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SESAR Solution PJ.10-W2-93A TS/IRS for TRL6 (and 93B, 93C TRL4) - Part IV - Human Performance Assessment Report

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PJ.10-W2-PROSA

PJ.10-W2-93 DELEGATION OF ATM SERVICES PROVISION AMONG ATSUS

This document is part of a project that has received funding from the SESAR3 Joint Undertaking under grant agreement No 874464 under European Union's Horizon 2020 research and innovation programme.

Abstract

The PJ.10-W2-93 deals with the different possible cases of delegation of provision of ATM Services amongst ATSUs based on traffic/organisation needs (either static on fix-time transfer schedule (Day/Night) or dynamic, e.g. when the traffic density is below/over certain level) or on contingency needs. The delegation operational concept can be supported by three different architectures, aka "Y", "D" and "U". Each of them has been developed in a specific technological solution and referenced as SESAR PJ.10-W2 Technological Solutions 93A, 93B and 93C.

This document is Part IV of the TS/IRS related to the SESAR Project ***PJ.10-W2 Solutions 93A, 93B and 93C.*** Part IV provides the Technological Human Performance Assessment Report (HPAR) describing the results of the HP activities conducted according to the HP assessment process, newly identified issues and the HP recommendations & requirements.

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1 Executive Summary

This document provides the Human Performance Validation Report PJ.10-W2-Sol.93A-93B-93C Technological Solution. Those solutions propose three different architectures, of which two are based on Virtual Centre services developed in SESAR 2020 Wave 1 PJ.16-03, and Operational Concepts developed in SESAR 2020 Wave 1 PJ.15-09.

While Solution 93B and 93C are only reaching TRL4 at the end of Wave2, Solution 93A reaches TRL6 and allows OI SDM-217 of PJ.10-W2-Solution 93 to reach V3.

The three different architectures correspond to those identified and proposed by EUROCAE WG122: Architectures “Y”, “D” and “U”.

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2 Introduction

2.1 Purpose of the document

The delegation of ATM services provision, as described by the OI "SDM-0217_Delegation of ATM Services provision between ATSUs", may be achieved with different system architectures.

PJ.10-W2-93A focuses on the "Y" architecture relying on a delegation between 2 ATSUs sharing the same ADSP and without affecting their respective AoRs.

PJ.10-W2-93B focuses on the "D" architecture relying on a delegation between 2 ATSUs, each one with its own ADSP, and using Virtual Centre (service) interoperability for remotely connecting CWPs from the receiving ATSU to the ADSP of the delegating ATSU without affecting the respective ATSU AoRs.

PJ.10-W2-93C focuses on the "U" architecture relying on a delegation between 2 ATSUs, each one with its own system, and using exchange capabilities between the 2 systems for transferring relevant data to the ATSU receiving the delegation. Each system may be a legacy one or be provided by an ADSP. In this architecture, the respective AoRs are reshaped according to the expected delegation.

The supported PJ.10-W2-Solution 93 operational use cases are:

- Delegation of ATM services provision at night,
- Delegation of ATM Services Provision at fixed time,
- Cross-border delegation of ATM services with dynamic AoR for an elementary sector,
- Cross-border optimisation using delegation with static AoR,
- Delegation of ATM services provision following abnormal conditions (ATSU contingency)

This TS-IRS mostly analyses the delegation "Preview" functionality and two different ways of processing a delegation: without changing the AoRs of the ATSUs using architecture "Y" or "D", or by changing the AoRs using architectures "U" or "Y".

For more details refer to TS/IRS Part I.

2.2 Intended readership

The intended audience for this document is the team members of PJ.10-W2-Solution 93, including other PJ.10-W2 Solutions, in particular:

- **SESAR JOINT UNDERTAKING (SJU)** as SESAR 2020 Programme coordinator.
- **SESAR 2020 PJ.10-W2** consortium members in order to be aware of activities and methods being used to allow for coherency, consistency and comparability of the validation results through all SESAR 2020 solutions.
- **SESAR 2020 PJ.10-W2-73** Flight Centred ATC and Improved Distribution of Separation Responsibility in ATC - Coordination contact(s)
- **SESAR 2020 PJ.09-W2-44** Dynamic Airspace Configuration (DAC) - Coordination contact(s)

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- **SESAR 2020 PJ.32-W3-WP3** Virtual Centre for follow-up of Virtual Centre Concept evolutions
- **SESAR 2020 PJ.19-W2** Content Integration that aims at assuring coherency, consistency, and comparability of the validation results throughout all SESAR2020 Solutions.
- **SESAR 2020 PJ.20-W2** European Master Planning of objectives - Coordination contact (s)
- Representatives of civil stakeholders: **ANSPs**.

