



Exploitation and Dissemination Plan

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FACT

FUTURE ALL AVIATION CNS TECHNOLOGY

This Initial Concept of Operations is part of a project that has received funding from the SESAR Joint Undertaking under grant agreement No 894616 under European Union's Horizon 2020 research and innovation programme.



Abstract

This document includes the strategy for knowledge management, protection, exploitation and dissemination of results, as well as the exploitation roadmap and the dissemination activities timeline that will implement it. The Communication Plan is also included as part of the dissemination and exploitation strategy. This document will be used by the FACT consortium to guide the exploitation and dissemination of the project's results.



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1 Introduction

This document (EDP) is to be used by the FACT consortium to guide the exploitation and dissemination of the project's results. Specifically, the EDP provides:

1. The communication plan, including its objectives and the intended communication activities (e.g., website, social media, interviews, etc.).
2. The dissemination plan, including its objectives and the intended dissemination activities (e.g., participation at SESAR Innovation Days, publication of scientific papers, organization of a workshop). The dissemination plan will describe the process to make public and/or to protect the project results.
3. The exploitation plan, including objectives and the intended exploitation activities.

These actions take into account the developments and accomplishments gathered in FACT as part of the performance of the project. Dissemination is intrinsically linked to exploitation in the sense that efficient publicity is a facilitator of the exploitation of these results beyond the project lifetime. Moreover, dissemination allows to measure acceptance of the proposed concepts and reuse of them in other projects. While the Dissemination Plan defines the strategy and planned activities, the Exploitation Plan presents in details the actual activities and how they support exploitation. Additionally, the deliverable provides an overview of the dissemination materials that are designed to exploit the accomplished results and outlines the exploitable components.

More specifically, the objectives of the exploitation plan are:

- Informing stakeholders of the project development and encourage interactions/ networking.
- Coordinating all levels and types of exploitation of the knowledge produced by the project.
- Ensuring that information is shared with appropriate audiences on a timely basis and by the most effective means.
- Maintaining a continuous tracking of the project status and its results to the interested public.
- Taking initiative in open discussions about the conceptual and technical aspects of the project, especially among the interested audience.

These objectives will be enriched with the forthcoming project's achievements and contributions from all partners.

1.1 About

The project FACT aims to address these modernisation and performance improvements by proposing (and validating) an integrated CNS (iCNS) functional architecture. It will serve the needs of both existing (commercial, general and military aviation including rotorcrafts) and new (drones or urban air mobility) airspace users. The project consortium brings together a balanced combination of industrial, operational, and academic knowhow, enabling it to address this challenging task.

The project will focus primarily on the innovative use, or new combinations of existing technologies, potentially not yet used in aviation domain. In this context, the technical maturity of the individual technologies will be typically higher than TRL1-2 expected for exploratory research. Nevertheless, their

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use in the context of iCNS concept for aviation will be new and therefore overall maturity from ATM application perspective will be low. This constellation is an important factor which allow to proceed with demonstration of selected project results in the experimental flight demo despite the low maturity assumed in exploratory research projects.

The Advisory Board established during the project's lifespan will contribute to steering of the project activities and offer regular opportunities to selected stakeholders and experts to review the project results and discuss with the project team optimal next steps and adjustment of the project plan. The envisioned composition of the Advisory Board aims to complement expertizes and skills available in the project consortium. In this context, the following candidate stakeholders are considered (the plan being refined and implemented during initial phase of the project): platforms OEMs (drones, UAM, aircraft, rotorcraft), EASA, ground systems industry, ATSEPs, drones' operators, etc.

1.2 FACT Project Objectives

The primary goal of the project FACT is to evaluate the feasibility of a **Performance-Based Integrated CNS (iCNS)** concept, in order to support today's and tomorrow's air traffic challenges in the most **cost-effective way without negatively affecting the overall operational safety**.

The main **design objectives for the iCNS concept** include:

- Enable advanced services, extensive operational data collection, and efficient information sharing among different service providers and airspace users (with special focus on drones and general aviation).
- Rationalization and optimization of frequency spectrum usage.
- Improve access of GA to the airports and airspace.
- Enable access to airports for new users such as UAM and enable evolution of autonomous operations for drones and UAM in the airspace.
- Improve resilience of CNS functions.

From technical perspective, the project focuses on the innovative use of existing technology bricks. Beyond the technologies already used in aviation, the project will evaluate several new technologies either developed in other industrial areas (e.g., 4G/5G cellular networks) or not yet deployed in today's airspace. From deployment perspective, an approach based on CNS performance requirements should allow much quicker migration to new technologies, taking benefit of the other sectors developments.

The project FACT applies two complementary approaches when addressing iCNS concept:

- Bottom-up going from individual technological elements or core CNS functions (supported by technical validations) and then building based on them CNS applications addressing operational needs of individual stakeholders; and
- Top-down exploring ATM/UTM operational needs and based on them formulating operational and performance requirements on the CNS applications/services for individual operational environments.



The main operational focus of the project is on low altitude operations and therefore primary targeted users are GA, drones, and UAM. Nevertheless, the conceptual approach aims to be potentially applicable in broader sense, and therefore range of stakeholders discussed in this concept is much wider.

1.3 Document Structure

This document consists of 5 Sections:

- Section 2 describes the Strategy for knowledge management.
- Section 3 presents the dissemination and exploitation roadmaps.
- Section 4 provides the communication plan.

