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#### Approval

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#### Version history

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<th>Version</th>
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<th>Author(s)</th>
<th>Justification - Could be a reference to a review form or a comment sheet</th>
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<td>1.00</td>
<td>30/10/2008</td>
<td>Approved</td>
<td>Stéphane Deycard / Alan Marsden</td>
<td>Approved by the Episode 3 consortium</td>
</tr>
<tr>
<td>1.01</td>
<td>10/11/2008</td>
<td>Approved</td>
<td>Catherine Palazo</td>
<td>Minor changes in format to submit the deliverable under acceptance by EC</td>
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0 EXECUTIVE SUMMARY

The goal of this document is to describe the approach and scope of the Episode 3 WP3.3.1 Expert Groups related to

- Medium and Short-Term Network Planning;
- Collaborative Airport Planning Processes.

Although both expert groups will address the notion of ‘Collaborative Planning’, the focus area of each will differ. Both expert groups will be conducted within the framework of Work Package 3.3.1 of Episode 3. The necessary coordination between the expert groups and ‘consistency check’ of their findings will be guaranteed.

The Expert Group on Network Planning will serve as input to the validation exercises related to Network Medium and Short-Term Planning, in order to consolidate their scenarios. Activities will be carried out to refine the DODs (operations, roles and responsibilities of the actors, etc.) linked to the SESAR Concept of Operations. Information will also be given by this expert group to a macro model (WP3.3.5) aimed at providing a performance assessment.

On the other hand, the Expert Group on Collaborative Airport Planning will start the development of an operational concept for TAM (Total Airport Management), at the level of roles and responsibilities as principal guidance for those airports implementing the future SESAR concept of operations related to collaborative decision making. This expert group will elaborate the issues associated with performance monitoring against collaboratively agreed targets, as well as the required processes which will permit a re-planning in the case of deviation from the targets. The decision making process in TAM will require the presence of a number of decision support tools and a prototype of such a tool will be used in the expert group in order to elicit requirements for each concerned actor.

Collection and compilation of information from the Expert Groups will be driven by the use of questionnaires and by regular meetings.

To carry out these activities, experts have been invited from ANSP’s, military, airlines, ground handlers and airports. They will focus their tasks on:

- Optimising and providing guidance on SESAR Collaborative Planning Processes procedures;
- Support the definition of Episode 3 WP3.3 validation exercises;
- Support the analysis of the results from the Episode 3 WP3.3 validation exercises.

1 INTRODUCTION

1.1 PURPOSE OF THE DOCUMENT

The goal of this document is to describe the approach and scope of the Expert Groups related to

- Medium and Short-Term Network Planning;
- Collaborative Airport Planning Processes.

Although both expert groups will address the notion of ‘Collaborative Planning’, the focus area of each will differ. Both expert groups will be conducted within the framework of Work Package 3.3.1 of Episode 3. The necessary coordination between the expert groups and ‘consistency check’ of their findings will be guaranteed.
This document covers the global needs and justification for each of these expert groups as well as providing information specific to each one, defining the objectives, tools and methods which will be considered.

1.2 INTENDED AUDIENCE

This document is delivered through the Validation Management Cell for approval of its content, correctness and alignment with the E-OCVM [1] based validation approach.

It is delivered to Episode 3 WP3.3.2, WP3.3.3, WP3.3.4 and WP3.3.5 validation exercises.

1.3 DOCUMENT STRUCTURE

The structure of this document is aligned with the document Guidelines for Expert Group Exercise Plan [2]. This introduction explains the document purpose, structure and provides general background and supportive information. Section 2 explains the fit with the validation strategy as well as the exercise scope. Section 3 gives the planning and management of the expert groups, while sections 4 and 5 give the analysis of specifications and the detailed exercise design respectively. Finally, section 6 lists the references and applicable documents.

1.4 BACKGROUND

With a view to supporting SESAR Development Phase activities, Episode 3 will focus on providing:

- Detail on key concept elements in SESAR;
- Initial operability through focussed prototyping exercises and performance assessment of those key concepts, i.e. operability and performance studies;
- Initial supporting technical needs impact assessment;
- Analysis of the available tools and gaps for SESAR concept validation, and
- Reporting on the validation methodology used in assessing the concept.

Validation exercises should produce evidence about the ability of some aspect of the concept to deliver on part of the performance targets. In order to prepare the Validation Exercises, there is a need for preliminary work covering concept clarification and requirements development.

The preliminary work covering concept clarification is the main focus or ‘raison d’être’ of the Expert Groups. The Expert Groups will take place before any other validation exercise, serving as a source of information for them. The primary outputs of the Expert Groups will be to support the validation exercises, for the consolidation of their scenarios. They will provide as well a refinement of the concepts of operations.

Part of this necessary preliminary work deals with the understanding of the SESAR Collaborative Layered Planning. To bridge that gap, two expert groups are envisaged, taking into consideration the SESAR CONOPS:

- Collaborative Network Planning;
- Collaborative Airport Planning.