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2.3 Structure of the document

This document contains 5 Chapters:

- Chapter 1 - contains an executive summary
- Chapter 2 - Introduction
- Chapter 3 - The Human Performance Assessment Process: Objective and Approach
- Chapter 4 – Human Performance Assessment
- Chapter 5 - References

2.4 Acronyms and Terminology

Term	Description
Human Factors (HF)	HF is used to denote aspects that influence a human's capability to accomplish tasks and meet job requirements. These can be external to the human (e.g. light & noise conditions at the work place) or internal (e.g. fatigue). In this way, "Human Factors" can be considered as *focussing on the variables that determine Human Performance*.
Human Performance (HP)	HP is used to denote the human capability to successfully accomplish tasks and meet job requirements. In this way, "Human Performance" can be considered *as focussing on the observable result of human activity in a work context*. Human Performance is a function of Human Factors (see above). It also depends on aspects related to Recruitment, Training, Competence, and Staffing (RTCS) as well as Social Factors and Change Management.
HP activity	An HP activity is an evidence-gathering activity carried out as part of Step 3 of the HP assessment process. An HP activity can relate to, among others, task analyses, cognitive walkthroughs, and experimental studies.
HP argument	An HP argument is an HP claim that needs to be proven through the HP Assessment Process.
HP assessment	An HP assessment is the documented result of applying the HP assessment process to the SESAR Solution-level. HP assessments provide the input for the HP case.
HP assessment process	The HP assessment process is the process by which HP aspects related to the proposed changes in SESAR are identified and addressed. The development of this process constitutes the scope of Project 16.04.01. It covers the conduct of HP assessments on the Solution-level as well as the HP case building over larger clusters of Solutions.
HP benefit	An HP benefit relates to those aspects of the proposed ATM concept that are likely to have a positive impact on human performance.

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HP case	An HP case is the documented result of combining HP assessments from Solutions into larger clusters (SESAR Projects, deployment packages) in SESAR.
HP issue	An HP issue relates to those aspects in the ATM concept that need to be resolved before the proposed change can deliver the intended positive effects on Human Performance.
HP impact	An HP impact relates to the effect of the proposed solution on the human operator. Impacts can be positive (i.e. leading to an increase in Human Performance) or negative (leading to a decrease in Human Performance).
HP recommendations	HP recommendations propose means for mitigating HP issues related to a specific operational or technical change. HF recommendations are proposals that require additional analysis (i.e. refinement and validation). Once this additional analysis is performed, HF recommendations may be transformed into HF requirements.
HP requirements	HP requirements are statements that specify required characteristics of a solution from an HF point of view. HP requirements should be integrated into the DOD, OSED, SPR, or specifications. HF requirements can be seen as the stable result of the HF contribution to the Solution, leading to a redefinition of the operational concept or the specification of the technical solution.

Table 11111: Acronyms and terminology

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3 The Human Performance Assessment Process: Objective and Approach

The purpose of the HP assessment process described in detail in **Error! Reference source not found.Error! Reference source not found.**~~SESAR Human Performance Assessment Process TRL4 to TRL6 depending on the different Architectures~~ is to ensure that HP aspects related to SESAR technical and operational developments are systematically identified and managed. The SESAR HP assessment process uses an 'argument' and 'evidence' approach. An HP argument is an 'HP claim that needs to be proven'. The aim of the HP assessment is to provide the necessary 'evidence' to show that the HP arguments impacted have been considered and satisfied by the HP assessment process. This includes the identification of HP requirements and recommendations to support the design and development of the concept.

