sequence is used by ATC while sequencing departing aircraft as and when feasible.
TS-0203																							Integration of Surface Management Constraint into Departure Management	More stable departure sequence thanks to a better awareness of traffic situation on ground.
TS-0302																							Departure Management from Multiple Airports	The system provides support to departure metering and coordination of traffic flows from multiple airports to enable a constant delivery into the en-route phase of flight.
TS-0306																							Optimised Departure Management in the Queue Management Process	With knowledge of the TTA (if applicable), the elapsed time derived from the trajectory, the departure and arrival demand for the runway(s) and the dependent departure route demand from adjacent airports, the system (DMAN) calculates the optimum take-off time and the SMAN will determine the associated start-up and push-back times and taxi route.
TS-0301																							Integrated Arrival Departure Management for full traffic optimisation, including within the TMA airspace	The system provides assistance to the controller to manage mixed mode runway operations, and identify and resolve complex interacting traffic flows.
TS-0304																							Integrated Arrival / Departure Management in the Context of Airports with Interferences (other local/regional operations)	Integration of AMAN and DMAN with the CDM processes between airports with interferences.
CM-0501																							4D Contract for Equipped Aircraft with Extended Clearance PTC-4D	A 4D Contract is a clearance that prescribes the containment of the trajectory in all 4 dimensions for the period of the contract. □ The goal of a 4D Contract is to ensure separation between□ - 4DC capable aircraft, □ - 4DC aircraft and dynamic special use airspace □ for a segment of the business trajectory in en-route airspace.
CM-0601																							Precision Trajectory Clearances (PTC)-2D Based On Pre-defined 2D Routes	After allocation of 2D routes, vertical constraint and longitudinal separation is provided by ATC to complement the 2D route. This may be achieved through surveillance based separation and/or the dynamic application of constraints. New support tools (incl. MTCD) and procedures and working methods have to be put in place.
CM-0602																							Precision Trajectory Clearances (PTC)-3D Based On Pre-defined 3D Routes	After allocation of 3D routes, longitudinal separation is provided by ATC to complement the 3D route. This may be achieved through surveillance based separation and/or the dynamic application of constraints. New support tools and procedures and working methods have to be put in place. This mode relies on aircraft capabiliies enabling barometric vertical navigation (VNAV) with the required accuracy (3D cones).
CM-0603																							Precision Trajectory Clearances (PTC)-2D On User Preferred Trajectories	Vertical constraint and longitudinal separation is provided by ATC to complement the 2D route. This may be achieved through surveillance based separation and/or the dynamic application of constraints. New support tools and procedures and working methods have to be put in place.
CM-0604																							Precision Trajectory Clearances (PTC)-3D On User Preferred Trajectories (Dynamically applied 3D routes/profiles)	Longitudinal separation is provided by ATC to complement the 3D route. This may be achieved through surveillance based separation and/or the dynamic application of constraints. New support tools and procedures and working methods have to be put in place. This mode relies on aircraft capabilities enabling the vertical containment of the trajectory (3D tube).
AUO-0401																							Air Traffic Situational Awareness (ATSAW) on the Airport Surface	Information regarding the surrounding traffic (incl. both aircraft and airport vehicles) during taxi and runway operations is displayed in the cockpit. The electronic flight bag is extended with a moving map and other traffic (aircraft+vehicles) information.
AUO-0402																							Air Traffic Situational Awareness (ATSAW) during Flight Operations	Surrounding traffic position is displayed in the cockpit.
AUO-0503																							In-trail Procedure in Oceanic Airspace (ATSA-ITP)	Procedure applicable in non-radar oceanic environment permitting a 'climb-through' or 'descend-through' manoeuvre to pass a 'blocking' aircraft, using a distance-based longitudinal separation minimum with the blocking aircraft during the ITP manoeuvre.
CM-0701																							Ad Hoc Delegation of Separation to Flight Deck - In Trail Procedure (ASEP-ITP)	The In-Trail Procedure - for use en-route in an oceanic environment - allows climbs and descents with temporarily reduced longitudinal separation minima. A limited transfer of separation responsibility between the controllers and aircrews is assumed (i.e. the duration of the ITP climb or descent). The flight crew has to monitor and maintain spacing to specific aircraft during the manoeuvre.
CM-0702																							Ad Hoc Delegation of Separation to Flight Deck - Crossing and Passing (C&P)	The Crossing and Passing applications (incl. Lateral crossing and passing; Vertical crossing and passing) allow an aircraft to cross or pass a 'target' aircraft using ASAS.
TS-0105																							ASAS Sequencing and Merging as Contribution to Traffic Synchronization in TMA (ASPA-S&M)	The flight crew ensures a spacing from designated aircraft as stipulated in new controller instructions for aircraft spacing. The spacing could be in time or space. The controller remains responsible for providing separation between aircraft. The crew is assisted by ASAS and automation as necessary.
TS-0107																							ASAS Manually Controlled Sequencing and Merging	When the ASAS Sequencing and Merging application is installed in EFBs it is necessary for the flight crew to follow the speed command manually in order to achieve the necessary spacing. This has been proven to be as easy (and probably simpler) than following a controller¿s instructions during radar vectoring. This method of control would be used during the transition to a fully integrated and automated system.
AUO-0504																							Self-Adjustment of Spacing Depending on Wake Vortices	The spacing is adjusted dynamically by the pilot based on the actual strength of the vortex of the predecessor. This implies that aircraft can determine the wake vortex characteristic they generate and broadcast this information to neighbouring aircraft.

Matrix Definition and Legend

This matrix shows the impact that the Operational Improvements Steps (OI Steps left side of the matrix) developed in SESAR have in the in the Performance Indicators at ECAC Level (ECAC PIs upper side of the matrix) developed by the EP3 WP 2.4.1. It is only show the ECAC PIs related with the operational SESAR KPAs (Key Performance Areas).

KPAs showed:	Capacity	Flexibility	Flexibility	Predictability

	The red colour means that the related OI Step has a **bad impact** in the associated ECAC PI
	The yellow colour means that the related OI Step has a **positive but low impact** on the ECAC PI
	The green colour means that the related OI Step has a **positive and high impact** on the ECAC PI
	The white colour means that the related OI Step has **no impact** in the associated ECAC PI

OI Step Code	ECAC PIs																							OI Step Title	OI Step Description
	CAP.ECAC.PI 1	CAP.ECAC.PI 2	CAP.ECAC.PI 3	EFF.ECAC.PI 1	EFF.ECAC.PI 2	EFF.ECAC.PI 3	EFF.ECAC.PI 4	EFF.ECAC.PI 5	EFF.ECAC.PI 6	FLX.ECAC.PI 1	FLX.ECAC.PI 2	FLX.ECAC.PI 3	FLX.ECAC.PI 4	FLX.ECAC.PI 5	FLX.ECAC.PI 6	FLX.ECAC.PI 7	FLX.ECAC.PI 8	PRED.ECAC.PI 1	PRED.ECAC.PI 2	PRED.ECAC.PI 3	PRED.ECAC.PI 4	PRED.ECAC.PI 5	PRED.ECAC.PI 6	PRED.ECAC.PI 7		
CM-0704																								Self Separation in Mixed Mode	The self separation is extended to all airspace to allow mixed-mode of separation. This self-separation mode need the authorization of the controller.
CM-0801																								Ground Based Safety Nets (TMA, En Route)	Ground based Safety Nets provide an alert to air traffic controllers when separation minima may be infringed or when a potentially threatening situation to the safe conduct of the flight is developing. The following safety nets are deployed where radar services are provided: Short Term Conflict Alert (STCA) in all ECAC airspace, Area Proximity Warning (APW) in all ECAC airspace to GAT from civil or military ATS Units, Minimum Safe Altitude Warning (MSAW) where the potential for infringements exists, and Approach Path Monitor (APM) where the potential for deviations from the glide path exists.
CM-0802																								ACAS Resolution Advisory Downlink	Controllers are automatically informed when ACAS (airborne collision avoidance system) generates an RA (resolution advisory). This improvement is intended to complement the voice report by the pilot.
CM-0803																								Enhanced ACAS through Use of Autopilot or Flight Director	ACAS is combined with Auto Pilot (automatic control of aircraft) or Flight Director (display of commands to assist the flight crew in controlling the aircraft) in order to provide a vertical speed guidance using ACAS target. This would be an automatic manoeuvre if the autopilot is on (or a manual man¿uvre through flight director cues if autopilot is off). Monitoring is ensured through the display of the vertical speed indicator and at any moment the pilot can override the automatism.
CM-0804																								ACAS Adapted to New Separation Modes	The ACAS function is adapted to new separation modes, in particular if lower separation minima is considered.
CM-0805																								Short Term Conflict Alert Adapted to New Separation Modes	The STCA is adapted to new separation modes, in particular if lower separation minima is considered.
CM-0806																								Improved Compatibility between Ground and Airborne Safety Nets	ACAS and STCA are and need to stay independent at functional level. There is however a need for better procedures in order to avoid inconsistent collision detection and solution. Also, information sharing is to be considered cautiously to avoid common mode of failure.
CM-0807																								Enhanced Ground-based Safety Nets Using Wide Information Sharing	System Wide Information Sharing, in particular through new surveillance means like ADS-B which provides both the aircraft computed position and its trajectory intent, is used to to improve the safety net performance, e.g. to detect that the separation mode has been compromised and to provide/propose resolution action. The safety nets must remain robust against information error or missing.
AO-0101																								Reduced Risk of Runway Incursions through Improved Procedures and Best Practices on the Ground	ECAC airports and aircraft operators develop procedures and apply recommendations contained in the European Action Plan for the prevention of runway incursions (e.g. compliance of infrastructure with ICAO provisions, best practices on flight deck procedures for runway crossing, while taxiing; assessment for pilots regarding aerodrome signage, markings and lighting.).
AO-0102																								Automated Alerting of Controller in Case of Runway Incursion or Intrusion into Restricted Areas	The system detects conflicts and infringements of some ATC rules involving aircraft or vehicles on runways, and provides the controller with appropriate alerts. Whereas the detection of conflicts identifies a possibility of a collision between aircraft and/or vehicles, the detection of infringements focuses on dangerous situations because one or more mobiles infringed ATC rules. This improvement addresses also incursions by an aircraft into an area where the presence of an aircraft (or vehicle) is temporarily restricted or forbidden (e.g. closed taxiway, ILS or MLS critical area).
AO-0103																								Improved Runway-Taxiway Lay-out, Signage and Markings to Prevent Runway Incursions	Improvements in lay-out of taxiway system as well as location of runways with respect to the terminal/apron, incl. Better placed runway crossings, use of additional perimeter taxiways, avoiding alignment of the main taxiways with entries or exits, use of perpendicular intersections. Include also enhanced signage and markings and use of Red Stop Bars.
AO-0104																								Airport Safety Nets including Taxiway and Apron	The systems detect potential conflicts/incursions involving mobiles (and stationary traffic) on runways, taxiways and in the apron/stand/gate area. The alarms are provided to controllers, pilots, and vehicle drivers together with potential resolution advisories (depending on the complexity of resolution possibilities). The systems also alert the controller in case of unauthorized / unidentified traffic.
AO-0201																								Enhanced Ground Controller Situational Awareness in all Weather Conditions	The system provides the controller with the position and automatic identity of all relevant aircraft and all relevant vehicles on the movement area (i.e. manoeuvring area plus apron).
AO-0202																								Detection of FOD (Foreign Object Debris) on the Airport Surface	The system provides the controller with information on FOD detected on the movement area.
AUO-0605																								Automated Alerting of Runway Incursion to Pilots (and Controller)	The system detects potential and actual runway incursions and simultaneously transmits alerts to controllers and the pilots of the potentially affected aircraft.
AO-0203																								Guidance Assistance to Airport Vehicle Driver	The system provides vehicle drivers with an airport moving map showing taxiways, runways, fixed obstacles, and their own mobile position.
AO-0204																								Airport Vehicle Driver's Traffic Situational Awareness	Information regarding the surrounding traffic (incl. Both aircraft and airport vehicles) during taxi and runway operations is displayed in the vehicle driver's cockpit.
AO-0205																								Automated Assistance to Controller for Surface Movement Planning and Routing	The system provides the controller with the best route calculated by minimising the delay according to planning, ground rules, and potential conflicts with other mobiles. The system informs the ground controller of any deviation from route/plan it has detected.
AO-0206																								Enhanced Guidance Assistance to Airport Vehicle Driver Combined with Routing	The system displays dynamic traffic context information including status of runways and taxiways, obstacles, and an airport moving map.
AO-0207																								Surface Management Integrated With Departure and Arrival Management	The taxiing process is considered as an integral part of the process chain from arrival to departure and AMAN / DMAN is integrated with CDM processes between airport operator, aircraft operators and air traffic service provider at the same airport.
AUO-0602																								Guidance Assistance to Aircraft on the Airport Surface	The system provides the pilot with an airport moving map showing taxiways, runways, fixed obstacles and own aircraft position.
AUO-0603																								Enhanced Guidance Assistance to Aircraft on the Airport Surface Combined with Routing	The system displays dynamic traffic context information including status of runways and taxiways, obstacles, route to runway or stand. Ground signs (stop bars, centreline lights, etc.) are triggered automatically according to the route issued by ATC.

Matrix Definition and Legend

This matrix shows the impact that the Operational Improvements Steps (OI Steps left side of the matrix) developed in SESAR have in the in the Performance Indicators at ECAC Level (ECAC PIs upper side of the matrix) developed by the EP3 WP 2.4.1. It is only show the ECAC PIs related with the operational SESAR KPAs (Key Performance Areas).

