- APROVIS3D -

Analog PROcessing of bioinspired VIsion Sensors for 3D reconstruction

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1. Introduction

1.1 Purpose of the Document

The D6.1.1. *Dissemination plan* aims to present the strategy of disseminating project progress and results to the relevant scientific communities, stakeholders and potentially industrial audience, as well as to promote the benefits of the methodology adopted by APROVIS3D. The project dissemination will follow four main strategies, in which communication contents and channels are tailored to different target groups:

- Traditional scientific presentations and manuscripts will be presented in scientific conferences and journals;
- Promotion of project activities through social networks;
- Dissemination of guidelines and recommendations on analogue computing and their applications;
- Industry networking

In this frame, the main objective of the dissemination plan is to successfully spread-out APROVIS3D outcomes across Europe and internationally. In details, D6.1.1 will:

- Implement the dissemination strategies through key messages delivered to targeted stakeholders;
- Define the targeted audience to disseminate the project and the project results;
- Plan a list of activities for achieving the aims above;
- Monitor and evaluate completion of activities at project phases.

In order to attain the widest results possible, the APROVIS3D partners will participate in conferences, exploit personal networks and contacts, and write and publish papers and brochures in social media and websites.

1.2 Document Organisation

The deliverable is separated in sections, where firstly the main communication strategies are introduced, followed by the dissemination objectives, messages, audiences, and channels, and finally the monitoring and evaluation methods to be adopted to monitor the project progress.

1.3 Methodology

According to the Description of Work, P4 UNIWA in close collaboration with all other project partners develops a dissemination plan along the following steps:

To whom?	The main target groups identified are researchers in analog computing/artificial intelligence/computational neurosciences/computer vision, end- users general public and media groups; wider audience
What?	What the consortium should disseminate and promote to maximise the impact of the project, both within and beyond the participants and their countries. Key messages about APROVIS3D's goals, outputs, outcomes, and data;
How?	The channels, instruments and tools to conceive, design and implement how to expand at large project objectives and results, methods and practices. a tailored approach to the specific needs and stakeholders' potential contributions
Why?	The aim the Consortium likes to achieve through results' dissemination, to promote APROVIS3D project's objectives, progress, and outcomes, and disseminate its results to interested parties
When?	The timeline of dissemination and promotion activities, taking into account project progress and achievements, from the launch of the project and adapted to its entire timeline

By whom and with whom?	The person or team in charge of specific dissemination and cooperation activities, taking into consideration partners' skills and expertise. The main target groups identified are researchers in analog computing/artificial intelligence/computational neurosciences/computer vision, end- users general public and media groups; wider audience

1.4 Application Area

This document serves as a management tool to define the dissemination and communication framework and guidelines for the project consortium, as well as project partners. It will be used as a reference document during the project duration, including regular monitoring and evaluation. Depending on project progresses and external factors, the dissemination plan will be updated and adapted accordingly to fit to the needs and deliverables.

1.5 Document Review and Amendment Procedure

Quality assurance procedures are envisaged for revision and updating of the document. In case of omissions, mistakes or updating, P4 UNIWA in close collaboration with all other project partners may review this document following consortium and EC approval. In this case, the new version will be uploaded to the APROVIS3D website and - if requested - also submitted to the European Commission.

1.6 Terminology

Dissemination
Dissemination is defined as "the means through which research results are presented to the public (internal and external)". This is the term generally used for communication of specific information to a targeted audience or general public, by means of different scale media. It can also be associated with the dissemination process and means, and the communication activities at events, such as workshops, demonstration events, posters, and mailing.

Target audience
The term is used to describe the groups of stakeholders interested at the entire or specific level/part of the project activities and results. These include the scientific, industrial and potentially even the medical community, lay public, press, media and decision makers.

Stakeholder
Any organization or individual being interested in the project or having an interest in the progress and/or outcomes of the project.

APROVIS3D Communication Network
It includes all the directly-controlled communication channels that the project aims to build, including relevant organizations, networks, industrial partners and projects, and initiatives. These will form a mailing list and will receive dissemination information to distribute further to their channels.