2 Strategy for Knowledge Management

This Section summarizes the strategy that will be followed to exploit and disseminate the FACT's project outcomes. Each following section is a step of the figure and the output of each one is explained in detail.

Figure 1 summarizes the strategy that will be followed to exploit and disseminate the FACT's project outcomes.

2.1 Main objectives of the project

Concerning the topics specified during the proposal addresses the main application areas as described below:

- **Application area 1:** Low-cost alternative Position, Navigation and Timing (A-PNT) for General Aviation and drones
- **Application area 2:** Improving security and resilience against GNSS threats
- **Application area 3:** Improving cybersecurity on CNS services
- **Application area 4:** Manned and un-manned aircraft protection from non-cooperative targets
- **Application area 5:** Use of 5G for ATM purposes

The project FACT objectives go well beyond the usual goals of the exploratory research projects. The project aims to exploit opportunities offered by highly connected environment to:

- **Enable performance-based approach to overall integrated CNS system** which will allow faster and simpler integration of new CNS technologies to aviation eco-system, but also more efficient use of existing technologies and resources (e.g., usage of spectrum).
- **Explore the opportunities associated with new technologies and concepts** (both airborne and ground) focusing on technologies developed outside of aviation domain.
- **Improve affordability of advanced CNS functions to wider spectrum of airspace users** by increasing flexibility how the required overall performance can be achieved through combinations of individual (COTS) technologies.
- **Improve the ATM efficiency by enabling wider access to existing services and improving air/ground communication.**
- **Improve robustness/resilience of CNS functions**
- **Improve interoperability of different types of airspace users including the new ones (drones, urban air mobility).**

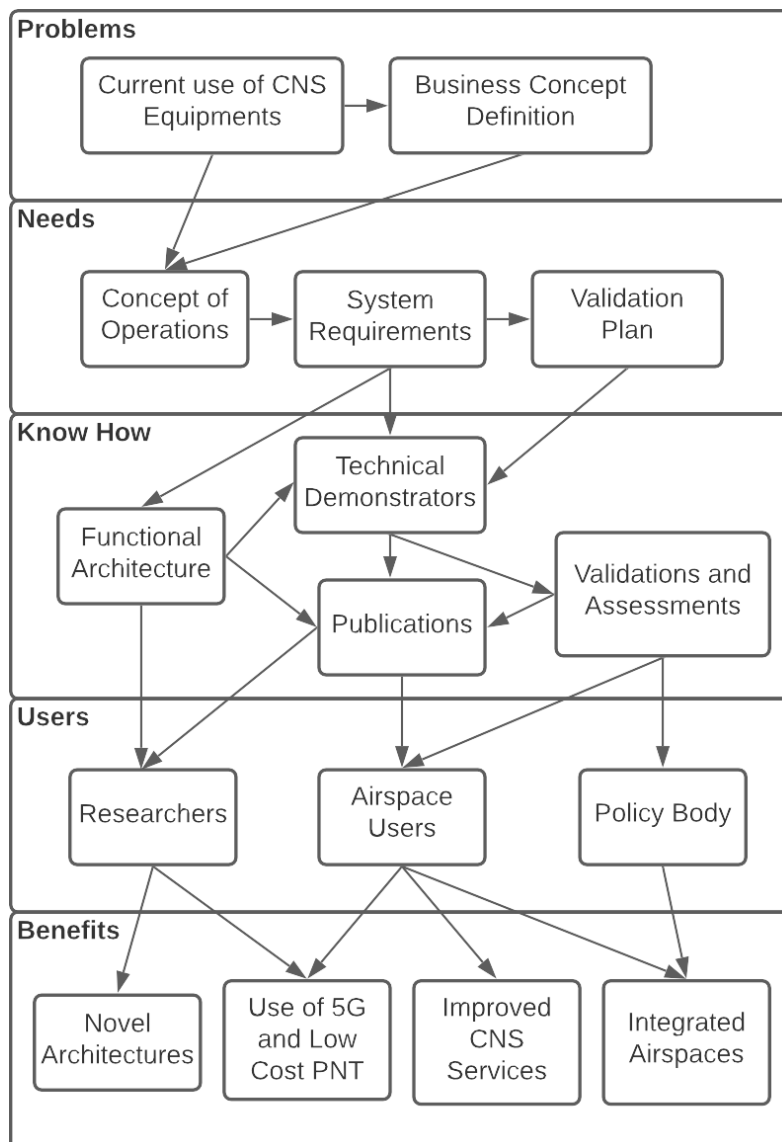


Figure 1 Dissemination and Exploitation Strategy of FACT

2.2 Problems addressed by the project

The two major problems that are subjected by the FACT project are listed as follows:

1. **Current use of CNS equipment:** Basically, this class of problems are subjected due to the target of the improvement and development of existing CNS equipment for faster and simpler integration systems; the improvement of the robustness/resilience and the integration of new systems.
2. **Business concept definition:** The importance of improving the interoperability of different airspace users, especially including new technologies (drones, urban air mobility), and increasing ATM efficiency by providing wider access to existing services and improving air / ground communication is the other main problem subjected by the project FACT.

