Communication, Dissemination and Exploitation Plan

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Copyright Statement

ARTIMATION

TRANSPARENT ARTIFICIAL INTELLIGENCE AND AUTOMATION TO AIR TRAFFIC MANAGEMENT SYSTEMS'

Abstract

The main objectives of ARTIMATION WP8 is to build awareness of the project, of its potential (internal and external) impacts and disseminate knowledge on the project scientific and technical achievements.

This document describes the **Communication, Dissemination and Exploitation (CDE)** plan and all related activities designed to reach a broad range of stakeholders providing different levels of information and using different communication means, tailored on the basis of the stakeholder role and interest.

It also defines the beneficiaries' strategy and concrete actions related to the protection and exploitation of the project results.

The deliverable moreover explains how we intend to perform these activities and monitor their impact.

The presented activities contribute not only to the external but also to the internal dissemination, among all the partners of the project.

So, it is a strategic document for the beneficiaries helping them to establish the bases for their intellectual property strategy, future exploitation, multiplication and sustainability activities.

EUROPEAN UNION   EUROCONTROL

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1 Introduction

This document presents the ARTIMATION Communication, Dissemination and Exploitation Plan developed to promote the project and its results properly. The Contractual obligations for dissemination are provided in Grant Agreement, Section 3, Articles 28 and 29 and Section 4, Article 38.1 [3]

The document illustrates the goals, the overall strategy and the needed activities in order to:

- Inform about and promote the project and its results/success (Communication)
- Describe and ensure results available for others to use (Dissemination)
- Make concrete use of research results (Exploitation)

The maximization of the information usage is based on the identification of groups of stakeholders who may be interested in the project findings, and on the personalization of the communication message for the stakeholder characteristics in terms of content, style and information support.

This plan is designed to be a practical framework for ARTIMATION day-to-day communications activities. It is based on the identification of the desired outcomes of the dissemination, the definition and analysis of the audience that will be targeted by the communication and the definition of the strategy to achieve the desired outcomes. If opportunities for communication and dissemination arise during the project, they will be caught even if not planned in this document.

1.1 Definitions

"Communication", "Dissemination" and "Exploitation" have different objectives and therefore different actions with different targets. The following perfectly describes and sums up the main differences between them and the corresponding activities as indicated by the European IPR Helpdesk [1].

Communication	Dissemination	Exploitation	
"Communication on projects is a strategically planned process that starts at the outset of the action and continues throughout its entire lifetime, aimed at promoting the action and its results. It requires strategic and targeted measures for communicating about (i) the action and (ii) its results to a multitude of audiences, including the media and the public and possibly engaging in a two-way exchange." (Source: EC Research & Innovation Participant Portal Glossary/Reference Terms)	"The public disclosure of the results by any appropriate means (other than resulting from protecting or exploiting the results), including by scientific publications in any medium." (Source: EC Research & Innovation Participant Portal Glossary/Reference Terms)	"The utilisation of results in further research activities other than those covered by the action concerned, or in developing, creating and marketing a product or process, or in creating and providing a service, or in standardisation activities." (Source: EC Research & Innovation Participant Portal Glossary/Reference Terms)	**Definition**
Reach out to society and show the impact and benefits of EU-funded R&I activities, e.g. by addressing and providing possible solutions to fundamental societal challenges.	**Transfer knowledge & results** with the aim to enable others to use and take up results, thus maximising the impact of EU-funded research.	**Effectively use project results** through scientific, economic, political or societal exploitation routes aiming to turn R&I actions into concrete value and impact for society.	**Objective**
Inform about and **promote** the project AND its results/success.	**Describe** and **ensure results available** for others to USE ➡ focus on results only!	**Make concrete use** of research results (not restricted to commercial use.)	**Focus**
Multiple audiences beyond the project's own community incl. media and the broad public.	Audiences that may take an interest in the potential **USE** of the results (e.g. scientific community, industrial partner, policymakers).	People/organisations including project partners themselves that make concrete use of the project results, as well as user groups outside the project.	**Target Audience**
• Rules for Participants • RIA & IA Proposal Template 2.2 b) • Grant Agreement Art. 38.1	• Rules for Participants • RIA & IA Proposal emplate 2.2 a) • Grant Agreement Art. 29	• Rules for Participants • RIA & IA Proposal Template 1.1, 2.1, 2.2 a) • Grant Agreement Art. 28	**Formal Obligations**

Figure 1: Definitions of Communication, Dissemination and Exploitation in H2020 [1]

The Communication activities to promote the project's actions and results, as well as the actions to disseminate the results and effectively exploit the results, are all key components of the ARTIMATION project (Grant Agreement, Section 3, Articles 28 and 29 and Section 4, Article 38.1 [1]).

Founding Members

The ARTIMATION CDE activities are designed to match: the messages to be communicated with the target audience to be reached; the means to be used, with the end goal of achieving awareness across a multi-layered community.

To do so, this deliverable is based on five pillars, each one detailed in the present plan:

1. **Define key messages and goals:** identify the desired outcomes and the ways to achieve them.

2. **Identify the different stakeholders:** identify groups of stakeholders who may be interested in the project findings e.g., general public vs. experts; internal audience vs. external audience.

3. **Tailor the information:** personalise the message based on the interests and needs of the stakeholders. Depending on the characteristics of the target audience, the message may vary in term of content, style and information support. Avoid the diffusion of sensitive/confidential information.

4. **Identify, plan and perform the communication, dissemination and networking activities:** identify a clear and coherent strategy for the project communication and dissemination that takes into account the goals, the target and the proper means for each type of audience; the strategy will help the consortium in reaching the dissemination goals and ensuring continuity and consistency in the communication.

5. **Verify the effect of Communication and Dissemination:** identify a set of indicators to keep track of the CDE activities performed by the project and to monitor their progress. These indicators will help to determine if the communication and dissemination strategy is achieving the expected results.

The CDE task spans the whole project duration (24 months), communicating continuously in a consistent and distinctive way the project progress and results, as well as engaging and involving all the categories of target audiences.

1.2 Applicable Reference Material

[1] Making the Most of Your H2020 Project - Boosting the impact of your project through effective communication, dissemination and exploitation, The European IPR Helpdesk, available at: https://www.iprhelpdesk.eu/sites/default/files/EU-IPR-Brochure-Boosting-Impact-C-D-E.pdf

[2] Project Handbook of SESAR 2020 Exploratory Research Call H2020-SESAR-2019-2 (ER4) (Programme Execution Guidance), Edition 03.00.00, March 2019.

[3] Grant Agreement Number: 894238 – ARTIMATION - H2020-SESAR-2019-1

[4] ARTIMATION Kick off Meeting 14th January 2021 – SJU Presentation

[5] H2020 Programme. Guidelines to the Rules on Open Access to Scientific Publications and Open Access to Research Data in Horizon 2020, Version 3.2, 21 March 2017.

[6] SJU slides used for the KoM: https://stellar.sesarju.eu/?message=Modifications+have+been+taken+into+account.+You+are+now+able+to+log+in.&domainName=saas&

[7] SESAR Joint Undertaking "SESAR Innovation Pipeline", Publications Office of the European Union, 2020. Available: https://www.sesarju.eu/sites/default/files/documents/SESAR%20Innovation%20Pipeline.pdf

[8] Zand, D. E. and R. E. Sorensen, 1975. "Theory of Change and the Effective Use of Management Science", Administrative Science Quarterly, vol. 20, no. 4, pp. 532–545, 1975

[9] Kujala S., Kauppinen M., Lehtola L., and Kojo T., 2005. "The Role of User Involvement in Requirements Quality and Project Success" International Requirements Engineering Conference, pp. 75–84.

[10] European Organisation for the Safety of Air Navigation (EUROCONTROL) and SESAR JU, "European ATM Master Plan." [Online]. Available: https://www.atmmasterplan.eu/

[11] SESAR Joint Undertaking "SESAR Solutions Catalogue 2019 – 3rd edition", Publications Office of the European Union, 2020. Available: https://www.sesarju.eu/sites/default/files/documents/reports/SESAR_Solutions_Catalogue_2019_web.pdf

[12] SESAR Joint Undertaking "Digital European Sky - Blueprint", Publications Office of the European Union, 2020. Available: https://www.sesarju.eu/sites/default/files/documents/digital%20european%20sky%20blueprint.pdf

[13] SESAR Joint Undertaking "European ATM Master Plan: Digitalising Europe's Aviation Infrastructure – Executive View 2020 edition", Publications Office of the European Union, 2019. Available: https://www.sesarju.eu/sites/default/files/documents/reports/European%20ATM%20Master%20Plan%202020.pdf

[14] DARWIN D6.8 Business Exploitation Plan

1.3 List of Acronyms

Acronym	Definition
AI	Artificial Intelligence
AMC	Acceptable Means of Compliance
ANSPs	Air National Service Providers
AR	Augmented Reality
ATCOs	Air Traffic Controllers
ATM	Air Transportation Manager

BCI	Brain Computer Interface
CDE	Communication Dissemination and Exploitation
DBL	Deep Blue srl
EASA	European Aerospace Association
EC	European Commission
ENAC	Ecole National de l'Aviation Civile
h-AIi	Human-AI interaction
HCI	Human Computer Interaction
HF	Human Factors
IPR	Intellectual Propriety Rights
KoM	Kick-off Meeting
MDH	Maelardalens Hoegskola
ML	Machine Learning
R&D	Research and Development
SJU	SESAR Joint Undertaking
SME	Small Medium Enterprise
UI	User Interaction
UNISAP	Sapienza University of Rome
UX	User Experience
VR	Virtual Reality
WP	Work Package
XAI	Explainable Artificial Intelligence
4D	4 Dimensions
AB	Advisory Board
EAB	External Advisory Board

Table 1: List of Acronyms

2 Project Introduction

2.1 The ARTIMATION project

Recently, Artificial intelligence (AI) algorithms have shown increasable interest in various application domains including in Air Transportation Management (ATM). Different AI in particular Machine Learning (ML) algorithms are used to provide decision support in autonomous decision-making tasks in the ATM domain e.g., predicting air transportation traffic and optimizing traffic flows. However, most of the time these automated systems are not accepted or trusted by the intended users as the decisions provided by AI are often opaque, non-intuitive and not understandable by human operators. Safety is the major pillar to air traffic management, and no black box process can be inserted in a decision-making process when human life is involved.