2. Executive Summary

The *APROVIS3D* dissemination activities aim to make visible the project's contents and findings to both scientific and non-specialist audience, and they are expected to advance the state-of-the-art of *analog-based technologies* in the fields of vision sensors, Machine Learning, computing and motion control of UAVs. Moreover, the project can play an important role towards bringing *analog-based technologies* in the daily environment of people.

These project activities include scientific dissemination (publications, conferences, open access to publications into a public repository), data dissemination (Zenodo, Github, data papers), economic valorisation and societal dissemination activities (e.g. through Xperium).

All consortium partners are very active in publishing novel scientific achievements in prestigious journals and major peer-reviewed conferences in their fields of expertise. We expect that the theme of APROVIS3D will lead to many novel publications that will be embraced by the scientific community. The published papers and their associated demos will be presented in the corresponding conferences and journals favouring Open Access. Project-related publications will be uploaded to the French National repository HAL (UCA, UL, INT) within 6 months after their publication, as allowed by the French Digital Republic Law.
Dissemination strategies and tools will be differentiated according to specific phases and targets, guaranteeing the continuity of the spreading the project results even after its end. Several communication channels will be used to reach specific audiences, including presentations at national and international congresses and workshops, publications in scientific journals, leaflets at relevant events, existing social networks and social-web based tools, and industry connections.

3. Dissemination methods and channels

3.1 Goals and Ambitions

3.1.1 APROVIS3D Vision and Mission

APROVIS3D targets analog computing for artificial intelligence in the form of Spiking Neural Networks (SNNs) on a mixed analog and digital architecture. The project includes Field Programmable Analog Array (FPAA) and SpiNNaker applied to a stereopsis system dedicated to coastal surveillance using an aerial robot.

The overall vision of APROVIS3D is to be the first real-time visual servoing algorithm implemented in an analog fashion directly integrated into a UAV system, thus, promoting open possibilities of combining analog computing with artificial intelligence and developing a demonstrable product with potential industrial/commercial applicability beyond the project time scale. Consequently, the project aims to create a multi-disciplinary research community with experts and, in the long term, such an innovative vision paradigm to open new research directions for scientific communities in developing analog machine learning.

The main ambitions of APROVIS3D are to develop a new design of event-based vision system, based on:
(1) improved event-based vision sensors
(2) new neuromorphic algorithms
(3) their implementation on a mixed analog-digital architecture.

Moreover, APROVIS3D will provide some strong impacts towards European societal objectives, especially in the environment for the preservation of coastal areas. The coastal areas are subject to increased pressure by regional alterations and global changes. The project will have a direct societal impact since the targeted demonstrator will facilitate the coastal erosion monitoring allowing a better understanding regarding environment evolution. The 3-Dimensional and real-time monitoring of the environment using UAV with the proposed bio- inspired stereopsis sensing can facilitate the monitoring and interpretation process. The proposed system can also be adapted for atmosphere changes, deforestation and biodiversity surveillance and monitoring with longer operation time and accurate navigation.

3.1.2 APROVIS3D targeted outcomes

The specific APROVIS3D communication objectives for the project duration of 36 months are directly related to the overall targeted outcomes, namely:

1) the implementation of the algorithm and subsystems into a system that will be

evaluated to control a UAV navigation by implementing an end-to-end analog event-based approach;

2) the design of a new bio-inspired DVS (Dynamic Vision Sensor) with electronic control of foveation points, allowing new applications involving 3D reconstructions.

The technology proposed by APROVIS3D may have potential impact on AI (Artificial Intelligence), ML (Machine Learning), IoT (Internet of Things), IT hardware design, robotics and autonomous vehicles;

3.1.3 Target Groups and dissemination/communication tools

APROVIS3D will target a variety of audiences ideally not only in Europe. Depending on the phase of the project lifetime, the priority audiences are likely to change, as in the beginning of users from the scientific, computational and even medical community will be prioritized, whereas towards the end of the project, industrial manufacturers in analog technologies and possibly also in robotics may also become targeted.

