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ASM SWIM Closing Report

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Author(s)	Alvaro RAMOS DEL RIO, EUROCONTROL
Contact Person(s)	Alvaro RAMOS DEL RIO, EUROCONTROL

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1 Introduction

1.1 Project Description and scope

ASM SWIM is a multi-stakeholder implementation project supporting harmonised and interoperable digital exchange of airspace-management information under the Common Project One framework. The implementation scope covers consumption of Network Manager Airspace Structure data, provision of AUP/UUP Airspace Availability information, real-time exchange of airspace status between ASM and ATC systems, and provision or consumption of Airspace Reservation information at local and cross-border level.

This closing report consolidates the main project management, technical implementation, operational validation, service-registration, training, communication and closure activities conducted during the execution of the project. It distinguishes technical capability, validation, SWIM registry publication and operational use.

1.2 Executive-level summary

ASM SWIM established a common European framework for digital airspace-management information exchange and delivered operational SWIM-enabled services across several national environments. The project implemented NM B2B exchanges, modernised local ASM systems, deployed and registered ARES services, integrated tactical airspace status with ATC systems, supported emerging cross-border exchanges, and created a harmonised assurance and reporting framework for CP1 implementation.

1.3 Key achievements

The project delivered a substantial European implementation baseline for SWIM deployment in ASM by delivering the following output:

- Established a common European implementation framework for Airspace Structure, Airspace Availability and Airspace Reservation information exchanges.
- Coordinated the programme through a living Project Management Plan, quarterly meetings, bilateral workshops, common templates, STAR updates and SDM/CINEA reporting support.
- Implemented consumption of NM Airspace Structure information and provision of AUP/UUP Airspace Availability data through NM B2B services.
- Deployed Local ASM System capabilities, including infrastructure, migration, security, testing, backup and operational environments.
- Implemented ARES services for real-time reservation and activation status through standard request/reply and publish/subscribe mechanisms.
- Integrated ASM information with national ATC environments.
- Achieved operational ARES use in several national environments, including the use for cross-border operations.
- Established resilient service infrastructures, including redundant newPENS-connected nodes and cloud-native components.
- Published ARES service descriptions in the SWIM Registry and demonstrated cross-border interoperability.

1.4 Deliverable ref. D1.3 Scope

ASM SWIM is a CINEA funded project in the context of CEF 2022 Call. ASM SWIM members represent Civil or Military Air Navigation Service Providers. ASM SWIM members may be Beneficiaries, i.e. benefiting from CINEA funds. However, after the signature of the CINEA grant agreement, additional members joined ASM SWIM, subject to the same objectives, deliverables, milestones and tasks but outside the CINEA process. This approach is beneficial to the successfulness of the project as more members mean that more stakeholders in Europe, in or outside the EU, commit to ensure successful implementation of CP1 and hence contribute to standardisation, digitalisation and interoperability efforts in Europe.

The scope of the D1.3 is primarily the ASM SWIM beneficiaries. There may be references to the effort made by ASM SWIM members that do not constitute ASM SWIM beneficiaries, just for the sake of providing the overall project picture but their contribution is out of the scope of this report.

1.5 Project members

ID	Short name	Legal name	Country	Project Role
1	EUROCONTROL	EUROPEAN ORGANISATION FOR THE SAFETY OF AIR NAVIGATION	INTERNATIONAL	Project Lead
2	AUSTROCONTROL (ACG)	AUSTRO CONTROL OSTERREICHISCHE GESELLSCHAFT FUR ZIVILLUFTFAHRT MBH	AUSTRIA	Beneficiary
3	CROATIA CONTROL (CCL)	HRVATSKA KONTROLA ZRACNE PLOVIDBE DOO	CROATIA	Beneficiary
4	DCAC	MINISTRY OF TRANSPORT, COMMUNICATIONS AND WORKS	CYPRUS	Beneficiary
5	DSNA	DIRECTION DES SERVICES DE LA NAVIGATION AERIENNE	FRANCE	Beneficiary
6	ENAIRE	ENAIRE	SPAIN	Beneficiary
7	AIRNAV	THE IRISH AIR NAVIGATION SERVICE	IRELAND	Beneficiary
8	LFV	LUFTFARTSVERKET SWEDEN	SWEDEN	Beneficiary
9	MATS	MALTA AIR TRAFFIC SERVICES LIMITED	MALTA	Beneficiary
10	MUAC	EUROCONTROL MAASTRICHT UPPER AREA CONTROL CENTRE	INTERNATIONAL	In kind contributor
11	NAV PORTUGAL	NAVEGACAO AEREA DE PORTUGAL - NAV PORTUGAL EPE	PORTUGAL	Beneficiary
12	NAVIAIR	NAVIAIR	DENMARK	Beneficiary
13	ORO NAVIGACIJA	AKCINE BENDROVE ORO NAVIGACIJA	LITHUANIA	Beneficiary
14	PANSA	POLSKA AGENCJA ZEGLUGI POWIETRZNEJ	POLAND	Beneficiary
15	SPAF	MINISTERIO DE DEFENSA DE ESPAÑA	SPAIN	Beneficiary
16	LPS	LETOVE PREVADZKOVE SLUZBY SLOVENSKEJ REPUBLIKY	SLOVAK REPUBLIC	Observer
17	SKYGUIDE	SWISS AIR NAVIGATION SERVICES LIMITED	SWITZERLAND	Observer