In order to address this challenge related to transparency of the automated system in the ATM domain, ARTIMATION focuses on investigating AI methods in predicting air transportation traffic and optimizing traffic flows based on the domain of Explainable Artificial Intelligence (XAI). Here, AI models' explainability in terms of understanding a decision i.e., post hoc interpretability and understanding how the model works i.e., transparency can be provided in the air traffic management.

In predicting air transportation traffic and optimizing traffic flows systems, ARTIMATION will provide a proof-of-concept of transparent AI models that includes visualization, explanation, generalization with adaptability over time to ensure safe and reliable decision support.

ARITMATION considers several objectives in terms of research, technical, user and social and presented in Table 2:

Objectives	Outcome	WP-M	Deliverable	Responsible Partners
Research Objectives	Provide **transparency and explainability** to the AI algorithms based on data driven storytelling, immersive analytics and visualization for *predicting air transportation traffic and optimizing traffic flows* in ATM domain.	M12	D4.2	ENAC
	Provide a conceptual framework for building **human-centric explainable AI** based on an extensive review across the field's ATM domain i.e., identify pathways for how specific explanations can be useful, how certain reasoning methods fail, and how to apply different elements of XAI to mitigate these failures	M18-M24	D5.2, D6.2	ENAC, DEEP BLUE
	Provide a new **generalized and optimized AI** predictive model for *predicting air*	M18-M24	D5.1, T7.2	MDH, ENAC

	transportation traffic and optimizing traffic flows in ATM based on machine lifelong learning and integration of causality.			
	Provide **user guidelines** for further AI algorithm development and application with AI transparency in ATM domain for *predicting air transportation traffic and optimizing traffic flows*.	M24	D7.1	ENAC
Technical Objectives	Design **human-AI-interaction (hAIi)** to place back the user in the AI data processing loop.	M5-M18	D5.2, T5.4	ENAC, UNISAP
	Provide **a data-driven storytelling** in making AI understandable to start to find a way to understand data.	M6-M18	T4.3	ENAC
	Define **a data exploration approach through visual analytics** which is an efficient way to understand data.	M6-M18	T4.4	ENAC
	Provide **novel immersive analytics technologies** with **virtual reality and Brain-Computer Interface (BCI)** systems to evaluate the XAI from human perspective, operator while obtaining explanation from the XAI system.	M6-M18	T4.4	ENAC
User and Social Objectives	Develop a **human centric AI model** that can be easily accepted by the ATM operators.	M18	D5.2, T5.2	ENAC
	Develop **transparent AI models** for ATM operators with explanation that will be acceptable by the end users.	M24	D6.1	DEEPBLUE
	Provide **better integrated** approach between human and AI models based on human-AI-interaction (hAIi), such as HMI/HCI between human and machine/computer.	M16	D5.2. T5.3, T5.4	ENAC, UNISAP
	Provide clear and complete guidelines for application of transparent AI predictive models which will **shorten the training period** of ATT operations**.** Create operators' awareness of certain situations and attitudes through the training that could lead to potentially hazardous conditions and training for autonomous systems users will be promoted.	M24	D7.1, T7.3	ENAC

Table 2. Summaries ARITMATION project objectives

2.2 Project key messages

There are at least three key ARTIMATION high level messages that are foresee for the main solution produced by the projects, will be centred around the concepts of:

- ARTIMATION provides Transparent AI model with explainability for automation in ATM domain.
- The ARTIMATION project develops adaptative human computer interfaces for the ATM domain making use of selected physiological parameters for different "levels of Explanation".
- ARTIMATION uses and assesses innovative Methodologies of visualizations and UX (AR-VR) to presentation and interaction between the user and explainable AI for application in ATM.

2.3 Keywords

XAI design, Human Factors assessment, Aviation.

2.4 Focal point for communications, dissemination and exploitation

Name	Role	Email address
Vera Ferraiuolo	Dissemination Consultant	vera.ferraiuolo@dblue.it
Alessandro Tedeschi Gallo	Social Media Manager	alessandro.tedeschigallo@dblue.it
Stefano Bonelli	WP8 Leader	stefano.bonelli@dblue.it

Table 3. Focal Points of contact

3 Communication

The communication activities of ARTIMATION aim to ensure that project results reach all interested aviation stakeholders and target organisations, fostering stakeholder awareness.

3.1 Communications objectives and strategy

From the European Commission point of view, the role of communication activities in research projects is to show the impact and benefits of the research outcomes to the broad public.

In this perspective, ARTIMATION aims to maximise communication effectiveness of the project results by the general audience and other relevant stakeholders in the field of XAI design and human factor (HF) assessment and Aviation.

The projects' key messages will be communicated with the target audience and the means used, with the end goal of achieving awareness across a multi-layered community. To this regard, tailored messages and information using a multicultural approach through promotional video and messages will be spread thanks to the dedicated channels in airports, railway stations and ports. For this reason, communication (as well as dissemination and exploitation) will be a collective activity, steered by WP8 and managed by the entire consortium, and an individual set of actions handled by a specific partner at the local level.

Therefore, the awareness and understanding of the relevant stakeholders about the results of the project are the key challenges to be achieved. The success of the communication tasks is also related to the extent of these actions directed toward the widest possible audience of stakeholders, both in the wide systems-of-systems, and in the Research and Development (R&D) domain.

At the beginning of the project and through all its life cycle, the communication activities intend to:

1. **Raise awareness** of the project and its work, making an impact on the target audience. The Consortium will put effort in making the project known for the entire duration of the project, illustrating its objectives, scope and the value it will bring to all the stakeholders and research activity. The raising awareness goal may be considered achieved at the end of the project run, if a wide audience has received information on the project. The audience is expected to use the information provided in a conceptual way, meaning that the communication will affect levels of knowledge, understanding, or attitude towards the topics of the project.
2. **Generate understanding** around the project activities, in the form of transferring key messages to the target audience verifying that the messages are correctly received and generate comprehension on the project itself. This activity can be considered as a follow up of the raising awareness one. After the first contact, the ARTIMATION Consortium plans to periodically communicates the progress and achievements of the project producing an instrumental use of the information by the target audience. The achievement of this goal is reflected on follow-up discussions, requests for further information or uses project materials (documents, reports or dissemination material) for other research activities.
3. **Engage** the target audience in the use of the project results and findings and in further interaction between stakeholders, showing the relevance of the work in their own practices

and collecting feedback and comments. The audience engagement can be considered also as part in the dissemination process. The targeted audience is expected to be involved in the ARTIMATION project and will spends its own time and effort to use the project's results or promote the project's contents increasing the impact and resonance of the project itself.

4. **Ensure long-term impact** of the project research on the target audience. It is the most ambitious goal and consists of getting key messages to key decision makers (e.g., funding organisations and regulatory agencies) and SJU wider community so that the ARTIMATION findings and results are taken up by decision-makers and considered in future policies and practices as well projects. Long-term impact reflects on stakeholders' and regulators' research agendas and research programmes. The information is used in a strategic way and influences the definition of policies and broad research themes.
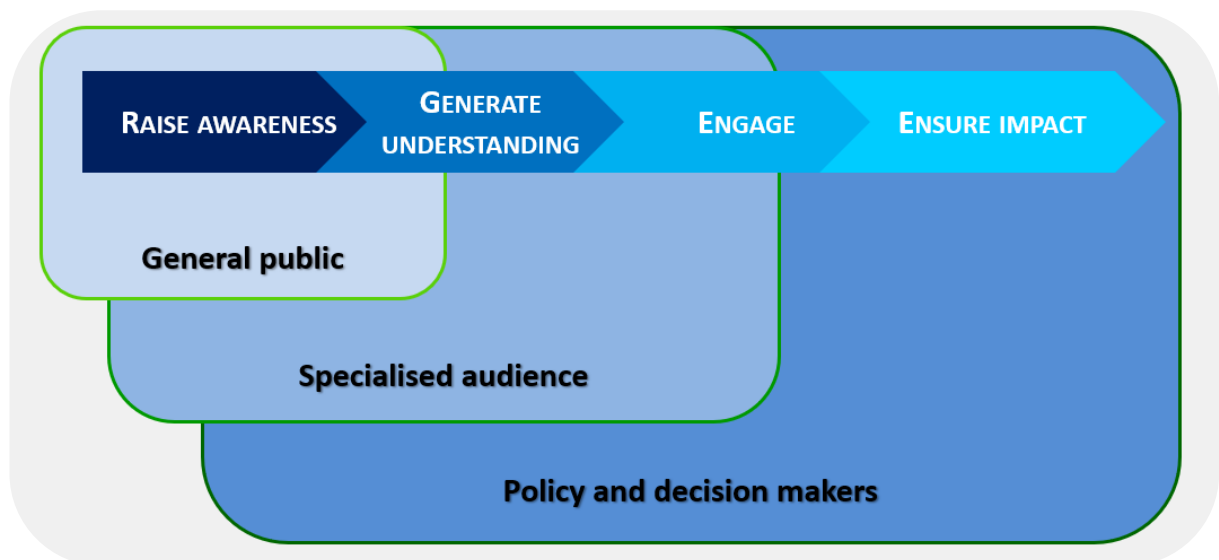
Figure 2. Mapping between communication goals and target audience

Consistent communication with SESAR brand

To ensure that communications are consistent with the SESAR brand, the project consortium will be in constant contact with the SJU Communications office in order to:

- Ensure that project communications and outreach milestones are integrated into broader SJU communications scheduling and planning;

- Review strategies, key messages, targeted audiences and communications material on SESAR solutions so that consistency with SJU's core objectives is ensured;

- Develop joint outreach activities taking into account established cooperative arrangements by the SJU or with the European Commission within the context of SESAR;

- Benefit from support of the SJU for various events and conferences;

- Maximise outreach by using SJU communications channels and cooperative arrangements to further cascade relevant content.

3.2 Target audiences

The communication activities of ARTIMATION will rely on the identification of targets audience before deciding on which media to use to transmit the message. The ARTIMATION communication can provide a high-level strategy to match of the type of messages to be communicated with the target audience and the means used, along with the end goal of achieving awareness across a multi-layered community.

