



ICARUS - Communication, Dissemination and Exploitation Plan

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ICARUS

INTEGRATED COMMON ALTITUDE REFERENCE SYSTEM FOR U-SPACE

This Communication and Dissemination Plan is part of a project that has received funding from the SESAR Joint Undertaking under grant agreement No. 894593 of the European Union's Horizon 2020 research and innovation programme.



Abstract

The present document is deliverable D7.2 "Communication and Dissemination Plan" (CDP) of the ICARUS project, and has been produced in Work Package 7 "Exploitation and Dissemination".

This document defines the communication and dissemination activities that the partners of the ICARUS project will carry out during the duration of the project.

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1 Introduction

This Communication and Dissemination Plan (CDP) implements the project communication and dissemination requirements contained in the ICARUS Grant Agreement [1], and is fully compliant with the Communication Guidelines for SESAR 2020 Projects [2].

The CDP is based on the Communication and Dissemination section of the Project Management Plan [3] and provides the requirements for successfully communicating the existence of the project to the community, and disseminating its results.

The structure of the documents is as follows:

First, the document establishes the contractual obligations and requirements regarding the project's communication and dissemination activities, and describes the communication and dissemination objectives and strategy.

This is followed by a concrete and unique brand identity designed to make the project recognisable and give it its own identity. To ensure that all partners know how to integrate the brand identity into the different communication platforms and printed materials, the deliverable includes a simple brand manual section.

The deliverable identifies the high-level messages to be delivered, the target audiences identified and the channels to be used to engage the target audiences, and lists the communication and dissemination activities that are planned throughout the project duration.

Finally, specific key performance indicators (KPIs) have been established to measure the communication and dissemination efforts.

This document is only related to Communication and Dissemination activities. A more detailed document regarding Exploitation activities (D7.5) will be delivered separately.

1.1 Applicable reference material

The following documents have been referred to in this document.

- [1] Grant Agreement-894593-ICARUS
- [2] Communication Guidelines SESAR 2020 Projects – Edition 07.00.00, 14 January 2019
- [3] ICARUS Project Management Plan, issue 00.02.01, 30 September 2020

1.2 CDP maintenance

This is the first revision of the CDP. A second revision is planned for the end of the project detailing the actual communication and dissemination activities carried out during the project and the outcome of these activities.

The main purpose of the CDP is to serve as a guideline to the communication and dissemination efforts performed by the members of the ICARUS consortium and it will therefore be kept up-to-date through the publishing of amendments, as necessary.

1.3 Acronyms

The following acronyms have been used in this document.

Acronyms	Signification
AB	Advisory Board
ANSP	Air Navigation Service Provider
ATM	Air Traffic Management
CDM	Communication and Dissemination Manager
DTM	Digital Terrain Model
EU	European Union
GA	General Aviation
GNSS	Global Navigation Satellite System
ICARUS	Integrated Common Altitude Reference system for U-space
JU	Joint Undertaking (in reference to SESAR JU)
KPI	Key Performance Index



SJU	SESAR Joint Undertaking
SME	Small or Medium Enterprise
UAS	Unmanned Aerial System
UAV	Unmanned Aviation Vehicle (obsolete term)
VLL	Very-Low-Level

Table 1 – Acronyms list

2 Communication and dissemination requirements

2.1 Requirements in the Grant Agreement

The dissemination and communication requirements established in the ICARUS Grant Agreement are summarised below:

Article 29.1 Obligation to disseminate results

Unless it goes against their legitimate interests, each beneficiary must — as soon as possible — ‘disseminate’ its results by disclosing them to the public by appropriate means (other than those resulting from protecting or exploiting the results), including in scientific publications (in any medium).

This does not change the obligation to protect results in Article 27, the confidentiality obligations in Article 36, the security obligations in Article 37 or the obligations to protect personal data in Article 39, all of which still apply.

A beneficiary that intends to disseminate its results must give advance notice to the other beneficiaries of — unless agreed otherwise — at least 45 days, together with sufficient information on the results it will disseminate.

Any other beneficiary may object within — unless agreed otherwise — 30 days of receiving notification, if it can show that its legitimate interests in relation to the results or background would be significantly harmed. In such cases, the dissemination may not take place unless appropriate steps are taken to safeguard these legitimate interests.

If a beneficiary intends not to protect its results, it may — under certain conditions (see Article 26.4.1) — need to formally notify the JU before dissemination takes place

Article 29.4 [and 38.1.2] Information on funding — Obligation and right to use the JU logo and the EU emblem

Unless the JU requests or agrees otherwise or unless it is impossible, any dissemination of results (in any form, including electronic) / [communication activity related to the action (including in electronic form, via social media, etc.) and any infrastructure, equipment and major results funded by the grant] must:

- (a) display the JU logo;*
- (b) display the EU emblem and*
- (c) include the following text:*

“This project has received funding from the SESAR Joint Undertaking under grant agreement No 894593. The JU receives support from the European Union’s Horizon 2020 research and innovation programme and the SESAR JU members other than the Union”.

When displayed together with another logo, the JU logo and the EU emblem must have appropriate prominence.

Articles 29.5 [and 38.1.3] Disclaimer excluding JU responsibility

Any dissemination of results / [communication activity] related to the action must indicate that it reflects only the author's view and that the JU is not responsible for any use that may be made of the information it contains.

Article 38.1.1 Obligation to promote the action and its results

The beneficiaries must promote the action and its results, by providing targeted information to multiple audiences (including the media and the public) in a strategic and effective manner.

...

Before engaging in a communication activity expected to have a major media impact, the beneficiaries must inform the JU (see Article 52).

2.2 Coordination with SJU communications

In addition to the specific requirements contained in the Grant Agreement, the SJU has developed the Communications Guidelines for SESAR 2020 Projects document. To ensure that communications are consistent with the SESAR brand, project consortia are requested to contact SJU Communications Sector when preparing external communication activities, in order to:

- Ensure that project communications and outreach milestones are integrated into broader SJU communication scheduling and planning
- Review strategies, key messages, targeted audiences and communication material on SESAR solutions to ensure consistency with SJU's core objectives
- 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 the support of the SJU for various events and conferences
- Maximise outreach by using SJU communications channels and cooperative arrangements to further cascade relevant content

2.3 Communication and Dissemination Manager

The ICARUS consortium has appointed a Communication and Dissemination Manager (CDM) to ensure an effective plan for these activities, based on previous experience and best practices tailored to the ICARUS project.

The CDM is responsible for the overall management of the project's communication, dissemination, and exploitation activities.

In particular, the CDM will:

- identify and set clear communication objectives;
- adopt strategic and targeted measures and communication actions for raising awareness of the project and its results among a wide spectrum of audiences, and for promoting these measures and actions to the media and the public;
- assure the public disclosure of the results by any appropriate means, including through scientific publications on any medium;
- facilitate further use of project results, recognising exploitable results and their stakeholders.

2.4 Communication and dissemination guidelines

To comply with the requirements described above, all communication and dissemination activities of the project should adhere to the guidelines established below:

1. All external communication activities, including the dissemination of results, will be coordinated internally with the CDM
2. The CDM will, in turn, coordinate all external communication with SJU Communication Sector
3. All external communication material should include the following elements:
 - a. EU Emblem
 - b. SESAR JU Logo
 - c. Contain a reference to the grant funding from Horizon 2020, i.e.: *“This project has received funding from the SESAR Joint Undertaking under grant agreement No 894593. The JU receives support from the European Union’s Horizon 2020 research and innovation programme and the SESAR JU members other than the Union”*

When used in combination with other logos, the EU Emblem and SESAR JU logo should be given enough prominence.

An example of use of these three elements is shown below:



This project has received funding from the SESAR Joint Undertaking under grant agreement No 894593. The JU receives support from the European Union’s Horizon 2020 research and innovation programme and the SESAR JU members other than the Union

Any communication or dissemination of results must indicate that it reflects only the author’s view and that the JU is not responsible for any use that may be made of the information it contains.

