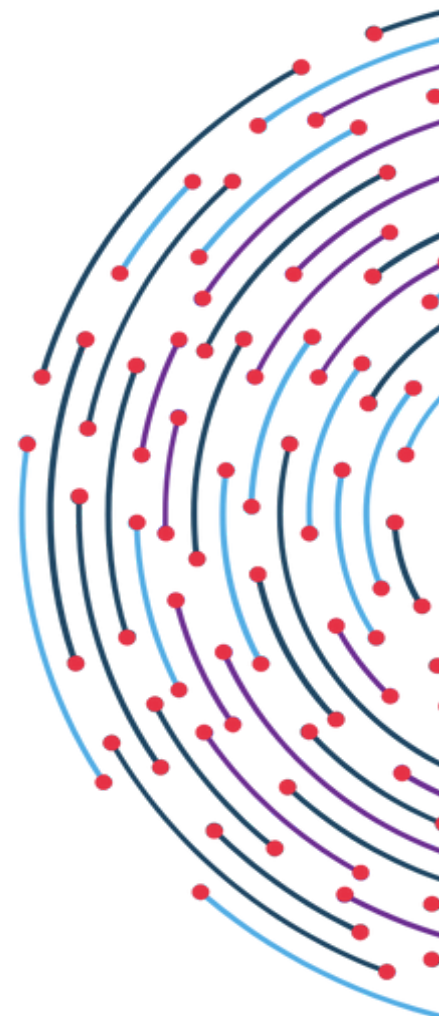**TWIN**RELECT

Twinning for excellence in reliable electronics

D6.1

DELIVERABLE
REPORT

D6.1 Dissemination, Communication and Exploitation Plan

WP6: Dissemination, Exploitation and Communication

TWINRELECT
TWINNING FOR EXCELLENCE IN RELIABLE ELECTRONICS

Document information

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1.0	29/01/25	Final Version	Katerina Tsilingiri, Georgios - Ioannis Paliaroutis, Marko Andjelkovic, Christos Sotiriou	

DISCLAIMER

Contents

1. Introduction

1.1 Overview of the TWIN-RELECT project and its objectives

The TWIN-RELECT project's primary purpose is to advance research in integrated circuit (IC) reliability, with a particular focus on radiation effects. This collaborative initiative, involving the University of Thessaly (UTH), the University of Montpellier, and the French National Centre for Scientific Research (CNRS), the Leibniz Institute for High Performance Microelectronics (IHP) in Germany and the University of Manchester (MAN), brings together a diverse team of partners to analyze how radiation impacts the reliability of modern electronics. A key objective is to model the generation and propagation of transient and permanent faults within ICs, providing comprehensive analysis that contributes to the design of more reliable systems.

The project aims to integrate advanced fault models, analysis techniques, and optimization methods into a cross-layer design flow, enabling the creation of more reliable and robust ICs. These circuits will be particularly utilized in challenging environments where radiation effects are a critical concern. By examining the combined impact of multiple transient and permanent faults, the project aims to develop innovative solutions for enhancing the reliability of digital systems and optimizing performance at the system level.

In addition to advancing technical understanding, the TWIN-RELECT project emphasizes on fostering meaningful engagement with a broad spectrum of stakeholders, including researchers, engineers, and industries. Effective communication of the project's progress and outcomes is essential to ensure that the knowledge generated is not only accessible but also applicable to various stakeholders. This approach empowers the scientific community and industry leaders to leverage the project's insights and methodologies, driving innovation in practical and commercial endeavors while contributing to the development of more reliable and robust technologies.

1.2 Scope of this plan

The Dissemination, Exploitation, and Communication plan is designed to strategically and effectively communicate the objectives, progress, and outcomes of the TWIN-RELECT project to a wide and diverse audience. This includes dissemination through academic publications, conferences, workshops, and outreach events, ensuring that the knowledge generated is accessible, impactful, and valuable for the relevant stakeholders. In particular, the project aims to be promoted to the scientific community through the publication of 12 conference papers and 10 journal articles. Dissemination will also be accomplished through events such as training schools, which will further extend the impact of the particular research.

