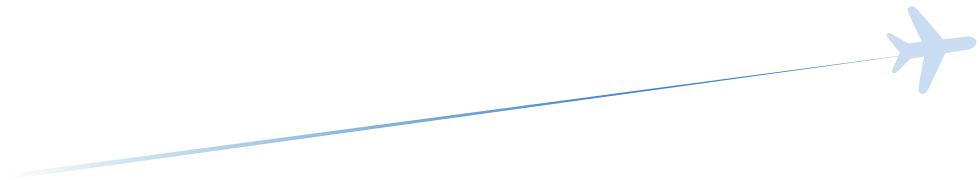

D8.1 Dissemination, Exploitation and Communication Plan

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NOSTROMO

NEXT-GENERATION OPEN-SOURCE TOOLS FOR ATM PERFORMANCE MODELLING AND OPTIMISATION

This Dissemination, Exploitation and Communication Plan is part of a project that has received funding from the SESAR Joint Undertaking under grant agreement No 892517 under European Union's Horizon 2020 research and innovation programme.

Abstract

This document describes the different dissemination, exploitation and communication activities planned to be undertaken by NOSTROMO partners.

NOSTROMO dissemination, exploitation and communication activities have been identified and developed to ensure the proper usability and exploitation of NOSTROMO results and achievements.

Dissemination, Exploitation and Communication is focused on guaranteeing that NOSTROMO outputs fully satisfy stakeholders' needs, linking the relevant participation of NOSTROMO partners within the SESAR industrial research and paving the way to further research or exploitation of NOSTROMO outputs.

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Executive Summary

Dissemination and Exploitation is considered essential to the successful of NOSTROMO project. The Dissemination, Exploitation and Communication plan aims at ensuring that project results are properly disseminated inside and outside the consortium to the proper audience, at the right moment and following effective means:

- The **Dissemination Plan** gathers the objectives of the project, the main outcomes (results) of it, to whom the project is directed to and what activities will be developed to do so. In addition, it establishes the control mechanisms to ensure that the pursued objectives are accomplished.
- On the other hand, the **Exploitation Plan** includes the description of exploitable outcomes and the identification of the potential customers and actions taken to ensure the exploitable results satisfy the customer's needs and achieve enough dissemination.
- The deliverable covers as well the **Communications Plan**, which includes the communication goals, channels and targeted audiences. It also identifies quantitative indicators to monitor the accomplishment of the communication goals.

1 Introduction

1.1 Purpose of the Document

Dissemination, Exploitation and Communication of NOSTROMO outputs is crucial for a successful impact of the project results. So, internal and external communication between partners and non-partners stakeholders and planning dissemination and exploitation activities are needed.

These activities are identified in the present Dissemination, Exploitation and Dissemination plan, which aims at disseminating and communicating the key information generated during NOSTROMO project's lifetime as well as planning the exploitation of the project outputs.

In order to achieve these goals, NOSTROMO dissemination plan includes a description of the dissemination objectives as well as the identification of the dissemination material and the partner's roles in the dissemination process. Additionally, it identifies the required dissemination activities by defining the need of workshops with the stakeholders, the use of Internet resources and the most suitable journals and conferences for the publication of NOSTROMO's results. In order to guarantee the dissemination activities achieve the expected measures, quantitative objectives and expected results in dissemination will be detailed in the dissemination plan.

On the other hand, NOSTROMO exploitation plan includes the description of exploitable outcomes and the identification of the potential customers and actions taken to ensure the exploitable results satisfy the customer's needs and achieve enough dissemination.

Finally, NOSTROMO communication plan includes the definition of the communication goals, the channels and audiences. It also identifies quantitative indicators to monitor the accomplishment of the communication goals.

NOSTROMO dissemination, exploitation and communication plan has been developed in accordance with the Grant Agreement, in particular with Article 28 - Exploitation of Results - and Article 29 - Dissemination of Results - Open Access - Visibility of JU funding and support from JU members [1].

1.2 Intended readership

This document is intended to be used by SESAR JU and NOSTROMO members.

1.3 Acronyms and Terminology

The present plan follows the established guidelines in the context of SESAR Exploratory Research, including the H2020 Research Participant Portal Online Manual [2], and the reference terms gathered in the Terminology section of the Research Participant Portal [3], where the following definitions and concepts are derived:

- **Project Results**, which are outputs generated during the project that can create impact during and/or after the funding and products that can be used by the project partners and other stakeholders. There are different types of results:

- Reusable and exploitable entities (inventions, products, services), or
- Elements (knowledge, technology, processes, networks) that have potential to contribute for further work, research or innovations.

Administrative deliverables, reports or dissemination materials (e.g. publications) are often not results in themselves.

- **Dissemination**, a process through which the results of a project are published (by any appropriate means other than protecting or exploiting them, e.g. scientific publications policy, roadmap, workshops, demonstrations, sharing the results online repository) maximizing the impact of the research and enabling the value of results to be potentially wider than the original focus.

- **Exploitation**, a process through which the results produced in an EU project are made use in further activities (other than those covered by the project, e.g.: in other research activities, feeding a PhD thesis; in developing, creating and marketing a product, process or service; registration of patents; creation of spin-offs/ start-ups; granting open/copy licenses; or providing concrete input to standards and policy changes). These results can be commercial, societal, political, and they can be performed by project partners or by others (e.g.: through making results available under open licenses).

The main differences between dissemination and exploitation are shown in Figure 1. While dissemination is enabling the use of results, exploitation shall ensure the results are used. Therefore, exploitation audience must be precisely chosen so as to ensure that it is composed of groups and entities that are effectively making concrete use of results. Moreover, it is recommended for exploitation activities to include all results (even those protected by Intellectual Property Rights (IPRs)), calling for an effort from partners to make best use of the project products.