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4 Human Performance Assessment

4.1 Step 1 Understand the ATM concept

4.1.1 Description of reference scenario

In order to progress on the validation of the different operational and technical aspects of the delegation of ATM services provision among ATSUs concept, five real time simulations (RTS) have been planned for the V3 phase of PJ.10-W2-93.

- EXE-PJ.10-W2-93-V3-VALP-001, led by ENAIRE.
- EXE-PJ.10-W2-93-V3-VALP-002, led by Skyguide.
- EXE-PJ.10-W2-93-V3-VALP-003, led by ENAV.
- EXE-PJ.10-W2-93-V3-VALP-004, led by COOPANS.
- EXE-PJ.10-W2-93-V3-VALP-005, led by PANSA.

In order to complement complement the description of reference scenario please refers to OSED Part I and VALP Part I.

4.1.2 Description of solution scenario

The Solution Scenario is as described in PJ.10-W2-93 V3 OSED, that is, with the possibility to consider the delegation of ATM services provision.

The main characteristics of the Solution Scenario to be considered for each one of the use cases addressed by the validation activity is described below:

- Delegation of ATM services provision at Night
    - Delegation between ATSUs of the same ANSP
    - Consolidation of sectors at night within the same ATSU
    - No cross-border sectorisation
- Delegation of ATM services provision at Fixed Time
    - Delegation between ATSUs of the same ANSP
    - No cross-border sectorisation
- Delegation of ATM services provision on-demand
    - Delegation between ATSUs of the same ANSP
    - Cross-border sectorisation available when delegating and receiving ATSUs are adjacent.
    - ATFCM measures: ATFM regulations, ATFM scenarios, capacity measures, tactical STAM.

In order to complement the description of solution scenario please refers to OSED Part I and VALP Part I.

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4.1.3 Consolidated list of assumptions

Refer to OSED Part I.

4.1.4 Identification of the nature of the change

The tables below provide the changes automatically provided by MEGA for feeding this section.

For more details refers to TS/IRS Part I.

Human Performance Technical point of view, only one figure involved in the process has been analysed: ***Supervision Distribution (TECHSUPD)***

Follow the specifications:

- OPCONFM and OPCONFD services: the Operational Configuration Management service allows an ACC/Approach operational supervisor to reflect the current radio frequency allocation and the sector configuration operated in the ATSU within the centre configuration information managed by the ADSP.

The Operational Configuration Distribution service dynamically notifies subscribed users about radio frequency allocation and sector configuration information within a given ATSU. The table below identifies the times associated with the OPCONF service operations and assigns a time profile.

Identifier	Definition	Type	Time Profile
OPS times			
TT-OPS-OPCONFM-001	Time for the supervisor to update the operational configuration (radio frequency, sector configuration) and receive a configuration data update	Operational Transaction Time	Category 'time sensitive'
DT-OPS-OPCONFD-001	Time between the ADSP detects new operational configuration data for an ATSU and the information is displayed on the WP of the operator.	Operational Delivery Time	Category 'time sensitive'
TECH Times			
TT-TECH-OPCONFD-001	Time for the VC ATSU to subscribe/unsubscribe to the Operational Configuration Distribution service.	Technical Transaction time	Category 'time sensitive'

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DT-TECH-OPCONFD-001	Time between the ADSP sends the operational configuration data and it is received by the VC ATSU	Technical Delivery Time	Category 'time sensitive'

Table 22222: [OPCONF] Response and Transit Times

4.1.5 Identification of relevant arguments, HP issues & benefits and HP activities

Arg.	Issue ID	HP issue / Benefit	HP/Valid. Obj. ID	HP validation objective	recommended activity/ies
Arg. 1.1.3: Roles and responsibilities are clear and consistent/non-contradictory	BEN1.1.3-PJ10-W2-93-001	Changes in roles and responsibility are not foreseen.	OBJ-PJ10-W2-93-001-HP	To assess if roles and responsibilities of human actors are clear and exhaustive.	Real Time Simulation
1.2.5: Operating methods (procedures) can be followed in an accurate, efficient and timely manner.	BEN1.1.5-PJ10-W2-93-002	All procedures and operating methods are followed in accurate manner.	OBJ-PJ10-W2-93-002-HP	To assess if procedures can be followed in accurate, efficient and timely manner.	Real Time Simulation
Arg. 1.3.3: The level of workload (induced by cognitive and/or physical task demands) is acceptable.	ISS1.3.3 PJ10-W2-93-001	During the normal operating conditions, the level of workload might be maintained, but during the delegation the Workload could increase (e.g. if the occupancy is high in the delegated airspace).	OBJ-PJ10-W2-93-003-HP	To assess if the level of workload induced by the delegation of ATM services is acceptable for ATCOs.	Real Time Simulation