A key element of the plan is to promote the integration of advanced fault models and analysis methods, which are the primary objectives of the project. To facilitate communication, various materials, such as flyers, articles, posters, and multimedia content, will be produced and disseminated via platforms like the project's website and social media accounts (Facebook, Instagram, YouTube, LinkedIn). The website will play a central role in ensuring accessibility, with a user-friendly interface and interactive features to engage visitors. It will be regularly updated with key project information, such as partner details, events, and publications, to comply with the open-access publication policy. This platform will also highlight the project's objectives, activities, and exploitable results, serving as a valuable tool for both internal communication and public engagement.

This plan also highlights the importance of stakeholder engagement, with a particular focus on the key processes for disseminating and promoting the project's main objectives. These efforts focus on attracting stakeholders, including researchers for future collaborations on related or new projects, as well as students who may develop an interest in this field. Additionally, ongoing evaluation will ensure that the project's findings are effectively utilized by the scientific community. This includes their exploitation in joint publications, future collaborations, new project proposals, and the enhancement of academic courses at the University of Thessaly (UTH).

Finally, the project's exploitation efforts will be managed by an exploitation committee established in the first quarter. This committee, which includes one representative from each partner, will evaluate and monitor the dissemination, exploitation, and communication activities. Specifically, the plan will be reviewed and updated at the project's mid-term to assess progress, identify new opportunities, and manage challenges. Adjustments will be made to ensure that these efforts remain effective and aligned with the project's objectives. Therefore, emphasis will be placed on maximizing the project's long-term impact, with active promotion of its results throughout its duration.

The final strategy for Dissemination, Communication and Exploitation of the TWIN-RELECT project will be outlined in the Deliverable D6.2, titled "2nd Dissemination, Communication and Exploitation Plan", which is scheduled for submission in the month 36 of the project.

2. General Communication, Dissemination, and Exploitation Strategy

2.1 Objectives of communication, dissemination, and exploitation

Effective communication, dissemination, and exploitation are fundamental to the success of any project, ensuring its outcomes reach the right audiences and have a lasting impact. These objectives not only aim to enhance the project's visibility, but also to actively engage stakeholders and promote the application of its results across various domains. Clear and strategic communication has a pivotal role in informing audiences about the project's goals, progress, and achievements, creating awareness, and fostering interest among key stakeholders.

Dissemination is essential for effectively sharing the project's findings and insights to a broader audience. By employing a variety of means and platforms—such as social media, publications, and public events—the project ensures its knowledge is accessible to diverse groups, from academic researchers to industry professionals and the general public. Exploitation works alongside dissemination by focusing on transforming the project's results into actionable items. This involves incorporating findings into educational initiatives, influencing policy and inspiring further research and innovation in the design of reliable electronics. By addressing practical challenges and fostering advancements, effective exploitation ensures the project's outcomes make a significant and lasting contribution beyond the academic sphere.

Fundamental to these initiatives is the aim of establishing lasting and productive partnerships. Engaging with stakeholders, including academic institutions, industry partners, and collaborative teams, is vital for securing the success of the TWIN-RELECT project and its long-term sustainability. Activities such as workshops, conferences, and collaborative talks provide opportunities to foster connections, exchange ideas, and highlight the project's relevance in broader contexts. These interactions are vital for sustaining the momentum of the project and broadening its impact.

2.2 Target Audiences

The dissemination and outreach activities of TWIN-RELECT are designed to address a broad and diverse audience, ensuring the effective transfer of knowledge and the promotion of the project's outcomes. One of the primary target groups includes the stakeholders, such as industry partners, and research institutions**.** Engaging these stakeholders is critical for facilitating the adoption of reliable electronics in real-world applications, providing input for policy recommendations and standards development, and fostering collaboration between academia and industry to bridge the gap between research and practical implementation.