The Expert Group exercises Medium and Short-Term Network Planning and Collaborative Airport Planning Processes are included in the Episode 3 WP 3.3, where the aim is to validate the main aspects of the Mid & Short Term ATM planning in the SESAR CONOPS. It will benefit from the activities already carried out as part of the previous Episode 3 programme, for WP3.3.1.1.1, for which Expert Group meetings had been organised for the Medium and Short-Term, and Long-Term Planning Processes.
1.5 GLOSSARY OF TERMS

<table>
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<tr>
<th>Term</th>
<th>Definition</th>
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<tr>
<td>AENA</td>
<td>Aeropuertos Españoles y Navegación Aérea</td>
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<tr>
<td>ANSP</td>
<td>Air Navigation Service Provider</td>
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<tr>
<td>AOP</td>
<td>Airport Operations Plan</td>
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<tr>
<td>APOC</td>
<td>Airport Operations Control Centre</td>
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<tr>
<td>ATC</td>
<td>Air Traffic Control</td>
</tr>
<tr>
<td>ATCC</td>
<td>Air Traffic Control Centre</td>
</tr>
<tr>
<td>ATM</td>
<td>Air Traffic Management</td>
</tr>
<tr>
<td>CAST</td>
<td>Comprehensive Airport Simulation Tool</td>
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<tr>
<td>CDM</td>
<td>Collaborative Decision Making</td>
</tr>
<tr>
<td>CONOPS</td>
<td>Concept of Operations</td>
</tr>
<tr>
<td>DCB</td>
<td>Demand and Capacity Balance</td>
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<tr>
<td>DoD</td>
<td>Detailed Operational Description</td>
</tr>
<tr>
<td>EG</td>
<td>Expert Group</td>
</tr>
<tr>
<td>E-OCVM</td>
<td>European Operational Concept Validation Methodology</td>
</tr>
<tr>
<td>EP3</td>
<td>Episode 3</td>
</tr>
<tr>
<td>ERC</td>
<td>Eurocontrol</td>
</tr>
<tr>
<td>KPA</td>
<td>Key Performance Area</td>
</tr>
<tr>
<td>KPI</td>
<td>Key Performance Indicator</td>
</tr>
<tr>
<td>NOP</td>
<td>Network Operations Plan</td>
</tr>
<tr>
<td>RBT</td>
<td>Reference Business Trajectory</td>
</tr>
<tr>
<td>SBT</td>
<td>Shared Business Trajectory</td>
</tr>
<tr>
<td>SESAR</td>
<td>Single European Sky ATM Research and Development Programme</td>
</tr>
<tr>
<td>TAM</td>
<td>Total Airport Management</td>
</tr>
<tr>
<td>UDPP</td>
<td>User Driven Prioritisation Process</td>
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Table 1: Glossary of Terms

2 EXERCISE SCOPE AND JUSTIFICATION

2.1 STAKEHOLDERS

From an internal stakeholder point of view, diverse representatives of the air transport industry are involved in the preparation and conduct of the Expert Groups (see Section 3.2). This secures a realistic operational feedback and evaluation of the results.

2.2 DESCRIPTION OF NETWORK AND AIRPORT PLANNING

The following sections include a brief description of the aspects of the SESAR CONOPS related to the Medium/Short Term Planning Processes that will be considered in the EP3 WP3 Expert Groups [3].
2.2.1 Network Planning

Medium Term Planning revises the long term plans on the basis of declared flight intentions, initially known at seasonal level (SBT publication). Identified situations of imbalance are collaboratively worked out to make sure that the execution phase is sustainable for the whole network.

Short Term Planning starts on the day of operation when the information is available with a high level of quality and accuracy, possibly three hours before departure for each flight more than 95% of the SBTs shall be available. Short Term Planning works on a mixed picture: on the one hand, a part of the demand is still missing while on the other hand some flights are already in execution (RBT is available at around the departure clearance).

The SESAR Operational Concept envisions the reorganisation of the current ATM planning process into a trajectory based collaborative layered planning. This reorganisation together with the particular emphasis put on trajectory based operations and on collaborative planning has led to the adoption of the following requisites for the ATM medium/short term planning process of SESAR.

In the medium/short term, the demand is planned, meaning that the flight intentions for the day of operation are progressively shared by the Airspace Users and gathered by the Regional Network Manager.

Because a part of the demand is unknown till the day of operation, declared flight intentions are complemented by virtual but probable flight intentions inferred from archived data. In the process, the Regional Network Manager builds a Reference Traffic Demand, regarded as a picture of the situation to come and the reference used for capacity planning and demand and capacity balancing. The picture is incrementally corrected (as new data become available) and progressively approaches reality. These data are available to Sub-Regional Network Managers, to Airspace Users, to Civil/Military Airspace Managers and to all other concerned actors, through the NOP. During the execution phase the NOP will continue to reflect updated information, including data from aircraft, ensuring access to the most up to date situation.

In the meantime, the Civil/Military Airspace Manager collects Airspace Requirements from Civil and Military Airspace Users and implements the appropriate Airspace Reservations, in close cooperation with the Sub-Regional Network Manager. Although airspace requirements may be known at short notice, the sooner the better in order to:

- Plan capacity consistently through the definition of a relevant Airspace Resource Available Capacity Plan;
- Implement suitable DCB Solutions in case of imbalance.