Target groups	Details	Access
Scientific communities	Peers in various scientific research domains interested in the project's outcomes	Publications, GitHub/GitLab, Events, Posters, Leaflets
End-users	SMEs and big industries interested in analog technologies	Website; bilateral exchanges Twitter
Local intermediaries	Coastal monitoring units	Website; bilateral exchanges Project documentation; YouTube channel
General public	All citizens of various ages	Website; Xperium

In addition, the dissemination, communication, monitoring & evaluation tools that the project will make use of are described below:

Tools / Channels	Partner in charge	Key Performance Indicator	Target values
Publications, presentations and posters	ALL	Scientific publication (refereed) related to project developments	18 (one publication per partner per year)
Events participation	UCA	Yearly event organised by CHIST-ERA	3
Website	UNIWA	Project website visits	5000+ unique visitors
Press releases / Project communications	ALL	Project's communications dissemination	4 project communication disseminated
Short videos	NTUA	Videos to promote the project and raise awareness;	3 videos 1000+ views
Social Media	ALL	Number of friends/followers/likes	100+ Friends / Followers / Likes

3.1.4 Key activities for target groups

APROVIS3D will deploy a dissemination strategy by means of:

- Feeding scientific results and application developments into the communication strategy for sharing messages about the added project value. As such, P4 UNIWA will collaborate with all the partners following the progress and result validation;
- Reaching out new users and communities;
- Addressing specialised audiences (e.g. scientific, industrial, non-scientific) according to specific project results, priorities, expectations and interests;

- Adopting messages according to the technical/scientific level of each target group, and where and when necessary.

A number of target actions for specific audiences is presented below.

Activity	Impact
Project Logo	The APROVIS3D logo will establish the project's identity during and after its completion
Project Documentation	The updated documentation (deliverables, results, achievements) will significantly raise the visibility of the project and communicate its potential applications to stakeholders and end-users.
Publications	High quality publications of the project achievements will enhance the possibilities of fostering cooperation with other entities of the analog computing community and will simultaneously provide the means of a peer review process regarding APROVIS3D methods and results
Organisation of events	Workshops, special sessions, and invited talks participation and/or organisation, will additionally increase the project's visibility and aid towards the wider communication of its results
Project website and social media	The website will be launched at the beginning of the project and will be used to disseminate the following set of activities: • Information about the project's objectives, results, and associated work plan as well as partners' profile and role in the project. • Public repository for results (deliverables, data) and for dissemination materials (papers, presentations, brochures, promotional videos, newsletters, press releases). • News and events related to the project's activities (demonstrations, experimental/integration meetings, participation in Fora). • Additional online dissemination and communication activities will be achieved via everyday social media (e.g. Facebook, Twitter, and YouTube) as well as via professional social media (e.g. LinkedIn and ResearchGate).
Participation in Groups and Fora	Participation in specialized Groups and Fora (e.g., European Robotics Forum) will significantly contribute towards project achievements wider communication as well as communication with potential stakeholders

3.2 Branding

3.2.1 Logo

An initial project logo is proposed.

3.2.2 Templates

Templates for text documents and presentations will be produced and made downloadable for all members of the project. Consistent use of these templates ensures project harmonisation.

3.3. Dissemination and Communication Channels

APROVIS3D results will be disseminated through different communication channels according to targeted groups and at different phases of the project. Non-scientific community will be mainly approached using the project website and social media profiles (e.g., Facebook and Twitter), updated on a regular basis, whereas the scientific and industry community will be informed of the project findings through presentations in national and international conferences, papers on peer-reviewed scientific journals and participation in specific workshops and events.