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Arg.	Issue ID	HP issue / Benefit	HP/Valid. Obj. ID	HP validation objective	recommended activity/ies
Arg. 1.3.4: The level of trust in the new concept/the new procedures is appropriate.	BEN1.3.4-PJ10-W2-93-003	During the delegation, in order to increase the level of trust, ATCOs training could be potential positive impact (considering contingencies as well).	OBJ-PJ10-W2-93-004-HP	To assess if the level of trust induced by the delegation is acceptable for ATCOs.	Real Time Simulation
Arg. 1.3.5: Human actors can maintain a sufficient level of situation awareness.	ISS1.3.5-PJ10-W2-93-002	During the normal operating conditions, the level of Situational Awareness is maintained, during the SA could decrease.	OBJ-PJ10-W2-93-005-HP	To assess if the level of situational awareness induced by the delegation is acceptable for ATCOs.	Real Time Simulation
Arg. 2.3.6: The usability of the user interface (including input devices, output devices/displays, and alarms & alerts) is acceptable.	ISS2.3.6-PJ10-W2-93-003	In order to supports the human in carrying out their tasks, should be small changes in HMI.	OBJ-PJ10-W2-93-006-HP	To assess the usability of the HMI with regards to the information.	Real Time Simulation
Arg. 3.3.1: Intra-team and inter-team communication supports the information requirements of team members.	ISS3.3.1-PJ10-W2-93-004	During the delegation procedures many actors communicate with each other, so a high level of information	OBJ-PJ10-W2-93-007-HP	To assess if the communication supports the information requirements of team members.	Real Time Simulation

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Arg.	Issue ID	HP issue / Benefit	HP/Valid. Obj. ID	HP validation objective	recommended activity/ies
		requirements is not always maintained.			
Arg. 3.3.2: The phraseology supports communication in all operating conditions.	ISS3.3.2-PJ10-W2-93-005	In contingency procedures could be better define a standard phraseology to applied.	OBJ-PJ10-W2-93-008-HP	To assess if the standard phraseology used support the communication.	Real Time Simulation
Arg. 3.3.4: The communication load of team members is acceptable in normal and abnormal conditions and degraded mode of operations.	ISS3.3.4-PJ10-W2-93-006	During the delegation procedures many actors communicate with each other, so a high level of information requirements is not always maintained.	OBJ-PJ10-W2-93-009-HP	To assess if the communication supports in normal and abnormal conditions the information requirements of team members.	Real Time Simulation
Arg. 3.3.5: Team members can maintain a sufficient level of shared situation awareness.	ISS3.3.5-PJ10-W2-93-007	During the normal operating conditions, the level of Situational Awareness is maintained, during the SA could decrease.	OBJ-PJ10-W2-93-010-HP	To assess if the level of shared situation awareness is maintained by team members.	Real Time Simulation
Arg. 4.1.1: Changes in roles and responsibilities are acceptable to the affected human actors.	ISS4.1.1-PJ10-W2-93-008	Human Performance related aspects of the operational concept should be identified.	OBJ-PJ10-W2-93-011-HP	To assess if the proposed solution is acceptable for human actors involved.	Real Time Simulation