Airspace requirements will be thereby adjusted to allow military Airspace Users to operate in flexible airspace regions interfering as little as possible with civil Airspace Users.

Capacity planning and DCB are performed by the Sub-Regional Network Managers, working hand in hand with the Civil/Military Airspace Managers. Medium term DCB Solutions try to optimise capacity as much as possible. In the near short-term and in the short-term, DCB Solutions not only will proceed with capacity adjustments but also with demand adjustments in the event of last minute imbalances, possibly resulting from an influx of intentions.

When the demand must be constrained, Airspace Users decide on how to meet the constraint (through trajectory modifications in time and/or in space), up to a point when they also decide on who meets the constraint (i.e. through the User Driven (flight) Prioritisation Process (UDPP), in case of severe capacity shortfall, making the Airspace Users the only ones able to assign their flights a priority based on each flight's marginal cost).

In addition, Medium/Short Term Network Planning, overseen by the network management function, will be founded on a number of key improvements:
• CDM (Collaborative Decision Making), enabled by common information sharing, will be enlarged throughout the planning phase;

• Shared Business Trajectories (SBTs) will be the focus of decision-making during the whole planning phase. They will contain high-quality data and more information than the current flight plan;

• SBTs will be managed uniquely through a common operational object, the Network Operations Plan, accessible to all ATM Stakeholders via SWIM.

2.2.2 Collaborative Airport Planning

The SESAR Operational Concept states that airport operations during the medium/short term planning phase will be built upon the framework of Airport Collaborative Decision Making (A-CDM) but with further enhancements to the decision making process.

In order to move toward a performance-based airport management philosophy, SESAR defines an integrated airport management system where all major aircraft operator, airport, aerodrome ATC and ground handling processes are conducted using common data sets and agreed procedures. This future “integrated” method of airport management is referred to as Total Airport Management (TAM).

Within the TAM concept, the Airport Operations Centre (APOC) is seen as the heart of the operation. In the current system, despite improved data sharing, notably through the A-CDM initiative, there still remains the reality that operational decisions within an airport are implemented on an “ad-hoc” basis. Invariably the “solution” is limited to maximising the immediate interests of those responsible for making a given decision. The main aim behind the APOC therefore is the creation of a platform whereby operational decisions, particularly those during periods of reduced capacity, taken by any given airport operator may be made in the full knowledge of the operational constraints and/or priorities of other actors who may be impacted by the decision. The management of degraded situations will therefore be improved, coupled with an earlier recovery to normal operations. The APOC will provide the forum whereby operators will communicate and co-ordinate, develop and maintain dynamically joint plans and execute those in their respective area of responsibility. Distinct possible implementations of the APOC are expected, ranging from a distributed virtual APOC to a high-tech physical APOC, even with new operator roles.

At the level of an individual airport, the Airport Operations Plan (AOP) will be continually refined as appropriate data becomes available. The main characteristic of this phase is that events which may have an impact on the AOP will be analysed via the APOC in a collaborative manner by all concerned stakeholders. The plan is consolidated through a process of demand and capacity balancing based on the Shared Business Trajectories and known “supply” constraints at the airport or in the network and which may directly impact airport operations. If demand exceeds capacity the consequences are analysed and aircraft operators revise their plans through a collaborative process.

2.3 Exercise Objectives

The objectives of Episode 3 Work Package 3.3.1 are:

• To obtain the operational details related to the ATM Collaborative Planning: available information along the phases (the Short Term Planning Phase, and partly the Medium Term Planning Phase (only the near Short-Term will be covered)) coming from the different actors – e.g. users, airports, service providers, military - granularity of the information, the actors involved in every phase of the planning, the main milestones that could change the plan…;

• To refine the validation scenarios to be simulated in other EP3 WP3 activities;

• To analyse the consistency of the validation results in other EP3 WP3 activities.
The operational scenarios to be investigated are [3]:

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<td>Non-severe (no UDPP) capacity shortfall impacting arrivals in the short term</td>
<td>WP3.3.2</td>
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<tr>
<td>Airport operational plan lifecycle for medium/short/execution phases</td>
<td>WP3.3.4</td>
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<tr>
<td>Military collaboration in the medium and short term</td>
<td>WP3.3.3</td>
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Table 2: List of Operational Scenarios

The first Expert Groups will be focused on these essential scenarios and, then, some desirable ones will be covered according to the needs of the exercises. Therefore, the list of operational scenarios that will be addressed in the expert groups is not consolidated.

2.4 \textbf{Expected Output}

The expert groups will produce the following results:

- Support to refinement of the applicable DoDs:
  - General Purpose – G [4];
  - Medium/Short Term Network Planning – M2/3 [5]
  - Collaborative Airport Planning - M1 [6].
- Operational details related to the Collaborative Planning at Network and Airport Level;
- Refinement of the validation scenarios to be simulated;
- Analysis of the consistency of the validation results.

In addition, the Expert Group on Collaborative Airport Planning will also provide an operational concept for TAM (Total Airport Management) at the level of roles and responsibilities as principal guidance for those airports implementing the future SESAR concept of operations related to collaborative decision making. Guidance on potential tool support and data exchange requirements related to the TAM concept will also be developed as a result of the use of a prototype interface within the expert group sessions. This expert group will elaborate the issues associated with performance monitoring against collaboratively agreed targets and the required processes which will permit a re-planning in the case of deviation from the targets.