Stakeholder mapping constitutes a fundamental and integral component of the communication activities within the TWIN-RELECT project. This process involves identifying the individuals and groups that may influence or be impacted by the proposed actions and outcomes of the project. The process will begin with the preparation of a detailed list, utilizing contacts provided by the Project Coordinator and Project Partners (University of Manchester, University of Montpelier/CNRS and IHP) to identify key stakeholder groups.

Table 1 presents a selection of key stakeholders in the TWIN-RELECT project, categorized according to their contributions. These stakeholders include research agencies, radiation testing facilities, Greek technology firms, EDA companies, rad-hard reliability design specialists, semiconductor foundries, and organizations engaged in automotive electronics. Each group plays a vital role in advancing the project by contributing expertise in areas such as cutting-edge electronics, reliability testing, space-grade technology, and semiconductor manufacturing. Additionally, local and EU authorities provide critical funding, policy guidance, and institutional support, ensuring the alignment of national and academic research efforts with the project's strategic goals. This table is temporal and will be updated in *Deliverable 5.1: 1st Report on Stakeholders Network*, scheduled for submission in the sixth month of the project, to reflect emerging partnerships and new collaborations.

Category	Companies/Organizations	Contribution to TWIN-RELECT
Research agencies/institutes/centers	European Space Agency (ESA), DLR, CERN, Karlsruhe Institute of Technology, Fraunhofer INT, CNES, TIMA	These organizations can contribute to TWIN-RELECT by providing expertise in advanced electronics, reliability assessment, and cutting-edge research in microelectronics and radiation effects.
Radiation Testing Facilities	UCLouvain, RADEF, GANIL, Sibersdorf Laboratoties	These facilities are essential to this project for conducting radiation testing on circuits.
Greek Companies	Creative Systems Engineering (CSE) Ltd, EULAMBIA Advanced Technologies, FEAC Engineering P.C., Space Asics, Leo Space Photonics, Alma Technologies S.A., Hellas Sat	These greek companies can contribute to TWIN-RELECT by providing expertise in electronic design, advanced simulation, space technologies, and semiconductor development.
EDA Companies	Cadence, Synopsys, Siemens, Intego Designs, IROC	These EDA Companies will provide advanced Electronic Design Automation (EDA) tools that can be used for the analysis during the TWIN-RELECT project.
Rad-hard Reliability design Companies (inlcuding space companies)	Airbus Defense and Space, Thales Alenia Space, Endurosat, Arquimea, Redcat, DSI Aerospace, ICSense, Nanoxplore, IDEAS, Cobham Geisler	The expertise of these companies can help the TWIN-RELECT project by advancing radiation-hardened electronics for space.
Semiconductor Foundries	GlobalFoundries, X-FAB, TSMC, UMC, STMicroelectronics	These foundries can provide to the project access to advanced semiconductors fabrication technologies.
Companies involved in development of automotive electronics	Continental AG, Robert Bosch GmbH, Infineon Technologies AG	The expertise of the companies can help the TWIN-RELECT by advancing the development of reliable and resilient automotive electronics.

Category	Companies/Organizations	Contribution to TWIN-RELECT
Local and EU authorities	EU Commission, Greek Ministry of Education, Greek Ministry of Innovation, Science and Technology, Helenic Space Center	These organizations can provide funding, policy alignment, and institutional support, like ensuring academic and national research collaborations.

Table 1: Selected Stakeholders for TWIN-RELECT

Another key audience comprises researchers and academics specializing in reliable electronics and related fields. As the coordinator of the project, the University of Thessaly (UTH) plays a significant role in advancing education in this area. The university offers a specialized course, *"ECE484: Radhard Circuit Design"*, during the spring semester, which equips the students with practical experience in evaluating circuit reliability and a deeper understanding of the impact of radiation on electronic systems. Moreover, the course serves as a platform to ignite students' interest in the field, while seamlessly incorporating the project's methodologies into the academic curriculum. This strategic engagement not only contributes to the advancement of knowledge within the field but also supports the development of a robust collaborative network, driving progress in the reliability and resilience of electronic systems.