Using a high-level conceptual categorisation of the target audience identified by ARTIMATION, it is possible to identify at least 3 main clusters:

- Interested General Public (media, citizens, passengers);
- Specialised audience (within the wider "Aviation Domain" e.g., Service Providers, airlines, and other airspace users, but also "specialised audience" in other means of transportation, as well in the audience specialised in AI and XAI, biomedical engineering and UX);
- and Institutional decision-makers.

Table 3 gives further information upon ARTIMATION target audiences, the benefits they can take from the project and the communication-related objectives.

Target	How can they benefit from the project	Objectives and expected feedback
General public	In this cluster will be included people/groups interested in the topic in general, and the media. Audience with this level of interest acknowledges the importance of the topics dealt within the project and the benefits that may derive from the project research, even if it is not primarily involved in technical activities related to the topic. This audience looks for clear, useful, non-technical information.	Raise awareness, generate understanding.
Industrial association and Industries	The ATM manufactures, that will benefit from the ARTIMATION results to develop and deploy new forms of automation support.	Raise awareness, generate understanding, engage.
Usability Community (UX designers, UI/UX researchers, developers etc.)	All the people interested in Artificial Intelligence and or in the best way to display and	Raise awareness, generate understanding.

	explain Task assistance to end-users	
Research community	This group is represented by Aviation community members, like EUROCONTROL Network Research Units, and Universities and other research organizations and educational institutions that may gain from the ARTIMATION lessons learnt and findings in similar or complementary research areas like neurometrics and data visualisation. Further, other on-going projects modelling and designing AI processes and UI interfaces which will benefit from exchanging information and results with ARTIMATION. A preliminary list of potentially interested research projects is presented in Table 6.	Raise awareness, generate understanding, engage and ensure the impact.
Service providers and end-users.	ANSPs, airlines and other airspace users would be impacted by the new automation developed by the project, while end-users, such as ATCOs and other workers in the ATM field will be directly affected by the project's outcome in their work.	Raise awareness, generate understanding.
Institutional decision-makers (EU, national, international)	The project results will affect the future work of policy makers and public bodies such as the European Commission, EASA and the National Civil Aviation Authorities, as they help to regulate the operation of ATCOs and airport surface, and the development of future regulations and Acceptable Means of Compliance (AMC).	Generate understanding and ensure the impact.

Table 4. Communications target audiences.

3.3 Communication channels

Based on the identification of the relevant goals and target stakeholders (respectively highlighted in Section 3.1 and 3.2), several means have been selected to be used for the project communication. ARTIMATION will use both traditional means, such as conferences and papers, and new means of communication (e.g., social networks) in order to reach the broader public and anticipate the dissemination of the project result.

The WP8 leaders will identify the most appropriate mean(s) to use or will design new materials ad hoc for the event and the maturity of the project results. As the project unfolds and starts to develop its first results, the means employed for the communication activities will be used also to disseminate the ARTIMATION findings, making them available for other to use.

Channel	Link	Information to be shared
Website of the project	https://artimation.eu/	- Project description - Products and Deliverables - News & Events - Communication tools, e.g., brochures, flyers, videos - Contacts - Consortium - Funding Acknowledgement - Related projects - Project timeline
LinkedIn, Twitter	LinkedIn: https://www.linkedin.com/company/artimation/ Twitter: @ArtimationAI	- Project description - Updates - Product and Deliverable - Photographs taken at project meetings - Brochures/flyers - Graphical Identity
Press releases	Each partner of ARTIMATION will distribute the press releases via their own channels	- Project description - Project goals - Expected findings - Project news
Presentations and posters	Stored in a repository page on the ARTIMATION website (to be created) and on STELLAR	- Project's goals - Methodology - Expected results

		• Graphical identity • Link to the project website • Contacts
Brochures, flyers, factsheet	Stored in a repository page on the ARTIMATION website (to be created) and on STELLAR	• Projects goals • Methodology • Findings
Trade magazines	Targeting stakeholders	• Project description • Findings
Media outlets	Targeting interested general public	• Project description • Findings • Project timeline
SJU Channels	SESAR Website, Socials and e-news	• Project description • Updates • Product and Deliverable • Photographs taken at project meetings • Brochures/flyers • Graphical Identity

Table 5. Communication channels.

ARTIMATION website

Objectives: inform and raise awareness.

The ARTIMATION website[1] (under construction – M2/M3 scheduled release) is one of the main elements within the communication plan of the project. It displays general information about the project and its objectives, activities and results. It also offers a range of functionalities, including document download, information on news and events, and relevant external links. The website will have an essential role in helping the ARTIMATION project to achieve its purpose to engage with key stakeholders and media and the general public. Moreover, it will facilitate communication and interaction within the Consortium.

Blogs and social networks

Objectives: inform and raise awareness.

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[1] https://artimation.eu/

ARTIMATION uses blogs and social networks in order to enlarge its group of followers and ensure a broader dissemination of its findings and results. In fact, social media networks allow to easily reach a wide range of people and ease the creation of a proper community, grouping people interested in receiving and exchanging information on the topics addressed by the project. ARTIMATION will use these channels to disseminate articles and news published on the website, to promote events, disseminate project findings and results, and to ensure constant connection with the related projects. ARTIMATION selected two social channels: Twitter[2] and LinkedIn[3]. Both channels allow people to stay in touch with the project; however, they slightly differ is that LinkedIn will mostly allow communication towards specialised audience and institutional bodies, while Twitter will target specialised audience and the general public.

Press releases

Objectives: inform and raise awareness

Press releases are official statements that are sent to targeted members of the news media to announce something newsworthy, so that it can be publicised. A press release is a short, compelling news story, whose goal is to catch the interest of a journalist or publication.

Different activities have been already accomplished (and on-going) regarding press releases coordinated by WP8. Press releases will be translated in the national languages of all the partners and will be distributed to press agencies of their countries to ensure proper circulation of the information.

Presentation and posters

Objectives: inform and raise awareness

Presentations and posters will be prepared for the participation to conferences, workshops and facilitation events. The presentations for external events should contain less textual information and will have a preeminent graphical aspect to attract the target audience. Also, they will contain the main project references such as the link to the project website and the contacts.

The public presentations and posters will be available on the project website and can be distributed to the people asking for them.

Brochure, flyers and factsheet

Objectives: inform and raise awareness

In connection to public events, printed flyers, factsheets and brochures will be produced during the entire duration of the project to present projects goals, methods and findings. The structure of the brochures can be adapted to the type of conference and objective of the communication; they will be

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[2] @ArtimationAI

[3] https://www.linkedin.com/company/artimation/

developed to be easily adaptable in terms of content and style. The textual content will be agreed with the partner attending the conference, so to be as tailored as possible to the conference and its public.

The ARTIMATION brochures and flyers will always be up to date and available for download on the website.

3.4 Project logo

The communication pack is composed of a set of products associated with the project image, such as the logo and overall graphical identity. It is developed to give consistency to the project communication and to support awareness on the project. The logo and graphical identity will be a practical framework for all the ARTIMATION communication and dissemination activities and products and will evolve together with the evolution of the project.

The ARTIMATION communication pack contains:

- The project logo and graphical identity;
- Visual library and web elements.

The communication pack il available on https://stellar.sesarju.eu/servlet/dl/ShowDocumentContent?doc_id=25006482.13&att=attachment&statEvent=Download and will be updated when new elements will be produced.

The logo gives a conceptual representation of the project. To this end, it has to be graphically appealing and manageable. The logo is the basis for the project graphical identity: it determines the choices of the colours and fonts adopted in the document templates and in the dissemination products. It is the trait d'union of the project, which makes each element of the graphical identity immediately ascribed to the project, helping to consistently communicate and disseminate the project.

The visual identity of the project has been conceived with the aim of visually emphasizing the idea of Transparency and Artificial intelligence. The conceptualization and the creative process is being carried out as a co-design activity through an iteration process starting from the initial logo to the final one (illustrated below).

Figure 3. Original (top) and final Logo (bottom) and its evolution following the initial steps of the project.

The fresh and modern graphic style was obtained making use of ad-hoc typography, which plays a major role in the composition. From a technical perspective, the versatile design allows to apply the logo across a variety of mediums and applications. It has been designed in vector format, to ensure that it can be scaled to any size, maintaining its features and its legibility.

ARTIMATION will set up a visual library of the project to ensure that the communication balances textual and visual elements. For this activity the Consortium plan to the SJU database "STELLAR" as a repository graphical material. The visual library is composed of photos, images, icons, banners etc. at the project's disposal.

The visual library includes a slider, that will be shown in the home page of the project website (coming at M3), and some key figures inspired by the ARTIMATION logo and adopted in the other social networks.

3.5 Communication key performance indicators (KPIs) and success criteria

Several indicators have been identified to keep track of the progress of the communication activities. Based on the periodic assessment of the success on these criteria, the project will update the CDE plan, including also a refined list of concrete actions to communicate the project results and the assessment of the impact of these results on the target users.

Among the criteria to evaluate our communication success, the following can be mentioned:

Media coverage & press publications. ARTIMATION will record the number of press release and articles published online or through traditional media. The partners will be also requested to track and document the reached audience, and to point out the evidence of debates in the media about the project and its topics.

Number count of publicity material. As for the press publication, this measure consists of a count of the number of news, brochures, posters and other communication means during the course of the project.

Record of contacts. The consortium will keep track of contacts at the events and of the number of people asking for feedback or more information, record the website access and people subscribed to the mailing list, track the contacts on the social network and the people involved in the project discussions.

Website statistics & Search Engine performance. The consortium will use Google Analytics to monitor the website number of visitors, the bounce rate and the position on the search engine.

Below in Table 6, the expected targets for each quantitative indicator are reported:

Actions	KPIs and targets	
Website	# of visitors to the website	2000
	# of posts in website "News" section (per Month)	0.5/per month
	# of countries' visitors	20
	# of website backlinks	8
	Search engine position (keyword: "ARTIMATION Project")	FIRST PAGE

Social media	# of posts on social media platforms (per month)	15
	# of Followers (Twitter & LinkedIn)	200
	# of interactions on Twitter	200
	# of interactions on LinkedIn	200
Press and media	# of press releases & articles (online & printed)	10
Materials	# of brochure produced	2
	# of presentations and posters	4
Activities	# of presentations at public events/workshops	4

Table 6. Communication KPIs and success criteria.