2.3 Needs addressed by the project

Considering the problems targeted by the project, basic needs are determined in 3 main groups:

- Concepts of Operations the CNS applications aims to answer the functional requirements of the given operational environment. Corresponding performance requirements are driven by the way how the outputs of these CNS applications will be used within ATM/UTM services. In this context, it is proposed to consider three conceptual levels of performance requirements for assessment of explored technologies. These levels are based on typical layers of conflict management used in ATM and also envisioned for U space and they are therefore sufficiently generic to be used for both of them. Development of the ConOps and iCNS architecture is based on WP2.
- System Requirements: An important part of the project outputs is based on system improvement. Therefore, system requirements must be carefully and specifically determined so that targeted enhancements and improvements can be achieved. Initial system requirements will be based on initial concept of operations and technical enablers analysis. System requirements together with the iCNS functional architecture will serve as the basics for the the first technical demonstrators in WP3.
- Validation Plan: Both an implementation schedule and a validation plan are needed to determine whether the planned improvements of the entire operational concept and system requirements have been achieved. The validation plan is essentially the basis of WP5.

2.4 New knowledge generated by the project

Especially the following beneficial results will be obtained from the FACT project:

- **Functional Architecture:** In WP2 the design, development and redefinition of the ConOps, Functional Architecture will be improved.
- **Technical Demonstrators:** First technical demonstrators will be prepared per initial system requirements and the initial iCNS functional architecture. Set of validations and assessments will be carried out at the technical demonstrators and its results will determine final design of technical demonstrators captured in the final system requirements and the final iCNS architecture.
- **Publications:** Open access publications will be published on high impact journals related on the field (given in detail in Section 3.1.2).
- **Validations and Assessments:** The development of all system requirements and functional architecture will be based on a defined validation methodology and validation plan.

2.5 Who will use the results

Project outputs and knowledge can be used by users with different roles:

- Researchers: Research institutions and groups in related fields can use the knowledge and data obtained via publications and/or project deliverables especially regarding to use of novel CNS systems.
- Airspace Users: Different airspace users may need/use the result to integrate their systems and/or products with novel CNS architectures.
- Policy Body: Policy makers will benefit of the results of FACT project through mapping operational concepts to regulations.
- Airspace audience (public): Different groups who are related/interested in aviation can access to project events, news and results via website or social media.

2.6 How will the end users be informed about the generated results

End users will be informed of the project results through:

- Final Project workshop
- Articles in journals and trade magazines
- Project website (public)
- Conferences
- LinkedIn Group of discussion (private)
- CORDIS website (SESAR official research publications)

Additionally, the project partners will use their strong relationship with air navigation service providers, industrial partners and airports to inform the appropriate users of relevant project results.

At this stage, the main communication channels are the conferences and the LinkedIn group discussion. Both channels have proven to be effective and will be further used during the last part of the project. Now that the first project results are available, the Consortium expects to have more impact through the elaboration and publication of articles in trade Journals and the project website.

Social media shares, will provide opportunity to individuals and communities from all segments of the society interested in aviation to reach out and benefit from the project outputs.

Finally, it is expected to start publishing the approved public deliverables from the different work packages of the project on CORDIS SESAR official portal.

2.7 IPR Management

IPR Management is governed through both the Grant Agreement and the Consortium Agreement documents. This section provides additional details regarding its application and management.

2.7.1 Open Access to articles and deliverables

Open access refers to online research outputs that are free of all restrictions on access (e.g., access tolls) and free of many restrictions on use (e.g. certain copyright and license restrictions).

Within FACT, Open Access will be provided in two manners:

- All public deliverables (save those related to Project Management) and articles in the FACT website open to download free of charge. Additional usage rights will be provided through the use of a specific Creative Common Licence.
- Publishing articles in either *open access journals* or in *hybrid open access journals*. In the latter case, the Consortium will consider paying specific fees for publication as article processing charges to ensure open access.

2.7.2 Ensuring appropriate access and usage rights for key IP

The Project will use the Creative Commons license to ensure appropriate access and usage rights for the project's public deliverables. Under the selected license users are free to use, copy and redistribute the material in any medium and format as long as they follow the license terms:

- **Attribution** — User must give appropriate credit, provide a link to the license, and indicate if changes were made. He / She may do so in any reasonable manner, but not in any way that suggests the licensor endorses him/her or their use.
- **Non-Commercial** — User may not use the material for commercial purposes.
- **No-Derivatives** — If the user remixes, transforms, or builds upon the material, he / she may not distribute the modified material.

Full license might be obtained at: <http://creativecommons.org/licenses/by-nc-nd/4.0/>

It must be pointed out that, in principle, the granting of access rights does not include the right to sublicense (not even to parent / affiliate companies of consortium members), unless the owner of the foreground or background at stake consented hereto.

2.7.3 Monitoring use of third-party components (e.g. licenses)

When a third-party component is required to implement a solution or a service proposed by FACT, the relevant partner will need to inform (in writing) the Project Coordinator. When possible, the use of third-party components should be discouraged (unless the component can be obtained through an open license).

The Project Coordinator will keep a list of these components for reference.

2.7.4 Regular reviews of project outputs to stimulate disclosure

To ensure that all project outputs are disseminated and exploited as widely as possible, the Consortium will review the available results as part of the regular Project Management Support Team meetings. To ensure this, an item will be regularly included in the meeting's agenda.