3 Communication and dissemination objectives and strategy

3.1 Promotion of the ICARUS concept

The ICARUS concept constitutes a novel approach to ensuring vertical separation and collision avoidance in very low level (VLL) airspace, which has traditionally relied almost exclusively on visual methods, that are prone to error and severely limit the potential capacity of this volume of the airspace.

The ICARUS service will therefore not only facilitate operations performed by drones but can also be adopted by manned general aviation (GA) to manage their own operations. In this sense, irrespective of whether “Geocentric Altitude Mandatory Zones” (GAMZ) are established or not, at least a part of manned aviation could be integrated into U-space through their use of the ICARUS service, contributing to the blurring of the current manned vs. unmanned divide in aviation.

For this reason, the ICARUS consortium will place an emphasis on the communication, dissemination and exploitation activities that are described in this document with a view to promoting the ICARUS concept and presenting its advantages not only to the drone sector, but also to the GA community.

These activities will focus on:

- description of the limitations of current vertical position estimation technologies;
- explanation of the ICARUS service concept;
- presentation of the advantages that will be provided by the service, in terms of added safety and capacity.

3.2 Specific objectives of the ICARUS project

The specific objectives of the Communication and Dissemination activities are:

- ensuring that ICARUS generates the greatest possible impact on the domain it operates in - the UAS market (pilot, operators and U-space service providers) and the General Aviation community - as well as on society as a whole;
- ensuring that the results of the project provide a solid basis to continue working on in the future to integrate UAS flights into the airspace.

3.3 General objectives of SESAR 2020 projects

In addition, ICARUS will support the general objectives established by the SESAR 2020 communication guidelines:

- creating awareness and outreach about SESAR 2020 and its projects among stakeholders both inside and outside Europe, where applicable;
- showcasing the research outcomes and benefits that SESAR solutions bring to real day-to-day air traffic management (ATM) operations both in Europe and within the broader global context;
- accelerating the operational stakeholder acceptance and subsequent deployment of SESAR solutions;
- demonstrating the value of public-private partnerships for European competitiveness and economic sustainability.

3.4 Communication and dissemination deliverables

The following table shows the list of deliverables related with the communication and dissemination activities.

Deliverable	Deliverable name	Short name of leader	Deliverable Leader	Type	Dissemination level	Delivery date
D7.1	Roadmap & cross fertilisation with concurrent U-space projects	ECTL	Giancarlo Ferrara	R	PU	Apr 2021
D7.2 & D7.3	Communication and Dissemination plan – Issue 1	EUSC	Manuel Onate	R	PU	Jan 2021
D7.4	Communication & Dissemination activity report	DICEA	Mattia Crespi	R	PU	Jul 2022
D7.5	Exploitation plan – Issue 1	EGEOS	Cristina Terpessi	R	CO	Jan 2021
D7.6	Market Analysis, Business model	EGEOS	Cristina Terpessi	R	CO	Jul 2022
D7.7	Lesson Learnt, Recommendation & best practice	ECTL	Giancarlo Ferrara	R	PU	Jul 2022
D7.8 & D7.9	Communication and Dissemination plan – Issue 2	DICEA	Mattia Crespi	R	PU	Jan 2022
D7.10	Exploitation plan – Issue 2	EGEOS	Cristina Terpessi	R	CO	Jan 2022

Table 2 – Communication and dissemination deliverables

3.5 ICARUS Advisory Board

The project management structure foresees an international Advisory Board (AB) that will advise the project to ensure its results address the real needs of the UAS community.

The IAB ensures a fruitful interaction with the evolving U-space world.

The AB is invited to share lesson learned, recommendations & best practice, providing feedback on the early outcomes of the project. The AB will provide feedback on the consolidated ICARUS concept and on the progress made during the course of the project.

The AB will meet at least once per year, normally in person. During the Covid-19 emergency, meetings will take place as teleconferences. Meetings have the following main objectives:

1. discussing the main findings of the project;
2. assessing whether the results match the real needs of the main organisations involved in the AB;
3. evaluating the remaining project activities to ensure that the expected results meet the needs.

The first AB meeting was held in October 2020

The first AB workshop was devoted to introducing the project to the members of the AB, describing its objectives and receiving valuable feedback from them.

Two additional meetings are planned:

- During 2021: for the final analysis review;
- During 2022: for presenting the the prototypes.

The bodies shown in the following table have already accepted to be part of the Advisory Board. They are the SESAR JU and representatives of the main stakeholders of the project - UAS operators, GA pilot organisations, U-space service providers and other aviation related bodies – and sibling UAS projects.

Organisation	Type of organisation
AOPA Italia	GA/UAS pilot association
APPLA	Commercial pilot association
ASSORPAS	UAS association
ATCEUC	Air Traffic Controller association
BUBBLE	Sibling UAS Project
DACUS	Sibling UAS Project
D-Flight	U-space service provider
EASA	Regulatory Body
ECA	Aviation pilot association
ENAV	ANSP

ETF	
EUROCAE WG-105 SG62	Standards-making organisation
GeoNumerics	SME
IFATCA	Air Traffic Controller association
ISO TC/20 SC/16	Standards-making organisation
Nuair	UAS test centre
SESAR JU	
Soul Software	Search and Rescue UAS association
Swisstopo	Government Organisation
University of Bologna (IT)	University
Upvision	UAS Operator

Table 3 - ICARUS Advisory Board

4 Graphical identity guidelines

4.1 Project logo

The logo to be used to identify the project is shown in Figure 1.

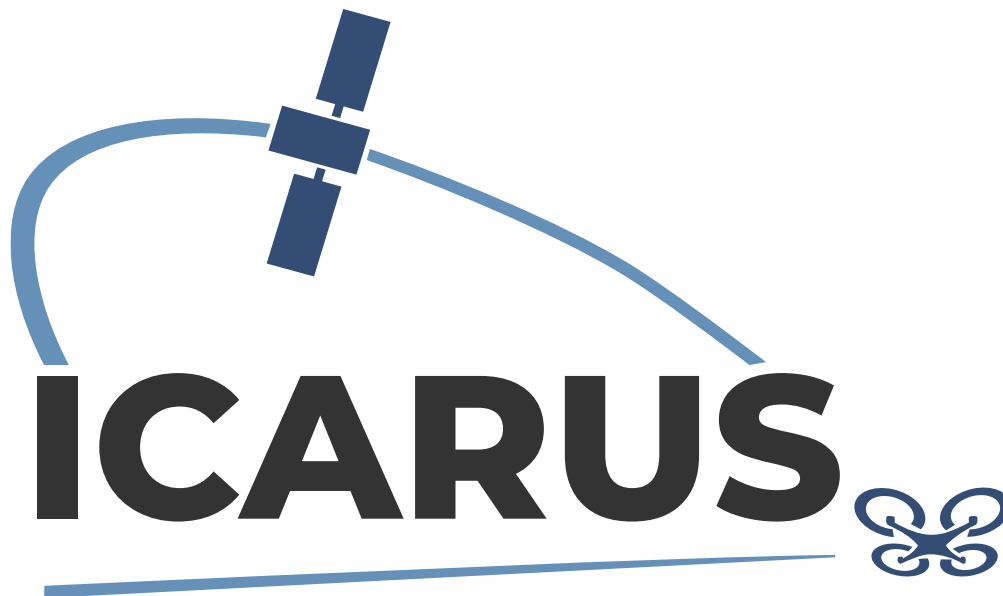


Figure 1 – Project ICARUS main logo

The following alternatives can be used when it is not possible to use the ICARUS colours or when using the logo inside a dark background.