4 Dissemination

4.1 Dissemination objectives and strategy

The dissemination strategy should be considered and carried out as a long-term activity to allow the community of reference to mature their knowledge along with the evolution of the project. The main steps of the approach followed by ARTIMATION will concern:

- **The analysis of the peculiarities and interests of the three main clusters of targeted stakeholders** presented in Section 4.2, and the identification of the reactions intended to be achieved through the project dissemination. This will help the Consortium in fitting the information to broadcast to the stakeholders' characteristics and expectations, in particular considering the fact that the audience is mainly composed by both technical people, coming from different countries and cultures. It is also necessary to prepare promotional material in various forms, to ensure that each different category of stakeholder can access them in the most suitable format.
- **The definition of the contents to promote** related to the findings of the project. The contents will evolve during the project, as will the means supporting their diffusion; in the initial phases of the project, the focus will be on the project promotion through informative means such as brochures and website, while the dissemination of technical results deserves more specialized supports, such as scientific articles, presentation at conferences and seminars.

Once these goals and the target audience have been identified, the strategy consists in an accurate matching between:

- the target audience **characteristics and needs**;

- the **selection of the information** to be communicated (tailored on the target needs);

- the identification of the **proper content, means, formats, and language style** to get the desired outcomes from the target audiences.

Three types of dissemination actions are essential in the ARTIMATION project: the dissemination towards stakeholders' group; the communication and networking with the other EU-funded actions; and the external dissemination towards the target audience.

4.2 Target audiences

The overall goal of the dissemination activities is to transfer knowledge and results with the aim to enable others to use and take up the ARTIMATION findings, thus maximizing the impact of the project. The dissemination activities also aim to describe the project results considering the audience targeted by the message to ensure results are available for others to use.

Table 7 considers groups of the audience already presented in Table 4. However, the dissemination activities will target the different stakeholders presented here with messages mainly focusing on the ARTIMATION results, rather than the overall presentation provided with the communication activities.

Target	How can they benefit from the project	Objectives and expected feedback
Industrial association and Industries	The ATM manufactures, that will benefit from the ARTIMATION results to develop and deploy new forms of automation support.	Generate understanding, engage and ensure the impact.
Usability Community (UX designers, UI/UX researchers, developers etc.)	All the people interested in Artificial Intelligence and or in the best way to display and explain Task assistance to end-users	Generate understanding and engage.
Research community	This group is represented by Aviation community members, like EUROCONTROL Network Research Units, and Universities and other research organizations and educational institutions that may gain from the ARTIMATION lessons learnt and findings in similar or complementary research areas like neurometrics and data visualisation. Further, other on-going projects modelling and designing AI processes and UI interfaces which will benefit from exchanging information and results with ARTIMATION. A preliminary list of potentially interested research projects is presented in Table 6.	Generate understanding and engage.
Service providers and end-users.	ANSPs, airlines and other airspace users would be impacted by the new automation developed by the project, while end-users, such as ATCOs and other workers in the ATM field will be directly affected by the project's outcome in their work.	Generate understanding, engage and ensure the impact.

Institutional decision-makers (EU, national, international)	The project results will affect the future work of policy makers and public bodies such as the European Commission, EASA and the National Civil Aviation Authorities, as they help to regulate the operation of ATC and airport surface, and the development of future regulations and Acceptable Means of Compliance (AMC).	Generate understanding, engage and ensure the impact.

Table 7 Dissemination target audiences

4.3 Dissemination channels

In order to disseminate the projects' results, the WP8 leaders will employ channels such as peer-reviewed papers, presentations at scientific conference and social events. Furthermore, to these dissemination channels shall be added all those means listed for communication activities, selected to raise awareness, and generate understanding in different target audiences at the beginning of the project. The WP8 leaders also plans to produce papers and participate or organize multiple events (targeting both ATM and non-ATM audience) to disseminate results and make them available for others to use.

Scientific publications

Dissemination objectives: inform, raise awareness, engage, and ensure impact.

Papers for scientific journals and conferences will be prepared and submitted as soon as the project delivers its first results. Partners are invited to submit publications in scientific journals and highly specialized media, and to a number of selected conferences and scientific events, to generate understanding on the project activities and engage the stakeholders. Another objective of such dissemination activities to these communities is to communicate the EC investment to support the transition to higher levels of automation in aviation by creating and empirically evaluating transparent Artificial Intelligence and automation to air traffic management systems.

The target audiences of the scientific dissemination activities can be classified as Core Targets and Ancillary Targets.

1. **Core targets** domains:

   a. AI and XAI

   b. ATM

   c. Neuro-physiological

   d. Safety scientific community and research institutions.

2. **Ancillary target** domains:

    e. Academic Institutions working in AI

    f. Systems-of-systems engineering, requirements engineering,

    g. Automated software engineering,

    h. UX and UI

A preliminary non-exhaustive list of journals that are already monitored by the consortium at M2 is provided in Table 8. Further refinements will be carried out during the project lifecycle.

Scientific Journals	Website
Applied Intelligence (APIN)	https://www.springer.com/journal/10489?gclid=CjwKCAiA65iBBhB-EiwAW253WzY8uMJD4dou7Qhq_Pg-suzQ4SKCpcGBtqw7MqoUCiUfxfkDd8q04hoCSjsQAvD_BwE
Artificial Intelligence Review	(https://www.springer.com/journal/10462
Brain Sciences	https://www.mdpi.com/journal/brainsci
Computational Intelligence and Neuroscience	https://www.hindawi.com/journals/cin/
Engineering Applications of Artificial Intelligence	https://www.journals.elsevier.com/engineering-applications-of-artificial-intelligence
Engineering Applications of Artificial Intelligence	https://www.journals.elsevier.com/engineering-applications-of-artificial-intelligence
Frontiers in Human Neuroscience	https://www.frontiersin.org/journals/human-neuroscience
Frontiers in Neuroergonomics	https://www.frontiersin.org/journals/neuroergonomics
Frontiers in Neuroscience	https://www.frontiersin.org/journals/neuroscience
IEEE Transactions on Visualization and Computer Graphics	https://ieeexplore-ieee-org.gorgone.univ-toulouse.fr/xpl/RecentIssue.jsp?punumber=2945

Open Research Europe	https://open-research-europe.ec.europa.eu/
Scientific Reports	https://www.nature.com/srep/?gclid=Cj0KCQiA962BBhCzARIsAIpWEL1Q8RQy49CtKMLv01WaV4XLhlbRwANZ689tVYEC7-9njCIlySdYTg4aAgQxEALw_wcB
Special Issue "Explainable Artificial Intelligence (XAI)", Applied Sciences	https://www.mdpi.com/journal/applsci/special_issues/Explainable_Artificial_Intelligence_XAI
Transportation Research Part C: Emerging Technologies	https://www.journals.elsevier.com/transportation-research-part-c-emerging-technologies

Table 8 List of provisional Journals for ARTIMATION scientific dissemination

Table 9 presents a preliminary list of Conferences where it will be possible to publish scientific papers to consider in the ARTIMATION dissemination activities.

Scientific Conferences	Website
IEEE Transactions on Visualization and Computer Graphics	https://ieeexplore-ieee-org.gorgone.univ-toulouse.fr/xpl/RecentIssue.jsp?punumber=2945
Special Issue "Explainable Artificial Intelligence (XAI)", Applied Sciences	https://www.mdpi.com/journal/applsci/special_issues/Explainable_Artificial_Intelligence_XAI
ICATCA International Conference on Air Transportation and Civil Aviation	https://waset.org/air-transportation-and-civil-aviation-conference-in-june-2021-in-tokyo
IEEE Information Visualization Conference	http://ieeevis.org/year/2021/welcome
International Conference on Air Traffic Management	https://waset.org/air-traffic-management-conference-in-march-2022-in-paris
h-workload:	http://hworkload.org/2020/
Association for the Advancement of Artificial Intelligence	https://aaai.org/Conferences/AAAI-21/
IEEE-Engineering in Medicine and Biology Conference	https://embc.embs.org/2021/

Table 9. List of provisional Conference for ARTIMATION scientific dissemination

In order to boost dissemination among the scientific community, the Consortium is committed to making every effort to fully adhere to Article 29 of the Grant Agreement [3], which in H2020 aims to ensure that the results of research funded by the EU are made widely available for free to the largest possible audience.

Dissemination towards the Advisory Board

<u>Dissemination objectives</u>: inform, raise awareness, engage, and ensure impact.

To broaden the impact of the project, the consortium, along with SJU, believe that there is the opportunity to increase stakeholders' participation and involvement, such as National Service Providers, Policy Makers and Regulatory Bodies, and other Safety domain experts. Collecting inputs from multiple stakeholders is essential to the success of any systems engineering endeavour, and ATM systems are no exception. In fact, including different ATM domain stakeholders allows better understanding the proposed changes together with the consequences and impacts from the stakeholders' corresponding perspective. In other words, an active participation of stakeholders in the exploration and elaboration of new solutions (and integration in current systems) is crucial for a successful change management of ATM systems.

To this aim, a ARTIMATION External Advisory Board (EAB) has been already set up from M1. External Advisory Board (EAB), EAB will be established to analyse and assess the progress and plans of ARTIMATION and to offer independent impartial advice on potential areas for improvement and new avenues to explore. The external Advisory Board members are invited to participate in 'ad-hoc' meeting reviews and provide feedback to (intermediate) project results thus steering the overall work of the project. It would be also possible external Advisory Board members might be asked to participate in questionnaires or short phone interviews.

The External Advisory Board shall meet in connection to the General Assembly meetings, or independently as suits the board best.

The current EAB will be enriched with the inclusion of other relevant stakeholders such as AI researchers, Human Factors and Safety experts, as well as more representatives from the Industry domain, too.

Coordination and networking with other projects

<u>Dissemination objectives</u>: inform, raise awareness, engage, and ensure impact.