KPAs showed:	Capacity	Flexibility	Flexibility	Predictability

	The red colour means that the related OI Step has a **bad impact** in the associated ECAC PI
	The yellow colour means that the related OI Step has a **positive but low impact** on the ECAC PI
	The green colour means that the related OI Step has a **positive and high impact** on the ECAC PI
	The white colour means that the related OI Step has **no impact** in the associated ECAC PI

OI Step Code	ECAC PIs																							OI Step Title	OI Step Description
	CAP.ECAC.PI 1	CAP.ECAC.PI 2	CAP.ECAC.PI 3	EFF.ECAC.PI 1	EFF.ECAC.PI 2	EFF.ECAC.PI 3	EFF.ECAC.PI 4	EFF.ECAC.PI 5	EFF.ECAC.PI 6	FLX.ECAC.PI 1	FLX.ECAC.PI 2	FLX.ECAC.PI 3	FLX.ECAC.PI 4	FLX.ECAC.PI 5	FLX.ECAC.PI 6	FLX.ECAC.PI 7	FLX.ECAC.PI 8	PRED.ECAC.PI 1	PRED.ECAC.PI 2	PRED.ECAC.PI 3	PRED.ECAC.PI 4	PRED.ECAC.PI 5	PRED.ECAC.PI 6	PRED.ECAC.PI 7		
AUO-0604																								Enhanced Trajectory Management through Flight Deck Automation Systems	Use of advanced aircraft automated systems such as e.g. auto-brake (making it impossible for an aircraft to cross a lit stop bar) and auto-taxi (optimising speed adjustment).
AO-0501																								Improved Operations in Adverse Conditions through Airport Collaborative Decision Making	Systematic strategies are agreed and applied by CDM partners to deal with predictable (e.g. forecast bad weather, industrial action, scheduled maintenance) or unpredictable adverse conditions (e.g. unforeseen snow or fog, accident). This involves effective methods of exchanging appropriate information on the expected or actual arrival of such conditions, special procedures, and system support to facilitate the sequencing of operations where needed (e.g. de-icing).
AO-0601																								Improved Turn-Round Process through Collaborative Decision Making	A set of milestones in the turn-round process are established at airport and flight progress is monitored against those milestones. The information is shared by all involved partners, not only at the airport concerned but also in other relevant units such as the CFMU and destination airport. The completion of a milestone triggers decision making processes for downstream events. Shared information on the progress of turn-round will be used to estimate departure demand and enable arrival/departure balancing.
AO-0602																								Collaborative Pre-departure Sequencing	The predeparture sequence refers here only to the organisation of flights from the stand/parking position. Pre-departure sequences are established collaboratively with the airport CDM partners concerned taking into account agreed principles to be applied for specified reasons (e.g. slot compliance, airline preferences, night curfew, evacuation of stand/gate for arriving aircraft, etc.). The resulting pre-departure list is used by ATC while sequencing departing aircraft, as and when feasible.
AO-0603																								Improved De-icing Operation through Collaborative Decision Making	De-icing stations are managed through CDM procedures enabling airport and ANSP to know the flights to de-ice and establish sequences accordingly.
DCB-0304																								Airport CDM extended to Regional Airports	Airport CDM is extended to include interconnected regional airports. Relevant CDM-A airports at regional level and the Central Flow Management Unit exchange information, especially in support of improving the estimated time of arrival for all flights bound to the region.
AO-0402																								Interlaced Take-Off and Landing	Mixed mode of operations.
AO-0403																								Optimised Dependent Parallel Operations	Capacity gains can be achieved by increased utilisation of the combined runways. Reducing dependencies between runways by implementing more accurate surveillance techniques and controller tools as well as advanced procedures, will enlarge the capabilities of existing runway configurations (like closely spaced parallel runways).
AUO-0701																								Use of Runway Occupancy Time (ROT) Reduction Techniques	The main flight operations elements that affect the Runway Occupancy Time (ROT) include not only braking distance or runway/taxiway design but also pilot's awareness of ROT requirements, pilot's reaction times to line-up/departure clearances, pre-departure actions, etc. This improvement addresses enhancements to operating practices of airlines and pilots in that respect.
AUO-0702																								Brake to Vacate (BTV) Procedure	Brake to vacate at a pre-selected runway exit coordinated with ground ATC by voice.
AUO-0703																								Automated Brake to Vacate (BTV) using Datalink	Automated braking to vacate at a pre-selected runway exit coordinated with ground ATC through datalink, and based on BTV avionics that controls the deceleration of the aircraft to a fixed speed at the selected exit.
AO-0301																								Crosswind Reduced Separations for Departures and Arrivals	Under certain crosswind conditions it may not be necessary to apply wake vortex minima.
AO-0302																								Time Based Separation for Arrivals	Constant time separations (LIV & STIV) independent of crosswind conditions and wake vortex existence are introduced. Time based separation is an option to replace the distance criteria currently used to separate trailing aircraft on the approach beyond the wake vortex of the leading aircraft.
AO-0303																								Fixed Reduced Separations based on Wake Vortex Prediction	In the applicable situations, the controller uses reduced aircraft separations derived from forecasted wake vortex behaviour.
AO-0304																								Dynamic Adjustment of Separations based on Real-Time Detection of Wake Vortex	The controller optimises aircraft separations taking account of the actual wake-vortices strength.
AO-0305																								Additional Rapid Exit Taxiways (RET) and Entries	Appropriate runway exits are provided for the aircraft mix using the runway. The Runway Occupancy Time (ROT) as well as the predictability is based on the number of exits, the design/shape of the exit, the location with respect to the landing threshold as well as pilot/airline behaviour policy. Finding a well accepted balance between number, shape and location is necessary. Multiple runway entries and a wide holding area can help to optimize the sequencing process for departing aircraft and can generate significant operational benefits during periods of traffic congestion.
AO-0502																								Improved Operations in Low Visibility Conditions through Enhanced ATC Procedures	LVP (Low Visibility Procedures) are collaboratively developed and are implemented at applicable airports involving in particular an harmonised application across airports and the use of optimised separation criteria.
AO-0503																								Reduced ILS Sensitive and Critical Areas	Smaller ILS sensitive and critical areas in CAT II/III are created through changes in the ILS antenna and ILS interception procedures (due to smaller angle of localizer beam).
AO-0504																								Improved Low Visibility Runway Operations Using MLS	Use of MLS instead of ILS for precision approaches.
AO-0505																								Improved Low Visibility Runway Operations Using GNSS / GBAS	Use of GNSS / GBAS for precision approaches.
AUO-0403																								Enhanced Vision for the Pilot in Low Visibility Conditions	Out the window' positional awareness is improved through the application of visual enhancement technologies thereby reducing the difficulties of transition from instrument to visual flight operations.
AUO-0404																								Synthetic Vision for the Pilot in Low Visibility Conditions	The system in the cockpit provides the pilot with a synthetic/graphical view of the environment using terrain imagery and position/attitude information.
AUO-0501																								Visual Contact Approaches When Appropriate Visual Conditions Prevail	Visual contact approaches are applied instead of IFR operations when appropriate visual conditions prevail. The legally approval of this type of VFR procedure for IFR traffic in Europe is a prerequisite.

Matrix Definition and Legend

This matrix shows the impact that the Operational Improvements Steps (OI Steps left side of the matrix) developed in SESAR have in the in the Performance Indicators at ECAC Level (ECAC PIs upper side of the matrix) developed by the EP3 WP 2.4.1. It is only show the ECAC PIs related with the operational SESAR KPAs (Key Performance Areas).

KPAs showed:	Capacity	Flexibility	Flexibility	Predictability

	The red colour means that the related OI Step has a **bad impact** in the associated ECAC PI
	The yellow colour means that the related OI Step has a **positive but low impact** on the ECAC PI
	The green colour means that the related OI Step has a **positive and high impact** on the ECAC PI
	The white colour means that the related OI Step has **no impact** in the associated ECAC PI

OI Step Code	ECAC PIs																							OI Step Title	OI Step Description
	CAP.ECAC.PI 1	CAP.ECAC.PI 2	CAP.ECAC.PI 3	EFF.ECAC.PI 1	EFF.ECAC.PI 2	EFF.ECAC.PI 3	EFF.ECAC.PI 4	EFF.ECAC.PI 5	EFF.ECAC.PI 6	FLX.ECAC.PI 1	FLX.ECAC.PI 2	FLX.ECAC.PI 3	FLX.ECAC.PI 4	FLX.ECAC.PI 5	FLX.ECAC.PI 6	FLX.ECAC.PI 7	FLX.ECAC.PI 8	PRED.ECAC.PI 1	PRED.ECAC.PI 2	PRED.ECAC.PI 3	PRED.ECAC.PI 4	PRED.ECAC.PI 5	PRED.ECAC.PI 6	PRED.ECAC.PI 7		
AUO-0502																								Enhanced Visual Separation on Approach (ATSA-VSA)	The application (ATSA-VSA) helps crew to achieve the visual acquisition of the preceding aircraft and then to maintain visual separation from this aircraft.
AO-0701																								Effective Collaboration between ATM Stakeholders Supported by Environmental Management Systems	ATM operational stakeholders adopt a sustainability policy supported by appropriate environmental management system to facilitate standard setting, monitoring and continuous improvement. Sharing best practices between airports, ATC, local airlines is a first step (e.g. through set-up of airport operational fora and shared data repository of environmental best practices).
AO-0702																								Improved Relations to Neighbours	A better understanding by the local community of the real disturbance is achieved through provision of more accurate and accessible information (noise, tracks, air emission, etc.) as well as through improvements in decision-making, consultation process and impact management (better transparency towards community). A commonly agreed development path for the airport and the surrounding communities is achieved (incl. e.g. noise protection zones, noise protection programs).
AO-0703																								Noise Management to Limit Exposure to Noise on the Ground	This improvement involves the application of a range of noise reducing measures including:□ - night noise management regimes with restrictions during night (e.g. noise preferential use of runways),□ - implementation of noise quotas (e.g. noise quota for the airport, per QFU, at several points around the airport) and noise account for each airline,□ - noise limitations on the ground (e.g. engine test forbidden at night, no reverse thrust, etc.).
AO-0704																								Optimised Design and Procedures for Airport manoeuvring Areas to Reduce Gaseous Emissions and Noise Disturbance	The airport taxiway design and the associated procedures are optimized in such a way as to reduce the queue and taxiing (e.g. dual taxi routes separating inbound and outbound traffic, new taxiways and RET, preferential runway use, standard routing, etc.).□ The associated procedures for this infra-structure are developed considering reductions to air pollution and noise disturbance levels of aircraft.
AO-0705																								Reduced Water Pollution	De-icing stations are created where the fluids, spoiled on the apron, can be collected and treated. Furthermore, technical solutions for the bio-degradation of de-icing fluids are implemented. Application techniques are developed in collaboration with airlines to improve the anti-icing treatment on aircraft at the stands so that the amount of glycol released in the storm water can be reduced.
AO-0706																								(Local) Monitoring of Environmental Performance	The environmental performance (compliance to operational procedures, key performance indicators) of ATM stakeholders at the airport is recorded and monitored in support of continuous improvement process. In particular, it is possible to determine the amount of airport related versus external pollution. This improvement involves use of noise monitoring system, flight tracking and air quality monitoring system.
AUO-0801																								Environmental Restrictions Accommodated in the Earliest Phase of Flight Planning	Environmental sustainability restrictions are becoming more and more a significant restriction for the execution and planning of the business trajectories of aircraft operators. It is in the interest of all ATM-stakeholders (aircraft operators and airports) to take into account the (most often local) environmental restrictions in the early phase of flight planning.
AUO-0802																								Ground Movement Techniques to Reduce Gaseous Emissions and Noise Disturbance	Time management techniques and aircraft movement technologies are developed which reduce both fuel consumption and noise by taxiing aircraft (e.g. taxiing with not all engines operating) or towing the aircraft to/from the runway with all engines off.□ □ The use of electric (instead of hydro-carbon powered) auxiliary power units and ground handling vehicles further reduces the noise and particulate polution around parked aircraft.
AUO-0803																								Reduced Noise Footprint on Departure	Continuous improvements in engine and airfoil design provides Aircraft Operators to be pro-active in the development of operating techniques which take advantage of technological improvements to shrink the noise footprint on departure. The Improvement comes through better rates of climb, reductions in required thrust percentage, quieter engines coupled with better SID route planning and altitude usage. Airspace users work with ATM to develop noise abatement procedures.