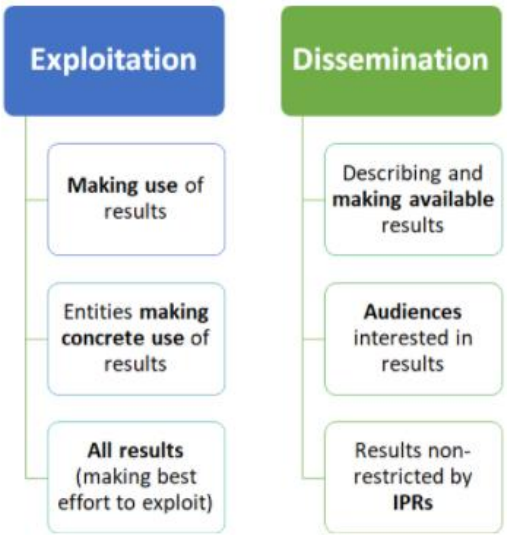

Figure 1 - Dissemination versus Exploitation Activities

- **Communication**, a strategically planned process that shall reach out to society as a whole and to some specific audiences and demonstrate how EU funding contributes to tackling societal challenges.

The main differences between communication and dissemination are shown in Figure 2. Communication seeks to inform about the existence of the project and its results, while dissemination activities focus solely on results, enabling their use and uptake. Furthermore, dissemination audience is composed of potential users of the results (scientists, project community, industry, policy makers, etc.), whereas communication addresses wider audiences.

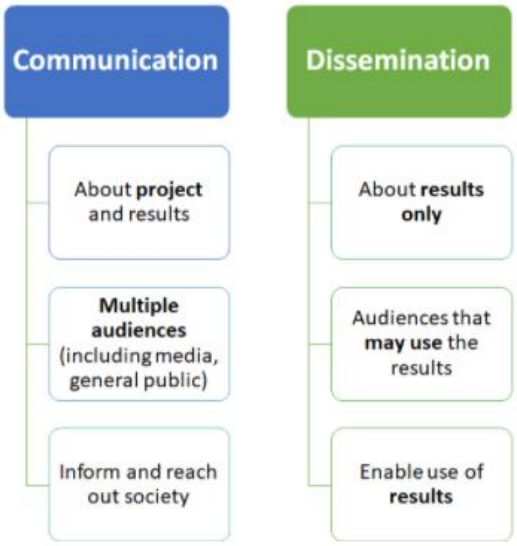

Figure 2 - Communication versus Dissemination Activities

Table 1 - List of Acronyms

Term	Acronyms
ATM	Air Traffic Management
ECAC	European Civil Aviation Conference
E-OCVM	European Operational Concept Validation Methodology
ER	Exploratory Research
Horizon 2020	EU Research and Innovation programme implementing the Innovation Union, a Europe 2020 flagship initiative aimed at securing Europe's global competitiveness.
IPRs	Intellectual Property Rights
IR	Industrial Research

Term	Acronyms
KPA	Key Performance Area
KPI	Key Performance Indicator
NOSTROMO	Next-generation Open Source Tools for peRfOrmance Modelling and Optimisation
SESAR	Single European Sky ATM Research Programme
SJU Work Programme	The programme which addresses all activities of the SESAR Joint Undertaking Agency.
SESAR Programme	The programme which defines the Research and Development activities and Projects for the SJU.

1.4 NOSTROMO Project Introduction

1.4.1 Project "About" Text

In recent years, the question of how to assess the performance impact of new solutions at a system-wide level in terms of air traffic management (ATM) has arisen. In this area, the goal of NOSTROMO is to develop, demonstrate and evaluate new approaches to ATM performance modelling, combining model transparency, computational tractability and ease of use.

In order to achieve this objective, first, the project will develop a methodology to build ATM performance metamodels by exploiting recent advances in the field of active learning. Second, this metamodelling methodology will be developed thanks to open source metamodels based on microsimulation tools able to reproduce ATM performance at the European Civil Aviation Conference (ECAC) level. Third, it will develop a set of visualisation and visual analytics tools. The project's results will be evaluated with the aim of promoting its further implementation.

NOSTROMO project will be developed in an incremental approach towards the objectives, by evaluating and refining the proposed methodology in an iterative manner in the light of the results obtained in its specific applications.

1.4.2 Project extended description

NOSTROMO *(Next-generation Open-Source Tools for ATM PeRfOrmance Modelling and Optimisation)* project addresses the SESAR 2020 Exploratory Research topic **SESAR-ER4-26-2019, 'ATM Validation for a Digitalised ATM'**, with focus on the **'Macro-modelling applied to Air Traffic Management'** area.

The Air Traffic Management (ATM) system is composed of a myriad of elements that interact with each other, including interdependent policies and regulations, stakeholders, technologies and market conditions. These interactions give rise to a number of properties characteristic of **complex adaptive systems**, such as non-linearity, emergence and adaptation, which make the ATM system intrinsically

difficult to model one of the most challenging modelling problems is the assessment of the performance impact of new solutions at a system-wide level.

The development of methodologies to **evaluate the impact of new ATM concepts and technologies on high-level, system wide Key Performance Indicators (KPIs)** has been a long-time objective of the ATM research community. Low-level validation activities based on fast-time simulation, human-in-the-loop simulation, shadow-mode trials and live trials provide accurate estimates of the performance of a certain solution in a given operational environment; however, implementing such validation approaches for different combinations of solutions at a network-wide scale is infeasible, or at least prohibitive in terms of both cost and time. It is therefore necessary to resort to performance models that consolidate the results of low-level validation experiments conducted for different solutions at a local level and estimate the integrated impact of such solutions at network level. The approaches to this problem can be classified into two broad categories:

- Top-down **macroscopic models:**

  Macroscopic models, such as the influence diagrams are the most commonly used for strategic decision-making because of their parsimonious character, which renders them easy to compute and facilitates the task of explaining and communicating results to decision makers. However, they suffer from two major shortcomings. First, they avoid the explicit modelling of the complex interrelationships between the components of the ATM system, which prevents them from capturing the resulting emergent behaviour and network effects. Second, they are, to a large extent, based on the use of experience and expert judgement; given the impossibility of conducting validation experiments at a network-wide scale, their mathematical formulation is thus supported by little or no empirical evidence.