2.7.5 Search for patentability, overlap, and/or potential partners / collaborator

Conducting patent searches is useful to identify technical and commercial information that can be used to:

- Identify barriers to developing an IP strategy

- Define the state of the art
- Check if the Consortium does not infringe someone else's rights

It is suggested that partners conduct patent searches through the use of the espacenet website <http://worldwide.espacenet.com/>

2.7.6 Assessment of market opportunities

During the Project Management Support Team meetings, its participants will review the following items:

- Potential demand for solutions and services proposed by FACT
- Potential interested from key stakeholders

When a commercial opportunity arises, the Project Management Team will produce a report that:

- Identifies the nature of the market
- Location (global or local)
- Segmentation (if sensible)
- Fields of use
- Market size
- Desired and likely market share
- Royalty estimates for licensing

2.7.7 Assessment of innovation potential

During the Project Management Support Team meetings, its participants will review the innovation potential based on:

- Nature of the proposed technology
- Technology transfer issues
- Support issues
- Commercial issues
- Potential barriers (freedom to use)
- Potential collaborators

This review will result on an Innovation Potential note for the proposed solution / service.

2.7.8 Review the need for formal protection

The Project Management Support Team will assess the need to patent specific aspects of the work performed by FACT. The assessment will take into consideration the possibility of declaring the work as confidential until research has been completed, as well as the costs associated with the process.

3 Dissemination and Exploitation Roadmap

In this section; strategies related to the implementation schedule of the deliverables planned to be completed in WP6 will be discussed. Dissemination and Exploitation Plan is prepared (as part of the more general Communication, Dissemination and Exploitation Plan) which includes the activities planned to transfer the results to the next steps of the concept lifecycle, considering all the possible applicative implications. In particular, the main channel for dissemination and exploitation will be the interaction with other research projects (especially SESAR projects) and with the industries that have business activities related to CNS/ATM. The feedback received from these interactions will provide a basis for FACT to identify the actions and the implications for moving the results toward more practical and viable outcomes for the future of flight safety and efficiency.

3.1 Dissemination Activities

Dissemination activities will be divided into two groups based on their means of address:

- **Internal** dissemination between project partners, including dissemination of evaluation reports and final project reports. Project partners will be informed of all project updates.
- **External** dissemination with stakeholders and possible beneficiaries of the outcomes of the project. Interested parties in the project will be informed regarding the progress and the updates of the project. Communication will work both ways.

Table 1 Dissemination objectives planned in the project FACT

Goal	Message	Internal Dissemination	External Dissemination
Project Updates	Connecting partners and keeping them up to date, also give a better explanation of expected results to stakeholders	<ul style="list-style-type: none"> • Project intranet • Publications 	<ul style="list-style-type: none"> • Project Website • Conferences • Workshops • Publications
Archive and Database	Maintain past records for future needs and documents that might support the activities	<ul style="list-style-type: none"> • Project intranet (mail services) • Publications 	
Info Releases	Provide regular and interesting updates relating to the items of interest during the project execution	<ul style="list-style-type: none"> • Social Media (e.g. Twitter, Linked-in, ResearchGate) 	<ul style="list-style-type: none"> • Social Media (e.g. Twitter, Linked-in, ResearchGate)
Notices	News that can affect or help and develop the project	<ul style="list-style-type: none"> • Project intranet(mail services) 	<ul style="list-style-type: none"> • Website • Conferences • Publications

Schedule Updates	Updated calendar of events	<ul style="list-style-type: none"> • Project intranet (mail services) • Publications 	<ul style="list-style-type: none"> • Conferences
Results	The need to verify project outcomes and effectiveness	<ul style="list-style-type: none"> • Project intranet (mail services) 	<ul style="list-style-type: none"> • Project Website • Conferences • Workshops • Publications • Social Media (e.g. Twitter, Linked-in, ResearchGate)
Technical Outcomes	Dissemination and technical results	<ul style="list-style-type: none"> • Publications in conference proceedings, scientific journals, trade magazines, development of an impact case. 	<ul style="list-style-type: none"> • Conferences
Open Debate	Keep a constant flow of new ideas	<ul style="list-style-type: none"> • Social Media (e.g. Twitter, Linked-in, ResearchGate) • Workshops 	<ul style="list-style-type: none"> • Social Media (e.g. Twitter, Linked-in, ResearchGate) • Project Website • Workshops
Host stakeholders gatherings	Keep track of stakeholders interests and concerns	<ul style="list-style-type: none"> • Regular Meetings • Workshops 	<ul style="list-style-type: none"> • Conferences • Workshops
Project summary	Easy to read summary to have a starting point for the new interested parties		<ul style="list-style-type: none"> • Social Media (e.g. Twitter, Linked-in, ResearchGate) • Project Website • Publications

3.1.1 Scientific papers and publications

This section presents the details of the production and presentation of dissemination material, book chapters, conferences, journal papers, inputs to PhD/Master theses and any other within the scientific tasks of FACT.

The objectives of producing and presenting scientific papers are:



- To ensure the key theoretical results of FACT's work packages are documented through papers in the scientific literature stream. This avoids the need for final deliverables referring to key background material in technical reports of individual partners.
- To use established scientific platforms to discuss the results with recognized peer reviewers.
- To meet and discuss with peer researchers in related projects in SESAR, H2020 and beyond.

Papers will be submitted to conferences that satisfy the following criteria:

- The paper submission deadline is within the FACT Kick-off and 12 months after FACT Close-out meeting.
- The quality of the conference is of high standard.
- The conference is expected to receive a large audience interested in FACT's research.
- The project will insure that (subject to budget constraints) papers published in academic journals are made available through 'gold' open access, ensuring free on-line access to the end-user.