D2.4.1-04b Catalogue of Performance Indicators and Traceability Operational Improvement step vs ECAC Performance Indicators - Annex to Perfomance Framework

ECAC PIs

Nº	KPA	ECAC PIs	Definition	Target
1	CAP	CAP.ECAC.PI 1	Annual number of IFR flights that can be accommodated in Europe	2020, The European ATM system will need to be able to handle 70% more flights per year than in 2005. This corresponds to 16 million flights
2	CAP	CAP.ECAC.PI 2	Daily number of IFR flights that can be accommodated in Europe	2020 target: 49,000 flights/day; 2020+ target:73,000 flights/day by the end of the design life of the concept
3	CAP	CAP.ECAC.PI 3	Hourly throughput overloads, number of occurrences of capacity (hourly throughput) overloads by overload level per sector/airport/ point	Target not proposed by SESAR / available
4	EFF	EFF.ECAC.PI 1	Percent of flight departure on time	On-time departure performance:1.Occurrence (Punctuality): at least 98% of flights departing on time
5	EFF	EFF.ECAC.PI 2	Average departure delay per flight	The average departure delay of delayed flights will not exceed 10 minutes
6	EFF	EFF.ECAC.PI 3	Percent of flight with normal flight duration	More than 95% of flights with normal flight duration
7	EFF	EFF.ECAC.PI 4	Average extra flight duration	Average flight duration extension of flights will not exceed 10 minutes
8	EFF	EFF.ECAC.PI 5	Percent of flight suffering additional fuel consumption of more than 2.5%	Less than 5% of flights suffering additional fuel consumption of more than 2.5%
9	EFF	EFF.ECAC.PI 6	Percent of additional fuel consumption for flight of more than 2.5%	For flights suffering additional fuel consumption of more than 2.5%, the average additional fuel consumption will not exceed 5%
10	FLX	FLX.ECAC.PI 1	Frequency: % of Business Trajectory update accepted possibly with time penalty as a consequence of the Business Trajectory full re-definition	At least 95% (European-wide annual average) of the (valid) requests for full Reference Business Trajectory (BT) redefinition of scheduled and non-scheduled flights will be accommodated, albeit possibly with a time penalty
11	FLX	FLX.ECAC.PI 2	Frequency: % of Business Trajectory delayed more than 3 minutes as a consequence of the Business Trajectory full re-definition	Of the scheduled and non-scheduled flights with a successfully accommodated request for full Reference BT redefinition, no more than 10% (European-wide annual average) will suffer a delay penalty of more than 3 minutes (with respect to their requested time) as a consequence of the request
12	FLX	FLX.ECAC.PI 3	Severity: Average delay of delayed flights as a consequence of the Business Trajectory full re-definition	The average delay (European-wide annual average) of such scheduled and non-scheduled flights (with a delay penalty of more than 3 minutes) will be less than 5 minutes
13	FLX	FLX.ECAC.PI 4	% of non-scheduled flights delayed more than 3 minutes	At least 98% (European-wide annual average) of the non-scheduled flight departures will be accommodated with a delay penalty less than 3 minutes
14	FLX	FLX.ECAC.PI 5	Average delay of delayed non-scheduled flights	The average delay (European-wide annual average) of such non-scheduled flight departures (with a delay penalty of more than 3 minutes) will be less than 5 minutes
15	FLX	FLX.ECAC.PI 6	% of the VFR-IFR change requests accommodated without penalties	At least 98% (European-wide annual average) of the VFR-IFR change requests will be accommodated without penalties
16	FLX	FLX.ECAC.PI 7	Proportion of Airspace Designated Segregated	Target not proposed by SESAR / available
17	FLX	FLX.ECAC.PI 8	Utilization of Airspace	Target not proposed by SESAR / available
18	PRD	PRED.ECAC.PI 1	Percentage of Flight delayed at arrival more than 3 minutes	Arrival punctuality: less than 5% (European-wide annual average) of flights suffering arrival delay of more than 3 minutes
19	PRD	PRED.ECAC.PI 2	Average delay of flight suffering delay of more than 3 minutes	Arrival delay: the average delay (European-wide annual average) of delayed flights (with a delay penalty of more than 3 minutes) will be less than 10 minutes
20	PRD	PRED.ECAC.PI 3	The coefficient of variation of gate-to-gate time intervals	Coefficient of variation is 0.015
21	PRD	PRED.ECAC.PI 4	Number of cancelled flights	Reduce cancellation rates by 50% by 2020 compared to 2010 baseline
22	PRD	PRED.ECAC.PI 5	Number of diverted flights	Reduce diversion rates by 50% by 2020 compared to 2010 baseline
23	PRD	PRED.ECAC.PI 6	Total delay due to disruption	Reduce total disruption delay by 50% by 2020 compared to 2010 baseline
24	PRD	PRED.ECAC.PI 7	Number of reactionary delay	Reduce reactionary delay by 50% by 2020 compared to 2010 baseline
25	ENV	ENV.ECAC.PI 1	Annual Fuel burnt	Reduction by 10%
26	ENV	ENV.ECAC.PI 2	Annual CO_2	Reduction by 10%
27	ENV	ENV.ECAC.PI 3	Annual H_2O	Reduction by 10%
28	ENV	ENV.ECAC.PI 4	Annual SO_x	Reduction by 10%
29	ENV	ENV.ECAC.PI 5	Annual NO_x	Reduction by 10%
30	ENV	ENV.ECAC.PI 6	Annual HC	Reduction by 10%
31	ENV	ENV.ECAC.PI 7	Annual CO	Reduction by 10%
32	SAF	SAF.ECAC.PI 1	Overall Number of accidents	Absolute number of accident with ATM contribution should not increase and where possible decrease
33	SAF	SAF.ECAC.PI 2	Accidents per category.	Safety improvements over the period to at least offset any adverse effects from the increase in traffic.
34	SAF	SAF.ECAC.PI 3	Incidents	High risk bearing incidents to decrease both in absolute numbers and as a proportion of the total numbers of incidents
35	SAF	SAF.ECAC.PI 4	Separation Minima Infringements	Improvement in this risk metric to keep absolute annual risk at least constant
36	SAF	SAF.ECAC.PI 5	Near Controlled Flight into Terrain	Improvement in this risk metric to keep absolute annual risk at least constant
37	SAF	SAF.ECAC.PI 6	Runway incursion	Improvement in this risk metric to keep absolute annual risk at least constant
38	SAF	SAF.ECAC.PI 7	Runway excursion	Improvement in this risk metric to keep absolute annual risk at least constant
39	SAF	SAF.ECAC.PI 8	Runway Confusion	Improvement in this risk metric to keep absolute annual risk at least constant
40	SAF	SAF.ECAC.PI 9	Unauthorised Penetration of Airspace	Improvement in this risk metric to keep absolute annual risk at least constant
41	SAF	SAF.ECAC.PI 10	Aircraft Deviation from ATC clearance	Improvement in this risk metric to keep absolute annual risk at least constant
42	SAF	SAF.ECAC.PI 11	ATM functions related occurrences	Decrease in risk-bearing occurrence
43	SAF	SAF.ECAC.PI 12	SMS maturity and Safety culture	Safety Management best practices development and safety culture at both managerial and ATCO level (Safety Culture enhancement and measurement tools to come from the European Safety programme (ESP)

Performance Indicator Identifier	Performance Indicator Short Name	Performance Indicator Description	Performance Indicator Target
ECAC PIs			
CAP.ECAC.PI 1	Annual number of IFR flights in Europe	Annual number of IFR flights that can be accommodated in Europe	2020, The European ATM system will need to be able to handle 70% more flights per year than in 2005. This corresponds to 16 million flights
CAP.ECAC.PI 2	Daily number of IFR flights in Europe	Daily number of IFR flights that can be accommodated in Europe	2020 target: 49,000 flights/day; 2020+ target:73,000 flights/day by the end of the design life of the concept
CAP.ECAC.PI 3	Hourly throughput overloads	Hourly throughput overloads, number of occurrences of capacity (hourly throughput) overloads by overload level per sector/airport/ point	Target not proposed by SESAR / available
Airtport, TMA and En-RouteECAC PIs			
Airport			
CAP.ECAC.APT.PI 1	Annual number of IFR flights at Airport level	Annual number of IFR flights that can be accommodated at Airport level	Target not proposed by SESAR / available
CAP.ECAC.APT.PI 2	Daily number of IFR flights at Airport level	Daily number of IFR flights that can be accommodated at Airport level between 0700 and 2200 hrs local time	Target not proposed by SESAR / available
CAP.ECAC.APT.PI 3	Hourly capacity at Airport level	Number of IFR flights that can be accommodated at Airport level per hour	Target not proposed by SESAR / available
TMA			
CAP.ECAC.TMA.PI 1	1h Capacity (Nb aircraft/hour)	Maximum number of aircraft that can exit the geographic area in one hour. It must be measured when the system is overloaded (or fully loaded, in high traffic conditions) for a whole hour	Target not proposed by SESAR / available
CAP.ECAC.TMA.PI 2	Maximum simultaneous number of aircraft (Nb aircraft)	Maximum simultaneous aircraft being controlled in the TMA	Target not proposed by SESAR / available
CAP.ECAC.TMA.PI 3	Total delays (minutes)	Sum of delays, due to the TMAs, for arrivals and for departures. The delay for arrivals is the difference between the planed arrival time and the actual arrival time. The delay for departures is given while it is on the ground	Target not proposed by SESAR / available
CAP.ECAC.TMA.PI 4	Total period throughput (Nb aircraft)	Total number of aircraft controlled in the TMA during the scenario duration	Target not proposed by SESAR / available
CAP.ECAC.TMA.PI 5	Maximum measured throughput (Nb aircraft/hour)	It is the maximum number of aircraft that actually exited the geographic area, per hour with the considered traffic demand. It is either lower that ECAC TMA capacity or equal to it when the system is fully loaded	Target not proposed by SESAR / available
CAP.ECAC.TMA.PI 6	10 minutes capacity (Nb aircraft)	Maximum number of aircraft that can exit the geographic area during a 10 minutes period. The measurement should be based on sector boundaries, rather that radio, in order to reduce grouping effects	Target not proposed by SESAR / available
En-Route			
CAP.ECAC.ER.PI 1	Annual flights accommodated	Annual number of IFR flights that can be accommodated at En Route level	To be determined
CAP.ECAC.ER.PI 2	Daily flights accommodated	Daily number of IFR flights that can be accommodated at En Route level	To be determined
CAP.ECAC.ER.PI 3	Hourly throughput overloads	Number of occurrences of capacity (hourly throughput) overloads by overload level per sector or airspace volume level	To be determined
Local Metrics			
Airport			
CAP.LOCAL.APT.PI 1	Airport Capacity (VMC)	Maximum achievable movements per hour	60 movements per hour in VMC for airport with a single runway (also airports with converging runways). 90 movements per hour in VMC for airport with parallel but dependent runways. 120 movements per hour in VMC for airport with parallel and independent runways. For complex airports (with 3 or more runways), no generic targets are defined. These airports should be looked at individually.
CAP.LOCAL.APT.PI 2	Airport Capacity (IMC)	Maximum achievable movements per hour	48 movements per hour in IMC for airport with a single runway (also airports with converging runways). 72 movements per hour in IMC for airport with parallel but dependent runways. 96 movements per hour in IMC for airport with parallel and independent runways. For complex airports (with 3 or more runways), no generic targets are defined. These airports should be looked at individually.
CAP.LOCAL.APT.PI 3	Total Throughput (VMC)	Total number of operations (departures + arrivals) along the day	Target not proposed by SESAR / available
CAP.LOCAL.APT.PI 4	Total Throughput (IMC)	Total number of operations (departures + arrivals) along the day	Target not proposed by SESAR / available
CAP.LOCAL.APT.PI 5	Maximum Throughput (VMC)	Maximum number of operations per hour (departures + arrivals) along the day	Target not proposed by SESAR / available
CAP.LOCAL.APT.PI 6	Maximum Throughput (IMC)	Maximum number of operations per hour (departures + arrivals) along the day	Target not proposed by SESAR / available
CAP.LOCAL.APT.PI 7	Mean Throughput (VMC)	Mean number of operations (departures + arrivals) between 07:00 and 22:00	Target not proposed by SESAR / available
CAP.LOCAL.APT.PI 8	Mean Throughput (IMC)	Mean number of operations (departures + arrivals) between 07:00 and 22:00	Target not proposed by SESAR / available
CAP.LOCAL.APT.PI 9	Arrival Delays (VMC)	Due to two possible reasons (this indicator is considered as a Predictability Indicator): Arrival Ground Delay: that would include taxi, apron and gate delays. Arrival Airspace Delay: for arrivals due to airport capacity restrictions. This indicator will be provided as the total arrival delay along the day, % of flights with arrival delay more than 1 minute, 2 minutes, 3 minutes,…. and average delays for delayed arrivals	Target not proposed by SESAR / available
CAP.LOCAL.APT.PI 10	Arrival Delays (IMC)	Due to two possible reasons (this indicator is considered as a Predictability Indicator): Arrival Ground Delay: that would include taxi, apron and gate delays. Arrival Airspace Delay: for arrivals due to airport capacity restrictions. This indicator will be provided as the total arrival delay along the day, % of flights with arrival delay more than 1 minute, 2 minutes, 3 minutes,…. and average delays for delayed arrivals	Target not proposed by SESAR / available
CAP.LOCAL.APT.PI 11	Departure Delays (VMC)	Due to two possible reasons (this indicator is considered as an Efficiency Indicator): Departure Ground Delay: that would include taxi, apron and gate delays and runway delays. Dependency with arrival/departure flows (mix-mode or dependency between runways). This indicator will be provided as the total departure delay along the day, % of flights with arrival delay more than 1 minute, 2 minutes, 3 minutes,…. and average delays for delayed departures	Target not proposed by SESAR / available
CAP.LOCAL.APT.PI 12	Departure Delays (IMC)	Due to two possible reasons (this indicator is considered as an Efficiency Indicator): Departure Ground Delay: that would include taxi, apron and gate delays and runway delays. Dependency with arrival/departure flows (mix-mode or dependency between runways). This indicator will be provided as the total departure delay along the day, % of flights with arrival delay more than 1 minute, 2 minutes, 3 minutes,…. and average delays for delayed departures	Target not proposed by SESAR / available
CAP.LOCAL.APT.PI 13	Total delays (VMC)	Addition of Arrival Delays and Departure delays	Target not proposed by SESAR / available