2.5 \textbf{Tools and Techniques}

Collection and compilation of information from the Expert Groups will be driven by the use of questionnaires and by regular meetings. The questionnaires will be specifically designed to capture the knowledge of the actors identified for these Expert Groups, and will be orientated to support the WP3.3 validation exercises (see Figure 1). In addition, for the Airport EG, the definition of the operational concept for TAM will require the presence of a number of decision support tools and a prototype of such a tool will be used in the expert group in order to elicit requirements for each concerned actor. In addition, the CAST fast-time simulator will be used during the expert group sessions. This simulator will contain a faithful reproduction of the terminal area of Palma being studied and the associated passenger flows and resource capacities – e.g. baggage delivery, security check, customs. This simulator will permit the experts to define performance targets for each of these processes and notably to define the measurement and monitoring which will be necessary in support of the APOC. The availability of each of these tools for the experts is expected to lead
to a natural transition from purely ‘expert group’ to one of ‘gaming exercise’ thereby enhancing the maturity of the results.

2.6 INTERACTIONS, RELATIONSHIPS OR DEPENDENCIES

This work package is considered as a continuous task along the project. All EP3 WP3 validation activities will be supported by the experts groups, not only by defining the operational details of the ATM planning process, but also by supporting the consolidation of conclusions from the validation results.

The validation exercises within WP3 receiving inputs from the Expert Groups, stakeholders are (see Figure 1):

- WP3.3.2 Business Trajectory Management and Dynamic DCB (led by ERC)
- WP3.3.3 Airspace Organisation and Management (led by AENA)
- WP3.3.4 Collaborative Airport Planning (led by ERC)
- WP3.3.5 Global Performance at Network Wide Level (led by ISDEFE)

To gain greater understanding of the concept, Expert Groups in WP3 will clarify the SESAR concept elements related to the Planning Process supported by analytical modelling, gaming and prototype development and exercises. These descriptions will be captured in the associated Detailed Operational Documents that will consolidate operational scenarios and use cases used in assessment activity, clearly linked to the SESAR Concept documents. Figure 2 illustrates these flows of information.
Finally, special mention should be made to the relation with other expert groups. The airport expert group activities in EP3 WP5 focusing primarily on efficient runway and taxi-way management are concerned with execution of the plan. There is a need for interaction between these airport expert groups and this interaction will principally explore the issues associated with the feasibility of executing a pre-determined plan and the interface (roles, responsibilities, data exchange requirements etc) between the planning phase and the execution phase.

### 2.7 Assumptions

Only an interim release of SESAR Detailed Operational Descriptions for General Purpose [4], Collaborative Airport Planning [5] and Medium/Short Term Planning Phases [6] – i.e. one of the main work documents for the Experts participating in the discussion – as well as the preliminary operational scenarios related to each EP3 WP3 exercise will be issued before the starting date of the Expert Group defined in section 3.1.

### 3 Planning and Management

#### 3.1 Activities to be Undertaken

The conduct of the Expert Groups has been structured as an iterative process aiming to analyse the aspects of the SESAR Operational Concept related to the Medium & Short-Term Network and Collaborative Airport Planning, to refine the operational scenarios to be simulated in other WP3 activities, and to analyse the consistency of the validation results.
3.1.1 Activities Specific to Network EG

The activities have been grouped in four phases, each one following an iterative sequence composed by the following steps when deemed necessary (questionnaire won’t always need to be used):

- Questionnaire distribution.
- Answers/comments gathering.
- Answers/comments integration.
- Report distribution.

1st Phase

The 1st phase has already been successfully conducted as part of the initial EP3 activities. An introductory meeting has been organised and used as a kick-off meeting, introducing all the experts to the SESAR Operational Concept, and familiarising them with the proposed methodology. The EP3 WP3 Exercise Leaders had been asked to present the high level questions they wanted the Expert Group to answer. A first questionnaire had been distributed to the experts at the end of the meeting.

The aim of this questionnaire was to get a first general understanding on the various topics covered by the SESAR Conops related to Medium and Short Term Planning Processes and EP3 WP3 validation activities. The experts have already filled-in and returned the questionnaire, which has been analysed [7].

From now on the Expert Group activities will concentrate on the various EP3 WP3.3 validation exercises (see Figure 1), as well as on the associated operational scenarios. The experts will first be tasked to answer the questions and request for information from the exercise leaders, providing guidance on the SESAR CONOPS aspects related to the Collaborative Planning Processes, in order to define and optimise the operational scenarios.

2nd Phase

The second phase will begin with a second group meeting, aiming at presenting the results gathered from the 1st phase questionnaire. The object will be to bring everyone up-to-speed, giving feedback on the planning, DCB scenarios [3], DOD’s [6] and concept elements which have been covered by the 1st questionnaire, in order to allow for more detailed debate and feedback.