The course covers crucial issues, including the interaction of silicon electronic structures with ionizing radiation, an introduction to integrated circuit design for ionizing environments, and the use of TCAD tools for analyzing these phenomena. Students will have the opportunity to investigate methods for analyzing Single Event Upsets (SEU) and Single Event Transient (SET) in systems and techniques for logical, timing, and electrical masking mechanisms modeling. Additional focus will be given to the presentation of the STA simulation engine utilized in the context of the TWIN-RELECT project to enable the simulation of both transient (SET and SEU) faults and permanent (aging) faults for the Soft Error Rate (SER) evaluation of circuits.

The TWIN-RELECT project aims to engage a diverse audience that plays a crucial role in advancing research, innovation, and societal impact in reliable electronics. This includes leading researchers from prestigious institutions such as TU Wien, TU Munich, TU Dresden, ETH Zurich, University of Luebeck, and University of Wurzburg, whose expertise drives cutting-edge developments in the field. Additionally, the project actively involves both the research and administrative staff at the University of Thessaly, who contribute to its scientific progress and operational success.

Beyond the academic and research community, the project also targets Greek and European citizens, as its outcomes directly influence technological advancements, economic growth, and societal resilience. A key focus is the creation of high-tech job opportunities resulting from project outcomes, particularly through startup activities in Greece and the EU, fostering innovation-driven employment. Furthermore, the city of Volos, where the University of Thessaly is based, stands to benefit from project-related meetings and travel, contributing to local economic activity and international collaboration.

The project places a strong emphasis on engaging both undergraduate and graduate students from all partner institutions, since they represent the next generation of researchers and innovators. Through a variety of activities, including seminars, workshops, the establishment of the Virtual Knowledge Platform, and the development of educational materials, the project aims to inspire undergraduate students to pursue careers in reliable electronics while equipping graduate students with the advanced

skills and knowledge needed to make meaningful contributions to the field. These initiatives not only foster academic growth but also promote interdisciplinary learning and collaboration, ensuring the long-term sustainability and far-reaching impact of the project. By nurturing young talent and providing a comprehensive educational experience, the project cultivates a vibrant community of researchers who will drive future advancements in the field.

Additionally, the TWIN-RELECT project actively seeks to establish collaboration with other European-funded initiatives addressing similar challenges, leveraging the collective expertise of a broader network. Related projects led by TWIN-RELECT beneficiaries, such as Cochisa, Corenext, and the Human Brain Project, as well as related initiatives like MIRELAI and SMARTEDGE, represent valuable opportunities for synergy. Additionally, the project aims to engage with both ongoing and past Twinning projects to foster cross-project knowledge exchange. These collaborations could include joint workshops, training schools, and other shared events, uniting the strengths of all involved partners. Such efforts not only amplify the project's impact but also contribute to building a cohesive European research ecosystem for reliable electronics. Furthermore, these partnerships lay the groundwork for sustainable, long-term collaborations, driving innovation and advancing the field.

As the leader of Work Package 6 (Dissemination, Exploitation, and Communication), the University of Thessaly will take an active role in promoting the project's objectives, activities, and outcomes. Additionally, all project partners are expected to actively contribute to the dissemination efforts through their respective communication channels, including websites, newsletters, social media platforms, and other relevant mediums.

3. Dissemination Plan

3.1 Development of the Virtual Knowledge Platform

The Virtual Knowledge Platform (VKP) is an online knowledge database and an e-learning platform, designed to facilitate both information sharing and self-education. The platform is accessible directly from the home page of the project website, providing users with access to the public information of the project. Moreover, the platform will offer educational material for those interested in extending their knowledge and understanding the project's focus areas. The main page of the Virtual Knowledge Platform is shown in Figure 1.