Table 2 Potential journals where FACT project outputs can be printed

Journal Title	Brief description of the journal
IEEE Aerospace and Electronic Systems Magazine <i>IF: 1.539 (2019)</i>	The journal publishes articles concerned with the various aspects of systems for space, air, ocean, or ground environments as well as news and information of interest to IEEE Aerospace and Electronic Systems Society members. The boundaries of acceptable subject matter have been intentionally left flexible so that the Magazine can follow the research activities, technology applications and future trends to better meet the needs of the members of the IEEE Aerospace and Electronic Systems Society.
IEEE Transactions on Intelligent Transportation Systems <i>IF: 6.319 (2019)</i>	The IEEE ITS Transactions is focused on the numerous technical aspects of ITS technologies spanned by the IEEE. Transportation systems are invariably complex, and their complexity arises from many sources. Transportation systems can involve humans, vehicles, shipments, information technology, and the physical infrastructure, all interacting in complex ways. Many aspects of transportation systems are uncertain, dynamic and nonlinear, and such systems may be highly sensitive to perturbations. Controls can involve multiple agents that (and/or who) are distributed and hierarchical. Humans who invariably play critical roles in a transportation system have a diversity of objectives and a wide range of skills and education.

<p>Aerospace Science and Technology, Elsevier</p> <p><i>IF: 4.499 (2019)</i></p>	<p>This journal publishes original papers, review articles and short communications related to all fields of aerospace research, fundamental and applied, potential applications of which are clearly related to:</p> <ul style="list-style-type: none"> • The design and the manufacture of aircraft, helicopters, missiles, launchers and satellites • The control of their environment • The study of various systems they are involved in, as supports or as targets.
<p>Journal of Aerospace Information Systems, AIAA</p> <p><i>IF: 0.787 (2019)</i></p>	<p>This Journal is devoted to the dissemination of original archival research papers describing new theoretical developments, novel applications, and case studies regarding advances in aerospace computing, information, and networks and communication systems that address aerospace-specific issues. Topics include aerospace systems and software engineering, verification and validation of embedded systems, uncertainty quantification, the field known as ‘big data,’ data analytics, machine learning, knowledge management for aerospace systems, human-automation interaction, and systems health management for aerospace systems.</p>
<p>Journal of Aerospace Engineering, ASCE</p> <p><i>IF: 1.373 (2018)</i></p>	<p>The Journal of Aerospace Engineering promotes the implementation and development of space and aerospace technologies and their transfer to other civil engineering applications. Topics of interest include aerodynamics, computational fluid dynamics, wind tunnel testing of buildings and structures, aerospace structures and materials, advanced composite materials, dynamics and control, real-time data acquisition, space engineering and construction, lunar base construction, field and remote sensing, and robotics.</p>

Possible congresses and conferences to attend:

1. The Integrated Communications Navigation and Surveillance (ICNS) Conference - icnsonline.org
2. IEEE Digital Avionics System Conference – <https://2021.dasconline.org/>
3. SESAR Innovation Days - <https://www.sesarju.eu/sesarinnovationdays>
4. ICRAAT - <http://icrat.org/icrat/>
5. World ATM Congress - <https://www.worldatmcongress.org/home>
6. ATM Seminar - <http://atmseminar.org>

7. IFAC Symposium on Control in Transportation Systems — <http://tc.ifac-control.org/7/4/>
8. ATACCS Conference - <https://dl.acm.org/conference/ataccs/upcoming>
9. IEEE International Conference on Information and Communication Technology Convergence

3.1.2 Information on funding in dissemination activities

Any dissemination of results (in any form, including electronic) will display the SJU logo and the EU emblem, and will include the following text:

“This project has received funding from the SESAR Joint Undertaking under grant agreement No 894616 under European Union’s Horizon 2020 research and innovation programme”.

When displayed together with another logo, the SJU logo and the EU emblem will have appropriate prominence.

3.1.3 Disclaimer excluding SJU responsibility

Any dissemination of results will indicate that it reflects only the author's view and that the SJU is not responsible for any use that may be made of the information it contains.

3.1.4 Evaluation of effectiveness/success

In order to guarantee the accomplishment of the expected measures in dissemination activities, and to facilitate an efficient and transparent project management in general, quantitative objectives and expected results in dissemination will be included.

Table 3 Dissemination effectiveness goals

Indicator type	Indicator	1 st	2 nd	3 rd	Target
		phase target (M0-M12)	phase target (M13-M24)	phase target (M25-M30)	for M30 (total)
Execution	Number of conferences and seminars celebrated	1	3	2	5
	Number of FACT website uploads	6	28	12	40
	Internet sites where FACT project is placed	2	3	4	7
	Number of publications released	1	2	3	5
	Workshops	1	3	2	6
	FACT presence in ATM Publications	1	2	2	5
Results	Number of ANSPs Reached	4	12	8	24
	Interested innovation companies reached	2	5	2	9
	Number of promotional links achieved to FACT website	1	3	2	5

Number of FACT website hits	0	140	90	230
Number of members in FACT’s LinkedIn Group	10	180	120	310
Number of entries in FACT’s LinkedIn Group	0	18	12	30
Attendees in seminars and conferences	0	10	12	22

The table and the indicators included in this Dissemination Plan will serve as a starting point and as a valuable criterion in project evaluations that will be conducted throughout the project.