- Bottom-up **microscopic models:**

  As opposed to the previous approach, ATM performance modelling has also been approached through the development of microscopic models with stronger behavioural foundations, which explicitly model the influence of new solutions on the behaviour and interactions of individual entities at the disaggregated level (e.g., individual flights) with the aim to observe the performance that emerges at the macroscopic level. Different models of this type, usually operationalised through fast time and agent-based simulations, have shown their ability to capture a rich variety of behaviours in a very realistic manner. However, these models also face some limitations that hinder their operational use: the richness of the model comes at the cost of computational complexity, which makes it difficult to explore the simulation space in a systematic manner, and also hampers the task of analysing, interpreting and communicating the modelling results.

The NOSTROMO project aims to tackle these limitations, in order to develop new approaches to ATM performance modelling able to **reconcile model transparency, computational tractability and ease of use with the necessary sophistication required for a realistic representation of the ATM system**.

1.4.3 Project Key Messages

NOSTROMO key messages are stated below:

1. Providing the ATM Community with a **new methodology** that allows the assessment of the overall performance benefits of new SESAR Solutions at ECAC level.

2. **Application of active learning techniques** for the construction of ATM metamodels as Open-Source with the required levels of transparency and computational tractability.

3. Moving forward to **improve the understanding of the performance assessment results** by decision makers within the ATM community thanks to an interactive visualisation.

1.4.4 Keywords

A list of keywords that can be used to help identify NOSTROMO project is provided below. These will be used as metadata on the SESAR JU website and as hashtags on relevant social media messaging.

ATM Performance Assessment, Active Learning, Visual Analytics, Performance Modelling, Metamodelling, Machine Learning, Air Traffic Management, Benchmarking, Open-Source.

1.4.5 Focal point for communications, dissemination and exploitation

The following table presents the focal point for dissemination, communication and exploitation activities.

Table 2- Focal points of contact

Name	Role	Email address
Mayte Cano Rincón	WP8 Leader Dissemination, Communication and Exploitation Manager	mtcano@e-crida.enaire.es
Juan Antonio López Sánchez	WP8 Leader Deputy Dissemination, Communication and Exploitation Manager Deput	jalopez@e-crida.enaire.es

2 Dissemination, Exploitation and Communication Framework

2.1 NOSTROMO Objectives

In the context previously described in §1.4, the goal of NOSTROMO is to develop, demonstrate and evaluate an innovative modelling approach for the rigorous and comprehensive assessment of the performance impact of future ATM concepts and solutions at ECAC network level. This will bring together the ability of bottom-up microscopic models to capture emergent behaviour and interdependencies between different solutions with the level of tractability and interpretability required to effectively support decision-making. The specific objectives of the project are the following:

1. Develop a **methodology for the construction of ATM performance metamodels** that approximate the behaviour of computationally expensive simulation models so as to allow a systematic and efficient exploration of the model input-output space and a robust handling of the uncertainty associated with the model predictions, by exploiting recent advances in the field of active learning.

2. **Implement and validate the proposed metamodelling methodology** by developing metamodels of different state-of-the-art microsimulation tools able to reproduce ATM performance at ECAC level.

3. Develop a set of **visualisation and visual analytics tools that facilitate the analysis, interpretation and communication of the results** of the new performance metamodels.

4. **Demonstrate and evaluate the maturity of the NOSTROMO approach and the capabilities of the newly developed toolset** through a set of case studies addressing the performance assessment of SESAR Solutions at ECAC level. The case studies shall cover a variety of ATM phases, solutions and KPAs/KPIs sufficiently heterogeneous to allow a comprehensive **benchmarking against the performance modelling methodologies currently in use,** with the aim to analyse the added value and the limitations of the NOSTROMO approach and evaluate the appropriateness of its transition to SESAR IR and improvement of the European Operational Concept Validation Methodology (E-OCVM).