Performance Indicator Identifier	Performance Indicator Short Name	Performance Indicator Description	Performance Indicator Target
CAP.LOCAL.APT.PI 14	Total Delays (IMC)	Addition of Arrival Delays and Departure delays	Target not proposed by SESAR / available
CAP.LOCAL.APT.PI 15	Resource Utilization (VMC)	Resource utilization will be defined as the ratio between the maximum airport throughput along the day and the airport capacity. This indicator indicates the utilization of capacity. Values far from “one” will indicate that the studied airport has spare capacity. Values close to “one” will indicate the airport is saturated in at least the maximum value of throughput is presented	Target not proposed by SESAR / available
CAP.LOCAL.APT.PI 16	Resource Utilization (IMC)	Resource utilization will be defined as the ratio between the maximum airport throughput along the day and the airport capacity. This indicator indicates the utilization of capacity. Values far from “one” will indicate that the studied airport has spare capacity. Values close to “one” will indicate the airport is saturated in at least the maximum value of throughput is presented	Target not proposed by SESAR / available
CAP.LOCAL.APT.PI 17	Range Resource Utilization (VMC)	Range resource utilization will be defined as the ratio between the mean airport throughput along the day and the airport capacity. This indicator indicates the utilization distribution of capacity along the hours with high demand. Values far from “one” will indicate that the studied airport has spare capacity between 07:00 and 22:00. Values close to “one” will indicate that the airport is close to saturation between 07:00 and 22:00	Target not proposed by SESAR / available
CAP.LOCAL.APT.PI 18	Range Resource Utilization (IMC)	Range resource utilization will be defined as the ratio between the mean airport throughput along the day and the airport capacity. This indicator indicates the utilization distribution of capacity along the hours with high demand. Values far from “one” will indicate that the studied airport has spare capacity between 07:00 and 22:00. Values close to “one” will indicate that the airport is close to saturation between 07:00 and 22:00	Target not proposed by SESAR / available
CAP.LOCAL.APT.PI 19	Median of the Resource Utilization (VMC)	Median of the resource utilization and range resource utilization of the airports at the ECAC Area. Median is better than mean because utilization distribution across the network is skewed (a few over-utilized nodes and a lot of under-utilised nodes)	Target not proposed by SESAR / available
CAP.LOCAL.APT.PI 20	Median of the Resource Utilization (IMC)	Median of the resource utilization and range resource utilization of the airports at the ECAC Area. Median is better than mean because utilization distribution across the network is skewed (a few over-utilized nodes and a lot of under-utilised nodes)	Target not proposed by SESAR / available
CAP.LOCAL.APT.PI 21	Difference between Airport Capacity (VMC) and Airport Capacity (IMC)	Difference between Airport Capacity in VMC and IMC conditions	Reduce the gap so the airport capacity in IMC is not lower than 20% of airport capacity in VMC
CAP.LOCAL.APT.PI 22	Ratio between Maximum Throughput (IMC) and Maximum Throughput (VMC)	Ratio between the maximum number of operations per hour (departures + arrivals) along the day in IMC and VMC conditions. Values far from “one” will indicate that there is a significant gap in capacity between VMC and IMC conditions. Values close to “one” will indicate that there is no loss of capacity at the airport even when there are bad weather conditions, low visibility conditions, etc	Target not proposed by SESAR / available
CAP.LOCAL.APT.PI 23	Difference between Mean Throughput (VMC) and Mean Throughput (IMC)	Difference between Mean number of operations (departures + arrivals) between 07:00 and 22:00	Target not proposed by SESAR / available
CAP.LOCAL.APT.PI 24	Difference between Total delays (VMC) – Total Delays (IMC)	Difference between Addition of Arrival Delays and Departure Delays. This indicator will be provided as the difference of total delay along the day in VMC and IMC conditions, difference in the percentage of flights with delay bigger than 1 minute, 2 minutes, 3 minutes, etc.. in VMC and IMC conditions and the difference in average total delay for delayed operations in VMC and IMC conditions	Target not proposed by SESAR / available
TMA			
CAP.LOCAL.TMA.PI 1	Sector capacity (Nb aircraft/h)	Maximum number of aircraft that can exit the geographic area or the most penalising TMA sector in one hour. It must be measured when the system is in high traffic conditions (at the limit of what a controller can deal without reducing safety) for a whole hour. It can be based on the maximum task load the tactical controller can deal with in this period of time	Target not proposed by SESAR / available
CAP.LOCAL.TMA.PI 2	Maximum simultaneous number (Nb aircraft)	Maximum simultaneous aircraft being controlled in the TMA	Target not proposed by SESAR / available
CAP.LOCAL.TMA.PI 3	Total delays (min)	Sum of delays, due to the TMA, for arrivals and for departures. The delay for arrivals is the difference between the planed arrival time and the actual arrival time. The delay for departures is given while it is on the ground	Target not proposed by SESAR / available
CAP.LOCAL.TMA.PI 4	Total period throughput (Nb aircraft)	Total number of aircraft controlled in the TMA during the 6h00-22h00 period	Target not proposed by SESAR / available
CAP.LOCAL.TMA.PI 5	Maximum measured throughput (Nb aircraft/h)	It is the maximum number of aircraft that actually exited the geographic area, or the most penalising TMA sector per hour with the considered traffic demand. It can be lower than the sector capacity, but can be equal to it when the system is fully loaded. This maximum measured throughput might be computed as the average of the maximum measured throughput for different controllers and traffic samples	Target not proposed by SESAR / available
CAP.LOCAL.TMA.PI 6	Sector 10 min capacities (Nb aircraft)	Maximum number of aircraft that can exit the TMA sector during a 10 minutes period. The measurement should be based on sector boundaries, rather that radio, in order to reduce grouping effects	Target not proposed by SESAR / available
CAP.LOCAL.TMA.PI 7	Throughput (Nb/10min)	Number of controlled aircraft per 10 minutes blocks in the TMA, during the day [for example 6 values for 1 hour of data]	Target not proposed by SESAR / available
CAP.LOCAL.TMA.PI 8	Clearances (Nb/10min)	Number of headings, speed clearances, climb/descent, clearances measured in 10 minutes blocks [for example 6 values for 1 hour of data for each type of clearance]	Target not proposed by SESAR / available
CAP.LOCAL.TMA.PI 9	R/T contacts (Nb/10min)	Number of R/T contacts per aircraft in 10 minutes blocks [for example 6 values for 1 hour of data]	Target not proposed by SESAR / available
CAP.LOCAL.TMA.PI 10	R/T contacts (sec/a/c)	Average duration of R/T contacts per aircraft	Target not proposed by SESAR / available
En-Route			
CAP.LOCAL.ER.PI 1	Total daily throughput	Total number of aircraft controlled in the en route airspace volume during the day	Target not proposed by SESAR / available
CAP.LOCAL.ER.PI 2	Maximum hourly throughput	Maximum number of controlled aircraft per hour in the airspace volume	Target not proposed by SESAR / available
CAP.LOCAL.ER.PI 3	Maximum 10 min throughput	Maximum throughput in 10 minutes block	Target not proposed by SESAR / available
CAP.LOCAL.ER.PI 4	Maximum aircraft frequency	Maximum number of aircraft on frequency: maximum number of simultaneous aircraft under the control of an ATCo in the airspace volume per hour and in 10 minute blocks	Target not proposed by SESAR / available
CAP.LOCAL.ER.PI 5	Estimated Airspace Volume Capacity	The estimated capacity is the maximum number of aircraft that can enter an airspace volume in one hour, based on the maximum workload the tactical controller can deal with in this period of time (threshold)	Target not proposed by SESAR / available
CAP.LOCAL.ER.PI 6	Estimated Overall System Capacity	Maximum number of flights per hour in the ECAC Area taking into account traffic flows and airspace capacity restrictions	Target not proposed by SESAR / available
CAP.LOCAL.ER.PI 7	Resource Efficiency (optimize use of network resources) Airspace Volume Workload Scattering	Scattering between workload per airspace volume and the threshold saturation. This is an indicator of en route airspace volume capacity utilization	Target not proposed by SESAR / available
CAP.LOCAL.ER.PI 8	Aircraft count per sector	A measure of the number of aircraft per sector	Target not proposed by SESAR / available
CAP.LOCAL.ER.PI 9	Aircraft density	A normalised measure of the aircraft density per sector	Target not proposed by SESAR / available
CAP.LOCAL.ER.PI 10	Speed clearances	-	Target not proposed by SESAR / available
CAP.LOCAL.ER.PI 11	Heading clearances	-	Target not proposed by SESAR / available
CAP.LOCAL.ER.PI 12	Altitude clearances	-	Target not proposed by SESAR / available
CAP.LOCAL.ER.PI 13	Number of directs	-	Target not proposed by SESAR / available

Performance Indicator Identifier	Performance Indicator Short Name	Performance Indicator Description	Performance Indicator Target
ECAC PIs			
EFF.ECAC.PI 1	Percent of flight departure on time	-	On-time departure performance:1.Occurrence (Punctuality): at least 98% of flights departing on time
EFF.ECAC.PI 2	Average departure delay per flight	-	The average departure delay of delayed flights will not exceed 10 minutes
EFF.ECAC.PI 3	Percent of flight with normal flight duration	-	More than 95% of flights with normal flight duration
EFF.ECAC.PI 4	Average extra flight duration	-	Average flight duration extension of flights will not exceed 10 minutes
EFF.ECAC.PI 5	Percent of flight suffering additional fuel consumption of more than 2.5%	-	Less than 5% of flights suffering additional fuel consumption of more than 2.5%
EFF.ECAC.PI 6	Percent of additional fuel consumption for flight of more than 2.5%	-	For flights suffering additional fuel consumption of more than 2.5%, the average additional fuel consumption will not exceed 5%
Airtport, TMA and En-RouteECAC PIs			
Airport			
EFF.ECAC.APT.PI 1	Percentage of flights departing on time / On-time departure performance at the airport	On-time departure is defined as actual off-block departure less than 3 minutes before or after the departure time of the Initial Shared Business Trajectory; delayed departure is defined as actual departure more 1minutes, 2 minutes, 3 minutes, etc.. after the departure time of the Initial Shared Business Trajectory	Target not proposed by SESAR / available
EFF.ECAC.APT.PI 2	Average departure delay of delayed flights /On-time departure performance at the airport	On-time departure is defined as actual off-block departure less than 3 minutes before or after the departure time of the Initial Shared Business Trajectory; delayed departure is defined as actual departure more than 1minutes, 2 minutes, 3 minutes, etc.. after the departure time of the Initial Shared Business Trajectory	Target not proposed by SESAR / available
EFF.ECAC.APT.PI 3	Percentage of flights with normal flight duration / Flight duration efficiency at the airport	Normal flight duration is defined as actual block-to-block time less than 3 minutes longer than the block-to-block time of the Initial Shared Business Trajectory; extended flight duration is defined as actual block-to-block time more than 1minutes, 2 minutes, 3 minutes, etc.. longer than the block-to-block time of the Initial Shared Business Trajectory).This PI will be focused on the flight duration efficiency during the airport phase (airport origin + airport destination	Target not proposed by SESAR / available
EFF.ECAC.APT.PI 4	Average flight duration extension / Flight duration efficiency at the airport	Normal flight duration is defined as actual block-to-block time less than 3 minutes longer than the block-to-block time of the Initial Shared Business Trajectory; extended flight duration is defined as actual block-to-block time more than 1minutes, 2 minutes, 3 minutes, etc.. longer than the block-to-block time of the Initial Shared Business Trajectory).This PI will be focused on the flight duration efficiency during the airport phase (airport origin + airport destination	Target not proposed by SESAR / available
EFF.ECAC.APT.PI 5	Percentage of flights suffering additional fuel consumption of more than 2.5% at the airport / Gate to Gate fuel efficiency	Actual compared to Initial Shared Business Trajectory. This PI will be focused on the fuel efficiency during the airport phase (airport origin + airport destination)	Target not proposed by SESAR / available
EFF.ECAC.APT.PI 6	Average additional fuel consumption of flights suffering additional fuel consumption of more than 2.5% at the airport / Gate to Gate fuel efficiency	Actual compared to Initial Shared Business Trajectory. This PI will be focused on the fuel efficiency during the airport phase (airport origin + airport destination)	Target not proposed by SESAR / available
TMA			
EFF.ECAC.TMA.PI 1	Total flight duration (min)	Sum of the flight durations in the scenario. Times during which aircraft are not in the geographic area are not considered. Time during which aircraft are flying before the beginning of the scenario are not considered too	Target not proposed by SESAR / available
EFF.ECAC.TMA.PI 2	Optimal total flight duration (min)	Sum of the “best controlled” flight durations. The “best controlled” flight duration is the one the aircraft would have if it were alone in the geographic area, following applicable procedures, from the first point of the geographic area to the last point of the geographic area. It can be computed by taking into account aircraft performances. See the beginning of the TMA section for precisions on the geographic area	Target not proposed by SESAR / available
EFF.ECAC.TMA.PI 3	Total Fuel consumption (kg)	Fuel consumption in the geographic area. If it is not computable, then fuel consumption can be replaced by the flown distance (Nm)	Target not proposed by SESAR / available
EFF.ECAC.TMA.PI 4	Optimal total fuel consumption (kg)	Sum of the “best controlled” fuel consumptions. The “best controlled” fuel consumption of an aircraft is its fuel consumption that would be used to travel in the geographic area if it was alone, with no other traffic to disturb its trajectory. If not computable, it can be replaced by *total effective distance* in the “general performance indicators” section	Target not proposed by SESAR / available
EFF.ECAC.TMA.PI 5	Number of delays (Nb aircraft)	Number of aircraft delayed by more that 3 minutes (a delay is the difference between expected time and actual time). Delay information can be found using flight plan data	Target not proposed by SESAR / available
EFF.ECAC.TMA.PI 6	Total delays (min)	Sum of delays due to the TMA, for arrivals and for departures	Target not proposed by SESAR / available
En-Route			
EFF.ECAC.ER PI 1	Normal flight duration	Percent of flight with normal flight duration at En Route level	Target not proposed by SESAR / available
EFF.ECAC.ER PI 2	Extra flight duration	Average extra flight duration at En Route level	Target not proposed by SESAR / available
EFF.ECAC.ER PI 3	Flights with additional fuel consumption	Percent of flight suffering additional fuel consumption of more than 2.5% at En Route level	Target not proposed by SESAR / available
EFF.ECAC.ER PI 4	Additional fuel consumption	Percent of additional fuel consumption for flight of more than 2.5% at En Route level	Target not proposed by SESAR / available
EFF.ECAC.ER PI 5	Fuel deviation	Average fuel deviation of deviated flights	Target not proposed by SESAR / available
Local Metrics			
Airport			
EFF.LOCAL.APT.PI 1	Departure Delays (VMC)	Due to two possible reasons: Departure Ground Delay: that would include taxi, apron and gate delays and runway delays. Dependency with arrival/departure flows (mix-mode or dependency between runways). % of departing flights delayed more than 1 minute, 2 minutes, 3 minutes, etc…. The average departure delay of delayed flights.	Target not proposed by SESAR / available
EFF.LOCAL.APT.PI 2	Departure Delays (IMC)	Due to two possible reasons: Departure Ground Delay: that would include taxi, apron and gate delays and runway delays. Dependency with arrival/departure flows (mix-mode or dependency between runways). % of departing flights delayed more than 1 minute, 2 minutes, 3 minutes, etc…. The average departure delay of delayed flights.	Target not proposed by SESAR / available