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Arg.	Issue ID	HP issue / Benefit	HP/Valid. Obj. ID	HP validation objective	recommended activity/ies
		These are crucial for the successful transition at a later stage.			
Arg. 4.2.1: Knowledge, skill and experience requirements for human actors have been identified.	ISS4.2.2-PJ10-W2-93-009	Negative impact on HP can occur when not maintain an appropriate level of skill on the delegated sector for the receiving ATCOs.	OBJ-PJ10-W2-93-012-HP	To consider the potential changes in knowledge, skill and experience requirements.	Real Time Simulation
Arg. 4.2.3: Potential interferences between existing and new knowledge & skills are identified.	ISS4.2.3-PJ10-W2-93-010	In the delegation process it could be possible identify an interference between existing and new knowledge & skills.	OBJ-PJ10-W2-93-013-HP	To consider the potential changes in knowledge, skill and experience requirements.	Real Time Simulation

4.2 Step 3 Improve and validate the concept

4.2.1 Description of HP activities conducted

ACTIVITY 1.	Real Time Simulation
Description	HP support will be provided to Real Time Simulation. This will ensure that appropriate evidence can be generated through these simulations, such that HP arguments and claims can be supported.
HP OBJECTIVES	See Table 4.

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Tool selected out of the HP repository	Post Run Questionnaire, Post Simulation Questionnaire, Remote over the Shoulder Observation (with experts in situ), Debriefing Agenda Topics prepared ad hoc in order to address the specific exercise objectives and related success criteria.
Planning and Approach	The execution of the Real Time Simulation involves the following steps: • Validation planning, development of HP objectives and associated scenario and measurement recommendations. • Attendance at simulation exercises. • Post-exercise data analysis • Report contribution.
timeline	2022

Table 33333: Description of Activity 1

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4.3 Step 4 Collate findings & conclude on transition to next V-phase

4.3.1 Summary of HP activities results & recommendations / requirements

All results were reported in detail in the OSED Part IV (Human Performance Assessment Report).

In addition, follow a list of technical Recommendation for implementation:

There is not a preferred architecture for processing delegations. The choice of the architecture is first the choice mutually adopted between 2 partners involved in the delegation.

Obviously, if the 2 partners are already sharing a common ADSP as a result of rationalization of infrastructure, then the delegation with “Y” architecture will be straight forward.

The existing standardisation of the services between the ATSUs and their respective ADSPs will favour the set-up of a “D” architecture.

Existing prior agreements for AoR extension (i.e. legacy contingency), and/or expectations in flow management reorganisation are factors in favour of the “U” architecture, as well as the involvement of non-virtual centre systems.

It must be noted that the architectures are not mutually exclusive. Despite this would be a challenging configuration to set-up, from a logical point of view it is possible to have an ATSU running in a “Y” architecture and also supporting both “D” and “U” architectures for processing delegations with different neighbours ATSUs that would not be included in the “Y”.

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4.3.2 Maturity of the Solution

The level of confidence in the results is satisfactory.

Results regarding the Human Performance can be considered as representative of the overall operational concepts thanks to the evidence given also from observation conducted during the exercise execution.

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Maturity checklist for finalising the V2/TRL4 assessment			
ID	**Question**	**Answer** *Fill in 'yes' or 'no'.*	**Comments**
1	Have relevant arguments for V2/TRL4 been addressed and appropriately supported?	yes	Refer to relevant sections of the HP table or HP assessment report.
2	Are the benefits and issues in terms of human performance and operability related to the proposed solution sufficiently assessed (i.e. on the level required for V2/TRL4)?	yes	Refer to relevant sections of the HP table or HP assessment report.
3	Have potential interactions with related projects/concepts started to be considered?	yes	Refer to relevant sections of the HP table or HP assessment report.
4	In case of different options of the proposed solution, is the decision for a specific option(s) based on the consideration of HP benefits and issues?	yes	Refer to relevant sections of the HP table or HP assessment report.
5	Is the level of human performance needed to achieve the desired system performance for the proposed solution consistent with human capabilities?	yes	Refer to relevant sections of the HP table or HP assessment report.
6	Are the assessment results in line with what is targeted for that concept? If not, has the impact on the overall strategic performance objectives/targets been analysed?	yes	• Refer to relevant sections of the HP table or HP assessment report.
7	Has the proposed solution been tested with end-users and started to be tested under sufficiently realistic conditions, including certain abnormal and degraded conditions?	yes	Refer to relevant sections of the HP table or HP assessment report.
8	Are the outcomes based on the solution assessment mature enough to start V3/TRL6?	yes	Refer to relevant sections of the HP table or HP assessment report.