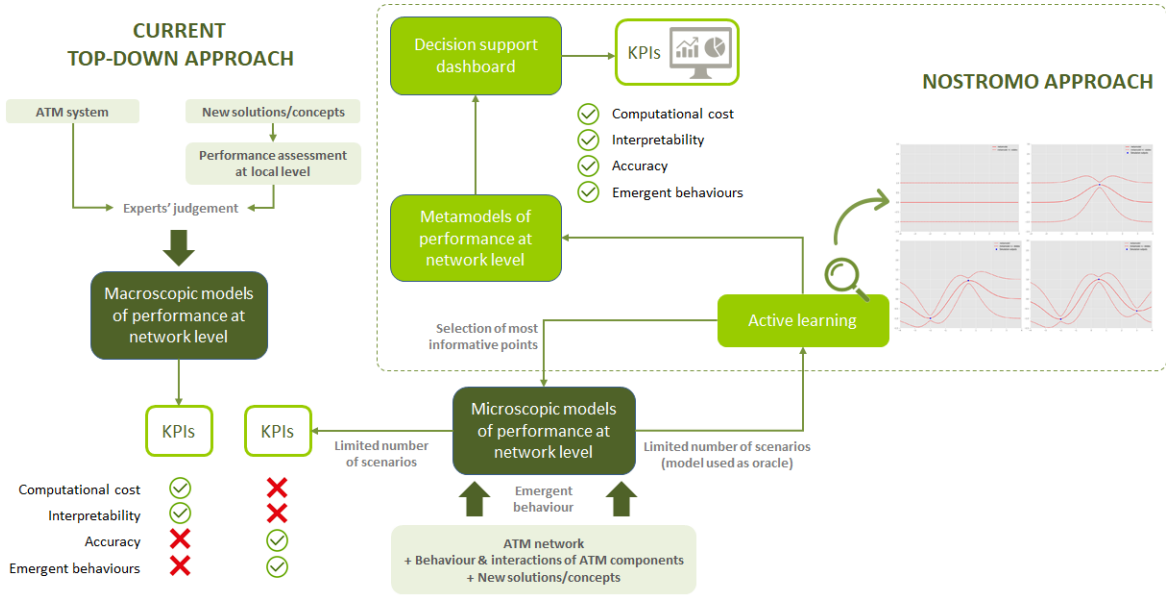

Figure 3 - Overall project concept

2.2 Dissemination, Exploitation and Communication Objectives

The dissemination activities are critical in this project in order to allow measuring stakeholders' acceptance of the NOSTROMO proposed solution and ensuring that it addresses its stakeholders' needs. Furthermore, dissemination is intrinsically linked to exploitation in the sense that efficient publicity is a facilitator of the exploitation beyond the project lifetime. Then, the objective of the project's dissemination activities is to ensure that NOSTROMO's key messages and its main achievements reach all relevant stakeholders and target group organisations.

More specifically, NOSTROMO dissemination and exploitation related objectives are to transmit NOSTROMO results to target stakeholders in a two-way exchange in order to:

- Obtain users' needs and expertise to be taken into account in NOSTROMO's activities;
- Disseminate the achievements to their potential users, thus facilitating the evolution of the project's solution to further maturity levels.

Moreover, the communication activities ensure that NOSTROMO's multiple messages reach their respective actors, establishing the required framework that allows:

- optimising the information flow among the project members and organise an efficient communication between involved actors;
- broadcasting NOSTROMO to the affected actors and main stakeholders.

2.3 Dissemination Material

All the results of NOSTROMO research will be detailed in NOSTROMO deliverables which will be public documents (except to NOSTROMO data repository). Additionally, specific research results will be also published in dedicated publications, newsletters and/or presented in different conferences. These means of communication will be used as supporting material to properly disseminate the project findings as the project progress:

- NOSTROMO proposed solution for modelling approach;
- NOSTROMO methodology and benefits of application;
- NOSTROMO Case Studies;
- Experimental results and conclusions;
- Consolidation of all findings in a final data package to provide evidences on the maturity reached, including guidelines and recommendations for future development and integration into SESAR IR mainstream.

According to the iterative and incremental NOSTROMO approach which includes three different project iterations, intermediate results will be available along the project lifecycle. These intermediate results, together with the final results, will also be used in NOSTROMO workshops or conferences in order to get stakeholders' feedback for the associated deliverables.

2.4 NOSTROMO Benefits

NOSTROMO project's results will have an impact in different stakeholders. The following table summarises the expected benefits per stakeholder group.

Table 3- NOSTROMO benefits for different stakeholder groups

Stakeholder Groups	Benefits
SJU Project Officer	• NOSTROMO Progress toward expected results; • Project general status including foreseen or actual delays, resources usage, risks or issues, and other managerial aspects; • Content and timing of press releases and joint publications.
EU Commission	• Benefits of NOSTROMO outcomes and their potential application; • On-going European initiatives that could be reinforced with NOSTROMO results.
S2020 Projects	• Advances related to performance modelling and assessment at ECAC network level; • Synergies with other projects related to ATM performance Assessment and Macro-modelling area.

Stakeholder Groups	Benefits
Other ER Projects	• Synergies with other ongoing research in the ATM Performance Assessment and Macro-modelling area.
ATM Industry	• Advances related to the application of metamodelling techniques to the performance assessment; • Benefits of NOSTROMO outcomes and their potential application.
ANSP, AU, Airport and Network Manager	• Benefits of NOSTROMO outcomes and their potential application.
Scientific Community	• I+D+I NOSTROMO results (application of Artificial Intelligence and Visual Analytics techniques to the performance metamodelling domain).

2.5 Exploitable Results

NOSTROMO project is intended to contribute to different aspects of ATM Performance domain by:

- **Developing a generic methodology for ATM performance assessment**.

  This will contribute to the improvement of the methodologies currently applied in SESAR IR for validation and assessment of the impact of new SESAR Solutions at network level. The methodology proposed by NOSTROMO aims to reduce the computational complexity, allowing a faster exploration of the space of solutions and minimising the need of simulation runs.

  In addition, the proposed methodology built upon metamodeling and active learning techniques is expected to improve the quality, scientific rigour and reliability of the assessment of SESAR Solutions performance benefits at ECAC level, as it will be able to capture the interrelations between different solutions and performance indicators.

  By articulating the results of the project within SESAR IR, a more accurate assessment of performance benefits will support the SESAR programme decision-making process, and in particular, the definition of the priority lines and performance ambitions of the European ATM Master Plan.

- **Developing a decision-support dashboard on visual analytics tools.**

  This will facilitate the comprehensive analysis and interpretation of the results obtained when applying the metamodeling methodology. It will also support the decision-making on performance monitoring and management, accelerating the identification of the SESAR Solutions with higher performance benefits that could be deployed. This will support the reduction of the transition time between the R&D and deployment phase.

On the other hand, the fact that the proposed methodology and ATM metamodels are to be **Open-Source** will empower the scientific and technological impact of the project, bridging the gap between the Exploratory and Industrial Research. In particular, it will allow the application of the proposed

methodology and the development of the new ATM metamodels quickly, providing more transparency and reliability not only to the metamodel itself but also to the results on performance assessment.

3 Dissemination Plan

3.1 NOSTROMO Dissemination Needs

The dissemination goals of NOSTROMO will change with the project progress, as it will be a constant need through the project. At the beginning of the project, dissemination will be more oriented to get stakeholder's feedback to ensure that NOSTROMO activities are built in the right direction. Then, dissemination priority will be gradually moved towards broadcasting results to ensure their further exploitation. Following figure shows the dissemination and exploitation strategy during the project.