Performance Indicator Identifier	Performance Indicator Short Name	Performance Indicator Description	Performance Indicator Target
EFF.LOCAL.APT.PI 3	Flight duration extension (VMC)	Percentage of flights with additional flight duration of more than 1 minute, 2 minutes, 3 minutes, etc.… Average deviation time of flights with additional flight duration of more than 1 minute, 2 minutes, 3 minutes, etc.…	Target not proposed by SESAR / available
EFF.LOCAL.APT.PI 4	Flight duration extension (IMC)	Percentage of flights with additional flight duration of more than 1 minute, 2 minutes, 3 minutes, etc.… Average deviation time of flights with additional flight duration of more than 1 minute, 2 minutes, 3 minutes, etc.…	Target not proposed by SESAR / available
EFF.LOCAL.APT.PI 5	Difference between Departure delays (VMC) – Departure Delays (IMC)	This indicator will be provided as the difference of departure delay along the day in VMC and IMC conditions, difference in the percentage of flights with departure delay bigger than 1 minute, 2 minutes, 3 minutes, etc.… in VMC and IMC conditions and the difference in average departure delay for delayed departures in VMC and IMC conditions	Target not proposed by SESAR / available
TMA		Average deviation time of flights with additional flight duration of more than 1 minute, 2 minutes, 3 minutes, etc.…	
EFF.LOCAL.TMA.PI 1	Total flight duration (min)	Sum of the flight durations in the scenario. Times during which aircraft are not in the geographic area are not considered. Time during which aircraft are flying before the beginning of the scenario are not considered too	Target not proposed by SESAR / available
EFF.LOCAL.TMA.PI 2	Optimal total flight duration (min)	Sum of the “best controlled” flight durations. The “best controlled” flight duration is the one the aircraft would have if it were alone in the TMA, following applicable procedures, from the first point of the geographic area to the last point of the geographic area of the TMA. It can be computed by taking into account aircraft performances. See the beginning of the TMA section for precisions on the geographic area	Target not proposed by SESAR / available
EFF.LOCAL.TMA.PI 3	Total Fuel consumption (kg)	Fuel consumption in the geographic area. If it is not computable, then fuel consumption can be replaced by the flown distance (Nm)	Target not proposed by SESAR / available
EFF.LOCAL.TMA.PI 4	Optimal total fuel consumption (kg)	Sum of the “best controlled” fuel consumptions. The “best controlled” fuel consumption of an aircraft is its fuel consumption that would be used to travel in the geographic area if it was alone, with no other traffic to disturb its trajectory	Target not proposed by SESAR / available
EFF.LOCAL.TMA.PI 5	Number of delays (Nb aircraft)	Number of aircraft delayed by more that 3 minutes (a delay is the difference between expected time and actual time). Delay information can be found using flight plan data	Target not proposed by SESAR / available
EFF.LOCAL.TMA.PI 6	Total delays (min)	Sum of delays due to the TMA, for arrivals and for departures	Target not proposed by SESAR / available
En-Route			
EFF.LOCAL.ER.PI 1	Actual Flight Time	Actual aircraft flight time taking into account the restrictions in the system	Target not proposed by SESAR / available
EFF.LOCAL.ER.PI 2	Optimum Flight Time	Flight time with no constraints (ideal flight time as defined in SESAR 2.1.2 associated to the Initial SBT)	Target not proposed by SESAR / available
EFF.LOCAL.ER.PI 3	Airspace Volume Delay (min)	Total Delay in the airspace volume taking into account traffic flows and airspace volume capacity restrictions	Target not proposed by SESAR / available
EFF.LOCAL.ER.PI 4	% of flights delayed more than 3 minutes	Percentage of flights with a delay bigger than 3 minutes in the en-route airspace volume	Target not proposed by SESAR / available
EFF.LOCAL.ER.PI 5	Fuel Efficiency (kg)	Defined as the difference between the actual fuel consumed in the airspace volume and the optimum fuel consumed in the airspace volume (no constraint)	Target not proposed by SESAR / available
EFF.LOCAL.ER.PI 6	Actual Flight Time	Actual aircraft flight time	Target not proposed by SESAR / available
EFF.LOCAL.ER.PI 7	Efficiency of routing service	Comparison of actual routing to Initial shared business trajectory	Target not proposed by SESAR / available
EFF.LOCAL.ER.PI 8	Duration Increase	This is the ratio: actual trajectory duration divided by optimum trajectory duration	Target not proposed by SESAR / available
EFF.LOCAL.ER.PI 9	Lateral deviation	Mean lateral deviation between SBT route and actual flown route	Target not proposed by SESAR / available
EFF.LOCAL.ER.PI 10	Vertical deviation	Mean vertical deviation between SBT route and actual flown route	Target not proposed by SESAR / available
EFF.LOCAL.ER.PI 11	Number of flights able to fly the requested altitude	Number of flights whose max. Altitude equalled the requested altitude in their SBT	Target not proposed by SESAR / available

Performance Indicator Identifier	Performance Indicator Short Name	Performance Indicator Description	Performance Indicator Target
ECAC PIs			
FLX.ECAC.PI 1	Frequency of BDT update because trajectory full re-definition	% of Business Trajectory update accepted possibly with time penalty as a consequence of the Business Trajectory full re-definition	At least 95% (European-wide annual average) of the (valid) requests for full Reference Business Trajectory (BT) redefinition of scheduled and non-scheduled flights will be accommodated, albeit possibly with a time penalty
FLX.ECAC.PI 2	Frequency of BDT delayed because trajectory full re-definition	% of Business Trajectory delayed more than 3 minutes as a consequence of the Business Trajectory full re-definition	Of the scheduled and non-scheduled flights with a successfully accommodated request for full Reference BT redefinition, no more than 10% (European-wide annual average) will suffer a delay penalty of more than 3 minutes (with respect to their requested time) as a consequence of the request
FLX.ECAC.PI 3	severity because trajectory full re-definition	Average delay of delayed flights as a consequence of the Business Trajectory full re-definition	The average delay (European-wide annual average) of such scheduled and non-scheduled flights (with a delay penalty of more than 3 minutes) will be less than 5 minutes
FLX.ECAC.PI 4	% of non-scheduled flights delayed more than 3 minutes	-	At least 98% (European-wide annual average) of the non-scheduled flight departures will be accommodated with a delay penalty less than 3 minutes
FLX.ECAC.PI 5	Average delay of delayed non-scheduled flights	-	The average delay (European-wide annual average) of such non-scheduled flight departures (with a delay penalty of more than 3 minutes) will be less than 5 minutes
FLX.ECAC.PI 6	% of the VFR-IFR change requests accommodated without penalties	-	At least 98% (European-wide annual average) of the VFR-IFR change requests will be accommodated without penalties
FLX.ECAC.PI 7	Proportion of Airspace Designated Segregated	Provides a yearly indication of airspace designated as segregated as a percentage of the nations total airspace (Geographical Surface of Segregated Areas Area against Published Times over total Amount of Airspace)	Target not proposed by SESAR / available
FLX.ECAC.PI 8	Utilization of Airspace	Gives a measurement for segregated areas of time actually used for military flying training compared to the total time available for military training (Total Airspace Capacity available/requested/allocated/used)	Target not proposed by SESAR / available
Airtport, TMA and En-RouteECAC PIs			
Airport			
FLX.ECAC.APT.PI 1	Average delay of delayed flights as a consequence of the Business Trajectory full re-definition at Airport level	-	Target not proposed by SESAR / available
FLX.ECAC.APT.PI 2	Average delay of delayed non-scheduled flights at Airport level	-	Target not proposed by SESAR / available
FLX.ECAC.APT.PI 3	Percentage of delayed flights due to a Business trajectory update	Measurement of the airport flexibility to accommodate flights that have updated their Business Trajectory. It is the percentage of flights with a business trajectory update delayed more than 1minutes, 2 minutes, 3 minutes, etc..	Target not proposed by SESAR / available
FLX.ECAC.APT.PI 4	Average delay of delayed flights due to a Business trajectory update at the airport: (minutes/delayed aircraft)	-	Target not proposed by SESAR / available
FLX.ECAC.APT.PI 5	Percentage of VFR-IFR change requests accommodated without penalties	-	Target not proposed by SESAR / available
TMA			
FLX.ECAC.TMA.PI 1	BT change success (%)	Percentage of Business Trajectory that requested a 4D Trajectory change and either could not get it or got an *additional delay* of more than 3 minutes as a consequence, over the number of Business Trajectory that did the request. The *additional delay* is the difference between the time the aircraft actually flew in the geographic area and the time it would have flown if it did not make the request. The amount of incurred *additional delay* has an influence on efficiency indicators	Target not proposed by SESAR / available
FLX.ECAC.TMA.PI 2	VFR-IFR change success (%)	Percentage of the VFR-IFR change requests accommodated without penalties	Target not proposed by SESAR / available
FLX.ECAC.TMA.PI 3	Proportion of Airspace Designated Segregated (%)	Provides a yearly indication of airspace designated as segregated as a percentage of the nations total airspace. It is the sum of surfaces of segregated areas (in the geographical area of the scenario) multiplied by the duration of the segregation in hours and by the number of flight levels used, over the surface of the geographical area of the scenario multiplied by 24h and by 400, the whole multiplied by 100	Target not proposed by SESAR / available
FLX.ECAC.TMA.PI 4	Adherence to optimum Airspace Dimension (ratio)	Gives a proportional measurement of how frequently military training has taken place within airspace areas that conform to the optimum airspace dimension (ratio of Allocated Airspace over Optimum Airspace Dimensions)	Target not proposed by SESAR / available
FLX.ECAC.TMA.PI 5	Utilization of Airspace (ratio)	Gives a measurement for segregated areas of time actually used for military flying training compared to the total time available for military training (Total Airspace Capacity available/requested/allocated/used)	Target not proposed by SESAR / available
FLX.ECAC.TMA.PI 6	Efficient Booking Procedure (ratio)	Gives an indication of actual airspace usage by military users compared with that booked by planners thus providing a measure of the degree of over- or under-booking of airspace by military planners (ratio of Time Used over Time Requested)	Target not proposed by SESAR / available
FLX.ECAC.TMA.PI 7	Training in Non-Segregated Airspace (ratio)	Measures how often military airspace users train in airspace not specifically designed for military training (ratio of Time Spent Training in Non-Segregated Areas over Total Training Time)	Target not proposed by SESAR / available
FLX.ECAC.TMA.PI 8	Release of Airspace (ratio)	Reports on the proportion of flexible use airspace military allocated but not used that was released for civil use on a time basis (ratio of Time given back before Scheduled Start over Time Cancelled)	Target not proposed by SESAR / available
En-Route			
FLX.ECAC.ER PI 1	Average delay due to BT re-definition	Average delay of delayed flights as a consequence of the Business Trajectory full re-definition at En-Route level	Target not proposed by SESAR / available
FLX.ECAC.ER PI 2	Average delay in non-scheduled flights	Average delay of delayed non-scheduled flights at En-Route level	Target not proposed by SESAR / available
FLX.ECAC.ER PI 3	Flights delayed due to BT update	Percentage of delayed flights due to a Business trajectory update. Measurement of the En-Route flexibility to accommodate flights that have updated their Business Trajectory. It is the percentage of flights with a business trajectory update delayed more than 3 minutes	Target not proposed by SESAR / available
FLX.ECAC.ER PI 4	Average delay due to BT update	Average delay of delayed flights due to a Business trajectory update at the En-Route level (minutes/delayed aircraft)	Target not proposed by SESAR / available
FLX.ECAC.ER PI 5	Change requests	Percentage of VFR-IFR change requests accommodated without penalties	Target not proposed by SESAR / available
FLX.ECAC.ER PI 6	Airspace Segregated	Proportion of the airspace Designated Segregated	Target not proposed by SESAR / available
FLX.ECAC.ER PI 7	Airspace utilisation	Utilisation of Airspace (Total Airspace Capacity, Available, requested, allocated, used)	Target not proposed by SESAR / available