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

3.2 Exploitation Strategy

The project will focus primarily on the innovative use, or new combinations of existing technologies, potentially not yet used in aviation domain. In this context, the technical maturity of the individual technologies will be typically higher than TRL3 expected for exploratory research. Nevertheless, their use in the context of iCNS concept for aviation will be new and therefore overall maturity from ATM application perspective will be low. This constellation is an important factor which allow to proceed with demonstration of selected project results in the experimental flight demo despite the low maturity assumed in exploratory research projects (Figure 2).

During the project, the consortium will exploit their combined expertise to deliver the project aims, and seek opportunities to disseminate their contributions. Following project completion, knowledge gained and prototypes/new technologies developed, will be exploited in each partner’s on-going and future activities.

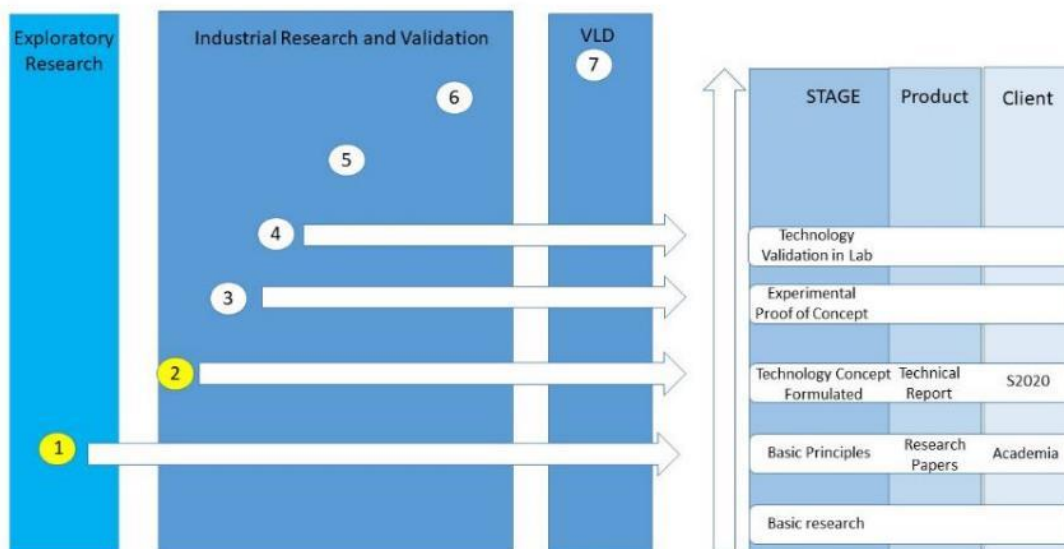


Figure 2 Exploitation strategy of project FACT



3.2.1 Exploitation targets

It is important that the know-how developed in FACT project must continue to exist beyond the life of the project.

The following exploitable outcomes from FACT project have been identified:

- **Industrials specialized** in CNS and UTM will exploit the results of this project
 - to improve their functions, operations, tools and architectures through 4G/5G services, and
 - to extend their knowledge and competitive advantage in offering innovative products and services.
- **Research institutions** will be highly interested in FACT project for
 - further enhance their operational capabilities
 - to validate their in-lab developed algorithms, and integrate their in-lab developed avionics systems.
- **Airports** could exploit the results with
 - the new operational procedures and tools enabling 4G/5G usage and UTM integration.
 - The novel approaches to be developed in this project will bring advanced knowledge on novel tools will potentially enhance capacity and resource management.
- **ANSPs**
 - will be interested in offering new services for highly-congested dynamic airspace management with fully integrated with GA and drone operations, and
 - exploiting new tools and procedures based on novel CNS and 4G/5G technologies.

4 Communication Plan

4.1 Communication Strategy

The communication strategy will support the exploitation of project results, focusing on the coordination of the outreach and dissemination activities necessary to achieve the project exploitation targets and promoting the work done during the project by using appropriate and useful tools, methods and channels. The Dissemination and Exploitation work package will ensure these results are communicated through dedicated presentations, publications, participation in and organization of workshops and conferences.

The success and impact of an innovative cooperative Project depends strongly on the dissemination and communicative actions. To guarantee a strategic planning and efficient management of all the activities and communication tools, a Communication Plan is created.

The main aim of the FACT Communication Plan is to present a roadmap for the dissemination of the concept, objectives, impacts and expected results of the project. A number of strategies are established to convey messages to their respective actors to allow active collaboration between all actors impacted by the development of the FACT project. The H2020 and SESAR JU websites will be the most important tool for disseminating the information for stakeholder. By using different communication channels (detailed in Table 4), it is aimed that both the project participants and related organizations as well as the public groups have information about the progress of the project. An important part of this fundamental communication plan is journals and publications for airspace users.

4.2 Communication Objectives

The main aim of the FACT Communication Plan is to present a roadmap for the dissemination of the concept, objectives, impacts and expected results of the project. The main communication objectives cover both internal and external communications and include:

- Broadcasting the project information to broad spectrum of stakeholders to establish contact with the relevant actors and attract their attention to the project activities/results (external communication).
- Communicating the project results to the interested parties and collect their feedback (external communication).
- Publishing/posting public results to wide aviation and ATM related community as well as interested general public to maximize the project impact (external communication).
- Optimizing the information flow between the project members and manage an efficient communication among involved actors (internal communication).
- Enabling co- test and validation operations (internal communication).

Communicative actions have different impacts on different actors as indicated in Table 4.