18	LVNL	LUCHTVERKEERSLEIDING NEDERLAND	THE NETHERLANDS	Observer
19	ENAV	ENTE NAZIONALE PER L'ASSISTENZA AL VOLO S.P.A.	ITALY	Observer
20	SKEYES	SKEYES	BELGIUM	Observer

Table 1-1: ASM SWIM members

2 Progress Reporting

2.1 Project governance and implementation model

EUROCONTROL acted as Project Lead and the central interface to the SESAR Deployment Manager. Beneficiaries and other project members remained responsible for national implementation activities, milestones, deliverables and evidence. Project control was maintained through the Project Management Plan, quarterly meetings, Local Implementation Plans, progress reports, templates, action tracking and STAR reporting.

Workstream	Purpose
T1	Project management and coordination
T2	Implementation of a local ASM system
T3-T4	Consumption and operational use of NM Airspace Structure services
T5	Provision of AUP/UUP Airspace Availability data to NM
T6	Operational training for the pre-tactical phase
T7	ARES local connection technical capability
T8	Local safety-case preparation
T9	Operational training for the tactical phase
T10	Local operational consumption of ARES
T11	Provision of ARES to external consumers
T12	Consumption of ARES from external ANSPs

Table 2: ASM SWIM implementation workstreams

EUROCONTROL organised quarterly coordination and direct technical workshops, supported interactions with SDM, maintained reporting templates and facilitated dialogue with connected LARA, ACADIA and EACP activities. A common SharePoint repository and project mailbox supported document exchange and stakeholder coordination.

2.2 Project timelines

ASM SWIM was organised in three main threads:

- Planning and coordination
- Implementation of the local ASM tool and consumption of NM B2B services
- Provision and consumption of ARES services

Seen over time the weight of the threads was distributed as follows in 3 phases:

- Q1-Q2 2023 - Planning and coordination setup
- Q3-Q4 2023 - Implementation of the local ASM tool and consumption of NM B2B services

- 2024 - Provision of ARES service
- 2025 - Consumption of ARES service

The project execution phase for ASM SWIM was formally initiated following the Grant agreement signature on 23 October 2023. The project was due to formally conclude on 31 December 2025 (CP1 deadline), however, due to the complexity of the activities, an extension to the initial deadline was agreed by CINEA, setting the new deadline to 31 May 2026.

2.3 Technical implementation

The technical programme combined common specifications with different national implementation paths. Most LARA users upgraded to LARA V5, while PANSA CAT developed equivalent interfaces. Activities included infrastructure deployment, database migration, certificate implementation, service configuration, publish/subscribe messaging, request/reply interfaces, ATC-system adaptation, safety assessment and operational validation. SWIM Registry entries documented service providers, information exchanges, interfaces and lifecycle status.

The following table summarizes the key information exchanges supported by the local implementations:

Service domain	Implemented capability
Airspace Structure	Local ASM systems consume authoritative structure information from NM B2B services.
Airspace Availability	Local ASM systems provide AUP/UUP information to NM through B2B services.
Airspace Reservation	ASM systems exchange current reservation and activation status with ATC systems, stakeholders and external consumers through SWIM services.

Table 3: Core ASM SWIM information exchanges

2.4 ARES service implementation and operational transition

ARES was the principal tactical service outcome. The service provides current information on whether reserved airspace is active, pre-active or released. Implementations were designed to support civil-military coordination, operational situational awareness and consistency between ASM and ATC systems, including its use in cross-border operations.

Activity	Result
Provision	Expose reservation, activity, validity, geometry and activation-status information.
Consumption	Retrieve ARES information in national middleware or ATC systems and present relevant status to operational users.
Subscription	Distribute changes through publish/subscribe mechanisms.
Local integration	Connect ASM and ATC systems so tactical airspace status is visible in operations.
External exchange	Provide or consume ARES information with neighbouring ANSPs and authorised stakeholders.
SWIM Registry	Publish the service description and maintain the lifecycle status.

