Final Project Report

Document information	
Project Title	IBPs and Tools Baseline Documentation
Project Number	03.02.01
Project Manager	DFS
Deliverable Name	Final Project Report
Deliverable ID	D01
Edition	00.01.01
Template Version	03.00.00
Task contributors	
AENA; AIRBUS; ALENIA; DFS; DSNA; EUROCONTROL; ENAV; INDRA; NORACON; SELEX and THALES	

Abstract

This document is the last deliverable of SESAR P03.02.01. It provides a brief summary of the outcomes achieved during the project's execution phase. The project provided the Information Management System for the operational view of WP03, which was also used to support the gathering of Validation Exercise information an early task of P03.01.01. The project documented the Industry based pre-operational Validation & Verification Platforms used mainly for the execution of V3 Validation Exercises.

The project supported the SESAR JU IBP with regard to the registration of new IBPs in order to avoid ambiguities concerning IBP names. Project members contributed to the standard for ATM Validation Platform Interoperability by means of a support task to task T003 of P03.03.01.

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Rational for rejection		
N/A		

Document History

Edition	Date	Status	Author	Justification
00.00.01	14/07/2014	Draft	██████████	New Document
00.01.00	01/08/2014	Final	██████████	Incorporation of partners change requests.
00.01.01	17/09/2014	Final	██████████	Incorporation of SJU Final Report assessment results

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This deliverable consists of SJU foreground.

1   Final Project Report

Project Goals

Project 03.02.01 "IBPs and Tools Baseline Documentation" as part of Work Package 03 "Validation Infrastructure Adaptation and Integration" aimed to support the purposeful usage of Industry based pre-operational Validation & Verification Platforms (IBP).

In order to do so the project had the following main objectives:

- Creation and maintenance of IBPs Baseline Documentation, by

   o gathering information about the capabilities and availability of candidate IBPs at the host site partner's premises;

   o gathering information about the capabilities and availability of Verification & Validation Infrastructure (V&VI) elements;

   o providing a template for decision views (decision forms) for the candidate IBPs based on the needs of project P03.02.02;

   o updating and managing (throughout their evolution) the information about the documented IBPs at the host sites.

- Definition, set up and maintenance of an Information Management Tool for the operational/management view of Work Package 03, by

   o defining an information model, the data flow between the projects and a document workflow with a well-defined handover of information between the projects contributing to the operational/management view of WP03;

   o providing traceability between Verification & Validation (V&V) exercises, V&V exercise needs, V&V user requirements, V&VI tool requirements and the IBP evolution plans;

   o setting up and maintaining an Information Management Tool which is able to support:

      ▪ the management of the IBPs Documentation and

      ▪ the implementation of the operational/management view of the WP03 Information Management Process.

   As part of the Information Management System (IMS) support for the WP03 projects belonging to the Operational View (OV) the project defined a Validation Exercise (VE) form in order to support an early task of P03.01.01 which supported the creation of the V&V Roadmap.
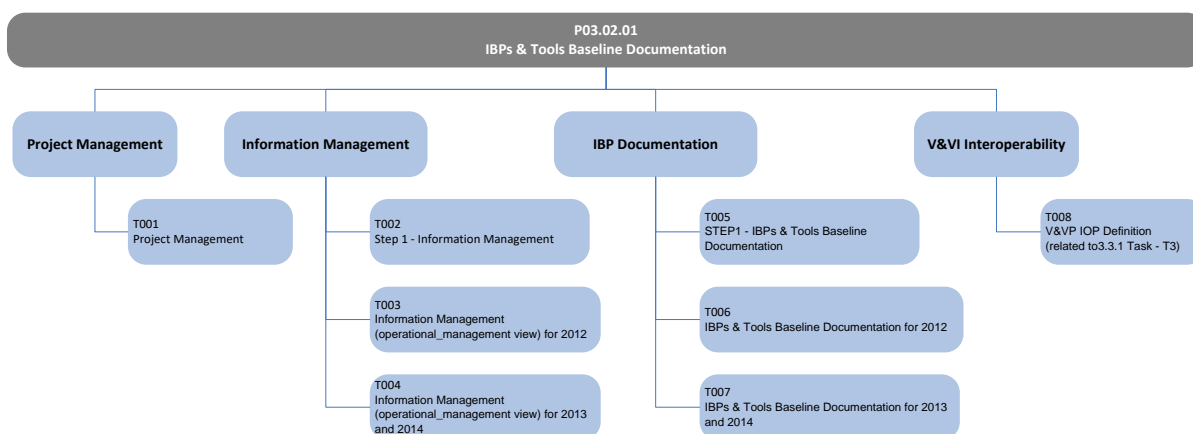
Due to the changes applied to P03.02.01 during the SESAR Revision Framework [3] for WP03 "Validation Infrastructure Adaptation and Integration" a support task for P03.03.01 had to be created allowing P03.02.01 members which were no P03.03.01 members to contribute to the P03.03.01 task T003 working on the Verification & Validation Infrastructure Interoperability.