Coordination and networking with other project will ensure the collaboration with other similar initiatives/research projects modelling and designing XAI, using neurometric indexes and UX-UI interfaces and user acceptance. These networking activities seek to create real synergies, exploring the possibility of coordinating the communication and dissemination activity or better organising the research. Furthermore, ARTIMATION will use these events also to disclose the project results to the research community, whenever the firsts will be ready.

The following Table 10 summarises the relevant ongoing (or about to start) projects that have been already identified as relevant for ARTIMATION. The list below is intended to be integrated as the project unfolds, depending on the target, goal and product outputs.

Acronym	Extended name
AISA	Exploring intelligent situational awareness systems for air traffic control operations
HARVIS	Human Aircraft Roadmap for Virtual Intelligent System
MAHALO	Modern ATM via Human/Automation Learning Optimisation
TAPAS	Towards an Automated and exPlainable ATM System
SAFELAND	SAFE LANDing through enhanced ground support
4D Skyways	4D Skyways (ATM 4D trajectory management)
	…to be expanded as the project unfolds

Table 10. List of potentially interested research projects.

Workshops

Dissemination objectives: inform, raise awareness, engage, and ensure impact.

The collaboration of relevant stakeholders is a critical success factor for ARTIMATION, as it ensures that the proposed solutions consider all relevant information and points of view and are agreed upon as much as possible. All key relevant stakeholders will be represented in the project Advisory Board that will meet regularly during the project. In addition to the stakeholders' consultation carried out by means of the Advisory Board, ARTIMATION will organise one final public workshop at M24 to share the project results achieved in the project to a larger audience of stakeholders and gather expert feedback on them. The workshop will involve all the target audiences of the project with the purpose to disseminate results produced during the first year of activity.

Third party events and conferences

Dissemination objectives: inform, raise awareness, engage, and ensure impact.

These include conferences, other workshops and invited speeches. National and international conferences and other dissemination events are an important opportunity for the partners to both disseminate and refine the project work: they will not only share information with experts in the field, collecting feedbacks from qualified audience, but also have the occasion to internally coordinating their work.

Partners will be invited to submit paper proposals to selected conferences and journals to promote the project and to be active in creating occasions for academic dissemination through publications and other relevant opportunities.

Conference attendance is a means to promote the project and its goals, and possibly to involve recently started projects that could be interested in ARTIMATION topic. Once the project delivers its first concrete results, scientific communication will become more active and relevant: the Consortium is then required to keep a proactive attitude not simply attending the conferences and presenting a

paper or a poster, but actively organising workshops, seminars or special session during the conferences days. This will give more relevance to the project.

Below in Table 10, a possible scheduling of third parts' events is outlined, including also the chronological possible participation to scientific conferences.

Title	Subject	Date	Place
Selected **SESAR JU INITIATIVES** **https://www.sesarju.eu/events**	Aviation	n/a	online
EURO VIS21 **https://www.eurovis.org**	Data Visualisation	June 2021	Zurich / online
SESAR Innovation Days **https://www.sesarju.eu/sesarinnovationdays**	Innovative research in the ATM	Dec 2021, 2022	tbd
Engage Automation, AI and ML Workshop **https://engagektn.com/**	Air traffic management research	September 2021	
World ATMs Congress	ATM	Oct 2021, 2022	Madrid
ICAO Global Symposium on the implementation of Innovation in Aviation	Innovation in aviation	Tbd	Tbd
ICATCA International Conference on Air Transportation and Civil Aviation **https://waset.org/air-transportation-and-civil-aviation-conference-in-june-2021-in-tokyo**	Aviation	June 2021	Tokyo
International Conference on Advances in Artificial Intelligence (ICAAI 2021)	Advances in Artificial Intelligence	August 2021	Northumbria University London
IEEE Information Visualization Conference **http://ieeevis.org/year/2021/welcome**	Advances in Visualization and Visual Analytics	October 2021	New Orleans / online
International Conference on Air Traffic Management	Air Traffic Management	March 2022	Paris

https://waset.org/air-traffic-management-conference-in-march-2022-in-paris			
International Joint Conference on Artificial Intelligence	Artificial Intelligence	2021 or 2022 edition	Montreal / Online / tbd
h-workload: http://hworkload.org/2020/	Human Mental Workload	2021 or 2022 edition	tbd
International Conference on Artificial Intelligence Applications and Innovations (AIAI)	Artificial Intelligence	2021 or 2022 edition	Crete / tbd
Association for the Advancement of Artificial Intelligence https://aaai.org/Conferences/AAAI-21/	Artificial Intelligence	2022	tbd
International Conference for Research in Air Transportation (ICRAT)	Air Transportation Research	2022	tbd
IEEE-Engineering in Medicine and Biology Conference https://embc.embs.org/2021/	International biomedical engineering conference	2022 edition	tbd
Final dissemination workshop	Artimation results	December 2022	tbd

Table 11 Dissemination conferences and workshops.

Final dissemination event

Dissemination objectives: inform, raise awareness, engage, and ensure impact.

ARTIMATION will organise the final dissemination event at the end of the project (about M23) to present its results. The final dissemination event will target all the partners, the members of the Advisory Board, external experts and the general public. Its objective will be the maximisation of the external dissemination of project results. Further, ARTIMATION will explore opportunities to organize the final dissemination event jointly with other related projects, or other large events.

Channel	Link	Information to be shared
Scientific articles	n/a	• Projects' results • Approach • Benefits

Dissemination towards the Advisory Board	n/a	• Projects' products • Benefits
Networking with other projects	n/a	• Projects' outcomes • Overlaps • Methodology • Benefits • Communication materials
Third party events and conferences	n/a	• Projects' outcomes • Overlaps • Methodology • Benefits • Communication materials
Workshop	n/a	• Projects' results • Methodology • Benefits
Final Event	n/a	• Projects results • Approach • Benefits

Table 12 Dissemination channels (general).

4.4 Dissemination KPIs and success criteria

Monitoring the results of dissemination actions over the entire lifetime of the project is essential. This allows to pinpoint actual strengths and weaknesses of the strategy pursued, to identify and implement corrective actions, to measure the effectiveness, and to report results.

Activity	KPIs and targets	
Publications	# of publication in scientific journals	2
	# of conference publications	2-3
	# of downloads on website publications page	50
Events	# of organised workshops/events (incl. final dissemination event)	3
	# of participants to the ARTIMATION workshops	About 20/per event
	# of participants to the ARTIMATION dissemination events	About 50/per event

Table 13 Dissemination KPIs and success criteria.

4.5 Open access to scientific publications

ARTIMATION will follow the European guidelines on the large-scale accessibility of project findings. A Green Open Access standard will be adopted. The repository will be detailed in a later stage, when the first results will be released. The articles produced in the framework of the project will be archived in an Online Open Access Repository. At first, all articles resulting from ARTIMATION will be available on the project website.

The consortium will then identify an appropriate Open Access repository and will also try to use the Open Access repository that the Commission is planning to create. The consortium will also target the "gold" Open Access standard by publishing articles on relevant Open Access Journals (i.e., International Journal of Critical Infrastructure Protection) which provide immediate open access to all of their articles, usually on the publishers' website.

The consortium will make every effort to ensure green open access to these articles within six months from the date of acceptance for publication. To that end, both the final published articles (publisher 's final version of the paper) and the final peer-reviewed manuscripts.

Finally, the project Consortium allocated some budget for golden publication access fee to use it when firsts significant results will be produced.

5 Exploitation

5.1 Project exploitable results

In order to highlight the global valorisation of ARTIMATION innovative outcomes, an overall perspective of the complete set of project activities was used as the basis for the definition of the exploitation activities to be identified by the EB. The EB, in fact, initially reviewed all the possible exploitable results foreseeable at M2, and according to the maturity of the results, different levels of exploitability could be envisaged.

The ARTIMATION EB discussed the following steps to determine the exploitation activities:

- Identify specific technical results, market and organisational issues for innovation resulting from the specific WPs activities;

- Identify the range of potential users or stakeholders potentially impacted by innovative results;

- For each project result:

  o manage IPR issues;

  o monitor the maturity level;

- Define exploitation measures for project results addressing the range of potential users and possible uses;

- Identify impact and uses, including research, commercial, trigger of new investments, social, policymaking, in terms of their pushing potential towards new standardization, regulation and certification standards;

- Monitor resulting knowledge, identifying potential use, further research paths, and exploitation benefits.

The main exploitable results deriving from the first EB meeting are the following:

ID#	Initial list of potentially exploitable result
1	Guidelines on AI Transparency and Generalization
2	Transparent AI model with explainability for automation in ATM domain
3	Mapping of solutions for XAI and adapted HMI levels
4	Mapping of SoA AI models with explainability
5	Assessment of different XAI, by using neurophysiological measures

6	Adaptative human computer interface with physiological parameters for different levels of Explanation for application in ATM Domain
7	In depth Task Analysis of ATM tasks related to AI
8	Dissemination Strategy
9	Exploitation Strategy
10	Ethical and Legal Reports
11	Plan for handling personal data and sharing / access
12	Augmented Reality and Complex Analytics Systems.
13	Software development for the experimental Platform at ENAC
14	Methodologies of visualizations and UX to presentation and interaction between the user and explainable AI for application in ATM

Table 14 Exploitable results.

The "Level of interest in the exploitation of the result" and the "Exploitation Action" will be considered by all partners at individual level using the "exploitation grids".

5.2 Exploitation strategy and objectives

In accordance with Article 28.1 of the Grant Agreement, each beneficiary must — up to four years after the period set out in Article 3— take measures aiming to ensure 'exploitation' of its results (either directly or indirectly, in particular through transfer or licensing) by:

- Using them in further research activities (outside the action);

- Developing, creating or marketing a product or process;

- Creating and providing a service, or

- Using them in standardisation activities.

WP8, and in particular the Exploitation/Innovation Board (EB), is in charge of developing the exploitation plan, examining the Intellectual Property Right (IPR) issues of the project, addressing other market related assessments, including risk analysis, exploitation strategies and new business opportunities.