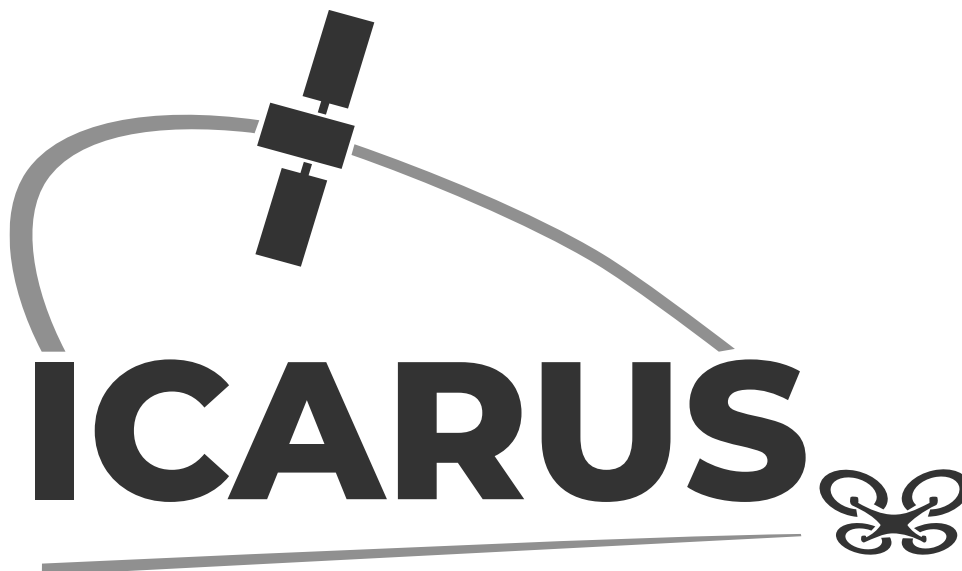


Figure 2 – Grayscale logo alternate

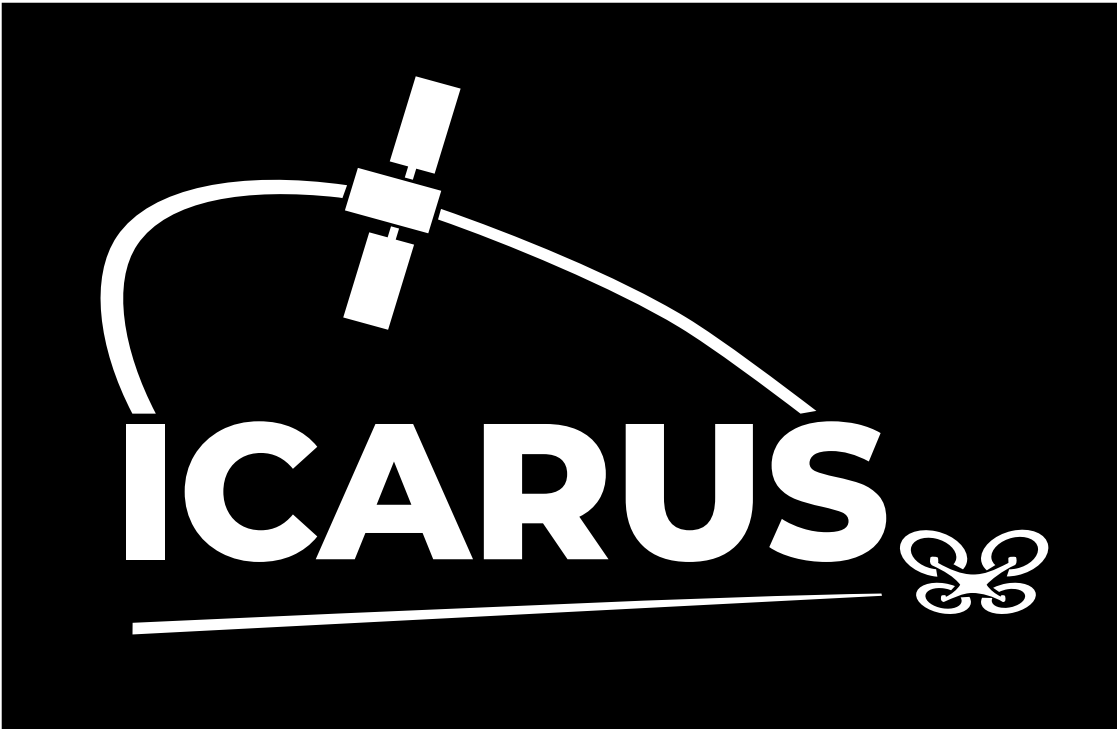


Figure 3 – White logo alternate for dark backgrounds

4.2 Colour schemes

The following colour scheme should be used when possible:

Main colour



C: 87% M: 72% Y: 32% K: 16%
R: 51 G: 77 B: 116
HTML colour: #334D74

Primary accent colour



C: 0% M: 49% Y: 100% K: 0%
R: 255 G: 150 B: 0
HTML colour: #FF9600

Secondary accent colour



C: 63% M: 36% Y: 13% K: 0%
R: 101 G: 144 B: 184
HTML colour: #6890B8

Colour for text



C: 68% M: 64% Y: 63% K: 58%
R: 51 G: 51 B: 51
HTML colour: #333333

5 Messages, targets, and channels

5.1 Project High Level Messages

All communication and dissemination activities will promote the following three high-level messages:

Description of the problem

- There is no common altitude reference between manned and unmanned aviation, nor among UASs. Traditional methods to determine altitude and ensure vertical separation in manned aviation are based on pressure measurements, with altitude origin fixed at the point of takeoff or using the International Standard Atmosphere (ISA). Drones mainly rely on satellite measurements (GNSS). Also, drones may take off and land anywhere. So, GNSS technology, which is very interesting for navigation for accuracy, integrity, continuity and availability reasons, may be the ideal technology for ensuring a common altitude reference for aircraft, manned or unmanned, flying in VLL airspace. To ensure vertical separation between drones and manned aviation, it is therefore necessary to convert altitude between pressure measurements and GNSS.

What is ICARUS

- ICARUS is a project that aims to provide an innovative U-space geodetic / barometric altitude translation service for UAS and GA pilots to be used in both the strategic and tactical phases of a flight. Drones with sufficient capabilities may use the ICARUS service to obtain the terrain profile, e.g. from digital terrain models (DTM), the distance from the ground and known ground obstacles, while keeping a common reference altitude datum (using GNSS-based altimetry). Drones with fewer capabilities may use the ICARUS service for augmenting their “level of confidence” in their vertical position (using a GNSS performance monitoring service), while keeping the same common reference altitude datum.

ICARUS benefits

- ICARUS will develop and validate a new U3 service to be used by drone operators and general aviation pilots that provides their current altitude, using a Common Altitude Reference, as well as distance from the ground or known obstacles.

5.2 Target Audience Identification

Communication and dissemination activities will be geared to six different stakeholder groups. Figure 4 shows the segmentation of these audiences in terms of their technical and scientific knowledge and their interest in the outcome of the project:

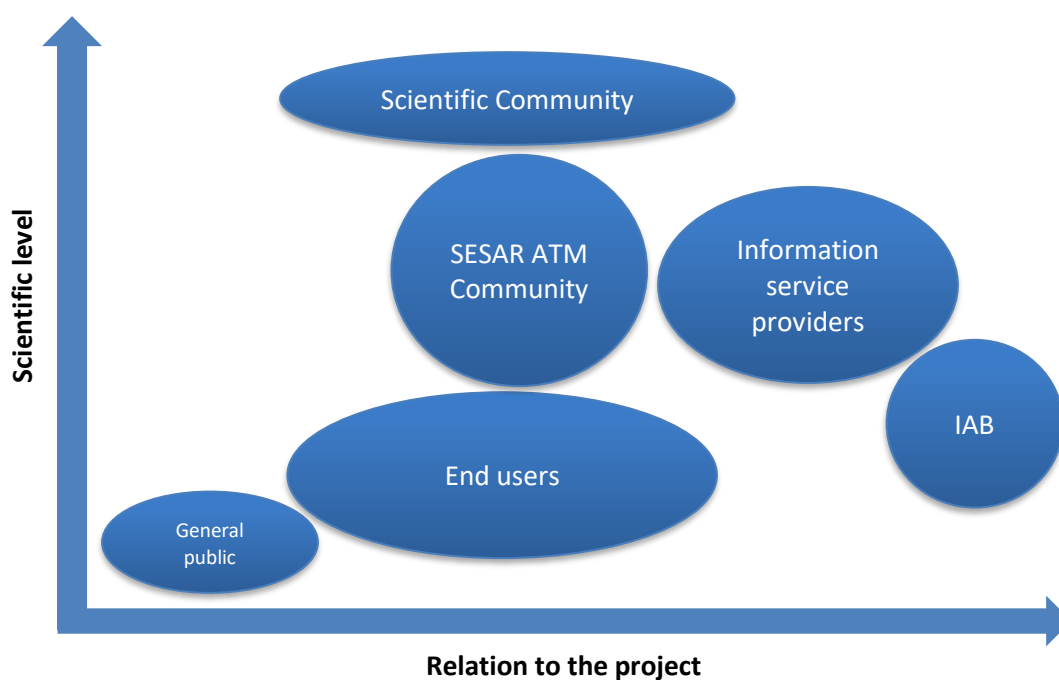


Figure 4 - Target audience segmentation

Different messages and means to deliver them will be employed to reach and convey the messages in the most effective way to the different target audience segments defined above. These tools and channels are described in Table 4.