This will be followed by a detailed presentation of the validation exercise EP3 WP3.3.2 – Business Trajectory Management and Dynamic DCB, and its associated operational scenarios (see Table 2, [3]). The exercise leader will be given the opportunity to raise his requests for information, which will be debated during the meeting. If deemed necessary by the WP3.3.2 Exercise Leader, he would create a second questionnaire to assess any open issue or concept lacking of maturity. Its main objectives would be to primarily consolidate the scenario needed by EP3 WP3.3.2 as well as, if applicable, the information from the first questionnaire, hence improving the knowledge on the SESAR Conops related to Medium and Short Term Planning and EP3 WP3 validation activities.

The experts will be given one week to fill-in and return the questionnaire (if applicable). Another week will be spent analysing the results, and a third week could be dedicated at producing a third – and more detailed – questionnaire (if necessary).

3rd Phase

The third phase will begin with a third group progress meeting, aiming at presenting the results from the second questionnaire (if it presents any interest to WP3.3.3), and detailing the exercise EP3 WP3.3.3 – Airspace Organisation and Management, and its associated operational scenarios (see Table 2, [3]). The main goal will be to refine the operational scenario related to the EP3 WP3.3.3 exercise as well as to clarify any question associated to
the SESAR CONOPS and needed to perform this exercise. If deemed necessary by the WP3.3.3 Exercise Leader, he would create a third questionnaire to further consolidate the operational scenarios linked to the validation exercise EP3 WP3.3.3.

The experts will be given one week to fill-in and return the questionnaire. Another week will be spent analysing the results, and a third week will be dedicated at compiling an eventual fourth questionnaire (if necessary).

**4th Phase**

The fourth phase will start with a fourth group meeting. The objective will be to present the results from the eventual third questionnaire (if it presents any interest to WP3.3.5), and to introduce everyone to the exercise EP3 WP3.3.5 – Global Performance at Network-Wide Level (Macro model), and its associated operational scenarios (see Table 2, [3]). If deemed necessary by the WP3.3.5 Exercise Leader, he would create a fourth questionnaire to further consolidate the open issues about the SESAR CONOPS and the operational scenarios linked to the validation exercise EP3 WP3.3.5.

The experts will be given one week to fill-in and return the questionnaires. Another week will be spent analysing the results.

**Final Phase**

The final phase will consist of analysing the set of questionnaires that have been produced, extracting from them the overall opinion of the Expert Group, and consolidating all these results within an interim Expert Group report. A final report will be compiled later to analyse the results of the EP3 WP3.3.2, WP3.3.3 and WP3.3.5 exercises. If deemed necessary, meeting(s) will be organised to consolidate all these results. The expert group will therefore provide an initial qualitative (not quantitative) performance assessment, evaluating the results from the WP3.3.5 macro model exercise. The KPA’s that will be analysed are the same as in this exercise (capacity, efficiency and predictability). In addition, the expert group will analyse the results related to the operational feasibility of the processes obtained by EP3 WP3.3.2 and WP 3.3.3 exercises.

These interim and final reports will be discussed and corrected thanks to e-mail and Webex communication, leading to the compilation of the final report. If necessary, meetings could be organised. The success of the exercise and of the final results will be evaluated against the degree of accomplishment of the initial objectives.

### 3.1.2 Activities Specific to Airport EG

The specific activities for the airport expert group are the following:

- Develop and validate the TAM concept;
- Develop a specification to implement the main TAM elements: APOC, ...

Key elements to develop and to evaluate the project success will be:

- Situational awareness (monitoring): airside, landside and the link between them;
- Move from “reactive management of situations” to “predictive management”;
- Functional specification for APOC implementation;
- Functional specification for decision support tools;
- Performance based management approach;
- Show how to use increased predictability to reduce buffers in the system;
- CAST as a support tool for the concept and specifications development.

The conduct of the expert group sessions will focus on the following areas:
• Present an overview of the proposed project steps and expected results;
• Process analysis with expert group:
  o Analyse the different processes with the actors one to one, e.g. airline, handler, airport manager, security provider;
  o Identify and plan the meetings and actors related to each process, and the whole process;
  o Consider every different operational profile: hub operation, regular operations, charter flights, general aviation, cargo. Consider the different passenger profiles and needs.
• Identify frequent problems and conflictive points at the airport;
• Identify decision points and KPI related measurements. Specific KPIs which will form the focus of the discussions relate to predictability and punctuality. The TAM operational concept is based on the premise that a more efficient management of key airport processes is possible if predictability can be improved. In such a way, the management process moves toward one of “planning” rather than “reactive”. The expert group will therefore focus on the data exchange (quality of information, frequency of information etc) which will be necessary to improve the predictability of airport operations. The direct consequence of improved predictability is improved punctuality;
• CAST as a support tool for concept development and elaboration of the monitoring processes required to aid decision making;
• APOC: definition of working rules, roles and positions. Development of procedures;
• Solution proposal.

3.2 RESOURCES AND RESPONSIBILITIES
The number of participants to the Expert Group will be driven by the minimum number of actors identified as the necessary representatives of the ATM community. The following sections describe the main responsibilities from a SESAR point of view related to the skills and knowledge of each type of expert.