The purpose of developing an Exploitation Strategy is to create a business and exploitation plan that explores the development and exploitation of the resilience guidelines beyond the life of the project. In the present deliverable D8.1 the initial individual and consortium business strategies is outlined, as well as the exploitation activities envisaged to assess the commercialization and applicability of the

concepts and ideas central to the evolution of the project results. To ensure further exploitation and impact of the ARTIMATION Project.

In order to maximise the impact of the project and the successful exploitation the results, the consortium will consider the following "Exploitation Roadmap":

- Identification of Results

- Level of interest in the exploitation of the result.

- Exploitation Action

- Target User and Mainstreaming & Multiplication

- Competitors already in the market

- Added value Market barriers and contextual variables

- Impact on partner portfolio,

- IPR measures

In particular, the exploitation strategy over the course of the project will be based on three main steps (Figure 6):

- **Results Identification**: Identification and definition of the key exploitable results of the project, intending them as concrete objects that are able to survive and be used after the end of the project. This step also included the identification of the level of interest in the different results and the identification of the added value of the project to boost further scientific and exploitation developments (Table 13).
- **Individual Partners' Plans**: Definition of the partners' exploitation strategies, including the market potential, the added value, the target end-users, the potential competitors, the expected impact on the partners' portfolio, a tentative timetable and the opportunities and barriers for the exploitation action (see Section 5.4).
- **Consortium Level Strategy**: Definition of common exploitation strategy, based on a combination of the Individual Partners' Plans according to clustering criteria, including similar or common exploitation actions declared by the partners in their individual plans; the typology of the target of the exploitation actions; the application domains considered for the exploitation; a consideration on the benefit expected from each exploitation actions (see Table 15, 16, 19).
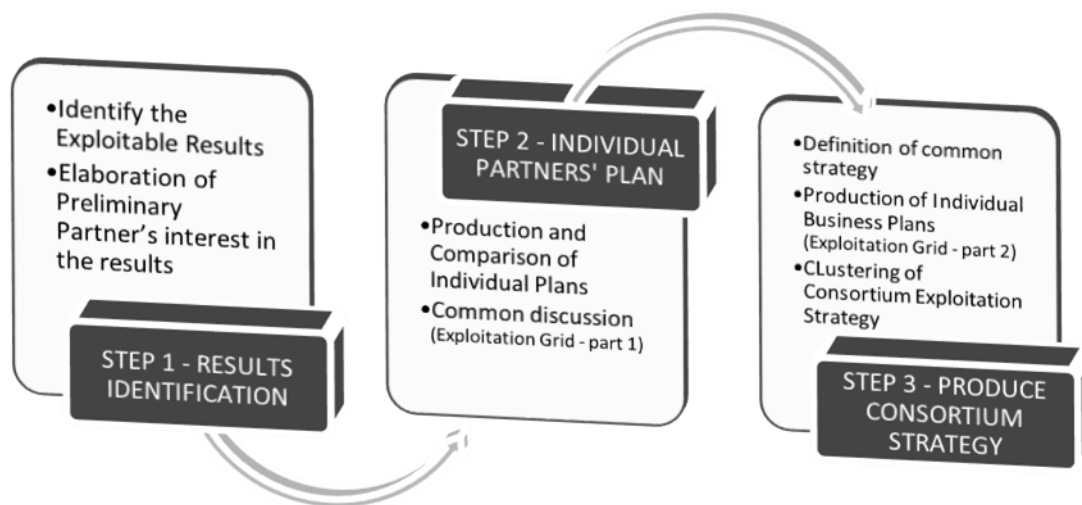
Figure 4. Exploitation Roadmap supported by the ARTIMATION's EB.

Based on these requirements, the ARTIMATION consortium via the first Exploitation/Innovation Board (EB) meeting (see Section 4.3), has formalised the preliminary plan (see following sections) that will be presented in the consolidated form in D8.3. Exploitation actions will be carried out throughout the project with the EB that will support all the partners in eliciting and coordinating their exploitation strategies.

5.3 Exploitation of results

As anticipated in Section 5.1, the exploitation strategy at consortium level uses as input the individual partners' plans and combines them based on different clustering criteria that have been discussed among the partners in dedicated EB meeting. The first step for the development of Common Exploitation Actions was (and will be) the analysis and comparison of individual exploitation plans. The initial list of exploitable results was created (and will be progressively revised). Starting from such list, specific exploitation actions will be revised during the course of the project as follow:

- by peer reviewing the individual plans,

- by identifying the common elements among them,

- by helping each partner to integrate and revise their own plans,

- by brainstorming on the actions that could be performed either collectively by the consortium or grouping together partners with similar needs and interests.

The second step is the identification of clusters of similar exploitation actions based on a set of agreed criteria like:

- The Type of exploitation action

- The identification of the Target of the exploitation action

- The focus on one or more Domains of Application

- The Benefit expected from the Exploitation Action

- The Partners more interested in the specific actions

- The envisaged Scheduling of the different Exploitation Actions

It is worth noting that some exploitable results did not present an exploitation strategy at M2 for any of the partners (e.g., Result#3) while for some other results, it was possible to define different individual-partner exploitation actions associated to the same exploitable result. On the one hand, such differentiation will be useful to see how different partners interpreted the potentialities of the same exploitable result. It can help to trigger new ideas after the preparation of the first drafts and to establish analogies among the proposal of different partners, with a potential for being merged. On the other hand, the differentiation will require a harmonization effort to make sure that different partners did not use different terms for the same exploitation actions or did not miss relevant differences among the possible options, just for a terminology issue.

For each of the Exploitable results that will be interesting for each partner, the "exploitation grids" will highlight how they will improve the beneficiary portfolio, and which IPR would be eventually required.

Beneficiary	Result (ID)	How do they plan to use the project results	When
MDH, ENAC	Guidelines on AI Transparency and Generalization (#1a)	Propose new project in several application domains where AI/ML transparency and generalization are needed, also for Dissemination	Prototyping and testing activities through ARTIMATION
MDH, ENAC	Guidelines on AI Transparency and Generalization (#1b)	Propose a new project. Dissemination	Project validation experiments; End of the project.
MDH, DBL, UNISAP	Transparent AI model with explainability for automation in ATM domain (#2)	Use the approach in three new projects where transparent AI is needed	Prototyping and testing activities through ARTIMATION
DBL	Exploitation Strategies (#9)	Use and integrate the exploitation strategies used in ARTIMATION for	Short term – Internal dissemination of the ARTIMATION

		future projects that require an exploitation WP	exploitation strategies within DBL (2021-2023) Long term – Extend DBL portfolio including improved exploitation strategies (2023-on)
DBL	Communication and Dissemination Strategy (#8)	A strategic structure with human is an integral part of the AI and ML models grow and retain knowledge for lifelong manner	During the ARTIMATION project
ENAC	Augmented Reality and Complex Analytics Systems (#12)	Use the results in proposing a new project	Prototyping during project validation experiments
ENAC	Software development for the experimental Platform at ENAC (#13)	Propose a new project.	Prototyping during project validation experiments
ENAC	Software development for the experimental Platform at ENAC (#13)	Use the resulting prototype in other applications for other AI and regular systems. Perform demonstrations to different scientific and operational communities. Propose training service on the use of such techniques in operational environment. Propose a new project.	Prototyping during project validation experiments
ENAC, UNISAP, DBL	Methodologies of visualizations and UX to presentation and interaction between the user and explainable AI	Propose a new project, dissemination.	Project validation experiments; end of the project

	for application in ATM (#14)		
MDH,DBL,ENAC, UNISAP	Mappin of SoA AI models with explainability (#4)	Developing XAI models beyond the SoA	During the ARTIMATION project

Table 15 Project internal exploitation of results.

User Group	Result (ID)	How could they use the project results	When
ATCOs, Pilots, Automotive, Maritime	Assessment of different XAI, by using neurophysiological measures (#5)	Propose a training and related service on the use of such techniques in operational environments	Prototyping during project validation experiments
ATM users, ATC user	Adaptive human computer interface with physiological parameters for different levels of Explanation for application in ATM domain (#6a)	Developing HCI/HMI to check the different levels of XAI in ATM	During the ARTIMAITON project
ATCOs, Pilots, Automotive, Maritime	Adaptive human computer interface with physiological parameters for different levels of Explanation for application in ATM domain (#6b)	Propose a training and related service on the use of such techniques in operational environments	Prototyping during project validation experiments
AI/ML Research community, Applied AI community	In depth Task Analysis of ATM tasks related to AI (#7)	Multivariate data analytics using multimodal machine learning can be applied to create higher-level of transparency of AI model in ATM domain	During the ARTIMATION project

ATCOs, Pilots, Computer Science Community	Augmented Reality and Complex Analytics Systems (#12)	Use the resulting prototype in other applications for other AI and regular systems. Propose a new project.	Prototyping during project validation experiments

<div align="center">**Table 16 Project external exploitation of results.**</div>

5.3.1 Mälardalens Hogskola (MDH)

Mälardalens Hogskola (MDH) will focus on exploiting project ARTIMATION results in exploring more projects where transparency and generalization of AI and Machine Learning can be applied and, use the approach to implement transparent and explainable AI in other domains as well. Also, develop HCI/HMI to assess the different levels of XAI in ATM. Multivariate data analytics using multimodal machine learning can be applied to develop higher level of transparency of AI models.

Considering the connections of MDH and possible application areas in the field, the target users are Research Community in AI, Applied AI and Machine Learning, ATM domain, ATCO, Healthcare and Medicine domain, and Manufacturing and Processing industries. The scope also includes all potential users who are interested in applying XAI.

The field of XAI is getting competitive with the advance of the technologies and its applications. Multivariate data analysis is also being used in many projects. Other than this, other well-competent similar projects exist in this field that can be posed as potential competitors. The underlying difference between the competitors and this project is the combination of lifelong machine learning, data driven storytelling, Immersive analytics, Visualization, Brain-computer interface and user centric AI. This hybrid approach and multimodal machine learning in XAI is considered as added value. HCI/HMI with physiological parameters also adds value to this project.

The hybrid approach as discussed above is different than other projects. This difference will strengthen the existing portfolio of MDH. It will allow MDH to venture into new projects and applying for new project domain.

MDH expects to increase the research and possible application of XAI in other domains as well and improve its performance in terms user friendly and accuracy.