Target group	Tools and channels
General Public	Project website; Press releases; Presence on SJU and other websites; Project leaflets and white papers; Presence on Social Media.
End Users	Presentation of project outcomes at specialised exhibitions; Project website; Newsletter; Project leaflets and white papers.
SESAR ATM Community	Project website; Participation in SESAR Innovation Days; Publications of articles in specialised magazines; Posters and talks at international conferences; Workshops; Project white papers.
Scientific Community	Posters and talks at international conferences; Publications of articles in specialised magazines; Project white papers.
Information service providers	Project website; Presentations at events; Publication of articles in specialised magazines.
Advisory Board	Workshops; Newsletter; Private section of the project web site.

Table 4 – Tools and channels

5.3 Communication, dissemination and exploitation channels

The main communication channel will be the project website, which will include a public area containing a description of the consortium, the objectives of the project and a number of assets to be used by interested parties or members of the press as described below. It will also provide a means of contact with the members of the ICARUS consortium to obtain more information or to collaborate with the consortium during the duration of the project. The website will also include a private section with access limited to members of the consortium, the SJU and members of the AB. The website will be linked to by the websites of consortium members and will link to and be linked to by the SJU website.

The project website will also be the online repository for all open-access scientific data generated during the project.

The project's presence on social media platforms we will include use of YouTube, LinkedIn and Twitter as a means of extending the reach of the project and its activities.

As mentioned above, a number of supporting documents will be employed to stimulate awareness of the ICARUS project in a unified and attractive way. This will include press releases, project leaflets, presentations, videos and newsletters. These tools will be constantly updated to reflect the project's progress, achievements, and intermediate and final results.

Publication in specialised magazines will be key for the wide dissemination of project results and for EU society.

ICARUS results will be disseminated at national and international level through participation in conferences and other public events. Participation will be at different levels, including presentations, workshops and panels.

The following conferences and public events will be considered for participation and monitored to check how and when they will be restarted.

Conference and Public Events	Links
SESAR Innovation days	https://www.sesarju.eu/sesarinnovationdays
World ATM Congress	https://www.worldatmcongress.org
EU Space week	https://www.euspaceweek.eu/
Ka Conference (Navigation Panel)	http://www.kaconf.org
Baska GNSS Conferecne	https://rin.org.uk/events/EventDetails.aspx?id=1187921
Global Wireless Summit	http://gwsummit.org/2016/about.php
Roma drone	http://expo.romadrone.it/
Drone Italy	http://www.dronitaly.it/en/

AUVSI European Conferences	http://insideunmannedsystems.com/auvsis-europe-2017/
Drone Berlin	http://www.drone-berlin.de/index.html
The Commercial UAV Show	http://www.terrapinn.com/exhibition/the-commercialuav-show/
TUS Expo	https://tusexpo.com/
Civildron	https://www.civildron.com/
Expodronica	http://www.expodronica.com/
UNVEX	https://unvex2020.com/portada.php
ASITA	http://www.asita.it/

Table 5 – Planned Conference and Public Events

5.4 Schedule of communication and dissemination activities

The project Gantt information uploaded in STELLAR contains a selection of communication and dissemination activities currently foreseen. Table 6 lists these.

Title	Activity type	Date	Place
Project website	Website and social media accounts	Jul 2020	N/A
Project brochure	Promotional material	Sept 2020	N/A
AB Meeting	Meeting	Oct 2020	Rome
ICARUS introductory video	Promotional material	Sept 2020	N/A
ICARUS concept definition white paper	Public documentation	Jan 2021	N/A
ICARUS Survey white paper	Public documentation	Feb 2021	N/A
AB Meeting	Meeting	2021	TBD
ICARUS U-space service white paper	Public documentation	Oct 2021	N/A
AB Meeting	Meeting	2022	TBD
ICARUS video	Promotional material	Dec 2021	N/A
ICARUS Summary report white paper	Public documentation	Jun 2022	N/A

Table 6 – Schedule of communication and dissemination activities

6 Main communication and dissemination materials

To support the communication and dissemination activities, the following supporting elements have been created:

- Website
- Social media channels
- Video
- Brochure

It is foreseen that a minimum of three public white papers will be produced during the project. These white papers, summarising the main findings of the project, will be written in a non-technical manner suitable for all audiences.

6.1 Website

The website is the main element for supporting the communication and dissemination effort, as well as the repository of all the documentation generated by the project.

The website has a public interface that is accessible to everybody and a private Member Area section that is only accessible to registered users, such as the members of the consortium, members of the Advisory Board, and SJU personnel.

6.1.1 Website structure

Each page of the website is organised into four different sections:

Navigation bar



Figure 5 – Navigation bar

At the top of every page there is a navigation bar that provides access to the different pages available, and provide link buttons for contacting the project consortium by email and visiting the project's Twitter channel.

The navigation bar also provides access to the login page, necessary for accessing the private section of the website.

Main content

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The main content section varies on each page according to the specific topic covered.

Footer

The footer includes links to the different pages as well as the funding and copyright notices.

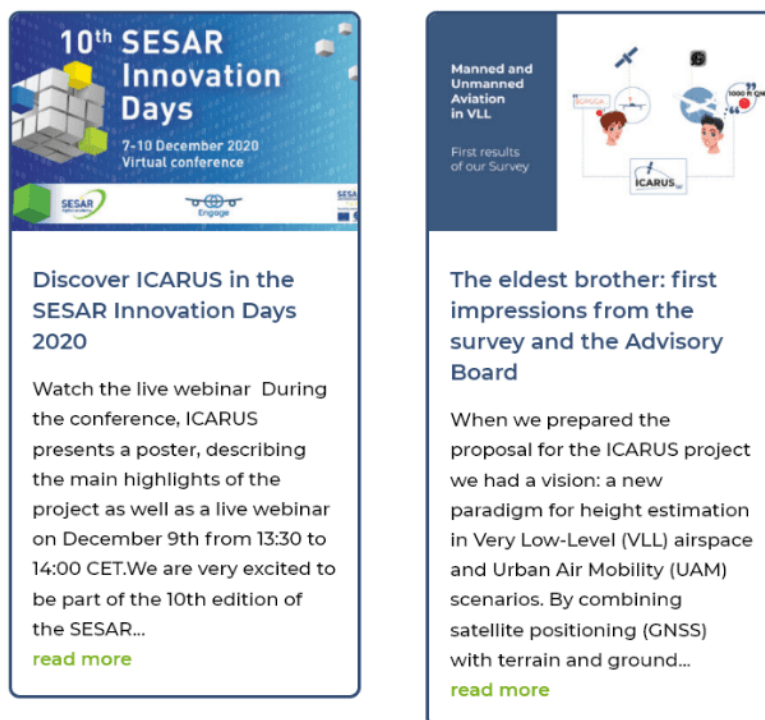


Figure 6 – Footer section

Widgets

A number of common elements are repeated on several pages. They provide access to important functionality such as viewing and accessing the Twitter feed, viewing and accessing the latest posts, and subscribing to the project newsletter. These widgets are shown in Figure 7 to Figure 9.

