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Final Project Report

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Abstract

This document, the Final Report of Project 06.06.01, provides a summary of the goals and achievements of project 06.06.01.

The aim of the project 06.06.01 was to develop specific methods and generic procedures, roles and protocols (rules) for airport operations in adverse and/or exceptional operating conditions that could impact on their operational performance. The project has sought to achieve this through collaboration with Network Management, ATC-Providers, Airspace Users and all involved actors in airport operations.

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None.

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This deliverable consists of SJU foreground.

1 Final Project Report

1.1 Project Aim

The Project Initiation report (PIR), published in March 2011, highlighted that the aim of the project was to develop and validate specific working methods, processes, procedures, and to identify roles and data exchanges (including meteorological information) between all the actors involved in the management of airport airside operations during adverse weather and exceptional operating conditions.

In addition, it was highlighted that the project would focus on recovery management during the phase between adverse weather or exceptional operating conditions back to normal operations. The project intended to develop and validate operational procedures appropriate for ensuring the recovery to an optimal level of performance of the airport as quickly, efficiently and fairly as possible for all stakeholders.

The project identified at the outset the necessity that the development of such procedures be the result of collaboration with Network Management, ATC-Providers, Airspace Users and all involved actors in airport operations.

The creation of the OFA 05.01.01 which coincided closely with the start of execution of P6.6.1 was not without impact on the overall execution of the project. Indeed P6.6.1 was required to adapt to the creation of the OFA 05.01.01 in so far as the specific context of the management of adverse conditions was placed into the more general context of overall airport operations management as per the remit of the OFA. As a result, a number of the deliverables produced by P6.6.1 and described in detail in Section 1.4 have been done in the context of the OFA 05.01.01 and the specific contribution of P6.6.1 has been formalized through the production of an associated 'Contribution Note'.

1.2 Contributions to the roadmap

The work of the OFA focusses primarily on four OI Steps as follows:

OI Step	Title
AO-0801	Collaborative Airport Planning Interface
AO-0802	A-CDM process enhanced through integration of landside (passenger and baggage) process outputs
AO-0803	Integration of Airports into ATM through Monitoring of Airport Transit View (Extension of Performance Monitoring building on A-CDM)
AO-0804	Collaborative Airport Performance Management

P6.6.1, through its V1 validation exercise and its contribution to the OFA has focused on AO-0803 and AO-0804. Based on results of validation exercises within 6.5.2 and captured in OSED Edition 2 with the collaboration of P6.6.1, these OI steps can be considered to be at full V2 maturity in the case of AO-0803 and partial V2 in the case of AO-0804 where it is recognised that more work is required in the definition of the 'toolset' necessary to facilitate collaborative performance management.

1.3 Project Achievements

The first deliverable of the project – the D01 Gap analysis report (Reference [4]) – identified a number of issues relating to adverse weather conditions cited by operational experts. Of particular importance is the necessity for developments to include increased predictability of events / weather forecasting, improved information sharing and recovery management, event impact assessment methods, mitigation measures and decision mechanisms to ensure timely and efficient reaction to any disruption.

It is important to note that as a result of this early work by P6.6.1, the above guidelines have been incorporated into a number of the validation activities conducted (or to be conducted) at the level of the OFA.

Following the creation of the OFA, the project introduced Change Request 1270 in August 2012 as a means of better aligning itself with the OFA 05.01.01. In particular, this Change Request promoted a move from OSED, SPR and Interop at the project level toward a wider contribution at the OFA level as well as recognition of the need to harmonise planned V3 activities at the OFA level.

As a result, the project has worked directly on the OFA 05.01.01 documentation (principally the first two iterations of the OSED) and ensuring specifically that the Use Cases and operational requirements around the management of adverse conditions have been included. Some of the key elements of the airport operations management concept (severity level detection, impact assessment, information sharing and so on) which now form an integral part of the ongoing validation activities have their origins in inputs from P6.6.1.