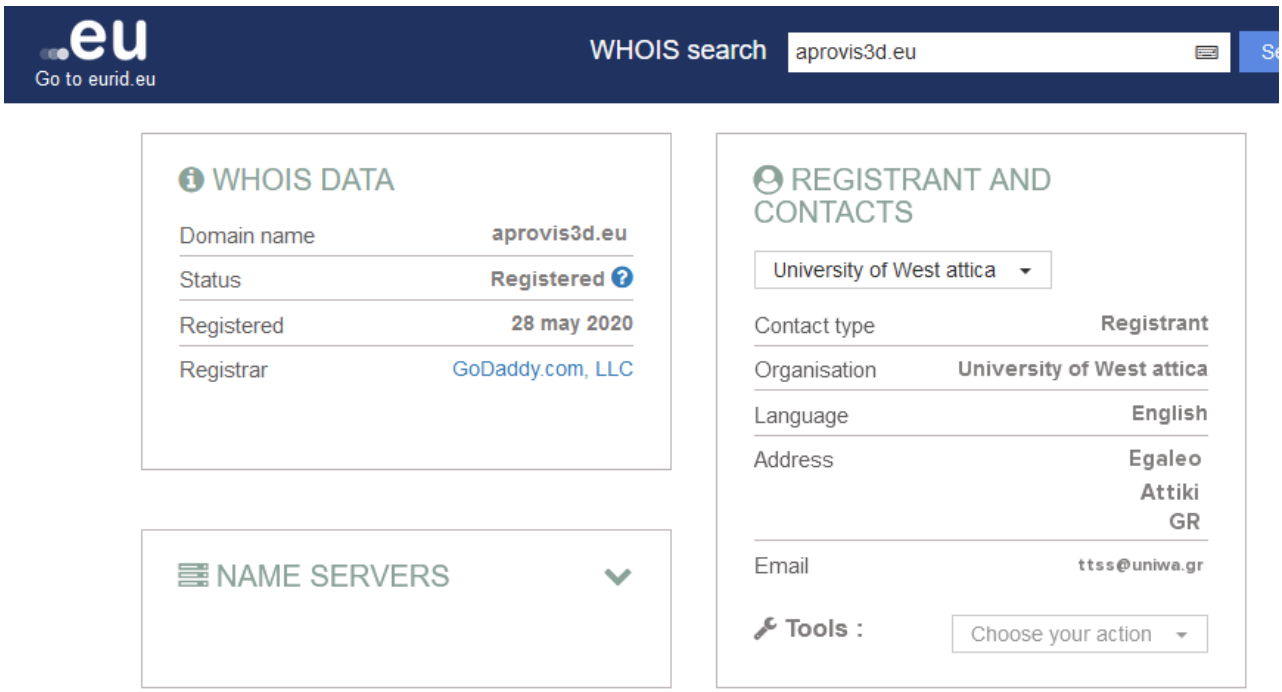
Communication tools are selected according to their ability to reach their target, timeliness, accessibility and user-friendliness, flexibility, reliability, credibility, and cost effectiveness. The following tools are identified: Project logo and website, Mailing List, Power Point Presentations and posters templates, Project information sheet(s), Scientific articles, Press releases, and Participation to international conferences and workshops.

Target group	Communication tools	Strategy
Scientific Community (Academics, Researchers)	Oral and poster presentations at conferences and congresses Peer reviewed articles Project website	Choice of high-profile meetings and journals Compliance with EC's Open Access Policy
Non-scientific community	Project Website Social media Printed material (leaflets)	Liaison with industry in analog computing technology and 3D reconstructions, targeting exhibitions/events, and other theme-related active groups
National and international stakeholders (organisations, associations of professionals)	Project Website Press releases Printed material (leaflets) Final event	All partners will contribute to related reports

Media	Project Website Press releases In –person meetings Printed material (leaflets) Final public event	link with local/national journals, creating mailing list(s) of media contacts

3.3.1. Website

The ***aprovis3d.eu*** domain has already been registered for initial period of two years (with 5 years extension option) using godaddy.com LLc service. Registration period started at 28/5/2020. Details can be found at https://whois.eurid.eu/en/search/?domain=aprovis3d.eu



Professional assistance will be endorsed regarding the project website, drafting of press releases/leaflets, graphic design, maintenance and other communication tasks. The project website will include:

i. The public website to share project information, history and progress, partnerships, media announcements, publications, conferences and events.