News



« Older Entries

Figure 7 – News feed widget

Twitter Feed

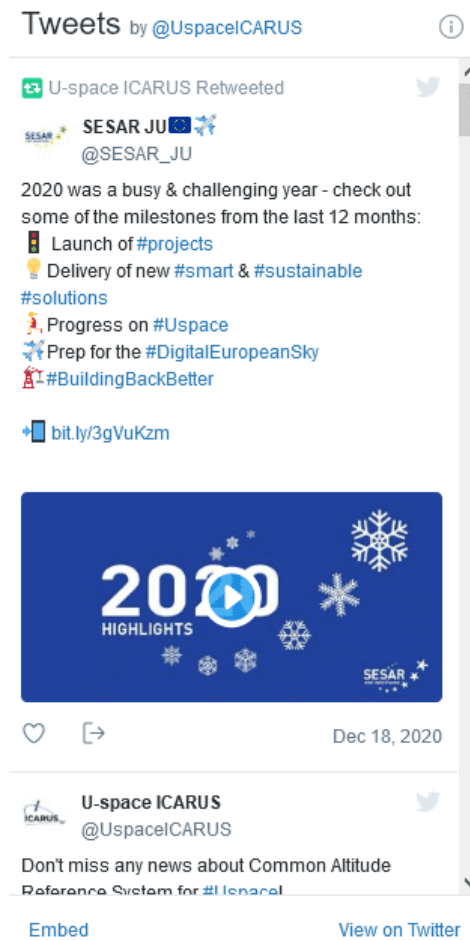


Figure 8 – Twitter feed widget



Figure 9 – Newsletter widget

6.1.2 Main page (About)

The main page contains the most important information for describing the project, as well as links to other related pages. It is divided into various sections as shown below.

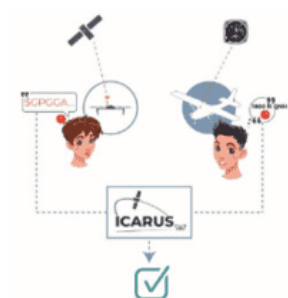


Figure 10 – Banner and funding notice (above the fold)

ICARUS project proposes a **GNSS based altimetry** solution to the challenge of the **Common Altitude Reference system** for drones at very low level airspace, through the identification of the navigation requirements applicable to **Unmanned Aircraft Systems (UASs)** and the definition of a new U-space service for UAS / Manned aircrafts altitude translation.

Objectives

ICARUS concept will be validated in a real operational environment, providing feedbacks and refinements to the initial definition. A final **Concept of Operations (CONOPS)** will be generated in the second part of the project.



- Define technical requirements for high accuracy GNSS-based altitude measurement for drones, to enable a reliable and accurate common vertical datum (UAS-UAS).
- Investigate the vertical accuracy and resolutions achievable by the actual **Digital Terrain Model (DTM/DSM)** services for **ground obstacles** clearance (UAS-Ground Obstacles).
- Design a tailored U-space service for height transformation: geodetic measurement to a barometric reference system and vice-versa for **UAS** and **Manned aircrafts** (UTM/ATM interface, G Airspace problem)
- Foster the safest possible system for a common altitude reference system to address the needs of UASs, Manned flights ad new Urban Air Mobility Actors (i.e. Taxi drones), paving the way for the enhancement of the VLL capacity and UAS separations for future BVLOS applications.

Figure 11 – Project objectives section

Why a common altitude reference is needed?



The activities in which UAS are employed, from commercial to leisure, can lead them to share VLL airspace with conventional aircrafts.

To maintain separation among all users of this airspace, the altitudes of all of these aircraft must be known unmistakably through a common datum.

However, whereas conventional manned aviation uses pressure altitude obtained from barometric readings, UAS may use other systems such as GNSS-based altitudes.

While each of these different systems can enable safe separation by their own, they can each provide different altitude values from each other.

A common altitude reference system must be established to address the needs of the new airspace actors (UAS, Taxi drones, ...), without superimposing additional equipment for general aviation users.

The users of ICARUS service are identified to be remote pilots and autonomous drones, considering the enhanced level of connectivity and automation provided by the U-space services at **U3 level**.

General aviation pilots and other airspace users (ultralights) may benefit of the altitude translation service provided by ICARUS through vocal communication (VHF) in controlled airspaces. For uncontrolled airspaces, different solutions are under investigation.

The definition of the common altitude reference system is fundamental to enhance the capacity of the airspace and the separations among UASs, especially in the urban environment, where the new potential markets of package delivery and drone taxi applications are just waiting to be unlocked.

Figure 12 – Problem statement section

Technical background



The ICARUS project has strong links both with the previous **SESAR Exploratory Research 2016** studies and with the actual ongoing SESAR projects such as **DACUS** and **BUBBLES**. Other initiatives as EC EGNSS studies and other international **UTM** initiatives will be considered during the lifetime of the project.

The **Common Altitude Reference System (CARS)** document developed by EuroControl and EASA represents the starting point for ICARUS investigation.

In this discussion paper **EUROCONTROL** and **EASA** have published some potential options for the resolution to the **Common Altitude reference** problem for drones. The conclusion of the study outlines three options covering different approaches to address the problem (GNSS/ barometric / Mixes approach). ICARUS represents the follow up of such analysis, with the enforcement of the **CONOPS** proposed in a relevant operational scenario.

ICARUS will consider the outcome of **CORUS** project in accordance with the classification of the airspace volumes provided in the final CONOPS (X, Y, Zu, Za).

In fact, the CONOPS proposed by CORUS and the related airspace architecture will represent a solid benchmark to start ICARUS study for the best possible elicitation of CONOPS and the proposed service.

At global level, **ICAO** has proposed a common UTM framework, in which recognizes the need for a common altitude reference system to ensure safe vertical separation between unmanned and manned traffic.

Figure 13 – Technical background section

U-space

U-space is a set of new services relying on a high level of digitalisation and automation of functions and specific procedures designed to support safe, efficient and secure access to airspace for large numbers of drones. As such, U-space is an enabling framework designed to facilitate any kind of routine mission, in all classes of airspace and all types of environment – even the most congested – while addressing an **appropriate interface with manned aviation and air traffic control**.

[Learn more](#)

Figure 14 – U-space section





6.1.3 Consortium page

The consortium page provides a brief description of the consortium partners and their contact information.

ICARUS Consortium

All information about the members of the ICARUS Consortium

▼

	<p>e-Geos</p> <p>e-GEOS, an ASI (20%) / Telespazio (80%) company, is a leading international player in the Earth Observation and Geo-Spatial Information business. e-GEOS offers a unique portfolio of application services, also thanks to the superior monitoring capabilities of COSMO-SkyMed constellation, and has acquired leading position within European Copernicus Program</p> <p>RSS Twitter LinkedIn YouTube</p>
	<p>DICEA – Sapienza</p> <p>DICEA, the Department of Civil, Constructional and Environmental Engineering at Sapienza, ensures scientific excellence and quality education in all branches of civil and environmental engineering, architectural design and urban planning</p> <p>RSS Twitter LinkedIn YouTube Facebook</p>
	<p>Drone Radar z.o.o</p> <p>Droneradar Sp. z o.o was founded in 2018 to continue the development of the DroneRadar UTM system in co-operation with the Polish Air Navigation Services Agency. In 2020, PansaUTM, based on Droneradar DAMS concepts and solutions, was launched as the first certified UTM system in the world.</p> <p>RSS LinkedIn YouTube Facebook</p>
	<p>Eurocontrol</p> <p>Eurocontrol is a pan-European, civil-military organisation dedicated to supporting European aviation</p> <p>RSS LinkedIn Twitter</p>



EuroUSC España, S.L.

EuroUSC España is an aviation safety consulting company, specialized in Unmanned Aerial Systems (UAS) and Remotely Piloted Aircraft Systems (RPAS). Our services cover the entire workflow of a successful UAS operation.



EuroUSC Italia S.r.l.

EuroUSC Italia is a consultancy company covering all domains relevant for the civil UAS industry and drones flying under GAT rules. We are leading experts in the standardization of European Regulation, safety assessment (SORA) and Education on RPAS safety and security for Pilots and Quality Managers



Politecnico di Milano

Politecnico di Milano is an Italian technical university, offering courses in engineering, architecture and design. The Department of Civil and Environmental Engineering (DICA) covers many disciplines, also including Geodesy and Geomatics.