The Virtual Knowledge Platform is designed to serve two primary roles within the project. First, it will act as a repository for both public users and project partners. For partners, it will provide secure storage and sharing of sensitive information, consolidating all project-related resources into a unified database. Second, the Virtual Knowledge Platform will be a tool for disseminating the knowledge and results generated throughout the project's duration. To achieve this, the platform will host a variety of educational resources, including trainings, video tutorials and scripts, giving the opportunity to the users to educate themselves on topics such as reliable electronics and their importance. This approach ensures that the platform not only supports the project team communication but also empowers a broader audience to engage with and benefit from the outcomes of the project.
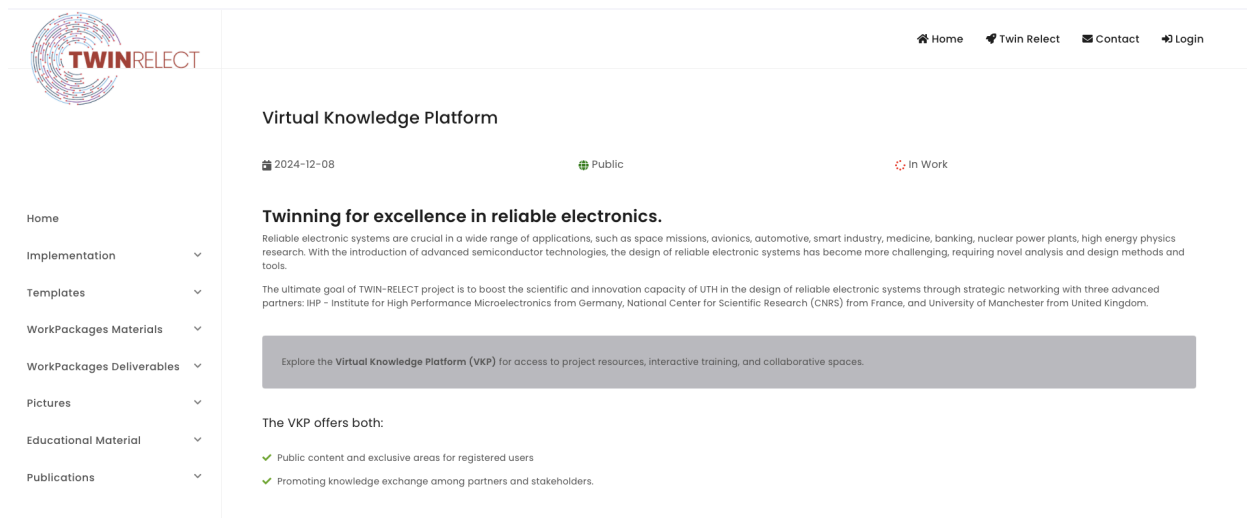

Figure 1: Main Page of Virtual Knowledge Platform

3.2 Journal and Conference Publications

Disseminating research findings through high-impact journal articles and conference presentations is a key objective of the TWIN-RELECT project. The dissemination plan prioritizes engagement with leading conferences in the fields of Reliable Electronics and Electronic Design Automation (EDA) to ensure the project's visibility and maximize its impact. Over the course of the project, the team aims to publish at least 10 journal articles and 12 conference papers, showcasing major advancements such as innovative reliability models and techniques to improve the robustness of electronic designs.

Conference Name	Acronym	Conference Dates (2025)	Conference Website
IEEE European Test Symposium	ETS	26-30/05/2025	https://ets2025.taltech.ee/index.php?page=89
IEEE Nuclear and Space Radiation Effects Conference	NRSEC	14-18/07/2025	https://www.nsrec.com/
IEEE International Symposium on On-Line Testing and Robust System Design	IOLTS	07-09/07/2025	https://orion.polito.it/iolts/
Design, Automation and Test in Europe	DATE	31/03-02/04/2025	https://www.date-conference.com/
RADiation and its Effects on Components and Systems Conference	RADECS	29/9 - 3/10/2025	https://www.radecs2025.org/
IEEE International Symposium on Defect and Fault Tolerance in VLSI and Nanotechnology Systems	DFTS	21-23/10/2025	https://www.dfts.org/
Design and Diagnostrics of Electronic Circuits and Systems	DDECS	05-07/05/2025	https://www.ddecs.org/