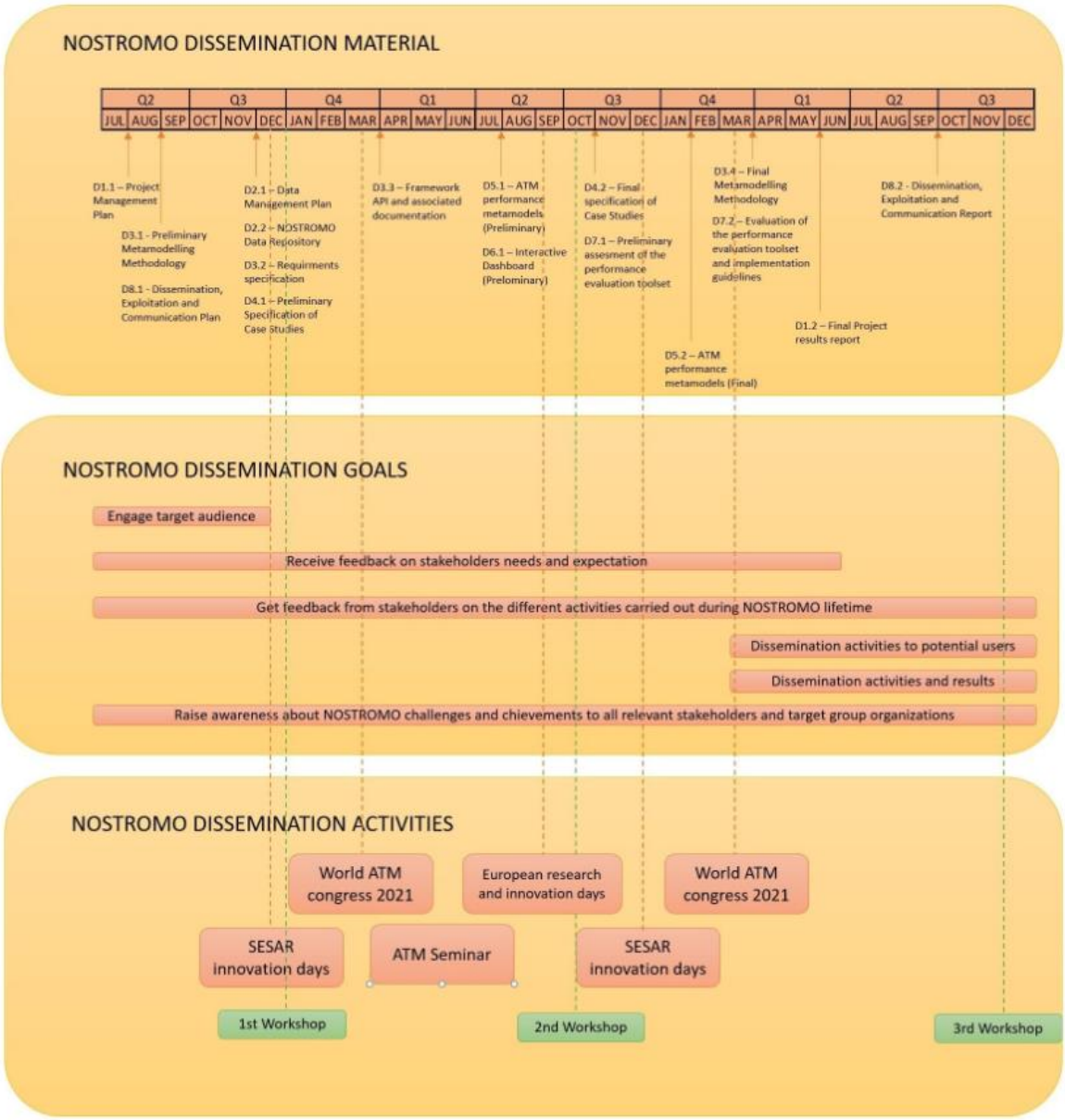

Figure 4 - NOSTROMO dissemination and exploitation strategy

The requirements of each dissemination activity are documented in the following matrix:

Table 4 - NOSTROMO dissemination activities requirements

Dissemination Activity	Objective	Dissemination Mean	Audience	Responsible	Deliverable	Format
Workshops	Disseminate Projects results and obtain stakeholders feedback	Face to face	Project Coordinator WP Leader WP Team Stakeholders	WP8 Leader	Agenda Meeting Minutes Session results	Word files archived on project SharePoint site
NOSTROMO news, disseminate project results	Announce Project results or events to promote project visibility	Website Professional Network Conferences	Project Team Stakeholders	WP8 Leader	Web announcement	Web announcement
Announce Workshop	Increase project visibility	Website Professional Network	Project Team R&D Community Stakeholders	Project Coordinator	Web announcement	Web announcement
Workshop invitation	Involve NOSTROMO stakeholders	Email	Stakeholders	Project Coordinator	Invitation Brochure Workshop Agenda Email	Invitation Brochure Workshop Agenda Email
Publications (Scientific Journals, posters…)	Promote NOSTROMO results	Journals Conferences	R&D Community Stakeholders	All Project Member	Article Paper Poster	Article Paper Poster

3.2 NOSTROMO Dissemination Activities

This section details the dissemination activities planned for NOSTROMO, including the purpose, means, key messages, timing and responsible role for each activity. The dissemination activities are the following:

- **Website**: The website will be a way to keep everyone in contact with updated information and shall contain, as a minimum:
    - Description of the project;

- Consortium description;
- News & Events section;
- Access to the public deliverables;
- Contacts.

The domain shall be maintained by the PCo, at least 1 year after the end of the action, include a reference to H2020 and the name of the project (NOSTROMO), and if possible, use the .eu domain.

The NOSTROMO webpage should be ready by the end of M6 (30th of November 2020).