Telespazio S.p.A

Telespazio, Joint venture between Leonardo (67%) and Thales (33%), is one of Europe's leaders and world's main players in satellite solutions and services. Telespazio has its HQ in Rome, Italy, includes e-GEOS (ASI 20%), operates worldwide and it has a wide network of space centres and teleports.



TopView S.r.l.

Is an Italian Engineering SME. Its Drones and IoT based Systems are tailored for the Industry and Service Provider companies to enhance their processes. So far TopView has joined several U-space projects as partner and advisory board member.



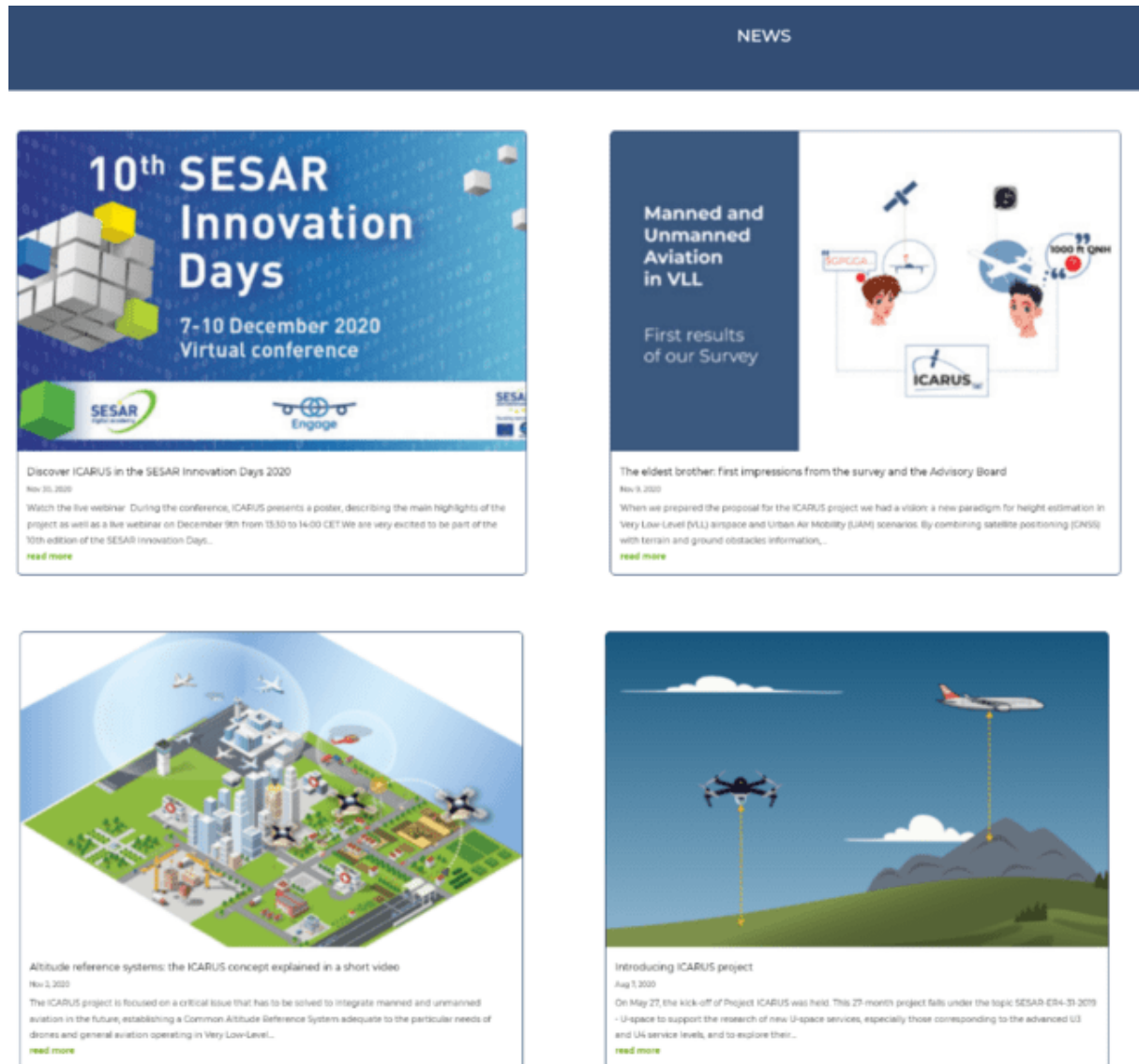
Figure 15 – Consortium page



6.1.4 News page

The news page is a repository of articles written to describe the project, its main findings, and notices of communication and dissemination actions such as conferences where ICARUS results will be presented..

NEWS




10th SESAR Innovation Days
7-10 December 2020
Virtual conference

Discover ICARUS in the SESAR Innovation Days 2020
Nov 30, 2020

Watch the live webinar. During the conference, ICARUS presents a poster, describing the main highlights of the project as well as a live webinar on December 9th from 13:30 to 14:00 CET. We are very excited to be part of the 10th edition of the SESAR Innovation Days..

[read more](#)




Manned and Unmanned Aviation in VLL

First results of our Survey

The eldest brother: first impressions from the survey and the Advisory Board
Nov 9, 2020

When we prepared the proposal for the ICARUS project we had a vision: a new paradigm for height estimation in Very Low-Level (VLL) airspace and Urban Air Mobility (UAM) scenarios. By combining satellite positioning (GNSS) with terrain and ground obstacles information,...


[read more](#)



Altitude reference systems: the ICARUS concept explained in a short video
Nov 1, 2020

The ICARUS project is focused on a critical issue that has to be solved to integrate manned and unmanned aviation in the future, establishing a Common Altitude Reference System adequate to the particular needs of drones and general aviation operating in Very Low-Level..

[read more](#)



Introducing ICARUS project
Aug 1, 2020

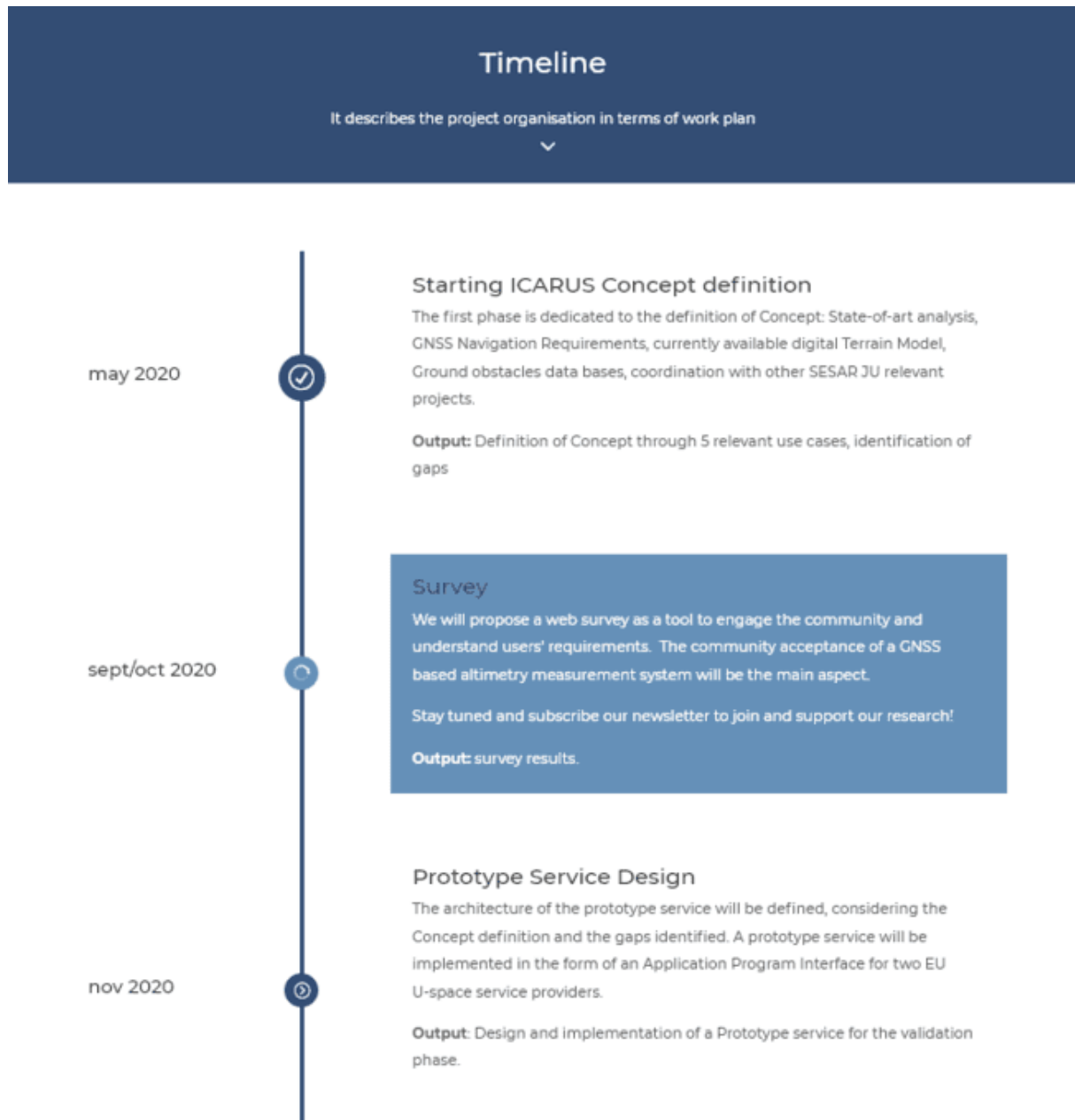
On May 27, the kick-off of Project ICARUS was held. This 27-month project falls under the topic SESAR ED4-31 2019 - U-space to support the research of new U-space services, especially those corresponding to the advanced U3 and U4 service levels, and to explore their...