Performance Indicator Identifier	Performance Indicator Short Name	Performance Indicator Description	Performance Indicator Target
Local Metrics			
Airport			
FLX.LOCAL.APT.PI 1	Percentage of non-scheduled delayed flights at the airport	The airport tries to accommodate the non-schedule flights (flexible access on demand). It is the percentage of non-scheduled flights delayed more than 1minute, 2 minutes, 3 minutes….	Target not proposed by SESAR / available
FLX.LOCAL.APT.PI 2	Average delay of non-scheduled delayed flights: (minutes/delayed aircraft)	-	Target not proposed by SESAR / available
FLX.LOCAL.APT.PI 3	Percentage of delayed flights due to a Business trajectory update	Measurement of the airport flexibility to accommodate flights that have updated their Business Trajectory. It is the percentage of flights with a business trajectory update delayed more than 1 minte, 2 minutes, 3 minutes, etc…	Target not proposed by SESAR / available
FLX.LOCAL.APT.PI 4	Average delay of delayed flights due to a Business trajectory update at the airport: (minutes/delayed aircraft)	-	Target not proposed by SESAR / available
FLX.LOCAL.APT.PI 5	Percentage of VFR-IFR change requests accommodated without penalties	-	Target not proposed by SESAR / available
TMA			
FLX.LOCAL.TMA.PI 1	BT change success (%)	Percentage of Business Trajectory that requested a 4D Trajectory change and either could not get it or got an *additional delay* of more than 3 minutes as a consequence, over the number of Business Trajectory that did the request. The *additional delay* is the difference between the time the aircraft actually flew in the geographic area and the time it would have flown if it did not make the request. The amount of incurred *additional delay* has an influence on efficiency indicators	Target not proposed by SESAR / available
FLX.LOCAL.TMA.PI 2	VFR-IFR change success (%)	Percentage of the VFR-IFR change requests accommodated without penalties	Target not proposed by SESAR / available
FLX.LOCAL.TMA.PI 3	Proportion of Airspace Designated Segregated (%)	Provides a yearly indication of airspace designated as segregated as a percentage of the nations total airspace. It is the sum of surfaces of segregated areas (in the geographical area of the scenario) multiplied by the duration of the segregation in hours and by the number of flight levels used, over the surface of the geographical area of the scenario multiplied by 24h and by 400, the whole multiplied by 100	Target not proposed by SESAR / available
FLX.LOCAL.TMA.PI 4	Adherence to optimum Airspace Dimension (ratio)	Gives a proportional measurement of how frequently military training has taken place within airspace areas that conform to the optimum airspace dimension (ratio of Allocated Airspace over Optimum Airspace Dimensions)	Target not proposed by SESAR / available
FLX.LOCAL.TMA.PI 5	Utilization of Airspace (ratio)	Gives a measurement for segregated areas of time actually used for military flying training compared to the total time available for military training (Total Airspace Capacity available/requested/allocated/used)	Target not proposed by SESAR / available
FLX.LOCAL.TMA.PI 6	Efficient Booking Procedure (ratio)	Gives an indication of actual airspace usage by military users compared with that booked by planners thus providing a measure of the degree of over- or under-booking of airspace by military planners (ratio of Time Used over Time Requested)	Target not proposed by SESAR / available
FLX.LOCAL.TMA.PI 7	Training in Non-Segregated Airspace (ratio)	Measures how often military airspace users train in airspace not specifically designed for military training (ratio of Time Spent Training in Non-Segregated Areas over Total Training Time)	Target not proposed by SESAR / available
FLX.LOCAL.TMA.PI 8	Release of Airspace (ratio)	Reports on the proportion of flexible use airspace military allocated but not used that was released for civil use on a time basis (ratio of Time given back before Scheduled Start over Time Cancelled)	Target not proposed by SESAR / available
En-Route			
FLX.LOCAL.ER PI 1	Local change requests	Percentage of VFR-IFR change requests accommodated without penalties in the airspace volume	Target not proposed by SESAR / available
FLX.LOCAL.ER PI 2	BT change success (%)	Percentage of Business Trajectory that requested a 4D Trajectory change and either could not get it or got an *additional delay* of more than 3 minutes as a consequence, over the number of Business Trajectory that did the request. The *additional delay* is the difference between the time the aircraft actually flew in the geographic area and the time it would have flown if it did not make the request. The amount of incurred *additional delay* has an influence on efficiency indicators	Target not proposed by SESAR / available
FLX.LOCAL.ER PI 3	VFR-IFR change success (%)	Percentage of the VFR-IFR change requests accommodated without penalties	Target not proposed by SESAR / available
FLX.LOCAL.ER PI 4	Proportion of Airspace Designated Segregated (%)	Provides a yearly indication of airspace designated as segregated as a percentage of the nations total airspace. It is the sum of surfaces of segregated areas (in the geographical area of the scenario) multiplied by the duration of the segregation in hours and by the number of flight levels used, over the surface of the geographical area of the scenario multiplied by 24h and by 400, the whole multiplied by 100	Target not proposed by SESAR / available
FLX.LOCAL.ER PI 5	Adherence to optimum Airspace Dimension (ratio)	Gives a proportional measurement of how frequently military training has taken place within airspace areas that conform to the optimum airspace dimension (ratio of Allocated Airspace over Optimum Airspace Dimensions)	Target not proposed by SESAR / available
FLX.LOCAL.ER PI 6	Utilization of Airspace (ratio)	Gives a measurement for segregated areas of time actually used for military flying training compared to the total time available for military training (Total Airspace Capacity available/requested/allocated/used)	Target not proposed by SESAR / available
FLX.LOCAL.ER PI 7	Efficient Booking Procedure (ratio)	Gives an indication of actual airspace usage by military users compared with that booked by planners thus providing a measure of the degree of over- or under-booking of airspace by military planners (ratio of Time Used over Time Requested)	Target not proposed by SESAR / available
FLX.LOCAL.ER PI 8	Training in Non-Segregated Airspace (ratio)	Measures how often military airspace users train in airspace not specifically designed for military training (ratio of Time Spent Training in Non-Segregated Areas over Total Training Time)	Target not proposed by SESAR / available
FLX.LOCAL.ER PI 9	Release of Airspace (ratio)	Reports on the proportion of flexible use airspace military allocated but not used that was released for civil use on a time basis (ratio of Time given back before Scheduled Start over Time Cancelled)	Target not proposed by SESAR / available

Performance Indicator Identifier	Performance Indicator Short Name	Performance Indicator Description	Performance Indicator Target
ECAC PIs			
PRED.ECAC.PI 1	Percentage of delayed flights	Percentage of Flight delayed at arrival more than 3 minutes	Arrival punctuality: less than 5% (European-wide annual average) of flights suffering arrival delay o more than 3 minutes
PRED.ECAC.PI 2	Average of delayed flights	Average delay of flight suffering delay of more than 3 minutes.	Arrival delay: the average delay (European-wide annual average) of delayed flights (with a delay penalty of more than 3 minutes) will be less than 10 minutes.
PRED.ECAC.PI 3	The coefficient of variation of gate-to-gate time intervals.	-	Coefficient of variation is 0.015.
PRED.ECAC.PI 4	Number of cancelled flights.	-	Reduce cancellation rates by 50% by 2020 compared to 2010 baseline
PRED.ECAC.PI 5	Number of diverted flights	-	Reduce diversion rates by 50% by 2020 compared to 2010 baseline
PRED.ECAC.PI 6	Total delay due to disruption	-	Reduce total disruption delay by 50% by 2020 compared to 2010 baseline
PRED.ECAC.PI 7	Number of reactionary delay	-	Reduce reactionary delay by 50% by 2020 compared to 2010 baseline
Airtport, TMA and En-RouteECAC PIs			
Airport			
PRED.ECAC.APT.PI 1	Arrival Punctuality:	Percentage of Flights delayed at arrival at Airport level (especially those delayed more than 1minutes, 2 minutes, 3 minutes, etc..).	Target not proposed by SESAR / available
PRED.ECAC.APT.PI 2	Average delay of delayed flights at airport level	Average delay of delayed flights at airport level (especially those delayed more than 1minutes, 2 minutes, 3 minutes, etc..)	Target not proposed by SESAR / available
TMA			
PRE.ECAC.TMA.PI 1	Unpredictable Deviation (min)	Unpredictable deviation depends on how airspace users estimate flight times. As we may not have user estimates, we suppose here that they use the origin/destination parameter (the procedure in TMA), and the type of the aircraft. This is the rational for the procedure deviation. This PI enables to take into considerations procedures with different durations, and aircraft with different speeds and it still make the predictability computation valid. o The best controlled flight duration is the one the aircraft would have if it were alone in the TMA, and still following applicable procedures. This is the duration to go from the first point the aircraft has in the geographic area (e.g. an Initial Approach Fixe) to the last point the aircraft has in the geographic area (e.g the glide path + 2 Nm). Computing this time can be done with data analysis or with performance data using aircraft type and weight. o A deviation for an aircraft is the difference between its actual flight duration and its best controlled flight duration (absolute value). o A procedure deviation is for a specified TMA procedure the average deviations of flights that follow the procedure. This is the o The unpredictable deviation is the sum of absolute values of (deviation – procedure deviation), for all aircraft. If a procedure g o The computation is still valid if best controlled duration is replaced by the initial flight plan duration, the duration of the initial fli	Target not proposed by SESAR / available
PRE.ECAC.TMA.PI 2	Flight time deviation (no unit)	Flight time standard deviation divided by mean flight time. This PI does not capture the fact that sub-groups of trajectories can have regular flight times internally, while their average flight time is different (two different procedures in TMA for example). It also does not capture the fact that aircrafts of different category have different speeds. Those two points could make *flight time deviation* big, while flight times are actually very predictable.	Target not proposed by SESAR / available
En-Route			
PRED.ECAC.ER PI 1	Delayed flights	Percentage of flights delayed at arrival more than x minutes at En Route level (x to be defined)	Target not proposed by SESAR / available
PRED.ECAC.ER PI.2	En route average delay	Average delay of flights suffering delay of more than x minutes at En-route level	Target not proposed by SESAR / available
PRED.ECAC.ER PI 3	En route average total delay	Average delay of delayed flights.	Target not proposed by SESAR / available
PRED.ECAC.ER PI 4	Diverted flights	Number of diverted flights at En-Route level	Target not proposed by SESAR / available
Local Metrics			
Airport			
PRED.LOCAL.APT.PI 1	Arrival Delays/Arrival Punctuality (VMC)	Due to two possible reasons: Arrival Ground Delay: that would include taxi, apron and gate delays. Arrival Airspace Delay: for arrivals due to airport capacity restrictions. This indicator will be provided as the total arrival delay along the day, % of flights with arrival delay more than 1 minute, 2 minutes, 3 minutes, etc…. and average delays for delayed arrivals.	Target not proposed by SESAR / available
PRED.LOCAL.APT.PI 2	Difference between Arrival delays (VMC) – Arrival Delays (IMC)	This indicator will be provided as the difference of arrival delay along the day in VMC and IMC conditions, difference in the percentage of flights with arrival delay bigger than 1 minute, 2 minutes, 3 minutes, etc…. in VMC and IMC conditions and the difference in average arrival delay for delayed departures in VMC and IMC conditions.	Target not proposed by SESAR / available
PRED.LOCAL.APT.PI 3	Temporal variation (VMC)	Coefficient of variation (standard deviation divided by mean) of gate-to-gate time differences between actual and last agreed values milestone times. The deviation is defined as the temporal difference between the milestones of the Actual 4D Trajectory and the agreed Business Trajectory	Target not proposed by SESAR / available
PRED.LOCAL.APT.PI 4	Temporal variation (IMC):	Coefficient of variation (standard deviation divided by mean) of gate-to-gate time differences between actual and last agreed values milestone times. The deviation is defined as the temporal difference between the milestones of the Actual 4D Trajectory and the agreed Business Trajectory	Target not proposed by SESAR / available
PRED.LOCAL.APT.PI 5	Knock-on effect (rotation timeliness) (VMC)	The performance indicator is related to: Reactionary delay Number of cancelled flights	Target not proposed by SESAR / available
PRED.LOCAL.APT.PI 6	Knock-on effect (rotation timeliness) (IMC)	The performance indicator is related to: Reactionary delay Number of cancelled flights	Target not proposed by SESAR / available
TMA			
PRE.LOCAL.TMA.PI 1	Unpredictable Deviation (min)	Unpredictable deviation depends on how airspace users estimate flight times. As we may not have user estimates, we suppose here that they use the origin/destination parameter (the procedure in TMA), and the type of the aircraft. This is the rational for the procedure deviation. This PI enables to take into considerations procedures with different durations, and aircraft with different speeds and it still make the predictability computation valid. o The best controlled flight duration is the one the aircraft would have if it were alone in the TMA, and still following applicable procedures. This is the duration to go from the first point the aircraft has in the geographic area (e.g. an Initial Approach Fixe) to the last point the aircraft has in the geographic area (e.g the glide path + 2 Nm). Computing this time can be done with data analysis or with performance data using aircraft type and weight. o A deviation for an aircraft is the difference between its actual flight duration and its best controlled flight duration (absolute value). o A procedure deviation is for a specified TMA procedure the average deviations of flights that follow the procedure. This is the o The unpredictable deviation is the sum of absolute values of (deviation – procedure deviation), for all aircraft. If a procedure g o The computation is still valid if best controlled duration is replaced by the initial flight plan duration, the duration of the initial fli	Target not proposed by SESAR / available
PRE.LOCAL.TMA.PI 2	Flight time deviation (no unit).	Flight time standard deviation divided by mean flight time. This PI does not capture the fact that sub-groups of trajectories can have regular flight times internally, while their average flight time is different (two different procedures in TMA for example). It also does not capture the fact that aircrafts of different category have different speeds. Those two points could make *flight time deviation* big, while flight times are actually very predictable.	Target not proposed by SESAR / available
En-Route			
PRED.LOCAL.ER.PI 1	Flight Time Deviation (min)	For each flight, the difference between the actual flight duration and the optimum flight duration (no constraints).	Target not proposed by SESAR / available
PRED.LOCAL.ER.PI 2	Flight time Standard Deviation (no unit)		Target not proposed by SESAR / available