Table 2: Proposed Conferences to submit papers/journals in 2025

The conferences and journals selected, as outlined in Table 2 and Table 3, have been carefully chosen for their relevance to the project's objectives and their focus on reliability and robust design in electronics. These venues provide an ideal platform for engaging with a wide audience of experts, researchers, and industry professionals. Furthermore, as part of the dissemination strategy, the TWIN-RELECT team plans to organize a dedicated special session at DFTS 2025. This session will offer a focused opportunity to

present the TWIN-RELECT project's contributions, encouraging in-depth discussions and fostering collaborations with leading experts in the field. Through these strategic dissemination activities, the project aims to make a lasting impact on both academia and industry, positioning TWIN-RELECT as a key driver of innovation in reliable electronic systems.

Journal Name	Acronym	Publisher	Journal Website
IEEE Transactions on Nuclear Science	IEEE TNS	IEEE	https://ieeexplore.ieee.org/xpl/RecentIssue.jsp?punumber=23
IEEE Transactions on VLSI Design	IEEE TVLSI	IEEE	https://ieeexplore.ieee.org/xpl/RecentIssue.jsp?punumber=92
IEEE Access	IEEE Access	IEEE	https://ieeexplore.ieee.org/xpl/RecentIssue.jsp?punumber=6287639
Microelectronics Reliability	-	Elsevier	https://www.sciencedirect.com/journal/microelectronics-reliability
IEEE Transactions on Device and Materials Reliability	TDMR	IEEE	https://ieeexplore.ieee.org/xpl/RecentIssue.jsp?punumber=7298
Electronics	-	MDPI	https://www.mdpi.com/journal/electronics
Technologies	-	MDPI	https://www.mdpi.com/journal/technologies

Table 3: Targeted Journals for potential submission

3.3 Organization of Workshops and Training Seminars

Throughout the three-year duration of the TWIN-RELECT project, a series of workshops and training seminars will be organized to foster effective dissemination of the project's findings and objectives. These type of events will serve as key platforms for engaging stakeholders, sharing knowledge, and promoting the project's impact in the field of reliable electronics.

The University of Thessaly will organize three scientific workshops to disseminate the results and knowledge gained through the project to the broader scientific community. These workshops presented in Table 4 aim to bring together academics and professionals from Greece and around the world, promoting the exchange of insights on the scientific aspects of reliable electronic system design.

Workshop Name	Organizer	Objectives	Description
Workshop 1	UTH	Fault models at various abstraction levels	Simulation-based and analytical techniques for fault tolerance analysis
Workshop 2	UTH	Fault-tolerant design techniques	Static and dynamic techniques, real-time reliability monitoring, on-chip sensors
Workshop 3	UTH	Experimental characterization of fault effects in devices and systems	Discuss opportunities for transferring research results into real products and applications, fostering collaboration and future cooperation between research and industry.

Table 4: Scientific Workshops

Moreover, training seminars will be organized by all partners throughout the course of the project. These seminars aim to facilitate knowledge transfer on the project's topic, foster networking among staff from the University of Thessaly and partner institutions, and engage interested participants from other organizations.

4. Communication Channels

4.1 Establishment and maintenance of the project website

The project website was officially launched in October 2024, within the first month of the project, and its main home page is shown in Figure 2. A second, enhanced version is set to be released by the end of January 2025, incorporating additional features and contents to further improve the dissemination and communication efforts of the project. The website, available in English, has been registered under the University of Thessaly's domain ('uth') with the URL: https://twin-relect.uth.gr/. Serving as the primary channel for disseminating information and updates, the website also functions as a repository for all public deliverables in line with the project's open access policy (green open access), as well as private deliverables accessible to authorized members.