[read more](#)

Figure 16 – News page

6.1.5 Timeline page

The timeline page provides a visual representation of the progress of the project, listing its main development phases and its current status.



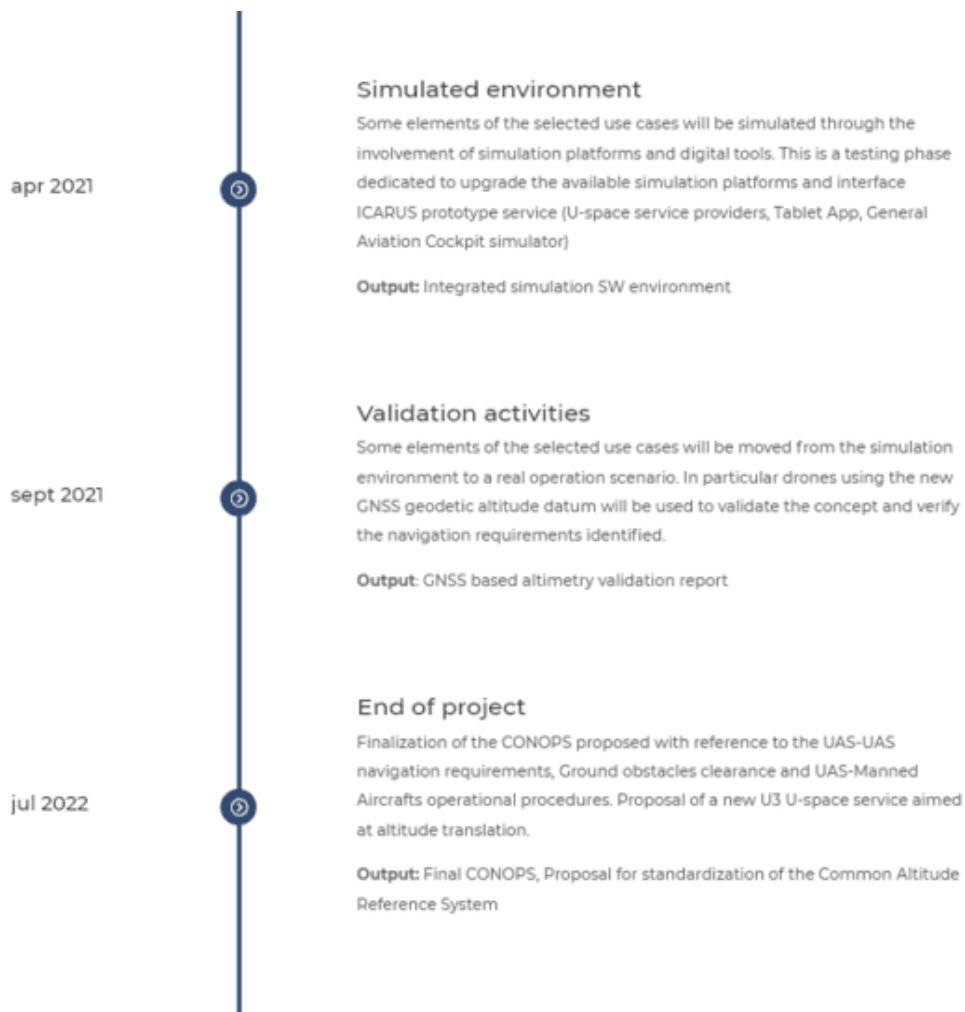
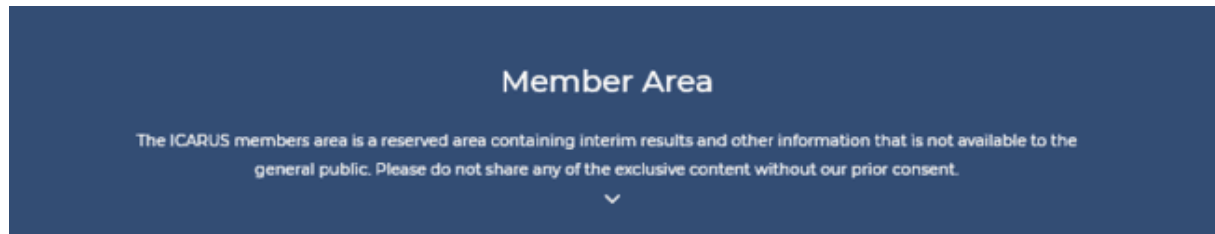


Figure 17 – Timeline page

6.1.6 Member Area

The Member Area is a private section, only available to users registered on the system, i.e. representatives of the SESAR JU, members of the AB and project partners. It hosts supplemental material not available to the general public.



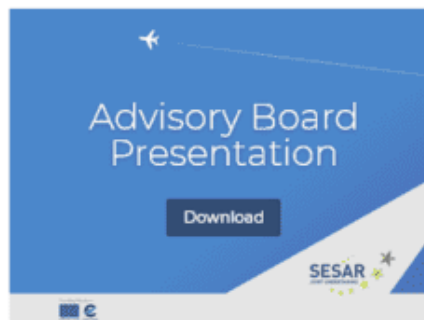
Manuel Onate



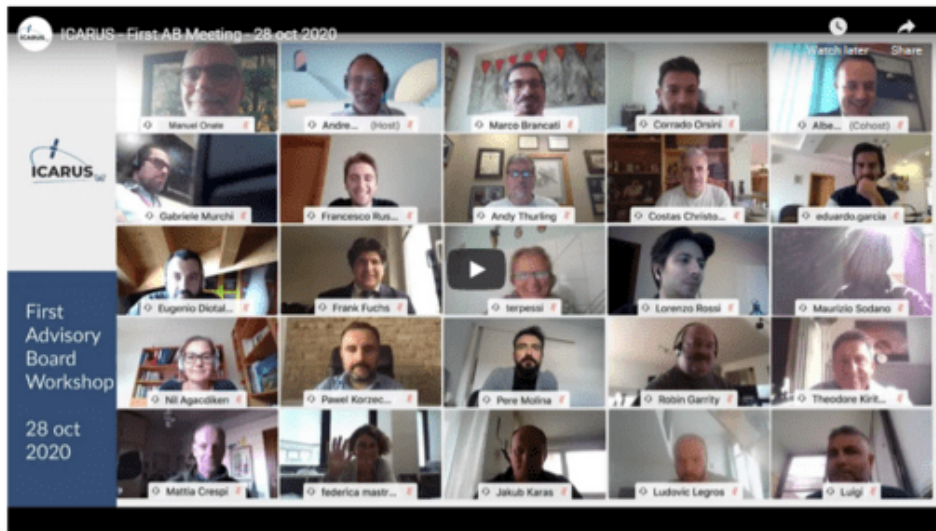
First Advisor Board Workshop

Wednesday, 2020 October 28 - 10:30 > 12:30

- **Andrew Hately**, Eurocontrol: Host
- **Cristina Terpessi**, e-Geos: ICARUS
Introduction; Roadmap and next meeting
- **Corrado Orsini**, Telespazio: ICARUS
Scope
- **Alberto Mennella**, TopView s.r.l.:
ICARUS High level technical objectives
- **Mattia Crespi**, DICEA: ICARUS Digital
Elevation Models
- **Pawel Korzec**, DroneRadar: ICARUS
Architecture
- **Francesco Russo** TopView s.r.l.: ICARUS
Real Time Survey
- **Manuel Onate** EuroUsc-Es ICARUS
Communication & Dissemination