5.3.2 Deep Blue (DBL)

Deep Blue will mainly exploit project ARTIMATION results in its consultancy and training **activities** for public and private organisations in the Airport and Air Traffic Management domains and, more in general, in other similar complex socio-technical domains such as Maritime and Railways Transport, Healthcare and Oil & Gas domains.

The problem of taking into account transparency and compliance such as mainly features of AI when this is implemented in complex socio-technical systems (e.g. the ATM) will become explosive in the future, because of increasing automation and tasks migration in these kinds of Systems. Potentially **targets** like ANSPs and manufacturer for ATC systems will be affected by it.

Compared to the **competitors**, ARTIMATION solution like exploitable result #5, #6, #12 in Table 15 will represent a very important contribution for the SESAR 2020 and 2050 programmes which target to transform air traffic management into a more modular, scalable, automated, interoperable system that takes advantage of advances in digital and virtualization technologies.

Deep Blue will further re-adapt the experience gained while working on ARTIMATION to integrate the **portfolio** of the company with future R&D proposals and projects on similar topics or on similar domains (e.g. exploitable results #2, #3, #8,#9 in Table 15). Indeed, such results as well as ARTIMATION prototype **will help ATM stakeholders** to actively discuss and envisioning how the operational and technological improvements developed by SESAR members and partners could be effectively implemented and what could be the interdependencies, in terms of pro and cons, focusing on safety and human factors.

Finally, despite the **COVID-19** pandemic, tomorrow's aviation infrastructure is still considered to become more data intensive. Thanks to the ARTIMATION's focus on machine learning and deep learning solution (i.e. exploitable result #1, #2, #4, #7, #14), ATM stakeholders will be able to design an ATM system that is smarter and safer by constantly analysing and learning from the SESAR ER programme.

5.3.3 Ecole National de l'Aviation Civile (ENAC)

L'Ecole National de l'Aviation Civile (ENAC) will mainly exploit project ARTIMATION results in two activities: 1) submit new projects on similar topics or on similar domains, 2) reuse the prototypes in other domains (e.g. AI in Medical domain), or for other AI systems.

XAI will be necessary in aviation to provide operators (ATCO, Airplane pilots, and similar targets) ways to understand the results of AI systems, and they remain the principal targets of future activities. Nonetheless, generalization will also guide further work targeting computer scientists, and actors in other domains will also be done.

With respect to other visualization technics used in AI by other computer scientist (i.e. t-SNE, PCA, genealogy, representing competitors of the future visualisation) ENAC position as leader of aeronautical schools in Europe, training all ATCOs of the French ANSPs allow us to generate prototypes in a user centric approach, with several interviews, brainstorming, and several user tests, which represent an added value.

The application and validation of this methodology within the timeframe of Artimation project will allow to enhance ENAC portfolio, with future R&D proposals and projects on similar topics or on similar domains.

Also, ENAC expects to increase the use of AI systems within the ATM field thanks to developed XAI methods (visualization to name one).

5.3.4 Sapienza University of Rome (UNISAP)

Sapienza University of Rome (UNISAP) will mainly exploit project ARTIMATION results in its service activities, mainly oriented to operational socio-technical domains such as Air Traffic Management, Airplane pilots, Maritime and Automotive environments.

Neurophysiological measures are becoming a necessary tool to be adopted in all those complex socio-technical domains, where the operators take important decisions and have to interact with complex systems (ATCOs, Airplane pilots and similar targets).

With respect to other operator measures (i.e. questionnaire, performance, and even other sensors, such as eye tracking, representing competitors of this methodology as a service), neurophysiological measures represent a direct and objective link with mental and emotional states of the user, experienced in that specific moment. This represent the added value of this methodology.

In particular, this methodology paves the way to a more direct comparison of different interfaces/scenarios/events/technologies, that the operators have to interact with, allowing at the same time to trigger the user interface (in Artimation different levels of XAI transparency levels), depending on the actual mental and emotional states of the operators, contributing to the establishment of ever safer and controlled conditions.

The application and validation of this methodology within the timeframe of Artimation project will allow to enhance the UNISAP portfolio, with future R&D proposals and projects on similar topics or on similar domains.

Also, UNISAP expects to increase the awareness of the need of the proposed methodology within the ATM field, allowing in the future to enter the market in this and even similar domains.

5.4 IPR Management

As for IPR management, the Exploitation Board introduced the consortium to the main intellectual property rights during the first EB meeting (M2).

In particular, the following points were highlighted:

- The general rule of ownership of results in the project is that "the party that generates them owns the results".

- If a result is jointly developed, it is also jointly owned. Organizations contributing to each result are detailed on each deliverable.

- If the exploitation is non-commercial (e.g., research activities), such access is granted royalty-free.

- If the result is not mentioned it means that it is accessible on a royalty-free basis, only requiring a reference to the project when used.

The main IPR measures that the partner plans to adopt to protect its intellectual property rights include patent, license, trademark, registered design. Examples were provided in the EB meeting and summed up in the following table:

Type of creation	Intellectual Property Rights
Scientific works	Copyright (with different licences: CC-BY, SA, ND, NC, Open)
Inventions	Patents and utility models
Product appearance	Design
Signs, words, phrases, symbols or designs which are used as brands of goods and services	Trademarks

Table 17 Main IPR Measures.

6 Schedule of communication and dissemination activities

Activity	Description	Target audience	Tools to be used to further support communications and dissemination	Provisional dates /frequency	Responsible Role	KPIs and targets
Meeting with the AB 1	Project objectives and expectations	Users' representatives	Presentations, meeting tools	2021-02-24	DBL	Raise awareness, generate understanding,
Meeting with the AB 1	Definition of the roadmap to include in the development plan	Industrial association and Industries	Presentations, meeting tools, factsheet, website, social media	2021-07-17	DBL	Raise awareness, generate understanding, engage
Meeting with the AB 2	Results and next steps (together with IRM)	Industrial association and Industries	Presentations, meeting tools, factsheet, website, social media	2021-12-01	DBL	Raise awareness, generate understanding, engage
Meeting with the AB 3	Participation of the Advisory Board in the validation and testing activities	Industrial association and Industries	Presentations, meeting tools, factsheet, website, social media	2022-06-10	DBL	Raise awareness, generate understanding, engage, ensure the impact

Final Dissemination workshop	Presentation of the project results	General public, specialised audience and institutional decision makers	Presentations, meeting tools, factsheet, brochure, flyers, website, social media	2022-12-10	DBL	Raise awareness, generate understanding, engage, ensure the impact
SESAR innovation Days	Project results	General public, specialised audience and institutional decision makers	Presentation, factsheet, social media	Once a year	All	Raise awareness, generate understanding, engage, ensure the impact
World ATM Congress	Project results	General public, specialised audience and institutional decision makers	Presentation, factsheet, social media	Once a year	All	Raise awareness, generate understanding, engage, ensure the impact
Scientific paper	Project results will be published in scientific journals	Specialised audience	social media	On occasion	MDH, ENAC, UNISAP, DBL	Engage, ensure the impact
Presentation at external events	Presentation of the project, its findings, and results	General public, specialised audience and institutional decision makers	Websites, social media	On occasion	MDH, ENAC, UNISAP, DBL	Raise awareness, generate understanding, engage, ensure the impact
Flyers, brochures, factsheets	Flyers and brochures presenting the project, its findings, and results	General public, specialised audience and institutional decision makers	Website, social media	When needed (e.g. participation to events)	DBL	Raise awareness, generate understanding, engage, ensure the impact

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Posters	Posters presenting the project, its findings, and results	General public, specialised audience	Website, social media	On occasion, when results are available (e.g. 2021-10-30, 2022-06-30)	DBL	Raise awareness, generate understanding, engage, ensure the impact
Website	Release of the website	General public, specialised audience and institutional decision makers	Social media	2021-04-30	DBL	Raise awareness, generate understanding, engage, ensure the impact
	Publication of news	General public, specialised audience and institutional decision makers	Social media	1 per month	DBL	Raise awareness, generate understanding
	Promotion and publication of information on upcoming events	General public, specialised audience and institutional decision makers	Social media	When necessary	DBL	Engage, ensure the impact
	Publication of ARTIMATION products	General public, specialised audience and institutional decision makers	Social Media	When produced	DBL	Raise awareness, generate understanding, ensure the impact
Social media	Post/Tweet on hot ARTIMATION topic/relevant articles	General public, specialised audience and institutional decision makers	Images, photos, video, articles	1 per week	DBL	Raise awareness, generate understanding, engage
	Post/Tweet on ARTIMATION	General public, specialised audience	Presentations, photos, images, video, factsheet,	When available	DBL	Raise awareness, generate

	activities: on-going activities, findings and results	and institutional decision makers	brochure, flyers, press releases, articles			understanding, engage, ensure the impact
	Post/Tweet of related projects' news and events	General public, specialised audience and institutional decision makers	Images, photos, video, news	When available	DBL	Raise awareness, engage
	SESAR e-news and other channels	General public, specialised audience and institutional decision makers	Images, photos, video, articles	2022-02-01	DBL	Raise awareness, generate understanding, engage
Press and online megazines	Press release	General public, specialised audience and institutional decision makers	Images, photos, video, articles	2021-04-30 2022-06-10 (update)	DBL	Raise awareness, generate understanding, engage
Multimedia	Videos	General public, specialised audience and institutional decision makers	Videos presenting results, videos with voiceovers over PPTs	When results are available (target date for the video on final results: 2022-11-30)	DBL	Raise awareness, generate understanding, engage