3.2.1 Resources – Network EG
• Airline Operational Centre Expert:
  To manage the trajectory lifecycle. They are the pivot on which the medium/short term planning phase turns. In that sense they are the primary actor of the medium/short term planning phase.
• Civil Airspace Manager:
  To maximise the utilisation of available airspace by dynamic time-sharing and, at times, by segregating airspace among various categories of users based on a short-term needs.
  To collaborate with the regional or sub-regional management to plan airspace usage in a way that balances the impact on civil air traffic flow and capacity management with military needs.
• Military Airspace Manager:
  To collaborate with the regional or sub-regional management to plan airspace usage in a way that balances the impact on civil air traffic flow and capacity management with military needs.
• Regional Network Manager:
  To assure stability of the whole network in the face of traffic demand, facilitating dialogue between airspace users, ANSP’s and airport operators so that traffic demand and capacity balancing issues can be resolved in an efficient manner.
  To check unexpected network effects of sub-regional decisions prior to their implementation.

• Sub-Regional Network Manager:
  To define and refine the airspace available capacity plan, in cooperation with the Civil/Military Airspace Manager.
  To identify imbalances at airspace level, possibly advised by the Regional Network Manager.
  To implement DCB Solutions developed at airspace or network level, after regional validation if need be.

• Airport Operator:
  To support medium/short term network planning activities insofar as airports are nodes of the network.
  To contribute to DCB through the application of DCB Solutions implemented at the airport level.

• SESAR CONOPS Expert:
  He/she should have been involved in the development of the ATM Planning process defined in the SESAR CONOPS.

3.2.2 Resources – Airport EG

• Airport Operator:
  Responsible for the management of airport resources both airdside and within the passenger terminal

• Ground handling :
  Responsible for the management and allocation of resources used for aircraft servicing during the turnaround process.

• Airlines:
  Representative(s) of incumbent airlines.

The main participants will therefore be the Palma airport operator, ground handling and incumbent airlines (currently anticipated to be Air Berlin, Spanair, IBERIA and EasyJet).

3.2.3 Roles in Expert Group

There are three different roles involved in the execution of the Expert Group: the Expert Group Manager, the Experts and the Exercise Leaders. A summary of main responsibilities of each one is showed next.

• Expert Group Manager:
  o To conduct the exercise as described in this document (Expert Group Experimental Design);
  o To issue the questionnaires within the established framework;
  o To collect all answers, summarise them and extract conclusions;
• To organise the meeting establishing specific targets;
  o To issue the Expert Group Report.

Experts:
  o To answer the questionnaire in due course;
  o To attend the meetings;
  o To consolidate conclusions;
  o To review and comment the Expert Group Report.

Exercise Leaders
  o To present their validation exercise to the Experts;
  o To identify all scenarios, concepts, etc. linked to their exercise and present them to the Experts;
  o To list all the questions, open issues, show-stoppers, etc. linked to their exercise and ask the Experts for support;
  o To implement the Experts’ answers and recommendations into the definition and execution of their exercise.
  o To consolidate the conclusions with the Experts trying to define a clear output.

3.3 TRAINING REQUIREMENTS

There are not specific training requirements related to any specific tool.
The experts will be trained to the SESAR ConOps & DoD’s related to Medium and Short-Term Planning Process during the first group meeting.

3.4 RISKS

The results expected from this Expert Group exercise have some dependencies that could put at risk the quality and validity of its outputs or produce delays in the planned schedule. The main risks identified are:

<table>
<thead>
<tr>
<th>Risk 1:</th>
<th>Gaps or inconsistencies in the DoD’s</th>
</tr>
</thead>
<tbody>
<tr>
<td>Description:</td>
<td>Gaps or inconsistencies in the DoD’s are not addressed</td>
</tr>
<tr>
<td>Impacted Area:</td>
<td>☒ Own Exercise ☐ Other Exercise ☐ WP</td>
</tr>
<tr>
<td>Level:</td>
<td>☐ Low ☒ Medium ☐ High</td>
</tr>
<tr>
<td>Possibility of occurrence:</td>
<td>☒ Low ☐ Medium ☐ High</td>
</tr>
<tr>
<td>Contingency Actions</td>
<td></td>
</tr>
<tr>
<td>Mitigation Actions:</td>
<td>The DoD’s authors should identify the key open questions to be clarified by the experts.</td>
</tr>
<tr>
<td>Responsible party:</td>
<td></td>
</tr>
<tr>
<td>Risk 2:</td>
<td>Knowledge of SESAR Operational Concept</td>
</tr>
<tr>
<td>--------</td>
<td>----------------------------------------</td>
</tr>
<tr>
<td>Description:</td>
<td>Experts do not have deep knowledge of SESAR Operational Concept.</td>
</tr>
<tr>
<td>Impacted Area:</td>
<td>✗ Own Exercise ☐ Other Exercise ☐ WP</td>
</tr>
<tr>
<td>Level:</td>
<td>☐ Low ✗ Medium ☐ High</td>
</tr>
<tr>
<td>Possibility of occurrence:</td>
<td>☐ Low ✗ Medium ☐ High</td>
</tr>
<tr>
<td>Contingency Actions</td>
<td></td>
</tr>
<tr>
<td>Mitigation Actions:</td>
<td>This risk has been partially mitigated by the first meeting (1st Phase) where SESAR ConOps Experts were able to solve doubts coming form the Expert Group participants. This will be consolidated throughout the cycle.</td>
</tr>
<tr>
<td>Responsible party:</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Risk 3:</th>
<th>Lack of information to perform WP3 validation activities</th>
</tr>
</thead>
<tbody>
<tr>
<td>Description:</td>
<td>The guidelines are not sufficient or inappropriate</td>
</tr>
<tr>
<td>Impacted Area:</td>
<td>✗ Own Exercise ☐ Other Exercise ☐ WP</td>
</tr>
<tr>
<td>Level:</td>
<td>☐ Low ✗ Medium ☐ High</td>
</tr>
<tr>
<td>Possibility of occurrence:</td>
<td>✗ Low ☐ Medium ☐ High</td>
</tr>
<tr>
<td>Contingency Actions</td>
<td></td>
</tr>
<tr>
<td>Mitigation Actions:</td>
<td>Support from WP3 exercise leaders is necessary to define the main questions to be solved by the experts.</td>
</tr>
<tr>
<td>Responsible party:</td>
<td></td>
</tr>
</tbody>
</table>
### 4 ANALYSIS AND SPECIFICATION