Watch playback



Next Advisory Board Meeting

February 2021



Figure 18 – Member area

6.2 Video

The project video is a 2-minute animated cartoon description of the problem statement and the project objectives using non-technical language. It provides an excellent introduction to the project and is suitable for all audiences.

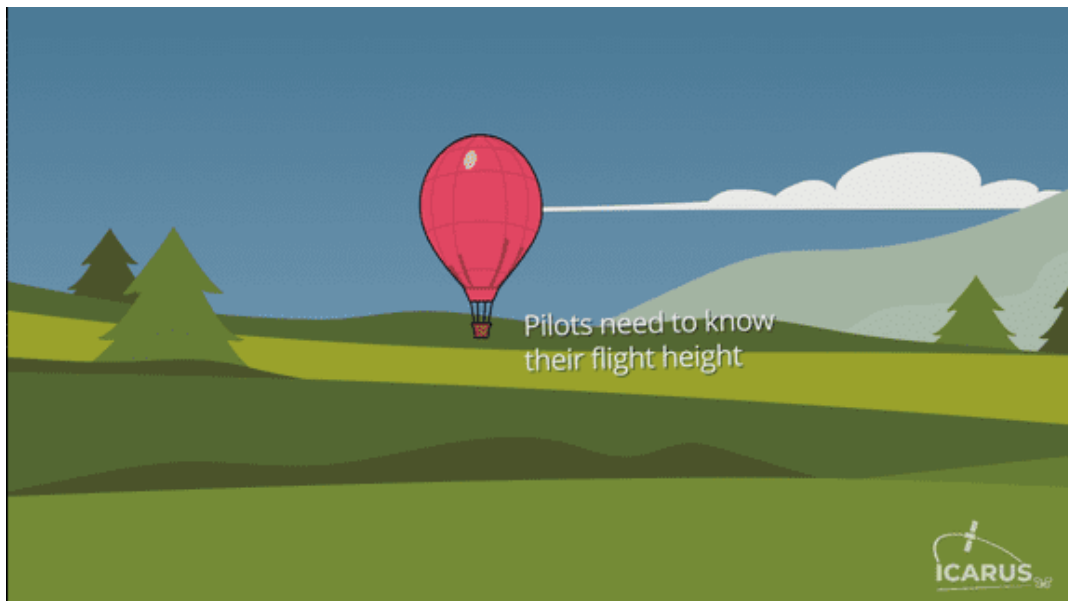


Figure 19 – Video frame

The video can be accessed on the SJU YouTube channel, at the following link:

<https://www.youtube.com/watch?v=9GxH6M1hZ90>

6.3 Brochure

A brochure including the key messages, timeline and participants is available to all the project partners for use in promoting the project at any public venue.



Currently there is no common altitude reference in manned vs unmanned aviation, or between different drone manufacturers.

Traditional methods to determine altitude, and ensure vertical separation, are based on pressure altitude.

Drones already use satellite measurements (GNSS) for navigation purposes. This technology offers excellent accuracy, integrity, continuity and availability properties and represents the ideal technology for ensuring a common altitude reference for drones flying at VLL.

ICARUS benefits

The U-space service that ICARUS will develop and validate can be used by drone and manned aviation to obtain their current altitude, using a Common Altitude Reference, as well as distance from the ground or known obstacles.

This innovative service will increase the safety of operations, boosting long distance (BVLOS) operations, increasing the capacity of congested low level airspace and further the integration of drones with the traditional manned aviation.

To get more information about the project ICARUS, please contact us at

www.u-spaceicarus.eu
info@www.u-spaceicarus.eu

Follow us:  

ICARUS

**Integrated Common
Altitude Reference
System for U-space**

  This project has received funding from the SESAR Joint Undertaking under the European Union 2020 Research and Innovation programme under grant agreement No 874513

Figure 20 – Brochure exterior

What is ICARUS

ICARUS is an altitude translation service (geodetic to/from barometric) for UAS and General Aviation pilots in the form of an innovative U-space service to be used in both strategic and tactical phases of the flight. Pilots may use the ICARUS service to obtain the terrain profile, the distance from ground and known ground obstacles, while keeping a common reference altitude datum as well as augmenting the "level of confidence" on the vertical position.

The main objectives of ICARUS are:

1. Define the technical requirements for GNSS-based altimetry
2. Investigate the vertical accuracy of existing Digital Terrain Models to be used for prevention of ground obstacles
3. Design a U-space service for height transformation
4. Define a safe system for a common altitude reference system for drones and general aviation to enhance the VLLC capacity and safety

Project Timeline

- may 2020**
Project Start
- oct 2020**
Survey to understand the user requirements
- dec 2020**
Design of the prototype service
- apr 2021**
Digital simulation of key elements of the proposed service
- sep 2021**
Validation of key elements of the simulated environment
- jul 2022**
Finalization of the CONOPS of the proposed U-space service

Project Consortium

Project Coordinator
e-geos
AN ASI / TELESPAZIO COMPANY

Partners

- droneadar.eu
- EUROCONTROL
- EUROUSC ESPAÑA / EUROUSC ITALIA
- TELESPAZIO
una società LEONARDO e THALES
- POLITECNICO MILANO 1863
- TOPVIEW
LOOKING OVER
- SAPIENZA UNIVERSITÀ DI ROMA

Figure 21 – Brochure interior

7 Success Criteria

7.1 Key Performance Indicators (KPIs)

The following table shows the performance indicators that will be used to assess the success of the communication and dissemination activities:

Actions	Target
Workshops organised by the project	3
Number of videos produced	2
Publication of articles in specialised magazines	2
Presentation of poster and talks at international conferences	3
Number of events attended representing the project	6
Number of posts in website	15
Number of social media impacts	50
Number of visitors to the project website	1,000
Number of links to ICARUS website	50
Number of subscribers to ICARUS newsletter	50

Table 7 – Communication and dissemination success indicators

7.2 Coverage of the objectives in the first period

The following table shows the coverage of the KPIs used to measure the success of the communication and dissemination activities.

Performance indicator	Objective (full project)	Achieved	Comment	% of achievement
Workshops organised by the project	3	1		33%
Number of videos produced	2	1		50%
Publication of articles in specialised magazines	2	-		-
Presentation of posters and talks at international conferences	3	1	SESAR Innovation days	33%
Number of events attended representing the project	6	1		16%
Number of posts in website	15	4		27%
Number of social media impacts	50	19	Number of tweets and posts	38%
Number of visitors to the project website	1,000	853		85%
Number of links to ICARUS website	50	N/A		-
Number of subscribers to ICARUS newsletter	50	12		24%

Table 8 – KPI coverage



To interpret the table, it should be noted that at the time of preparation (January 2021) one third of the project had elapsed. Also, it is important to consider that activities geared towards the dissemination of results should be skewed to the end of the project when results are available.

With these two considerations taken into account, the table demonstrates that the project is well on target to comply with the established success criteria.