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9	Have all relevant SESAR documentation been updated according to the HP activities outcomes (OSED, SPR)?	yes	Refer to relevant sections of the HP table or HP assessment report.
10	Have the major factors that can influence the transition feasibility (e.g. changes in automation level, changes in staff requirements, such as competence, staffing levels) been considered? Are there any ideas on how to overcome any such issues?	yes	Refer to relevant sections of the HP table or HP assessment report.
11	Have any impacts been identified that may require changes to regulation in the area of HP/ATM? This includes changes in roles & responsibilities, competence requirements, or the task allocation between human & machine.	yes	Refer to relevant sections of the HP table or HP assessment report.
12	Has the next V-phase sufficiently been prepared (additional testing conditions, open HP issues to be addressed)?	yes	Refer to relevant sections of the HP table or HP assessment report.

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Maturity checklist for finalising the V3/TRL6 assessment			
ID	**Question**	**Answer** *Fill in 'yes' or 'no'.*	**Comments**
1	Has a Human Performance Assessment Report been completed? Have all relevant arguments been addressed and appropriately supported?	yes	Refer to relevant sections of the HP table or HP assessment report.
2	Are the benefits and issues in terms of human performance and operability related to the proposed solution sufficiently assessed (i.e. on the level required for V3/TRL6)?	yes	Refer to relevant sections of the HP table or HP assessment report.
3	Have all the parts of the solution/concept been considered?	yes	Refer to relevant sections of the HP table or HP assessment report.
4	Have potential interactions with related projects/concepts been considered and addressed?	yes	Refer to relevant sections of the HP table or HP assessment report.
5	Is the level of human performance needed to achieve the desired system performance for the proposed solution consistent with human capabilities?	yes	Refer to relevant sections of the HP table or HP assessment report.
6	Are the assessments results in line with what is targeted for that concept? If not, has the impact on the overall strategic performance objectives/targets been analysed?	yes	- Refer to relevant sections of the HP table or HP assessment report.
7	Has the proposed solution been tested with end-users and under sufficiently realistic conditions, including abnormal and degraded conditions?	yes	Refer to relevant sections of the HP table or HP assessment report.

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8	Do validation results confirm that the interactions between human and technology are operationally feasible, and consistent with agreed human performance requirements?	yes	- Refer to relevant sections of the HP table or HP assessment report.
9	Have all relevant SESAR documentation been updated according to the HP activities outcomes (OSED, SPR)?	yes	Refer to relevant sections of the HP table or HP assessment report.
10	Do the outcomes satisfy the HP issues/benefits in order to reach the expected KPA?	yes	Refer to relevant sections of the HP table or HP assessment report.
11	Have HP recommendations and HP requirements correctly been considered in HMI design, procedures/documentation and training?	yes	Refer to relevant sections of the HP table or HP assessment report.
12	Have the major factors that can influence the transition feasibility (e.g. changes in competence requirements, recruitment and selection, training needs, staffing requirements, and relocation of the workforce) been addressed? Are there any ideas on how to overcome any issues?	yes	Refer to relevant sections of the HP table or HP assessment report.
13	Have any impacts been identified that may require changes to regulation in the area of HP/ATM? This includes changes in roles & responsibilities, competence requirements, or the task allocation between human & machine.	yes	Refer to relevant sections of the HP table or HP assessment report.
14	Has the next V-phase sufficiently been prepared (additional testing conditions, open HP issues to be addressed)?	yes	Refer to relevant sections of the HP table or HP assessment report.

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References

Human Performance

[1] Human Performance Assessment Report

[2] SESAR HP Assessment Process V1 to V3, Ed 3.1, January 2020

[3] European Operational Concept Validation Methodology (E-OCVM) - 3.0 [February 2010]

[4] SESAR Solution PJ.10-W2-Solution 93 Final SPR-INTEROP/OSED for V3 (D3.2.030)

[5] SESAR 2020 TS-IRS - PJ.16-03 Solution (D2.3.010)

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Appendix A – Additional HP activities conducted

No additional HP activities conducted.

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