#### 4.1 MEASUREMENT AND ANALYSIS METHODS

The applied methodology to manage the Expert Group will consist of controlled brainstorming sessions managed by a trained Facilitator during the Expert Group meetings, each meeting being focused on a given validation exercise.

If deemed necessary by the Exercise Leaders, this could be complemented by several questionnaires. Hence, when necessary, a questionnaire would be provided to each member of the expert group. These questionnaires should be answered in the indicated time period. This is not a specific method to collect the information and extract conclusions, but anyway the questionnaires will allow the project to identify the most likely solution, or sort all of them regarding the opinion of experts.

The results will be processed by the Exercise Leaders, who will also measure the degree of achievement and success of the activities.

#### 4.2 EXPERT GROUP REPORT

##### 4.2.1 Aim of the Document

The aim of the Expert Group Report is to summarise the results obtained by the Expert Group and to objectively present the key findings. It is not meant to state conclusions about whether or not a concept is worth pursuing, but may express recommendations.

##### 4.2.2 Contents of the Document

The main items that will be included in the EG report are:

- Scope of the Expert Group;
- Tools and Methodologies;
- Analysis of the results of the top-level Questionnaires linked to the DoD’s and SESAR concepts (in general, not those directly linked to the WP3.3.x validation exercises);
- Answers to the questions related to the Validation Exercises;
• Analysis of trends of the KPA’s covered by the WP3.3.5 macromodel (capacity, efficiency and predictability);
• Assessment of the operational feasibility of the processes addressed by the WP3.3.X validation;
• Recommendations to refine the DoD’s.

4.2.3 **Target Audience**

The present document will be distributed to the following work packages:
• EP3 WP2.2 Clarification and Refinement of SESAR ConOps;
• EP3 WP3.2.2 Operational Concept Refinement;
• EP3 WP3.3.2 Business Trajectory Management and Dynamic DCB;
• EP3 WP3.3.3 Airspace Organisation and Management;
• EP3 WP3.3.4 Collaborative Airport Planning;
• EP3 WP3.3.5 Global Performance at Network Wide Level.

5 **DETAILED EXERCISE DESIGN**

5.1 **LIST OF PARTICIPANTS**

5.1.1 **Network EG**
• Stéphane Deycard (AENA) – WP3.3.1 Leader
• Serge Manchon (Eurocontrol)
• Giuseppe Murgese (Eurocontrol)
• Claude Chamayou (DSNA)
• Antonio Corpa (Iberia)
• Maria Isabel Martín (Iberia)
• Christian Verlohren (DFS)
• Debora Palombi (ENAV)
• Giorgio Matrella (ENAV)
• Daniel Schuller (NATS)
• Fabio Grazzo (Eurocontrol – Military Unit)
• Pedro Abello Solé (AENA)
• Patricia Criscuolo (SICTA)
• Gérard Mavoian (Eurocontrol) – EP3 WP3.3.2 Leader
• Patricia Lopez de Frutos (AENA) – EP3 WP3.3.3 Leader
• Jose Manuel Risquez (INECO)
• Nicolas Suarez (ISDEFE)
• Marta Sánchez (ISDEFE) – EP3 WP3.3.5 Leader
5.1.2 Airport EG

- Alejandro Eguido (AENA / Palma)
- Ernesto Fernandez (AENA / Palma)
- Pablo Sánchez-Escalonilla (AENA)
- Mayte Cano (AENA)
- Alan Marsden (Eurocontrol)
- Eduardo Goñi-Modrego (EUROCONTROL)
- Louis Sillard (EUROCONTROL)
- Michael Laubrock (Airport Research Centre – CAST modelling)
- Uta Kohse (Airport Research Centre – CAST modelling)

In addition, experts on both the turnaround and passenger processes at the airport of Palma de Mallorca will be nominated for participation in each expert group. These are expected to include representatives from Acciona, Air Berlin, Air Europa and IBERIA.