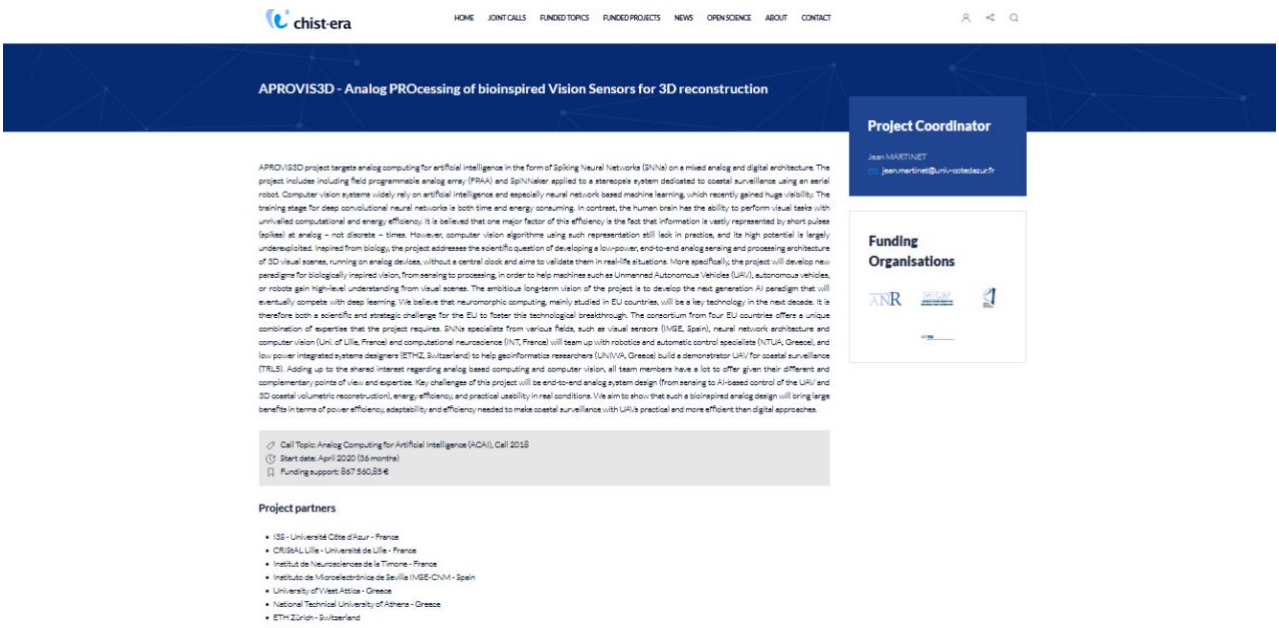
ii. The reserved area, containing confidential information to share among the project consortium, such as project meetings' minutes, confidential deliverables, patents and designs, and other internal project plans and reports.

The access to the website will be possible through:

i. search engines, and other partnering websites. In the first case, ***aprovis3d.eu*** will ensure that is optimized for search engines, as suggested by the EC Communication Best Practices

https://ec.europa.eu/research/participants/docs/h2020-funding-guide/grants/grant-management/communication_en.htm

ii. ***aprovis3d.eu*** will be promoted, among other ways, as a link from the websites of other partnering projects, universities, academic and research organizations and the CHIST-ERA site.



The project website will aim to comply with the recommended usability and accessibility standards (e.g. ISO 9241 standard, parts 110 and 111).

3.3.2 Conferences and Events

APROVIS3D partners will regularly represent the project and its achievements to conferences, meetings, and other events. Each partner is encouraged to promote the project outcomes, according to consortium agreed strategies. Partners will keep track of events and activities where they represent the project, sharing relevant information with partners. Final conference will be organized involving ideally relevant stakeholders and media.

Below a potential list is provided of target journals and conferences for publication.

Scientific Journals (ISI Indexed or equivalent)
• IEEE Internet of Things Journal, IEEE Transactions on Industrial Electronics, IEEE Transactions on Industrial Informatics, IEEE Sensors Journal • IEEE Transactions On Robotics, IEEE Transactions on Control Systems Technology, Robotica, Robotics and Autonomous Systems (Elsevier), Journal of Intelligent & Robotic Systems, Autonomous Robots (Springer), International Journal of Computational Vision and Robotics (InderScience), IEEE Open Access • Frontiers in Computational Neuroscience
Peer - reviewed Conferences and Workshops
• IEEE Sensors Applications Symposium, ACM/IEEE International Conference on Information Processing in Sensor Networks, ACM/IEEE Design Automation Test in Europe

- International Conference on Robotics and Automation (ICRA), International Conference on Intelligent Robots and Systems (IROS), IEEE Conference on Decision and Control, IEEE European Control Conference
- Conference on Computer Vision and Pattern Recognition (CVPR), Conference on Neural Information Processing Systems (NeurIPS).

3.3.3 Workshops / Demonstrations / Exhibitions/ Fairs

Participation in the (demonstration) workshops, exhibitions and fairs offers the opportunity for interaction and exchange of information, particularly when there will be involved stakeholders and end-users from the analogue technology, robotics, and computing industry sectors. Therefore, there is this way potentially a strong connection directly between the project results and the market, given that APROVIS3D is targeting to build a demonstrator UAV for coastal surveillance of TRL5. The attendance to exhibitions and fairs is foreseen mainly during the last year of the project duration.