ATM Master Plan contribution

As part of a transversal work package dealing with the adaptation and integration of Validation Infrastructure P03.02.01 did not directly contribute to deployment activities as defined in the ATM Master Plan [1].

Nevertheless WP 03 as a whole supported the verification and validation of system prototypes as part of the V&V Platforms which have implemented parts of the target concept.

P03.02.01 Work Breakdown Structure

Project Management

P03.02.01 project management started the Project Initiation Phase with the Kick-off Meeting on August 21st, 2009. After first being a candidate for "Project to be re-opened" the project was started as the first of all WP03 projects. The first Project Initiation Report (PIR) was rejected by the SJU due to the missing coordination with the other WP03 projects which were not started during that time. As a result the project was suspended on February 22nd 2010.

In order to reach a common understanding regarding the tasks and organisation of WP03 a Revision Framework for WP03 [3] document was released in June 2010. After the Revision Framework for WP03 was released the project was requested to update its PIR in June 2010 and the start of the project execution has been approved in August 2010 with nearly one year of delay.

The main deliverable of Task 001 of P03.02.01 was the management of the project in accordance to the rules of the SJU programme containing:

- Project Planning
- Risk, Issue and Opportunity Management
- Quality Control
- Reporting

As part of the Risk Management P03.02.01 management created a risk (Risk ID 4828) drawing attention to the fact that there are P03.02.01 activities which should go on after the closure of the project.

The following main activities were mentioned:

- Task 004: Managing the maintenance of WP03 IMS (OV) Remedy
- Task 007: IBP's and Tools Baseline Documentation

In addition the project management activity of supporting the SJU with regard to the registration of new IBPs.

As result of Action ID 5769 and in order to further provide the above mentioned activities to the SJU programme all those activities were taken over by project 03.02.02 (CR 1769).

- Task T03.02.02-016: is now covering the "Information Management (operational_management view) for 2014 and 2015" (former T03.02.01-004)
- Tasks T03.02.02-008 "IBP's evolution plans for 2014" and T03.02.02-010 "IBP's evolution plans for 2015" are now covering the "IBP's and Tools Baseline Documentation" due to the fact that chapters two and three of the common P03.02.01/P03.02.02 IBP documentation template are covering the information formerly provided by T03.02.01-007.
- T03.02.02-011 "Project Management" has taken over the role of the IBP registration support

The task deliverable of Task 001 "Project Management" is this document.

Information Management

The work on the Information Management for the operational/management view of WP03 started with the definition of the information management process comprising access to the relevant information elements by means of forms and of work flows. Forms were created to support the information management needs of all WP03 projects belonging to the operational/management part of the WP03 process such as P03.01.01, P03.01.02, P03.02.01 and P03.02.02. For the sake of a seamless handover of information between the two WP03 Information Management Systems for the operational/management view Remedy and engineering view eDEA a strong coordination between P03.02.01 and P03.01.03 took place.