Table 4: ARES implementation activities

2.5 Project management

Project management was established around 5 main areas:

Management area	Activities conducted
Planning and control	Project Management Plan, Local Implementation Plans, action tracking, quarterly meetings, progress reviews and escalation of material issues.
Reporting	D1.1, D1.2 and participant reports; ARES implementation and operational-use templates; final-report template; STAR updates and means-of-verification support.
Technical coordination	Workshops, bilateral support, migration guidance, certificate support, Registry guidance, cross-border connectivity and industry coordination.
Grant management	Amendment requests, participant withdrawals, timeline changes, revised milestones and deliverables, consolidation of budgets, and responses to clarification requests.
Communication	Project website and social media, beneficiary intranets and websites, training, workshops, stakeholder briefings and project presentations.

Table 6: Project management and communication activities

The June 2026 monitoring window required updated status, deliverables and means of verification. EUROCONTROL supported beneficiaries with STAR and repository difficulties and consolidated participant inputs. The second CLEAN ATM amendment was signed by CINEA on 26 June 2026.

3 Beneficiary status summary

Beneficiary	Status	Main achievements / remaining items
ENAIRE / SPAF	Operational	LARA V5 deployed; ARES hosted on redundant Madrid and Barcelona nodes; ICARO consumes ARES and distributes information to SACTA/ATC; Registry publication and operational use reported.
LFV	Operational	LARA V5 and SWIM infrastructure deployed; TopSky integration, safety, training and operational transition completed; local consumption and external provision reported; external consumption remained ongoing.
Austro Control	Operational	LARA V5 upgrade, certificate transition, TopSky integration, end-to-end validation and Registry publication completed.
Croatia Control	Operational	Airspace Structure, Airspace Availability and ARES services implemented; local ARES connection to the main ATC system completed.
PANSA	Operational with remaining external integration	CAT ARES service deployed with cloud-native hosting, SOAP and AMQP interfaces and Registry publication. PANSA continues to implement the interface with Lithuania.
Oro Navigacija	Operational with remaining external integration	SWIM Integration Platform and iTEC integration completed; cross-border exchange with LFV operational; additional regional connectivity remains under coordination.
DCAC, DSNA, AIRNAV Ireland, MATS, MUAC, NAV PORTUGAL, NAVIAIR	Withdrawn from funded WP8 scope	Some of the activities were finished for the beneficiaries, however, the project could not be dully completed. Tasks, milestones, deliverables and associated budget were removed from the original Grant Agreement through the CLEAN ATM amendment exercises.

Table 5: Beneficiary status

The following SWIM interfaces have/are being implemented in the framework of the project:

Interface	Implementing partner
ASM - NM	Lithuania, Spain, Austria, Croatia, Ireland, Sweden, Portugal, Malta, Cyprus
ASM - ATC	**Operational**: Lithuania, Spain, Austria, Croatia, Ireland, Sweden Q3 2026: Portugal, Cyprus Q3 2027: Ireland
ASM - ASM	**Operational**: Lithuania-Sweden Lithuania-Poland (Q3 2026) Lithuania-Latvia (under test) Sweden-Finland (under test) Sweden-Latvia (under test) Sweden-Estonia (under test)