Table 18 Schedule of Communication and Dissemination Activities

Appendix A   Overall Consortium Exploitation Plan

Table 19. Initial Overall Consortium exploitation plan

Result List	Exploitation Action	Targets	Competitors	Added Value	Portfolio	Timetable	Context	IPR
	What do you want to do with it?	*Who are the targets / users?*	*Who are the possible competitors?*	*In what my exploitable result is different?*	*How will the exploitable result change your portfolio?*	*When are you planning to exploit it?*	*What are the opportunities and barriers?*	*Which IPR mechanism you foresee?*
1. **Guidelines on AI Transparency and Generalization**	Propose new project in several application domains where AI/ML transparency and generalization are needed, also for Dissemination	AI/ML Research community, Applied AI community, ATM, ATCO, Healthcare, Medicine and Manufacturing Industries, Process industries	Yes, with similar project where XAI is applied	XAI in ATM domain will open a new market. Again, a combination of lifelong machine learning, Data Driven Storytelling, Immersive Analytics, Visualisation, Brain-Computer Interface (BCI) and user centric AI.	Hybrid approach in XAI domain	Prototyping and testing activities through ARTIMATION	Guideline could be generated but validation with user can be a problem	None
	Propose a new project. Dissemination.	ATCOs, Pilots, and Computer science community	XAI in other domains	XAI tested and conceived with ATCO's and operational	Disclosing AI Transparency in ATM domain and open a new market here. The project will allow to demonstrate the feasibility of XAI in ATM domain, and its generalization	Project validation experiments; End of project	Opportunities: Operators are and will stay in charge of provide services. As such, providing explainability to their tools is really important for them.	GNU GPL

Result List	Exploitation Action	Targets	Competitors	Added Value	Portfolio	Timetable	Context	IPR
	What do you want to do with it?	*Who are the targets / users?*	*Who are the possible competitors?*	*In what my exploitable result is different?*	*How will the exploitable result change your portfolio?*	*When are you planning to exploit it?*	*What are the opportunities and barriers?*	*Which IPR mechanism you foresee?*
					within the domain, and outside of it.			
2. Transparent AI model with explainability for automation in ATM domain	Use the approach in their new projects where transparent AI is needed	AI/ML Research community, Applied AI community	Similar projects	a combination of lifelong machine learning, Data Driven Storytelling, Immersive Analytics, Visualisation, Brain-Computer Interface (BCI) and user centric AI.	New profile in XAI domain	Prototyping and testing activities through ARTIMATION	Based on the dataset XAI will be implemented, so good enough data is challenging.	Publication
3. Mapping of solutions for XAI and adapted HMI levels	tbd							
4. Mapping of SoA AI models with explainability	Developing XAI models beyond the SoA	All users want to apply XAI	Similar projects	Hybrid approch in XAI	Apply for new project	During the ARTIMATION project	User level validation as there is limited gold standard	

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Result List	Exploitation Action	Targets	Competitors	Added Value	Portfolio	Timetable	Context	IPR
	What do you want to do with it?	*Who are the targets / users?*	*Who are the possible competitors?*	*In what my exploitable result is different?*	*How will the exploitable result change your portfolio?*	*When are you planning to exploit it?*	*What are the opportunities and barriers?*	*Which IPR mechanism you foresee?*
5. Assessment of different XAI, by using neurophysiological measures	Propose a training and related service on the use of such techniques in operational environments	ATCOs, Pilots, Automotive, Maritime	Other technologies (eye tracking)	The possibility to compare different interfaces/technologies by using Neurophysiological measures allow a more accurate evaluation, in comparison with questionnaires and performances-based techniques	Disclosing Neurophysiological measurements service in ATM domain and open a new market here	Prototyping during project validation experiments	The project will allow demonstrating the technology. The obstacle, at now, is the lack of awareness of the need of this product, and in some way also possible low acceptability, because the misunderstanding of operator "brain" measure	Licencing could be a good means for this kind of technology (e.g., hours of usage of the service).
6. Adaptative human computer interface with physiological parameters for different levels of Explanation for	Developing HCI/HMI to check the different levels of XAI in ATM	ATM users, ATC user	Similar tasks	HCI/HMI with physiological parameters	Apply for new project	During the ARTIMATION project	**Physiological parameters from end user**	Publication
	Propose a training and related service on the use of such techniques in	ATCOs, Pilots, Automotive, Maritime	Other technologies (eye tracking)	Passive Brain Computer Interface will allow to adapt the proper level of XAI transparency to the actual mental or	Disclosing Neurophysiological measurements service in ATM	Prototyping during project validation experiments	The project will allow demonstrating the technology. The obstacle, at now, is the lack of	Patenting of technology could be the best way to protect this knowledge, since it is quite new in

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Result List	Exploitation Action	Targets	Competitors	Added Value	Portfolio	Timetable	Context	IPR
	What do you want to do with it?	*Who are the targets / users?*	*Who are the possible competitors?*	*In what my exploitable result is different?*	*How will the exploitable result change your portfolio?*	*When are you planning to exploit it?*	*What are the opportunities and barriers?*	*Which IPR mechanism you foresee?*
application in ATM Domain	operational environments			emotional state of the user	domain and open a new market here		awareness of the need of this product, and in some way also possible low acceptability, because the misunderstanding of operator "brain" measure	the ATM field, for this specific purpose
7. In depth Task Analysis of ATM tasks related to AI	Multivariate data analytics using multimodal machine learning can be applied to create higher-level of transparency of AI models in ATM domain.	AI/ML Research community, Applied AI community	Project with Multivariate data analysis	Multimodal machine learning for XAI	Apply for new project, new application domain	During the ARTIMATION project	Multivariate data	Publication
8. Dissemination Strategy	A strategic structure with human is an integral part of the AI and ML	AI/ML Research community,	Project and application where LIFELONG MACHINE	Retain and transfer knowledge for lifelong ML	Apply for new project, new application domain	During the ARTIMATION project	Lifelong machine learning	Patent/publication

Result List	Exploitation Action	Targets	Competitors	Added Value	Portfolio	Timetable	Context	IPR
	What do you want to do with it?	*Who are the targets / users?*	*Who are the possible competitors?*	*In what my exploitable result is different?*	*How will the exploitable result change your portfolio?*	*When are you planning to exploit it?*	*What are the opportunities and barriers?*	*Which IPR mechanism you foresee?*
	models grow and retain knowledge for lifelong manner.	Applied AI community	LEARNING are applying					
9. Exploitation Strategies	Use and integrate the exploitation strategies used in ARTIMATION for future projects that require an exploitation WP.	Targets user are: — Possible future projects	Potential Competitors are: — Human Factor Consultancies focused on exploitation	The added values of the ARTIMATION exploitation strategies are: — The methodology used to implement and develop the exploitation strategies proved to be adaptable to variety of domains (academic vs. operative), content and critical infrastructure actors — The exploitation strategy is based on consolidated methodology (SWOT analysis), and other EU	The use of exploitation strategies can: — Extend DBL Portfolio, with additional content and methodology to add to DBL portfolio, potentially to increase company annual revenue related to training activities. — However, additional qualified resources may need to be	Short term - Internal dissemination of the ARTIMATION exploitation strategies within DBL (2021-2023) Longer term - Extend DBL portfolio including improved exploitation strategies (2023 - on)	Looking at the current context situation, is possible to foresee: — Opportunities: (a) Increased awareness of the importance of exploitation strategies in EU funded projects; — Barriers: (c) difficulties to reasoning in an "exploitable" way about the project's results	None

Result List	Exploitation Action	Targets	Competitors	Added Value	Portfolio	Timetable	Context	IPR
	What do you want to do with it?	*Who are the targets / users?*	*Who are the possible competitors?*	*In what my exploitable result is different?*	*How will the exploitable result change your portfolio?*	*When are you planning to exploit it?*	*What are the opportunities and barriers?*	*Which IPR mechanism you foresee?*
				projects (e.g., DARWIN, PACAS)	recruited to extend the portfolio.		(d): Difficulties to establish IPR in the global/social/ever-changing context; (e) Confidentiality Issues	
10. Ethical and Legal Reports	tbd							
11. Plan for handling personal data and sharing / access	tbd							
12. Augmented Reality and Complex Analytics Systems.	Use the resulting prototype in other applications, for other AI and regular systems. Propose a new project.	ATCOs, Pilots, and Computer science community	XAI in other domains	XAI tested and conceived with ATCO's and operational.	Disclosing AI Transparency in ATM domain and open a new market here. The project will allow to demonstrate the feasibility of XAI in ATM domain, and its generalization	Prototyping during project validation experiments	Opportunities: Operators are and will stay in charge of provide services. As such, providing explainability to their tools is really important for them.	Patenting of technology could be the best way to protect this knowledge, since it is quite new in the ATM field, for this specific purpose

Result List	Exploitation Action	Targets	Competitors	Added Value	Portfolio	Timetable	Context	IPR
	What do you want to do with it?	*Who are the targets / users?*	*Who are the possible competitors?*	*In what my exploitable result is different?*	*How will the exploitable result change your portfolio?*	*When are you planning to exploit it?*	*What are the opportunities and barriers?*	*Which IPR mechanism you foresee?*
					within the domain, and outside of it.			
13. Software development for the experimental Platform at ENAC	Use the resulting prototype in other applications, for other AI systems. Perform demonstrations to different scientific and operational communities. Propose training service on the use of such techniques in operational environments. Propose a new project.	ATCOs, Pilots, and Computer science community	XAI in other domains	XAI tested and conceived with ATCO's and operational.	Disclosing AI Transparency in ATM domain and open a new market here. The project will allow to demonstrate the feasibility of XAI in ATM domain, and its generalization within the domain, and outside of it.	Prototyping during project validation experiments	Opportunities: Operators are and will stay in charge of provide services. As such, providing explainability to their tools is really important for them.	GNU GPL

Result List	Exploitation Action	Targets	Competitors	Added Value	Portfolio	Timetable	Context	IPR
	What do you want to do with it?	*Who are the targets / users?*	*Who are the possible competitors?*	*In what my exploitable result is different?*	*How will the exploitable result change your portfolio?*	*When are you planning to exploit it?*	*What are the opportunities and barriers?*	*Which IPR mechanism you foresee?*
14. Methodologies of visualizations and UX to presentation and interaction between the user and explainable AI for application in ATM	Propose a new project. Dissemination.	ATCOs, Pilots, and Computer science community	XAI in other domains	XAI tested and conceived with ATCO's and operational.	Disclosing AI Transparency in ATM domain and open a new market here. The project will allow to demonstrate the feasibility of XAI in ATM domain, and its generalization within the domain, and outside of it.	Project validation experiments; End of project	Opportunities: Operators are and will stay in charge of provide services. As such, providing explainability to their tools is really important for them.	GNU GPL