- **White paper**: At the end of the project, a white paper will be produced, providing a high-level view of the NOSTROMO concept and methodology and the main conclusions of the project. It will be addressed to decision-makers at an executive level, with the aim to promote the project results and foster their future adoption and development.
- **Workshops**: Workshops are a way to let in new ideas and ensure that stakeholders' needs are being addressed. They will embrace objectives such as open debates to gain experience, establish new ideas, and catch the attention and interest, and host gatherings for partners to take an active part in various parts of the project and understand and revise concept terms.

Table 5 - NOSTROMO Workshops

Workshops		
First Workshop	T0+8	Will be focused on the review of the initial test cases.
Second Workshop	T0+16	Will aim at disseminating initial findings on the methodology, models, dashboard and evaluation results to gather feedback on the methods and tools developed, as well as to refine the tested case studies.
Third Workshop	T0+30	Will be focused on the dissemination of the final project results.

- **Conferences and publications**: NOSTROMO partners will participate in conferences and seminars to raise awareness and gain stakeholder's interest. Publications will also be used as a mechanism of dissemination to serve the same purpose as conferences.

  Partners have identified the following conferences that could be relevant to disseminate the aim and results of the project:

  - The SESAR Innovation Days;
  - European Research and innovation days;

- ICAO innovation fair;
- World ATM Congress;
- ATM Seminar;

Publications are a mechanism of dissemination that can be used in an external way to keep archives of the projects process, help spread changes or new developments between partners, and to give a more tangible feel to news and projects results. The following journals and magazines are identified related to publication of scientific articles and communications:

- Transportation Research Part B – Methodological;
- Transportation Research Part C – Emerging Technologies;
- Journal of Air Transport Management;
- Aerospace Science and Technology.

Following tables describe in details the objectives, responsible partners and planned dates for each dissemination activity.

Table 6 - NOSTROMO Project Results Workshops objectives

NOSTROMO Project Results Workshops	
Purpose	Promoting the use of the project outputs and results Raise awareness about the challenges and solutions provided by NOSTROMO Disseminate and Obtain acceptance of the NOSTROMO proposed methodology
Responsible	WP8 Leader
Key message	NOSTROMO 1st workshop: • Present the architecture and interfaces of test cases (from 1st iteration); • Show evidences on the technical feasibility of proposed methodology (from 1st iteration); • Obtain feedback to select the most appropriate case studies (for 2nd iteration). NOSTROMO 2nd workshop: • Present the first results of the case studies evaluation (from 2nd iteration); • Obtain feedback to refine the case studies definition (for 3rd iteration). NOSTROMO 3rd workshop: • Present the final results; • Diffusion of final methodology and guidelines for its application.

NOSTROMO Project Results Workshops	
Dissemination channels and tools	Target Groups shall be reached directly by contacting companies with experience in the required fields of expertise or by means of emails, Professional Network and website announcements.
Target group	All NOSTROMO Stakeholder Groups
Success criteria	NOSTROMO results have been properly presented to the audience Stakeholder's feedback on the results is collected.

Table 7 - NOSTROMO publications objectives

Publications	
Purpose	Raise awareness and gains stakeholder's interest
Responsible	All
Key message	Depending on the publication it might focus in one of the following topics: • Implementation of the metamodel methodology. • Demonstration of the NOSTROMO approach and its capabilities through the different case studies. Use of Visual Analytics in the interpretation and communication of the metamodels results.
Dissemination channels and tools	Articles, Publications, Papers, press releases. • **Transportation Research,** https://www.sciencedirect.com/journal/transportation-research • **Journal of Air Transport Management**, https://www.sciencedirect.com/journal/journal-of-air-transport-management • **Aerospace Science and Technology,** https://www.journals.elsevier.com/aerospace-science-and-technology
Target group	Wider Scientific Community on ATM and XAI
Success criteria	Achieve at least the acceptance of one NOSTROMO publication in a scientific journal or conference.
Other comments	According to the Grant Agreement: *A beneficiary that intends to disseminate its results must give advance notice to the other beneficiaries of — unless agreed otherwise — at least 45 days, together with sufficient information on the results it will disseminate.* *Each beneficiary must ensure open access (free of charge online access for any user) to all peer-reviewed scientific publications relating to its results (see Article 29 of the Grant Agreement).*

3.3 Partners' Roles in Dissemination

Dissemination activities will be separated in two main groups according to their means of address:

- Internal dissemination between NOSTROMO partners. Dissemination of evaluation reports and final project reports are included. NOSTROMO partners should be informed of every change or update taking place in the project;
- External dissemination with stakeholders and possible beneficiaries from the projects outcome. Interested parties in the project should be informed of the projects progress and possible changes or updates. Communication will work both ways.

Each consortium member will be assigned specific roles and responsibilities to be carried out following scheduled goals as planned:

Table 8 - NOSTROMO partner's roles in Dissemination

Partner	Internal dissemination	External dissemination
CRIDA	Dissemination of NOSTROMO outcome among key ENAIRE's internal actors as a mean to address the ANSP's (Air Navigation Service Provider) challenges dealing with the automation.	Dissemination in ANSP's R&D forums as ENAIRE representative.
NOMMON	Dissemination of NOSTROMO's outcomes to other internal departments via internal teach-in sessions, so that they can use the visualisation tools developed in the project.	Dissemination in Visual Analytics Conferences.
UoW	Dissemination to other teams within the University via internal seminars.	Dissemination of NOSTROMO activities and solutions on forums. Dissemination of results through scientific publications and conferences.
UPC	Dissemination and knowledge transfer to the various branches of engineering studies inside UPC at master and PhD level. Dissemination at Summer schools and internal R&D UPC conferences and seminars.	Dissemination of NOSTROMO activities and solutions on forums and scientific events. Dissemination of results through scientific publications and conferences.
DTU	Dissemination within the Machine Learning for Smart Mobility group, Transport Division, DTU Management Department, as well as other interested groups/teams/depts within	Dissemination of NOSTROMO activities and solutions on forums.