Performance Indicator Identifier	Performance Indicator Short Name	Performance Indicator Description	Performance Indicator Target
ECAC PIs			
ENV.ECAC.PI 1	Annual Fuel burnt	Total annual amount of fuel burnt divided by number of movements	Reduction by 10%
ENV.ECAC.PI 2	Annual CO_2	Total annual amount of CO_2 divided by number of movements	Reduction by 10%
ENV.ECAC.PI 3	Annual H_2O	Total annual amount of H_2O divided by number of movements	Reduction by 10%
ENV.ECAC.PI 4	Annual SO_x	Total annual amount of SO_x divided by number of movements	Reduction by 10%
ENV.ECAC.PI 5	Annual NO_x	Total annual amount of NO_x divided by number of movements	Reduction by 10%
ENV.ECAC.PI 6	Annual HC	Total annual amount of HC divided by number of movements	Reduction by 10%
ENV.ECAC.PI 7	Annual CO	Total annual amount of CO divided by number of movements	Reduction by 10%
Airtport, TMA and En-RouteECAC PIs			
Airport			
ENV.ECAC.APT.PI 1	Airport Average CO_2	Amount of CO_2 emitted below 3000ft per flight movement (average)	Target not proposed by SESAR / available
ENV.ECAC.APT.PI 2	Airport Average NO_x	Amount of NO_x emitted below 3000ft per flight movement (average)	Target not proposed by SESAR / available
ENV.ECAC.APT.PI 3	Airport Average SO_x	Amount of SO_x emitted below 3000ft per flight movement (average)	Target not proposed by SESAR / available
ENV.ECAC.APT.PI 4	Airport Average CO	Amount of CO emitted below 3000ft per flight movement (average)	Target not proposed by SESAR / available
ENV.ECAC.APT.PI 5	Airport Average HC	Amount of HC emitted below 3000ft per flight movement (average)	Target not proposed by SESAR / available
ENV.ECAC.APT.PI 6	Airport Average PM_{10}	Amount of PM_{10} emitted below 3000ft per flight movement (average)	Target not proposed by SESAR / available
ENV.ECAC.APT.PI 7	Airport Average $PM_{2.5}$	Amount of $PM_{2.5}$ emitted below 3000ft per flight movement (average)	Target not proposed by SESAR / available
ENV.ECAC.APT.PI 8	Airport Poluted areas	Surface areas where those pollutants exceed elementary limits (concentration maps on annual average)	Target not proposed by SESAR / available
ENV.ECAC.APT.PI 9	Airport Affected Population by pollutants	Number of Population inside those surface areas (population maps frozen at Baseline year to exclusively capture aviation influence)	Target not proposed by SESAR / available
TMA			
ENV.ECAC.TMA.PI 1	TMA Average CO_2	Amount of CO_2 emitted below TMA ceiling per flight movement (average)	Target not proposed by SESAR / available
ENV.ECAC.TMA.PI 2	TMA Average NO_x	Amount of NO_x emitted below TMA ceiling per flight movement (average)	Target not proposed by SESAR / available
ENV.ECAC.TMA.PI 3	TMA Average SO_x	Amount of SO_x emitted below TMA ceiling per flight movement (average)	Target not proposed by SESAR / available
ENV.ECAC.TMA.PI 4	TMA Average CO	Amount of CO emitted below TMA ceiling per flight movement (average)	Target not proposed by SESAR / available
ENV.ECAC.TMA.PI 5	TMA Average HC	Amount of HC emitted below TMA ceiling per flight movement (average)	Target not proposed by SESAR / available
ENV.ECAC.TMA.PI 6	TMA Average PM_{10}	Amount of PM_{10} emitted below TMA ceiling per flight movement (average)	Target not proposed by SESAR / available
ENV.ECAC.TMA.PI 7	TMA Average $PM_{2.5}$	Amount of $PM_{2.5}$ emitted below TMA ceiling per flight movement (average)	Target not proposed by SESAR / available
ENV.ECAC.TMA.PI 8	TMA Noise areas	Sum of Surface areas with Noise Level - Lden > 55dB day - Lnight > 50dB night	Reduction by 10%
ENV.ECAC.TMA.PI 9	TMA Affected Population by noise	Total Number of Population ECAC wide exposed to Noise Level - Lden > 55dB day - Lnight > 50dB night	Reduction by 10%
En-Route			
ENV.ECAC.ER.PI 1	En-Route Fuel burnt	ECAC wide total amount of Fuel burnt per flight movement (average)	Target not proposed by SESAR / available
ENV.ECAC.ER.PI 2	En-Route Average H_2O	Amount of H_2O emitted above 3000ft per flight movement (average)	Target not proposed by SESAR / available
ENV.ECAC.ER.PI 3	En-Route Average CO_2	Amount of CO_2 emitted above 3000ft per flight movement (average)	Target not proposed by SESAR / available
ENV.ECAC.ER.PI 4	En-Route Average NO_x	Amount of NO_x emitted above 3000ft per flight movement (average)	Target not proposed by SESAR / available
ENV.ECAC.ER.PI 5	En-Route Average SO_x	Amount of SO_x emitted above 3000ft per flight movement (average)	Target not proposed by SESAR / available
ENV.ECAC.ER.PI 6	En-Route Average CO	Amount of CO emitted above 3000ft per flight movement (average)	Target not proposed by SESAR / available
ENV.ECAC.ER.PI 7	En-Route Average HC	Amount of HC emitted above 3000ft per flight movement (average)	Target not proposed by SESAR / available
Local Metrics			
Airport			
ENV.LOCAL.APT.PI 1	Local Airport Average CO_2	Amount of CO_2 emitted below 3000ft per flight movement (average)	Target not proposed by SESAR / available
ENV.LOCAL.APT.PI 2	Local Airport Average NO_x	Amount of NO_x emitted below 3000ft per flight movement (average)	Target not proposed by SESAR / available
ENV.LOCAL.APT.PI 3	Local Airport Average SO_x	Amount of SO_x emitted below 3000ft per flight movement (average)	Target not proposed by SESAR / available
ENV.LOCAL.APT.PI 4	Local Airport Average CO	Amount of CO emitted below 3000ft per flight movement (average)	Target not proposed by SESAR / available
ENV.LOCAL.APT.PI 5	Local Airport Average HC	Amount of HC emitted below 3000ft per flight movement (average)	Target not proposed by SESAR / available
ENV.LOCAL.APT.PI 6	Local Airport Average PM_{10}	Amount of PM_{10} emitted below 3000ft per flight movement (average)	Target not proposed by SESAR / available
ENV.LOCAL.APT.PI 7	Local Airport Average $PM_{2.5}$	Amount of $PM_{2.5}$ emitted below 3000ft per flight movement (average)	Target not proposed by SESAR / available
ENV.LOCAL.APT.PI 8	Local Airport Poluted areas	Surface areas where those pollutants exceed reglementary limits (concentration maps on annual average)	Target not proposed by SESAR / available
ENV.LOCAL.APT.PI 9	Local Airport Affected Population by pollutants	Number of Population inside those surface areas (population maps frozen at Baseline year to exclusively capture aviation influence)	Target not proposed by SESAR / available
ENV.LOCAL.APT.PI 10	Local Airport Noise areas	Sum of Surface areas with Noise Level - Lden > 55dB day - Lnight > 50dB night	Reduction by 10%
ENV.LOCAL.APT.PI 11	Local Airport Affected Population by noise	Total Number of Population exposed to Noise Level - Lden > 55dB day - Lnight > 50dB night	Reduction by 10%
TMA			
ENV.LOCAL.TMA.PI 1	Local TMA Average CO_2	Amount of CO_2 emitted below TMA ceiling per flight movement (average)	Target not proposed by SESAR / available
ENV.LOCAL.TMA.PI 2	Local TMA Average NO_x	Amount of NO_x emitted below TMA ceiling per flight movement (average)	Target not proposed by SESAR / available
ENV.LOCAL.TMA.PI 3	Local TMA Average SO_x	Amount of SO_x emitted below TMA ceiling per flight movement (average)	Target not proposed by SESAR / available
ENV.LOCAL.TMA.PI 4	Local TMA Average CO	Amount of CO emitted below TMA ceiling per flight movement (average)	Target not proposed by SESAR / available
ENV.LOCAL.TMA.PI 5	Local TMA Average HC	Amount of HC emitted below TMA ceiling per flight movement (average)	Target not proposed by SESAR / available
ENV.LOCAL.TMA.PI 6	Local TMA Average PM_{10}	Amount of PM_{10} emitted below TMA ceiling per flight movement (average)	Target not proposed by SESAR / available
ENV.LOCAL.TMA.PI 7	Local TMA Average $PM_{2.5}$	Amount of $PM_{2.5}$ emitted below TMA ceiling per flight movement (average)	Target not proposed by SESAR / available
ENV.LOCAL.TMA.PI 8	Local TMA Noise areas	Sum of Surface areas with Noise Level - Lden > 55dB day - Lnight > 50dB night	Reduction by 10%
ENV.LOCAL.TMA.PI 9	Local TMA Affected Population by noise	Total Number of Population exposed to Noise Level - Lden > 55dB day - Lnight > 50dB night	Reduction by 10%
En-Route			
ENV.LOCAL.ER.PI 1	Local En-Route Average CO_2	Amount of CO_2 emitted above 3000ft per flight movement (average)	Target not proposed by SESAR / available
ENV.LOCAL.ER.PI 2	Local En-Route Average NO_x	Amount of NO_x emitted above 3000ft per flight movement (average)	Target not proposed by SESAR / available
ENV.LOCAL.ER.PI 3	Local En-Route Average H_2O	Amount of H_2O emitted above 3000ft per flight movement (average)	Target not proposed by SESAR / available
ENV.LOCAL.ER.PI 4	Local En-Route Average SO_x	Amount of SO_x emitted above 3000ft per flight movement (average)	Target not proposed by SESAR / available
ENV.LOCAL.ER.PI 5	Local En-Route Average CO	Amount of CO emitted above 3000ft per flight movement (average)	Target not proposed by SESAR / available
ENV.LOCAL.ER.PI 6	Local En-Route Average HC	Amount of HC emitted above 3000ft per flight movement (average)	Target not proposed by SESAR / available
ENV.LOCAL.ER.PI 7	Local En-Route Average PM_{10}	Amount of PM_{10} emitted above 3000ft per flight movement (average)	Target not proposed by SESAR / available
ENV.LOCAL.ER.PI 8	Local En-Route Average $PM_{2.5}$	Amount of $PM_{2.5}$ emitted above 3000ft per flight movement (average)	Target not proposed by SESAR / available