5.2 Questions and Concepts to be Discussed

These two Expert Groups are designed to analyse the DoD’s ([4], [5], [6]) and operational scenarios [3] linked to the validation exercises WP3.3.2, WP3.3.3, WP3.3.4 and WP3.3.5.

5.3 Questionnaires

As part of the EG activities, to support the decision making process when deemed necessary by the exercise leaders, questionnaires may be distributed to the experts. The following section gives an example of a questionnaire which has been designed for the Network Expert Group.

Questionnaire 1 – Network EG

A first questionnaire had been created and distributed to the Experts during the first EP3 WP3.3.1 (initially WP3.3.1.1.1) Expert Group Meeting (25/03/2008). The results are compiled in the document [7]. The corresponding questions are as follows:

- Please describe what could be the influence of RBT management on airside capacity and airport capacity.

- According to the SESAR CONCEPT, please identify which are the key snapshots regarding the business demand (civil aviation) between the 6-month time horizon and the day of operation.

- Regarding the identified snapshots in the previous question, please define the type of information and granularity of business demand.

- According to the SESAR CONCEPT, please identify which are the key snapshots regarding the mission demand (military aviation) between the 6-month time horizon and the day of operation.

- Regarding the identified snapshots in the previous question, please define the type of information and granularity of mission demand.

- If all stakeholders involved – e.g. ANSPs, Airports, Sub-regional and Network Management - had more detailed traffic information from the airlines and military, what could be the usefulness of such information to implement DCB solutions?

- What DCB solutions could be implemented at Network, Airspace and Airport level?
• Please detail the UDPP strategy. For instance, what could be the criteria to establish priorities between users?
• What are the events/information/rationale which would trigger the need to switch to an UDPP process?
• Please, define roles and responsibilities in an UDPP process - i.e. Network Manager, Sub-regional manager, ANSP’s, Airline Operators, Military and Airports.
• In the process of interaction between the Network Management function and the users, what is the end of the process?
• Would you see the need to introduce other actor(s) for the management of airspace (AFUA)?
• Who will negotiate with military? The sub-regional manager, the Network manager or the airspace manager?
• What could be the advantages at network level of having more planning information from the airports (airports as part of the network)?

5.4 **Detailed Time Planning**

5.4.1 **Time planning – Network EG**

The timeframe to develop the activities described above is 3 months starting in October 2008. The next schedule shows the expected planning (the responsible for the work for each activity has been indicated as follows: A-AENA (as Work Package Leader); E-Experts; L-Exercise Leader; M-Meeting (all)).

| 2008          | Week 9 | Week 13 | Week 13 | Week 14 | Week 40 | Week 41 | Week 41 | Week 43 | Week 46 | Week 45 | Week 45 | Week 43 | Week 43 | Week 43 | Week 43 | Week 43 | Week 45 | Week 49 | Week 50 | Week 50 | Week 51 | Week 51 | Week 52 | Week 52 |
|---------------|--------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|
| 1st Phase     |        |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |
| Release of Experimental Plan | A       |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |
| 1st Questionnaire |       |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |
| First Meeting, methodology explanation | M       |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |
| Feedback from Experts | E       |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |
| 2nd Phase     |        |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |
| Synthesis, selection and redefinition | L       |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |
| 2nd Questionnaire |       |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |
| 2nd Meeting, analysis and update | M       |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |
| Feedback from Experts | E       |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |         |
Table 3: Time Planning – Network EG

The planned meetings are:

- 8th/9th October 2008 (support to WP3.3.2);
- 24th/25th November 2008 (support to WP3.3.3);
- 26th/27th November 2008 (support to WP3.3.5);
- Final phase meeting (if necessary, for the consolidation of the results).

5.4.2 Time Planning – Airport EG

A kick-off meeting between relevant Episode 3 partners and the major actors at the airport of Palma de Majorca has already taken place on 19th and 20th June 2008. This meeting described the SESAR Concept of Total Airport Management - at its current level of maturity - as well as the expert group methodology for future concept development. The key actors who will constitute the expert groups have expressed their desire to be involved in this process.

A technical meeting associated with the incorporation of the airport of Palma into the CAST model took place on 29th September 2008.
The first expert groups comprising AENA and EUROCONTROL along with representatives of Acciona, Air Berlin and Air Europa are planned for week 48. This will focus on the turnaround process and boarding process. Once the findings from these two expert groups have been collated, a subsequent expert group (plenary session) will be organised in order to clarify the findings and explore in an interactive manner with the CAST tool the potential gains in terms of predictability and punctuality which may be possible as a result of the ‘enhanced’ process description resulting from the initial expert group sessions. The findings of this plenary session are anticipated to prove useful in the assessment of the performance gains which may be extrapolated to other airports in the ECAC zone according to their different operational constraints.

6 REFERENCES AND APPLICABLE DOCUMENTS

6.1 REFERENCES

[1] EUROCONTROL European Operational Concept Validation Methodology Identification number 2.0

6.2 APPLICABLE DOCUMENTS


[4] Episode 3 SESAR 2020 General Purpose (G) Initial Detailed Operational Description (DOD) E3-WP2-D2.2-020-PLN 3.0,2008


[7] Episode 3 M&ST EG Answers to 1st Questionnaire E3-WP3-I0001-WKP
END OF DOCUMENT