Partner	Internal dissemination	External dissemination
	DTU, via, for example, seminars, workshops and winter/summer schools. Knowledge transfer through M.Sc. and Ph.D. engineering levels.	Dissemination of results through scientific publications and conferences. TBC by DTU
ISA	Dissemination to other ISA research teams and interns working with the organisation to ensure good knowledge of the topics and techniques being assessed by NOSTROMO.	Dissemination among users working forums and to ISA's network of Aviation, ATFCM, ATM, ATC and Airport simulation users/clients.

3.4 Success Criteria for Dissemination Activities

In order to guarantee the accomplishment of the expected measures in dissemination activities, and to facilitate an efficient and transparent project management in general, quantitative objectives and expected results in dissemination will be included. The indicators included in the table below will serve as a starting point and as a valuable criterion in the evaluations that will be conducted throughout the project.

Table 9 - NOSTROMO Dissemination Indicators

Indicator type	Indicator	Objective total value
Execution	Minimum number of conferences and seminars in which the project will be presented	3
	Internet sites where the project is placed	4
	Key Stakeholders contacted to make the solution known	7
	Number of publications released	4
	Mínimum number of workshops organised by the project	2
	Minimum number of workshops organised by other projects in the ER4 call or by the SJU with NOSTROMO's participation	4
Results	Project presence in ATM Publications	4
	Number of Key Stakeholders reached and interested in further exploitation	2
	Attendees to NOSTROMO's sessions in seminars and conferences	50

Especially in the mid-term evaluation, the review of indicators and the assessment of the activities enable internal trouble detection and its timely correction so that an effective and efficient management and coordination are achieved.

4 Exploitation Plan

4.1 Exploitation Strategy

The following table gathers the expected outputs, means and targeted audience associated with the Exploitation Strategy.

Table 10 - Exploitation roadmap

	Exploratory research
OUTPUTS	Metamodels and Visual Analytics Tools
	Methodology formulated and guidelines for further applications
DOCUMENTS	Research papers
	Technical Reports (both intermediate and final deliverables)
USERS	R&D Community
	Universities
	SESAR JU

4.2 Exploitation at Consortium Level

NOSTROMO results will contribute to the improvement of the methodologies currently applied in SESAR IR for validation and assessment of the impact of new SESAR Solutions at network level.

CRIDA, UPC, Nommon, ISA and UoW have experience in the application of E-OCVM within SESAR Exploratory Research as well as Industrial Research, gained from the execution of different type of validation activities of several ATM concepts. This provides the background needed to ensure that the project results are properly evaluated.

UoW will use the improved Mercury simulator in other projects (like on-going ER4 BEACON Project) with the final aim of providing a benchmarking tool able to catch complex effects in what-if scenarios designed to test to new mobility-related concepts. The metamodeling will also help UoW to understand the complexity of the model and guide future development.

The participation of ISA in NOSTROMO will allow them to improve the range and functionality of the FLITAN modeling tool (used previously in the SESAR sponsored FLITE analysis), which will be provided in support of selected case studies.

With its contribution to NOSTROMO, DTU will be able to expand its ample experience in the application of active learning metamodeling techniques to complex transport and traffic simulations. The results obtained within the consortium will provide further validation of such techniques, and will hopefully stimulate new research as well as fruitful discussions among the involved players, namely, the transportation scientific community, planners and practitioners, and the associated industry, particularly within the ATM domain.

4.3 Exploitation at Stakeholders Level

NOSTROMO will provide the ATM Community with a new methodology that allows the assessment of the overall performance benefits of new SESAR Solutions at ECAC level, enabling the evaluation of concept and KPAs/KPIs interdependencies and capturing emerging behaviours at network-wide level.

The innovation of the project is focused on the application of active learning techniques for the construction of ATM performance metamodels, with the required levels of transparency and computational tractability that will allow:

- To minimise the dependency on inputs from expert judgement and/or local simulations to obtain results at ECAC level;
- To minimise the need of simulation runs, and thus reducing the computational costs;
- To address the trade-offs between KPAs/KPIs.

NOSTROMO will contribute to improve the understanding of the performance assessment results by decision makers within the ATM community.

5 Communication Plan

5.1 Communications Objectives and Strategy

The final objective of the communication activities is to promote the NOSTROMO project and spread its results to the largest possible concerned audience in a clear and intelligible way. So, the communication strategy will pursue the following objectives:

- Optimizing the information flow among the Project members and organizing an efficient communication between involved stakeholders;
- Broadcasting the project to the affected target audiences and main stakeholders, including other Exploratory Research and SESAR2020 projects;
- Communicating the project results to the interested policy body;
- Supporting the dissemination activities.

The present Communication Plan sets up the most appropriate channels for maximum visibility of project findings ensuring that all partners contribute to communication activities and assess the communication results.

5.2 Project Communications Team

The project communications team will be led by the WP8 leader (appointed by CRIDA). All participants in the work package will appoint a member in charge of the communications on behalf of its organisation.

Table 11 - NOSTROMO Communications Team

NOSTROMO Partner	Responsible
CRIDA	Mayte Cano (WP8 Leader) Juan Antonio López
NOMMON	Marta Ramírez de Diego
UoW	Gérald Gurtner
UPC	Jovana Kuljanin Jordi Pons-Prats
DTU	Francisco Pereira
ISA	Abderrazak (Zak) Tibichte

The Project Coordinator will take a proactive role in ensuring effective communications on the Project, and the SJU Communication Department will be consulted as required to ensure that communications are performed according to SJU guidelines.

The project members will have different communications requirements and responsibilities according to their role, defined in the organizational structure.

Table 12 - Internal actors and communication requirements

Internal Actors	Communication Requirements
General Assembly	• Progress towards expected results; • Project general status (foreseen or actual delays, resources usage, budget consumption, risks, administrative or legal issues, etc.); • Content and timing of press releases and joint publications.
Project Coordinator	• WP status (tasks, deliverable, risks, etc.); • WP dependencies; • Content and timing of press releases and joint publications.
WP Leaders	• Tasks status; • WP dependencies.
Project Members	• Tasks status; • Meetings.
Advisory Board	• Progress towards expected results; • Benefits of outcomes and their potential application.