3.3.4 Social media

Social media platforms are to be used, such as LinkedIn, Facebook and Twitter, providing direct and low-cost successful communication campaigns by aiming at both academics and professionals, as well as and many other interested persons or groups. Already a PhD position funded by APROVIS3D has been advertised on both Facebook and Twitter.

3.3.5 Printed media

Both international and national printed media/press are to be used, by focusing - at the start of the project - on (daily) local/national newspapers and internet press, which can be more easily accessible and provide an effective way to reach wider public.

3.3.6 Factsheet/ Leaflet

An APROVIS3D factsheet is to be created for providing the most important information immediately to interested parties, such as project description, objectives, pilot demonstrations, impact and outcomes.

In addition, a project leaflet, which contains general information on the project, is to be designed during the start of the project, with the aim to provide interested parties a quick overview of APROVIS3D, along with additional information than what available on the factsheet, such as vision, context, expected results, case scenarios and demonstrations.

3.3.7 User Communication and Feedback

For improving the quality and effectiveness of the project dissemination, regular updates of the APROVIS3D social media accounts are foreseen, from where adequate feedbacks may be directly provided through network platforms, posts, likes, and re-tweets. In addition, the project consortium will need to capitalize on the experience, resources, and contacts already available to them, in order to reach a larger audience and avoid duplicated activities. To achieve this, the aim is to set up mutually acceptable partnerships with relevant networks, organizations, initiatives and international projects/industry plans with similar goals.

4. Internal and EU Communication

Establishing internal communication channels early in the project is crucial for effective dissemination, it is important for:

- Systematic dissemination and updates to avoid confusion and missing out on important tasks/ events;
- Keeping every partner informed and aware of their own and also of the overall activities and obligations due for delivery;
- Effective access by the entire consortium to the project materials, including sensitive electronic and robotic plans and UAV flight details.

4.1 Mailing Lists

Dedicated mailing lists will be set up for each area of the project referring accordingly to (i) all members of the consortium, (ii) networking area for external users. At present an all-consortium list has been set-up by the coordinator, namely aprovis3d@listes.univ-cotedazur.fr, and an Executive Committee list aprovis3d.ec@listes.univ-cotedazur.fr.

4.2 Reserved Area

A reserved area within the project website will be available to all partners who will receive a username and password for the “sign in” link, in order to provide a safety environment to share and store relevant documents, plans, templates for dissemination tools, and recorded audiovisual material of teleconferences (together with past minutes and agendas). Moreover, a dedicated “dissemination” part of the website will contain materials produced by partners during events (slides presentations, press articles, etc.), which can be further updated for other initiatives according to the project progress and results.

4.3. Information on the EU Funding

Unless the European Commission requests or agrees otherwise or unless it is impossible, any 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 EU ERA-NET emblem and (b) include the following text:

- For communication activities: “This project has received funding from the European Union’s ERA-NET CHIST-ERA 2018 research and innovation programme under grant agreement No ANR-19-CHR3-0008-03”.

- For infrastructure, equipment and major results: “This [infrastructure][equipment][insert type of result] is part of a project that has received funding from the European Union’s ERA-NET CHIST-ERA 2018 research and innovation programme under grant agreement No ANR-19-CHR3-0008-03”.

5. Monitoring and Evaluation

5.1 Performance Measurement

The project dissemination evaluation will examine the progress of planned activities, as stated in the objectives and the targeted groups. Performance evaluations deal with effective use of resources and other users' feedback regarding communication materials. Performance measurement methods include monitoring website statistics on traffic, dissemination effectiveness, factsheet/leaflet downloads, and visitors' comments and the way they navigate and use the website layout.