At the beginning of the SESAR Execution Phase an early task was created in P03.01.01 to support SESAR JU in gathering information regarding the Validation Exercises for the V&V Roadmap produced and published by SJU/IS. In order to support this task of P03.01.01 Remedy was adapted by means of a Validation Exercise form. At that time VE information for the V&V Roadmap was gathered and managed by using Microsoft Excel files where the SESAR partners provided their input to the SESAR Programme. P03.02.01 took the V&V Roadmap Excel files and imported them into Remedy. Once the initial feeding of the V&V Roadmap information was completed Remedy was used as IMS by all SESAR project managers to update the V&V Roadmap information for their projects exercises. This activity could be supported due to the fact that Remedy was accessible by means of a Web interface and because of the support of multiple users. After a specific cut-off date the complete picture concerning the V&V Roadmap was handed over to SESAR Joint Undertaking (JU)/Industrial Support (IS) for the production and publication of the V&V Roadmap.

Even though the support of the V&V Roadmap activity and the gathering of VE information were not in the objectives of the Project Initiation Phase the project succeeded in providing this service to the SESAR JU programme within the required time and budget.

The project was part of the IBP registration process where new Verification & Validation Platforms (V&VP) had to be justified and where their usage in the SESAR JU programme had to be explained. A validity check was done by the task Information Management in order to avoid ambiguities with other V&VPs.

The main deliverable of P03.02.01 task Information Management was the IMS for the operational/management view of WP03 Remedy. After various prototypes a pragmatic approach has been to develop Remedy in an incremental way by following the process execution in order to apply the real workflow to the application. Remedy has been adapted in order to support the management and control of the information elements produced by the following WP03 Projects:

- P03.01.01: Validation Infrastructure Needs Management;
- P03.01.02: Tools and Analysis Support;
- P03.02.01: IBPs & Tools Baseline Documentation;
- P03.02.02: IBPs Use Planning.

The task deliverables concerning the Information Management comprise information about the setup and the maintenance of the Information Management System Operational View (OV) throughout the life-cycle of P03.02.01 and consist of the following Information Reports:

- D02   STEP 1 - Information Management Report (OV) [6]
- D03   Information Management Report (OV) for 2012 [7]
- D04-001   Information Management Report (OV) for 2013 [8]
- D04-002   Information Management Report (OV) for 2014 [9]

IBP Documentation

In the beginning of P03.02.01 the task IBPs & Tools Baseline Documentation created a Microsoft Word template [4] which was made to document the Industry Based pre-operation Verification & Validation Platforms planned to be used in the context of WP03 supported Validation Exercises.

The IBPs & Tools Baseline Documentation should provide a comprehensive overview about the IBP and it was structured by the following main chapters:

- IBP General Information
- V&VI Information
- System Under Test (SUT)/Prototype

The task analysed the structure of the V&V Needs defined by P03.01.01 and created the following description tables within the chapter IBP General Information:

- IBP required capabilities
- Interoperability (IOP)

Further the following description tables were created within the V&VI information chapter. While documenting the IBP, the task members were creating one or more sub-chapters for each V&VI Tool depending on the V&V Needs domains they were contributing to.

The following V&V Need domains were applicable:

- Data Preparation
- SUT Feeding & Emulation Capabilities
- Data Collection Capabilities
- Metrics Capabilities
- Data Post-processing and Analysis Capabilities
- Exercise Monitoring and Control Capabilities

Due to the WP03 optimization process, P03.02.01 and P03.02.02 were jointly working on a common Microsoft Word template comprising chapters for the IBPs & Tools Baseline Documentation and the Evolution Plan [5]. The new template comprised information about the existing IBP capabilities as well as a description concerning the IBP target capabilities.

The task deliverables concerning the IBPs & Tools Baseline Documentation were Reports which comprise information about the documentation activities throughout the WP03 supported Validation Exercises. All IBP documentations have been stored in Remedy.