5.3 Target audiences

The external actors, involved in the communications, are also identified to ensure that each actor might be approached adequately.

Table 13 - External actors and communication requirements

External Actors	Communication Requirements
SJU Project Officer	• Progress towards expected results; • Project general status including foreseen or actual delays, resources usage, risks or issues, and other managerial aspects; • Content and timing of press releases and joint publications.

External Actors	Communication Requirements
EU Commission	• Benefits of outcomes and their potential application
S2020 Projects	• Relation with SESAR IR programme, PJ19 for alignment with Performance Framework, SESAR Solution Catalogue and Performance Assessment
Other projects in the ER Call	• Consistency with other solutions being developed under Exploratory Research Projects within Work Area 1 and Work Area 2
ATM Industry, ANSP, NM, AUs, Airport and Scientific Community	• Technical and Commercial feasibility.

5.4 Communication Channels

NOSTROMO project considers using the following communication channels to guarantee an efficient communication between partners and external target audiences:

- **Face-to-face and online meetings**. This channel allows the interaction between speakers and recipients to clarify messages and exchange information. Before COVID-19 crisis, different interviews, workshops, conferences and other presentations were planned as face-to-face meetings. However, due to COVID-19 impact, online meetings, webinars and other online interactions have gradually replaced this type of meetings.
- **Electronic communication**. NOSYROMO project will make use of Internet and social media platforms, which can be used for one-on-one, group or mass communication. This is a very efficient way to communicate between partners and to broadcast NOSTROMO projects results and important achievements.

  The Electronic communication will mainly take place through the social networks such as LinkedIn and Twitter. A Twitter account will be created, where the relevant news about the project will be posted. The information will be updated frequently, allowing people from different backgrounds to have access to NOSTROMO outcomes. Also, discussions around NOSTROMO main challenges and topics could be generated.
- **Project Website.** NOSTROMO web will serve to communicate project achievements and announce workshops and latest news. The website will be a way to keep everyone in contact with updated information and shall contain, as a minimum:
  - Description of the project;
  - Consortium description;
  - News & Events section;
  - Access to the public deliverables;
  - Contacts.

NOSTROMO website will be kept up-to-date as the main information mean to share public documentation with the R&D community and working documents with NOSTROMO members.

The domain shall be maintained by the PCo, at least 1 year after the end of the action, include a reference to H2020 and the name of the project (NOSTROMO), and if possible, use the .eu domain.

The NOSTROMO webpage should be ready by the end of M6 (30th of November 2020).

- **Publications**. Written communication will be used when a message that does not require interaction needs to be communicated to a group. Papers, news and announcements will be delivered through this channel, frequently in combination with the electronic communication channel.

Communication actions make an impact on different target audience/stakeholders in independent ways, and therefore various communication channels are to be defined to pursue the strategic goals. These channels present different tools to be used to adapt to the communication needs that each target audience/stakeholder requires. The selected channels are presented in the table below:

Table 14 - Communication channels

Target Audiences	H2020 Participants Portal	Meetings and Teleconferences	Email	Workshops	Website	Social Media (Twitter, LinkedIn)	Scientific Journals and articles	Leaflets, posters, press releases	Conferences and presentations
SJU Project Officer	X	X	X	X					
EU Commission	X		X		X			X	X
S2020 Projects			X	X	X	X	X	X	X
Other Exploratory Research Projects			X	X	X	X	X	X	X
ATM Industry, ANSP, NM, AUs, Airport and Scientific Community				X	X	X	X	X	X
Project Members (all)	X	X	X		X	X			
Advisory Board		X	X	X		X	X	X	

5.5 Project Logo

The banner image of NOSTROMO project is shown below.

Figure 5 - NOSTROMO Banner

5.6 Communication key performance indicators (KPIs) and success criteria

In order to ensure NOSTROMO project Communication is performed in an effective way, both inside and outside the project, the following quantitative metrics have been selected.

Table 15 – NOSTROMO Communication Indicators

KPIs and targets	
H2020 Participants Portal	Update the information available on H2020 Participants Portal when needed
Meetings and teleconferences	+3 bilateral meetings with relevant stakeholders, including meetings with ANSP, airports, airspace users, Scientific Community and with other involved ATM target audiences who provide relevant input to the project and to whom broadcast NOSTROMO achievements. +1 progress meeting per semester to communicate NOSTROMO progress and general status, together with WP status and foreseeing risks. +1 scheduled meeting between WPs that have dependencies between one another
Email	Use email to coordinate and communicate updates and other relevant information to all Consortium members and as a mean to communicate with members of other relevant SESAR Projects when needed.

KPIs and targets	
Workshops	+3 workshops organised by NOSTROMO project to communicate progress of the project and intermediate and final results
Website	+1 update per month in NOSTROMO website +200 unique website visitors throughout the project lifecycle
Social Media (Twitter, LinkedIn)	Use Twitter and LinkedIn as social media to reach out to society and broadcast, not only NOSTROMO results (dissemination), but also NOSTROMO project progress, work, workshops and other announcements. Announce important news about NOSTROMO project and results as needed. +1 update per month in Twitter and/or LinkedIn
Scientific Journals and articles	+3 number of publications publish within NOSTROMO project framework
Leaflets, posters, press releases	+ 4 number of leaflets, posters or press releases published within NOSTROMO project framework
Conferences and presentations	+3 conferences and seminars in which NOSTROMO project will be presented

6 References

[1] NOSTROMO Grant Agreement 892517

[2] H2020 Research Participant Portal Online Manual, [Online]. Available:

http://ec.europa.eu/research/participants/docs/h2020-funding-guide/grants/grant-management/dissemination-of-results_en.html.

[3] Terminology section of H2020 Research Participant Portal, [Online]. Available:

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CRIDA
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