Table 4 Communication actions for different actors

	Website	Scientific Journals & Articles	Newsletters & Deliverables	Workshop	Conferences & Presentations	Social Media
ATCo	■		■	■		■
ANSP's	■		■	■	■	■
Airports	■		■	■	■	■
R&D Centers	■	■	■	■	■	■
Policy body	■		■	■		■
Public	■	■		■	■	■

Table 5 The potential events for communication activities can be listed as

Conference	Dates	Venue	Website	Paper Submission Date
5th International Conference on Electronics, Communication and Aerospace Technology ICECA 2021	2-4, December 2021	Coimbatore, India	http://icoeca.org/2021/	30 September, 2021
11th SESAR Innovation Days	7-9 December 2021		https://www.sesarju.eu/sesarinnovationdays	Extended to 11 October 2021
ICUASTT 2022: 16. International Conference on Unmanned Aircraft Systems and Technologies for Transportation	January 07-08, 2022	Singapore, Singapore Digital	https://waset.org/unmanned-aircraft-systems-and-technologies-for-transportation-conference-in-january-2022-in-singapore	December 07, 2021

The International Conference for Aerospace Experts, Academics, Military Personnel, and Industry Leaders	Mar 5-12, 2022	Montana	https://www.aeroconf.org/	January 14, 2022
10th Workshop on Satellite Navigation Technology (NAVITEC)	April 4 - 8, 2022	Virtual Conference - The Netherlands	https://atpi.eventsair.com/QuickEventWebsitePortal/navitec-2022/website	
Electric & Hybrid Aerospace Technology Virtual Conference	May 31 & June 1, 2022		https://www.electricandhybridaerospacetechnology.com/en/index.php	October 12, 2021
International Conference on Unmanned Aircraft Systems (ICUAS)	June 21-24, 2022	Dubrovnik, Croatia	http://www.uasconferences.com/2022_icuas/	February 1, 2022
ICUASD 2022: 16. International Conference on Unmanned Aerial Systems and Drones	June 23-24, 2022	Oslo, Norway Digital	https://waset.org/unmanned-aerial-systems-and-drones-conference-in-june-2022-in-oslo	
International Conference for Research in Air Transportation	Summer 2022	Tampa, Florida	http://icrat.org/icrat/	NA
Urban Transitions 2022 Integrating urban and	8-10 November 2022	Sitges, Barcelona, Spain	https://www.elsevier.com/events/conferences/urban-transitions	

transport planning, environment and health for healthier urban living				
22nd IFAC World Congress	2023	Yokohama, JAPAN	https://www.ifac-control.org/	NA

The activities listed above are alternatives that are of interest to different partners and are found suitable for the dissemination and communication of the project content to large spectrum of stakeholders. The events are tentative and partners are also interested in alternative conferences and/or workshops and/or exhibitions.

During the project, internal communication will be directly carried out via email, LinkedIn group, online and face-to-face meetings and Stellar. On top of it, H2020 portal and Stellar will be used to communicate project deliverables and other project's documents to relevant stakeholders benefiting from H2020 and SJU channels.

Finally, the external communication to broader spectrum of stakeholders will be carried out through project website, twitter account, attended conferences and/or workshops and/or exhibitions, and materials published in related magazines. With the information to be published in GA and UAV magazines (either online and/or paper based), it will be possible to reach the targeted end users and large communities.

Possible magazine list can be listed as follows:

- General Aviation News <https://generalaviationnews.com/>
- Midwest Flyer <https://midwestflyer.com/>
- UAS Magazine <http://www.uasmagazine.com/>
- Drone Life <https://dronelife.com/>
- Drones Monthly <https://www.dronesmonthly.com/>
- Drone User Magazine <https://www.droneusermagazine.com/>

4.3 High level messages about the project

The benefits that the project is expected to bring can be expressed in the following messages:

- *FACT will provide experimental results for efficient information sharing among different service providers and airspace users with special focus on drones and general aviation.*
- *FACT will provide a framework for rationalization and optimization of frequency spectrum usage.*
- *FACT will help to improve access of GAs to the airports and airspace.*
- *FACT will aid to enable access to airports for new users such as unmanned personal vehicles and enable evolution of autonomous operations for drones and UAM in the airspace.*
- *FACT will support to improve resilience of CNS functions which is used in aviation.*

Once the project is finished, these messages will be updated with the results obtained.

4.4 Project Representatives

The Project Coordinator and the WP6 leader, in quality of **project spokespersons**, are officially entitled to act as representatives of the project in media engagement activities for the whole duration of the project.

Partner spokespersons are entitled to speak as partner representatives in media engagement activities.

Partners invested in a leading role for special activities, such as the local host of a workshop, the organizer of a demonstration etc., act as representative for the project for the specific activity. In addition to that, any partner that is required to disseminate project activities in scientific events, bi-lateral meetings or public events act on behalf of the project and as project representatives for the specific activity.

4.5 Internal communication activities and tools

Internally to the consortium, day-to-day communication is achieved via the project mailing list. Meetings are planned by the PC and inserted in the project calendar. In addition, the FACT cloud environment will be used for sharing documents, storing project reports, deliverables, and any other type of digital material, including this document.

4.6 Focal Communication Contact

The communications point of contact of this project is the Project Coordinator, Dr. Petr Casek. His contact details are the following:

*Dr. Petr Casek
Technical Manager
HONEYWELL INTERNATIONAL SRO
Turanka 100 Brno*

62700 Czech Republic
+420 532 115 504
petr.casek@honeywell.com

4.7 FACT Logo

FACT logo was chosen within a variety of other alternatives. The revised logo was submitted to the approval of all partners after the joint opinions were declared and took its final form on 30 November 2020.