The principal contribution of P6.6.1 to the initial OFA OSED Edition 1.0 was in the form of Use Cases and a number of initial requirements covering the sharing of information amongst the CDM partners via the AOP relating to the predicted severity levels of adverse conditions. An evolution on the management of adverse conditions was proposed and which was centred on improved MET information and information sharing. It was highlighted that whilst such an approach is generic for all airports, that specific local procedures would need to be developed as a function of local constraints, roles and responsibilities.

1.4 Project Key Deliverables

The following table lists the key SESAR deliverables to which P6.6.1 has either been fully responsible or has fulfilled a contribution role.

Code	Deliverable Name	Handed Over	Assessment Decision
D01	GAP analysis Report	11.08.2011	No reservation (P)
D03	Validation Plan	05.04.2013	No reservation (P)
D04	Initial Validation Report	19.02.2013	No reservation (P)
D05	Contribution to OFA 05.01.01 OSED Edition 2	02.08.2013	No reservation (P)

D06	Contribution to OFA 05.01.01 SPR Edition 2	19.09.2013	No reservation (P)
D08	Contribution to OFA 05.01.01 INTEROP Edition 2	04.10.2013	No reservation (P)
D15	Final Project Report	19.02.2015	

In terms of key deliverables, D01 (Gap Analysis Report) and D04 (Initial Validation report) more information is provided in the following Sections.

Each of the Edition 2 OFA documents (OSED, SPR and Interop) to which P6.6.1 contributed to through respectively deliverables D05, D06 and D08 has been accepted by the SJU.

1.4.1 D01 - Gap Analysis Report (ref [4])

This task was a preliminary work to the development of the concept related to the management of adverse weather and exceptional operating conditions and recovery management elements of the SESAR airport concept.

The aim of the gap analysis task was primarily to refine the scope of Project 6.6.1 by:

- Identifying the types of adverse weather and exceptional operating conditions to be considered in the project.
- Identifying their occurrence and quantitative impact on the airport and ATM performance.
- Making a state of the art of implementation of IP1 A-CDM against adverse weather and exceptional conditions concept elements at European airports with identification of possible deviations.
- Providing where and how the existing A-CDM adverse conditions concept element needs to be modified to fit into the overall SESAR concept.

To achieve this goal the project partners chose to collect the input of key stakeholders from European airports implementing or having implemented Airport CDM as well as Network Manager (NM) experts through interviews. Through a questionnaire, the participants in the interviews were asked to rate the impact of events (based on the categories and sub-categories used by the NM for reporting purposes on reasons for ATFM delays) on the performance of their operations and assess the level and quality of anticipation of these events. They were also invited to identify the positive aspects and potential improvements of today's management of adverse weather and exceptional operating conditions.

The following conclusions and recommendations for the next tasks in the Project could be drawn:

- IP1 Airport CDM helps managing adverse weather and exceptional operating conditions and more effort needs to be put on the implementation of the CDM in adverse conditions concept element.
- Further development and validation of this element in a SESAR context are still needed.
- Developments include increased predictability of events / weather forecast, improved information sharing and recovery management (including the Network Manager), event impact assessment methods, mitigation measures and decision mechanisms to ensure timely and efficient reaction to any disruption.
- Clear and harmonized definitions of “adverse weather” and “exceptional operating conditions” need to be adopted in SESAR.

- Priority should be given to events impacting the capacity. These events vary from one airport to another, depending on the local situation and circumstances.
- Effort should be put on the recording and quantitative analysis of disruptions.
- The solutions developed in the Project have to be supported by international standards.

1.4.2 D04 - Initial Validation Report

This document was the Validation Report for the concept of Operations in adverse weather and/or exceptional operating conditions / recovery management (as developed in P6.6.1) of the validation V1 (ref [7]). The report presents the results of the "paper" validation which took place in Vienna on October 23rd and 24th, 2012. Representatives from the main airport stakeholders (airspace users, airports operators, ANSP, ground handlers) participated in the validation execution. The principal conclusions of the validation exercise as reported in the deliverable are that:

- The adverse condition situation has to be anticipated and shared by all concerned stakeholders;
- It is obvious any adverse situation has to be managed following a coordinated and well known process;
- In case of sudden adverse conditions, the availability of common process/procedure is a very supporting tool for mastering and reducing the impacts;
- The impact assessment and collaborative decision making process are the main success factors for adverse situation management;
- For the recovery process the main success factor are predefined candidate solutions, which were not available during the validation execution.
- The full adverse situation process, from the triggering event to the end of recovery, has to be managed and supported by common procedures.