The following IBPs & Tools Baseline Documentation reports have been produced throughout the life-cycle of P03.02.01:

- D05   STEP1 - IBPs and Tools Baseline Documentation [10]
- D06-001   IBPs & Tools Baseline Documentation Report Q1-2012 (external) [11]
- D06-002   IBPs & Tools Baseline Documentation Report Q3-2012 (external) [12]
- D07-001   IBPs & Tools Baseline Documentation Report Q2-2013 (external) [13]
- D07-002   IBPs & Tools Baseline Documentation Report Q4-2013 (external) [14]
- D07-003   IBPs & Tools Baseline Documentation Report Q1-2014 (external) **Error! Reference source not found.**

V&VI Interoperability

At the beginning of P03.02.01 initiation phase back in 2009 the project was foreseen as interface between SESAR JU and the EUROCAE Working Group (WG) 81. EUROCAE WG-81 "Interoperability of ATM Validation Platforms" has specified a Common Standard for the Interoperability of Air Traffic Management (ATM) Validation Platforms of various origins in order to make them capable to run jointly in the common framework of a common ATM Simulation Validation Exercise.

After the submission of the first Project Initiation Report, the project was suspended for nearly one year. During the SESAR Revision Framework for WP03 the SESAR JU Programme Management decided to move the cooperation with EUROCAE WG-81 from P03.02.01 to P03.03.01.

The project has contributed to an IOP Standard for ATM Validation Platforms by means of task T008 a dedicated support task complementary to task T003 of P03.03.01. This task was created for those members (AIRBUS, DSNA, NORACON and SELEX) which were not P03.03.01 members. AIRBUS and NORACON took advantage of this opportunity to cooperate closely with P03.03.01 in contributing to EUROCAE Document (ED) ED-147 "ATM Validation Platforms Interoperability Specification".

The key deliverable of task T008 was the:

- D08 V&VP IOP Report (related to 3.3.1 Deliverable - D3) [16]

In this report task T008 described its contribution to task T003's deliverable D03 "V&VP IOP Report ".

The V&V IOP Report was handed over to EUROCAE WG-81 as input for the ED-147.

Final Conclusion

The main deliverables of P03.02.01 have proven their usability within WP03 and the SJU Programme. The WP03 Information Management System for the operational/management view is still be used to manage the V&V Needs, V&V User Requirements and Gap Analysis results for several Validation Exercises using WP03 support. It is hosting the IBP Descriptions and Evolution Plans for the V&V Platforms and thus providing a good overview regarding the capabilities of the V&V Infrastructure used within the SJU Programme. Due to the fact that P03.02.02 did not get the mandate to select the IBPs to be used for Validation Exercises the IBP decision forms as mentioned in the project objectives were never created and used.

The WP03 optimisation process to an even closer cooperation between P03.02.01 and P03.02.02 and ended in a common Word template comprising the IBP Description and Evolution [5]. This process has also eased the handover of the P03.02.01 activities which should be retained even though the project needs to be closed.

2 References

[1] European ATM Master Plan, Edition 2

[2] P03.02.01, Latest Project baseline

[3] SESAR Revision Framework for WP03, 19/05/2010, Edition 01.01.00

[4] P03.02.01, IBPs and Tools Documentation Template, Edition 00.01

[5] P03.02.01&P03.02.02, IBP Baseline Description and Evolution Plan Template, Edition 00.01.01

[6] P03.02.01, STEP 1 - Information Management Report (OV), D02, Edition 00.01.01

[7] P03.02.01, Information Management Report (ov) for 2012, D03, Edition 00.01.02

[8] P03.02.01, Information Management Report (ov) for 2013, D04-001, Edition 00.01.00

[9] P03.02.01, Information Management Report (ov) for 2014, D04-002, Edition 00.01.00

[10] P03.02.01, STEP1 - IBPs and Tools Baseline Documentation, D05, Edition 00.01.01

[11] P03.02.01, IBPs & Tools Baseline Documentation Report Q1-2012 (external), D06-001, Edition 00.01.02

[12] P03.02.01, IBPs & Tools Baseline Documentation Report Q3-2012 (external), D06-002, Edition 00.01.02

[13] P03.02.01, IBPs & Tools Baseline Documentation Report Q2-2013 (external), D07-001, Edition 00.01.00

[14] P03.02.01, IBPs & Tools Baseline Documentation Report Q4-2013 (external), D07-002, Edition 00.01.00

[15] P03.02.01, IBPs & Tools Baseline Documentation Report Q1-2014 (external), D07-003, Edition 00.01.00

[16] P03.02.01, V&VP Interoperability Report, D08, Edition 00.01.00

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