5.2 Key Performance Indicators

For each project objective the following table reports the indicators to be used:

Operational Level/Indicators	Output Indicators
Outcome 1 Increase the number of APROVIS3D followers among non- scientific community	Number of Communication Network' members Trends in the APROVIS3D website visits Social networking: no. of followers of the Project (reactions and likes) No. & ranking of participants events Number of expressions of interest by researchers or groups Number of media-press releases
Outcome 2 Increase awareness among the scientific community and stakeholders on APROVIS3D value, results, impacts, and market relation	Number of conferences where the APROVIS3D members are presented Number of posters and presentations in conferences Impact factor of relevant publications and audience of target of selected scientific journals Number of liaisons with academic institutions, industry and other-related projects

5.3 Risks and Assumptions

The communication risks are associated to the consequences of a communication activity going wrong and what can be done to prevent or mitigate this. The following risks and mitigation strategies are suggested:

Risk	Probability / Impact / Severity	Mitigation
An audience not specialized in analogue technology, AI, ML	Critical	Use demonstrations and clear language to convey APROVIS3D objectives and outcomes according to audience's needs
External communication is not successful despite efforts	Medium	Regular and proactive monitoring and evaluation of dissemination and communication
Harmful events for the reputation of APROVIS3D or breach of ethics	Low	The proposed project does not raise any EU ethical issues. The project considers the EU GDPR compliance and keeps proper maintenance of documentation

		relatively to personal data processing

6. Partner Specific Dissemination Activities

Although the dissemination of the APROVIS3D results shall continue beyond the total duration of 36 months, each partner is encouraged to promote the project progress and outcomes through proactive activities tailored to their own expertise and experience.

P3 - IMSE

At the starting of the project the initial project web page has been linked to the Neuromorphic Group web page for dissemination http://www2.imse-cnm.csic.es/neuromorphs/index.php/Projects

The next actions planned to disseminate the project at a general public level:

- M4-Create an instagram account for the group/institution to announce project events and project publications
- M10- submit a special session on the project topics in the International Conference on Content Based Multimedia Indexing, Lille June 2021
- M20- submit a full journal publication on the sensor foveated architecture to IEEE Biomedical Circuits and Systems or to Frontiers in Neuromorphic Engineering- After completing a patent on the architecture
- M20- submit partial design of innovative circuits and block to conferences like IEEE ISCAS, IEEE ICECS, IEEE BIOCAS or DCIS
- M24- Submit a full journal publication on the sensor design and experimental results to IEEE Transactions on Solid-State Circuits
- M24 Submit partial circuit results to IEEE ISSC
- M30- Submit experimental results of databases acquisition and demonstrators to Frontiers in Neuromorphic Engineering
- M30- Submit demonstrators to conferences like IEEE ISCAS, IEEE ICECS, IEEE BIOCAS or DCIS
- M36- Submit paper of final results on the project, probably in collaboration with other partners to Frontiers in Neuromorphic Engineering or IEEE PAMI

P4 UNIWA and P5- NTUA

NTUA will publish the methods and results derived within the context of the APROVIS3D project at prestigious international scientific journals and peer-reviewed conferences. The list includes (but not limited to) the following Journals: IEEE Transactions on Robotics, IEEE Control Systems Technology, Springer Autonomous Robots, Springer Journal of Intelligent and Robotic Systems, Wiley Journal of Field Robotics, Frontiers on Robotics & AI (open access) and peer-reviewed international conferences: IEEE International Conference on Robotics and Automation (ICRA), IEEE Intelligent Robots and Systems (IROS), IEEE Conference on Decision and Control (CDC), IEEE International Conference on Unmanned Aircraft Systems (ICUAS), IFAC European Control Conference (ECC). Furthermore, the CSL NTUA group will investigate the possibility of organizing a special issue in the open access journal: Frontiers on Robotics & AI. The dissemination plan involves publishing at regular intervals but also upon the project completion. Moreover, since Greece faces serious coastline corrosion issues, NTUA under the leadership and in close collaboration with UNIWA, will participate in local (national level) events related to the inspection

and monitoring of the greek coastlines. Additionally, UNIWA and NTUA will communicate with the local authorities on the possible ways that the technologies stemming from the APROVIS3D project can be applied in coastline monitoring and corrosion assessment.

7. Conclusions

This document sets the framework for best disseminating the APROVIS3D results to the defined targeted groups, in order to ensure an effective and consistent communication and dissemination strategy to the stakeholders, being either from scientific community or from the industry sector, or even the wider audience. Collaboration among project partners for sharing ideas and results are keys for a successful project dissemination.

8. Annexes