These conclusions and recommendations were all implemented as part of the (P6.5.4) exercise VP-013. Further simplification of the proposed process and procedures were identified as being necessary and changes introduced into OSED Edition 3 which will be tested during future validation activities in the framework of P6.3.1.

1.5 Contribution to new Standards and Norms.

The material currently generated by the OFA 05.01.01 (OSED, SPR, Interop) has not yet been translated into recognised (EUROCAE for example) standards and norms although it is likely that in the near future this process will start as the various SESAR Solutions reach V3 maturity and progress forward into deployment.

1.6 Recommendations

Whilst advances in APOC procedures originally advocated by P6.6.1 as described earlier have been made and are being validated (Event report, Impact Message etc), it is recommended that more work be performed in the management of adverse conditions and particularly with the key stakeholders (NM, MET, De-icing,...).

Within OFA05.01.01, the validation exercise VP-757 (Release 5) provides a particularly good opportunity for testing the 'streamlined' collaborative processes to be employed within the APOC during the management of adverse conditions.

Within SESAR2020, both AO-0819 (Pro-active management of MET impacts on the AOP) and AO-0820 (Pro-active collaborative airport / network management of predicted performance deterioration) both provide the opportunity to take forward the work originally planned in 6.6.1

2 References

- [1] [SESAR Programme Management Plan, Edition 03.00.01](#)
- [2] [European ATM Master Plan, Edition 2](#)
- [3] [Latest Project baseline, Edition 15.05.2014](#)
- [4] Operations in adverse weather and/or exceptional operating conditions / recovery management, Gap Analysis Report, P06.06.01, D01, Edition 00.01.00, 11.08.2011
- [5] Operations in adverse weather and/or exceptional operating conditions / recovery management, Delivery Note Project 6.6.1 Task 002, P06.06.01, D02, Edition 00.01.00, 02.05.2012
- [6] Operations in adverse weather and/or exceptional operating conditions / recovery management, Validation Plan (V1), P06.06.01, D03, Edition 00.01.00, 12.03.2013
- [7] Operations in adverse weather and/or exceptional operating conditions / recovery management, Initial Validation Report (V1), P06.06.01, D04, Edition 00.01.00, 31.01.2013
- [8] Operations in adverse weather and/or exceptional operating conditions / recovery management, Contribution to OFA 05.01.01 OSED Edition 2, P06.06.01, D05, Edition 00.01.00, 02.08.2013
- [9] AirPort Operations Centre (APOC) definition, OFA 05.01.01 Operational Service and Environment Definition document, P06.06.01, D08, Edition 00.02.00, 30.04.2013
- [10] Operations in adverse weather and/or exceptional operating conditions / recovery management, Delivery note describing 6.6.1's contribution to OFA 05.01.01 SPR Edition 2, P06.06.01, D06, Edition 00.01.00, 19.09.2013
- [11] AirPort Operations Centre (APOC) definition, OFA 05.01.01 Consolidated VALP 'EXE-06-05-04-VP-013 Validation Plan', P06.06.01, D25, Edition 00.01.00, 16.05.2014
- [12] Operations in adverse weather and/or exceptional operating conditions / recovery management, Delivery note describing 6.6.1's contribution to OFA 05.01.01 Preliminary INTEROP, P06.06.01, D08, Edition 00.01.00, 04.10.213
- [13] AirPort Operations Centre (APOC) definition, OFA 05.01.01 Preliminary Interoperability Requirements (INTEROP) document, P06.06.01, D12, Edition 00.01.00, 18.11.2013
- [14] AirPort Operations Centre (APOC) definition, OFA 05.01.01 Preliminary Safety and Performance Requirements Document, P06.06.01, D11, Edition 00.01.00, 11.07.2013

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