Performance Indicator Identifier	Performance Indicator Short Name	Performance Indicator Description	Performance Indicator Target
ECAC PIs			
SAF.ECAC.PI 1	Overall Number of accidents	-	Absolute number of accident with ATM contribution should not increase and where possible decrease
SAF.ECAC.PI 2	Accidents per category.	Overall Number of accidents per category (Mid-air collisions (MAC), Controlled Flight Into Terrain (CFIT), Wake Turbulence, Runway Collisions, Taxiway Collisions)	Safety improvements over the period to at least offset any adverse effects from the increase in traffic.
SAF.ECAC.PI 3	Incidents	Total ATM related incidents (Occurrence per million flight hours and severity)	High risk bearing incidents to decrease both in absolute numbers and as a proportion of the total numbers of incidents
SAF.ECAC.PI 4	Separation Minima Infringements	-	Improvement in this risk metric to keep absolute annual risk at least constant
SAF.ECAC.PI 5	Near Controlled Flight into Terrain	-	Improvement in this risk metric to keep absolute annual risk at least constant
SAF.ECAC.PI 6	Runway incursion	-	Improvement in this risk metric to keep absolute annual risk at least constant
SAF.ECAC.PI 7	Runway excursion	-	Improvement in this risk metric to keep absolute annual risk at least constant
SAF.ECAC.PI 8	Runway Confusion	-	Improvement in this risk metric to keep absolute annual risk at least constant
SAF.ECAC.PI 9	Unauthorised Penetration of Airspace	-	Improvement in this risk metric to keep absolute annual risk at least constant
SAF.ECAC.PI 10	Aircraft Deviation from ATC clearance	-	Improvement in this risk metric to keep absolute annual risk at least constant
SAF.ECAC.PI 11	ATM functions related occurrences	Occurrences related to ATM support functions (COM, SUR, NAV, Data processing, Information)	Decrease in risk-bearing occurrence
SAF.ECAC.PI 12	SMS maturity and Safety culture	-	Safety Management best practices development and safety culture at both managerial and ATCO level (Safety Culture enhancement and measurement tools to come from the European Safety programme (ESP)
Airtport, TMA and En-RouteECAC PIs			
Airport			
SAF.ECAC.APT.PI 1	Potentially Conflicting Runway Configuration	Potentially Conflicting Runway Configuration: • Runway crossing movement, i.e. crossing of runways to reach the terminal or another departure runway. • Runway entry at intermediate location. Most aircraft enter the runway at the end. Planned entry at an intermediate point introduces the possibility of incursion ahead of other traffic. It may result from short take-off aircraft, including helicopters, being allocated intermediate entry to reduce taxi-ing or congestion. • Alternating take-off and landing traffic, i.e. runways used for both take-offs and landings. • Incorrect runway entry point, i.e. unintentional runway entry at the wrong place. It may result from: Entry at the end of the wrong runway. Unintended entry of the runway through an intermediate taxiway or intersection.	Target not proposed by SESAR / available
SAF.ECAC.APT.PI 2	Premature Take-off	-	Target not proposed by SESAR / available
SAF.ECAC.APT.PI 3	Ineffective Take-Off procedure	Ineffective Take-Off procedures (runway): • Inadequate take-off instructions by ATCO. This may result from the same causes as above. • Inadequate communication with pilot. • Pilot failure to follow the take-off instructions. This may be due to: Take-off without clearance. Failure to advise ATC if holding on the runway	Target not proposed by SESAR / available
SAF.ECAC.APT.PI 4	Ineffective Runway entry procedures	Ineffective Runway entry procedures (runway): • Inadequate runway entry instructions by ATCO. This may result from: Inadequate information to identify conflicts. Since both radar and non-radar surveillance are normally used in combination, this requires an inadequate radar traffic picture combined with inadequate non-radar position information, which may consist of: Inadequate aircraft position reports. For example, where the flight crew are lost and the ATCO fails to clarify the position reports. Another example might be the aircraft holding on the runway after receiving take-off clearance but not advising the ATCO. Inadequate airport ATCO coordination: Inadequate information from approach controller. Inadequate information from ground controller. • ATCO error in providing runway entry instructions, given the availability of adequate information. The causes of this are categorised as: Failure to recognise runway conflict -e.g. ATCO not being aware that two aircraft are on the runway. Misjudgement of runway separation -e.g. ATCO being aware of the aircraft but incorrectly judging that separation would be maintained. • Inadequate communication with pilot. This is where the ATCO decides on appropriate instructions but fails • Pilot error in runway entry. This may be due to: Failure to follow the correct taxi route to the runway entry point. Failure to follow the runway entry instructions.	Target not proposed by SESAR / available
SAF.ECAC.APT.PI 5	Ineffective Conflict warning	Ineffective Conflict warning (runway): • Conflict warning system not present. • Conflict warning system fails to give warning in time. • Controller failure to respond to warning. • Controller failure to resolve conflict in time. This may be due to: Failure to communicate appropriate avoidance instructions. Pilot failure to take the instructed avoidance action	Target not proposed by SESAR / available
SAF.ECAC.APT.PI 6	Ineffective Collision avoidance	Ineffective Collision avoidance (runway) • Ineffective avoidance warning by ATCO Low visibility prevents conflict detection Darkness prevents conflict detection Restricted view from tower prevents conflict detection ATCO failure to see visible aircraft in time ATCO failure to resolve conflict in time • Ineffective avoidance by intruding aircraft • Ineffective avoidance by impeded aircraft	Target not proposed by SESAR / available
SAF.ECAC.APT.PI 7	Inadequate ground movement clearance	Inadequate ground movement clearance (taxiway)	Target not proposed by SESAR / available
SAF.ECAC.APT.PI 8	Ground movement procedures unable to ensure separation	Ground movement procedures unable to ensure separation (taxiway)	Target not proposed by SESAR / available
SAF.ECAC.APT.PI 9:	Ineffective avoidance on striking aircraft	Ineffective avoidance on striking aircraft (taxiway)	Target not proposed by SESAR / available
TMA			
SAF.ECAC.TMA.PI 1	Conflict number (no unit) in the TMAs.	A conflict here means a potential separation loss. It is approximated as a separation of less than 2,5NM and 800ft that would occur 2 minutes ahead from the moment of observation, if the two aircrafts were maintaining their speed vector. This PI requires realistic tracks, and may therefore not be “easy” to evaluate.	Target not proposed by SESAR / available
SAF.ECAC.TMA.PI 2	Number of separation losses in the TMAs (no unit)	Number of separation losses in the TMAs (no unit). Number of times a pair of aircraft goes below 3NM horizontal and 1000ft vertically. If *conflicts number* can not be evaluated, then this PI will do	Target not proposed by SESAR / available
SAF.ECAC.TMA.PI 3	Total overload duration (min).	Times the controller is saturated with different severities and therefore, there are risky situations and then safety precursors. It is computed by analysing controller taskload during the day, and counting the cumulated time spent with taskload over a saturation limit. The saturation limit is subjective; it could be 70% of the maximum taskload	Target not proposed by SESAR / available

Performance Indicator Identifier	Performance Indicator Short Name	Performance Indicator Description	Performance Indicator Target
SAF.ECAC.TMA.PI 4	Total underload duration (min)	Times the controller has quite nothing to do and therefore, there are risky situations and then safety precursors. It is computed by analysing controller taskload during the day, and counting the cumulated time spent with taskload under a minimal activity limit. The saturation limit is subjective; it could be 15% of the maximum taskload. o Locations of the conflicts. Density maps could be produced based on this PI. o Locations of the separation losses. Density maps could be produced based on this PI.	Target not proposed by SESAR / available
En-Route			
SAF.ECAC.ER.PI 1	Ineffective traffic synchronisation	Ineffective traffic synchronisation including: • No ATC planning • Inadequate ATC planning Inadequate planning information Inadequate strategic surveillance picture Inadequate flight plan data • Planning controller failure to recognise conflict • Planning controller misjudgement of conflict prevention • Inadequate planning controller coordination • Planning controller failure to alert tactical controller to conflict	Target not proposed by SESAR / available
SAF.ECAC.ER.PI 2	Penetration of controlled airspace	Penetration of controlled airspace: • Conflict due to military traffic • Conflict due to VFR traffic	Target not proposed by SESAR / available
SAF.ECAC.ER.PI 3	Level bust	Level bust • Level bust due to communication error Inadequate ATCO transmission of instructions Inadequate pilot read-back • Pilot handling error • Altimeter setting error • Technical failure in autopilot or navigation equipment • ACAS RA • Weather induced level bust	Target not proposed by SESAR / available
SAF.ECAC.ER.PI 4	Trajectory instructions result in conflict	-	Target not proposed by SESAR / available
SAF.ECAC.ER.PI 5	Conflict in uncontrolled airspace		Target not proposed by SESAR / available
SAF.ECAC.ER.PI 6	Inadequate separation instructions	Inadequate separation instructions • Inadequate information for tactical control Inadequate tactical surveillance picture Inadequate flight plan data • ATCO failure to recognise conflict • ATCO misjudgement in tactical separation • Inadequate ATCO co-ordination	Target not proposed by SESAR / available
SAF.ECAC.ER.PI 7	Inadequate communication of instructions to pilot	Inadequate communication of instructions to pilot • Inadequate ATCO transmission of instructions • Loss of communication • Inadequate pilot read-back	Target not proposed by SESAR / available
SAF.ECAC.ER.PI 8	Inadequate pilot response to ATC		Target not proposed by SESAR / available
SAF.ECAC.ER.PI 9	Inadequate separation instructions	Inadequate separation instructions • Inadequate tactical surveillance picture • ATCO failure to recognise conflict in time	Target not proposed by SESAR / available
SAF.ECAC.ER.PI 10	Ineffective tactical separation of ATCO induced conflict		Target not proposed by SESAR / available
SAF.ECAC.ER.PI 12	Ineffective tactical separation by pilot	Ineffective tactical separation by pilot: • Inadequate traffic information from ATCO • Inadequate communication of information to pilot Inadequate ATCO transmission of information Loss of communication Inadequate pilot read-back	Target not proposed by SESAR / available
SAF.ECAC.ER.PI 13	Inadequate separation by pilot		Target not proposed by SESAR / available
SAF.ECAC.ER.PI 14	Ineffective STCA warning	Ineffective STCA warning: • No STCA coverage • STCA fails to give warning in time • Controller fails to respond to STCA warning • Controller fails to resolve conflict in time	Target not proposed by SESAR / available
SAF.ECAC.ER.PI 15	Ineffective other ATCO warning	Ineffective other ATCO warning: • No independent ATCO monitoring • Other ATCOs fail to detect conflict • ATCOs fail to communicate warning • Controller fails to resolve conflict in time	Target not proposed by SESAR / available
SAF.ECAC.ER.PI 16	Ineffective ACAS avoidance	Ineffective ACAS avoidance: • ACAS not installed • ACAS fails to give RA in time • Pilot fails to respond to RA in time • ACAS avoidance invalidated by other aircraft	Target not proposed by SESAR / available
SAF.ECAC.ER.PI 17	Ineffective visual avoidance on commercial aircraft	Ineffective visual avoidance on commercial aircraft: • Other aircraft effectively invisible • Flight crew fail to observe visible aircraft in time • Pilot fails to take avoidance action in time • Visual avoidance response invalidated by other aircraft	Target not proposed by SESAR / available
Local Metrics			
Airport			
SAF.LOCAL.APT.PI 1	Ground Conflicts (VMC)	Number of times an ATC tactical intervention is needed in order to avoid a potential conflict (loss of minimum separation) on ground (VMC)	Target not proposed by SESAR / available
SAF.LOCAL.APT.PI 2	Ground Conflicts (IMC)	Number of times an ATC tactical intervention is needed in order to avoid a potential conflict (loss of minimum separation) on ground (IMC) A conflict on ground is considered when an ATC intervention is needed to manage an intersection in the taxiway system or the usage of a bi-directional taxiway	Target not proposed by SESAR / available
TMA			
SAF.LOCAL.TMA.PI 1	Conflict number (no unit) in the TMA	A conflict here means a potential separation loss. It is approximated as a separation of less than 2,5NM and 800ft that would occur 2 minutes ahead from the moment of observation, if the two aircrafts were maintaining their speed vector. This PI requires realistic tracks, and may therefore not be “easy” to evaluate.	Target not proposed by SESAR / available
SAF.LOCAL.TMA.PI 2	Number of separation losses in the TMA (no unit)	Number of times a pair of aircraft goes below 3NM horizontal and 1000ft vertically. If*conflicts number* can not be evaluated, then this PI will do	Target not proposed by SESAR / available
SAF.LOCAL.TMA.PI 3	Total overload duration (min)	Times the controller is saturated with different severities and therefore, there are risky situations and then safety precursors. It is computed by analysing controller taskload during the day, and counting the cumulated time spent with taskload over a saturation limit. The saturation limit is subjective; it could be 70% of the maximum taskload.	Target not proposed by SESAR / available
SAF.LOCAL.TMA.PI 4	Total underload duration (min)	Times the controller has quite nothing to do and therefore, there are risky situations and then safety precursors. It is computed by analysing controller taskload during the day, and counting the cumulated time spent with taskload under a minimal activity limit. The saturation limit is subjective; it could be 15% of the maximum taskload. o Locations of the conflicts. Density maps could be produced based on this PI. o Locations of the separation losses. Density maps could be produced based on this PI.	Target not proposed by SESAR / available
En-Route			
SAF.LOCAL.ER.PI 1	Number of hours with overloads of ATC Workload.	Times the controller is saturated with different severities and therefore, there are risky situations and then safety precursors.	Target not proposed by SESAR / available
SAF.LOCAL.ER.PI 2	Number of hours with under loads of ATC Workload	Not only overload but also under load situations can cause safety critical situations according to relevant studies.	Target not proposed by SESAR / available

Performance Indicator Identifier	Performance Indicator Short Name	Performance Indicator Description	Performance Indicator Target
· SAF.LOCAL.ER.PI 3:	Number of ATC tactical interventions	Number of times an ATC tactical intervention is needed in order to avoid a potential conflict on air; Number of losses of minimum separation.	Target not proposed by SESAR / available
SAF.LOCAL.ER.PI 4	Geographical distribution of losses of minimum separation	The maps will provide information on the locations of the conflicts identifying critical areas (density of conflicts).	Target not proposed by SESAR / available
SAF.LOCAL.ER.PI 5	Conflict alerts	Number of STCA conflicts alerts that occurs during the simulation;	Target not proposed by SESAR / available
SAF.LOCAL.ER.PI 6	Separation between aircraft pair in conflict	Separation between aircraft pair in conflict: Vertical Horizontal	Target not proposed by SESAR / available
SAF.LOCAL.ER.PI 7	Number of intersecting flight paths	This is the number of routes or airways that cross within the sector	Target not proposed by SESAR / available
SAF.LOCAL.ER.PI 8	Number of resolutions	Number of resolutions o Number of lateral resolutions. Number of conflicts that have been solved using only lateral manoeuvres o Number of vertical resolutions. Number of conflicts that have been solved using only vertical manoeuvres	Target not proposed by SESAR / available
SAF.LOCAL.ER.PI 9	Number of aircraft taken into account for a resolution	For each resolution, the number of aircraft that the one in charge of it had to take into account.	Target not proposed by SESAR / available
SAF.LOCAL.ER.PI 10	Resolution complexity	The number of manoeuvres required to solve a conflict	Target not proposed by SESAR / available
SAF.LOCAL.ER.PI 11	Frequency of clearances:	Frequency of clearances: o Speed clearances o Heading clearances o Altitude clearances	Target not proposed by SESAR / available