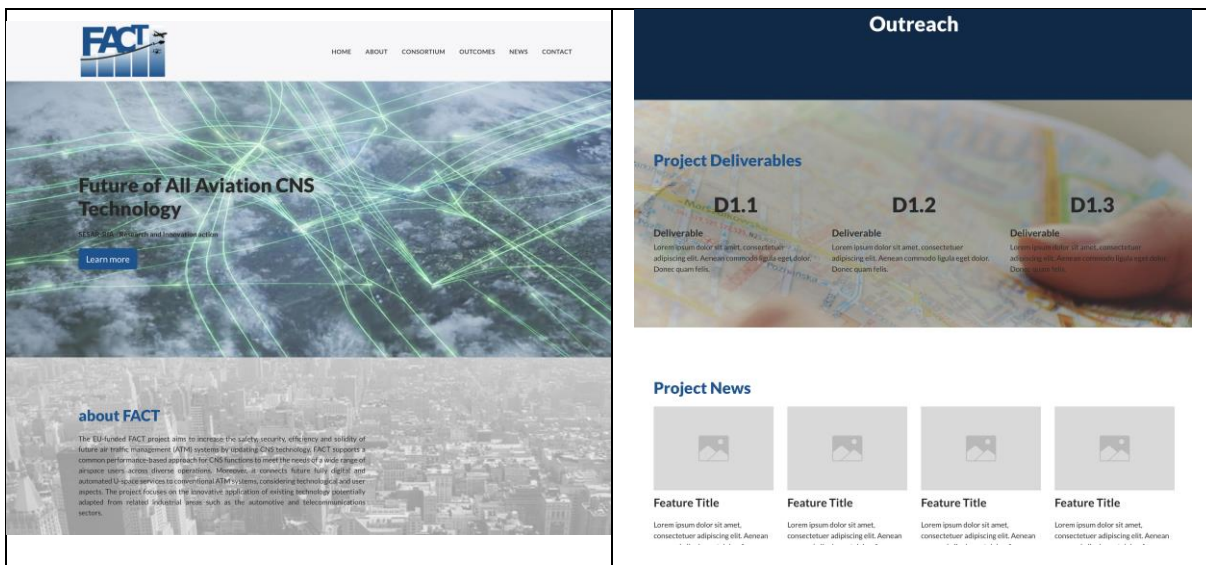
Figure 3 FACT project Logo

The logo will be used in all the project related documents, publications, reports and also presentations. It was chosen by the votes of all participants.

4.8 FACT Web Site

The FACT website has been published on November the 23rd 2020 at the following web address:

<http://fact.itu.edu.tr>



Founding Members



Website structure can be described as following:

- Home Page: aims at conveying the main topics of the project by presenting in the same place the main activities of FACT, containing a brief description and a visual element that recalls that specific activity. Furthermore, each activity description is linked to a short insight for a more detailed textual description in a dedicated page. In the second part of the page, the list of the most interesting articles is shown, while in the right part the social activity of the twitter profile is shown.
- About Section: this section will give brief information about the project.
- Consortium Section: this section contains the logos of each partner including their website link.
- Outcomes Section: this section contains the links to the following pages:
 - Deliverables
 - Resources

4.9 LinkedIn Account

Project LinkedIn profile has been created: <https://www.linkedin.com/groups/9007980/>

The account will be publishing and sharing all the milestones and events which will be carried out during the event. All stakeholders and related groups are informed to join the related social media account.



Figure 4 FACT project LinkedIn account

The number of visitors and interactions on the website; statistics of interactions to all the social media accounts will be kept. All these statistics will be given in the progress reports in detail.



In addition to LinkedIn, the WP6 leader will create a Twitter account as will posts mirrors of LinkedIn messages. However, considering the targeted community of the project, most likely, the LinkedIn will be the main dissemination source of FACT.

4.10 Deliverables and presentations templates and guidelines

FACT will use standard SJU templates for producing project deliverables. The deliverable leader is ultimately responsible for the coordination activities and formatting following the SJU template.

The SESAR 2020 PowerPoint template will be the standard template for all official project presentations (presentations involving the SJU or an external audience).

- The Integrated Communications Navigation and Surveillance (ICNS) Conference
- IEEE Digital Avionics System Conference
- SESAR Innovation Days
- World ATM Congress
- ATM Seminar
- IFAC Symposium on Control in Transportation Systems

5 Glossary

ANSP	Air Navigation Service Provider
ATC	Air Traffic Control
ATCo	Air Traffic Controller
ATFM	Air Traffic Flow Management
CNS	Communication, Navigation and Surveillance
GNSS	Global Navigation Satellite System
iCNS	Integrated Communication, Navigation and Surveillance
IEEE	Institute of Electrical and Electronics Engineers
IF	Impact Factor
JU	Joint Undertaking
PNT	Position, Navigation and Timing
R&D	Research and Development
SESAR	Single European Sky ATM Research
SJU	SESAR Joint Undertaking
TRL	Technology Readiness Level
UAM	Urban Air Mobility
UAS	Unmanned Aircraft System
UTM	Unmanned Traffic Management
VLD	Very Large-scale Demonstrations
WP	Work Package