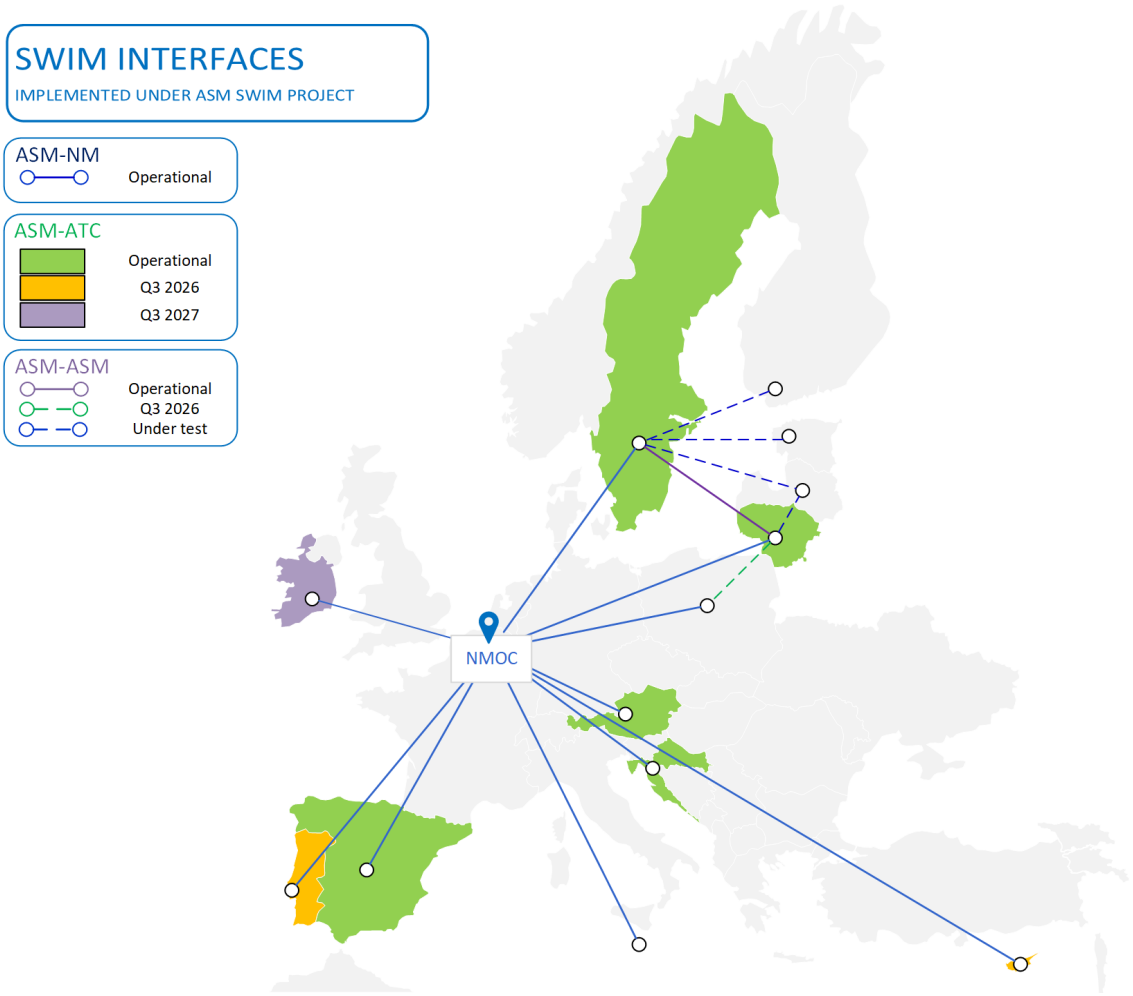

Figure 3-1: SWIM Interfaces implemented in the project

4 Conclusions and recommended follow-up

ASM SWIM converted a regulatory and interoperability objective into tangible national implementations. The project delivered common service definitions, NM B2B interoperability, LARA V5 and CAT-based service implementations, ARES Registry entries, ASM-to-ATC integration, operational training, safety and security work, and a repeatable evidence framework for technical and operational closure.

4.1 Lessons learned

4.1.1 Technical

- Common service specifications enabled implementation across both LARA-based and national CAT architectures.
- Security certificates, middleware, message brokers, PENS or newPENS connectivity and ATC-system adaptations were integral implementation components rather than peripheral infrastructure tasks.
- Redundant nodes, backup capability, health monitoring, latency monitoring and fallback arrangements were necessary to support operational confidence.
- Publish/subscribe and request/reply interfaces addressed different operational and integration needs and required dedicated end-to-end validation.
- Cross-border implementation introduced dependencies on neighbouring release schedules, connectivity configuration and coordinated test windows.

4.1.2 Operational

- Operational use required procedures, safety assessment, training, organisational roles and contingency arrangements in addition to software installation.
- Technical acceptance and operational deployment could occur at different times, particularly where ATC release windows or NSA approval were involved.
- Operational evidence needed to show actual system use and not only the presence of an implemented interface.
- Civil-military coordination benefited from a shared, timely view of reservation and activation status across connected ASM and ATC systems.

4.1.3 Governance

- Common templates and a central repository improved the consistency of distributed reporting. A living Project Management Plan helped the consortium absorb participant, scope and schedule changes.
- Direct bilateral support was essential where beneficiaries experienced STAR, repository or technical-integration difficulties.

4.2 Recommended follow-up

- Complete PANSA and Oro Navigacija connectivity and operational-use actions.
- Support delayed implementations that were withdrawn from the funded WP8 scope through the LARA working arrangements.
- Preserve project knowledge through LARA governance and service-support arrangements.

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