The structure of the TWIN-RELECT website is as follows:

- **Home:** Offers a brief overview of the project and provides access to the Virtual Knowledge Platform (VKP).

- **About:** Includes three subcategories:

    - **Project:** Outlines the main objectives and aims of the TWIN-RELECT project.

    - **Work Packages:** Details each work package, highlighting the associated tasks, deliverables, and milestones.

    - **Deliverables:** Lists all project deliverables, providing information such as the document title, lead partner, dissemination level, delivery date, and current status. The "Deliverables" page is shown in Figure 3. Public deliverables are freely available to the public, while sensitive materials can be accessed exclusively by authorized project members via the Virtual Knowledge Platform.

- **Partners:** Introduces the project Coordinator and partners, with brief descriptions of each.

- **News:** A regularly updated section providing the latest updates and news about the project.

- **Events:** A comprehensive list of upcoming events related to the project.

- **Publications:** Regularly updated section for publications related to the project.

- **Contact:** Contact information for general inquiries.

- **Direct Access to Social Media:** Links to the project's social media profiles on LinkedIn, Twitter/X, Instagram, and YouTube.

The website will be continuously updated throughout the project with relevant content, such as ongoing activities, public reports, deliverables, publications, and information about upcoming events and educational initiatives, including courses and opportunities for PhD/postdoctoral involvement. To ensure the website remains dynamic and current, all participants and Work Package Leaders are expected to

actively contribute by submitting updates, news, events, and educational materials for the Virtual Knowledge Platform.
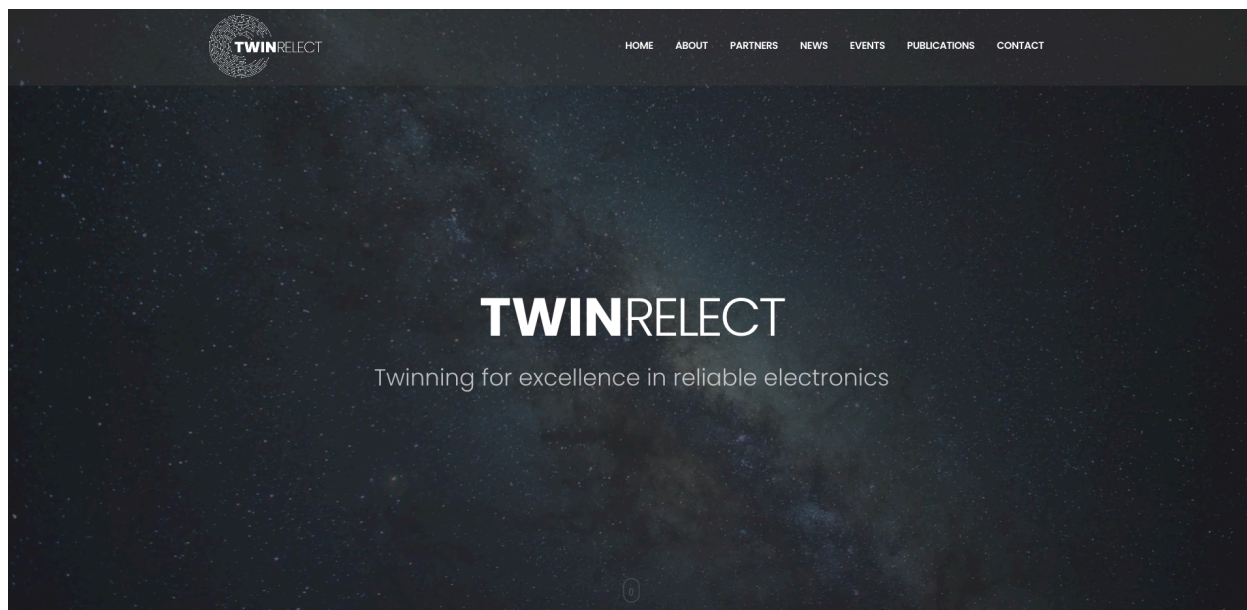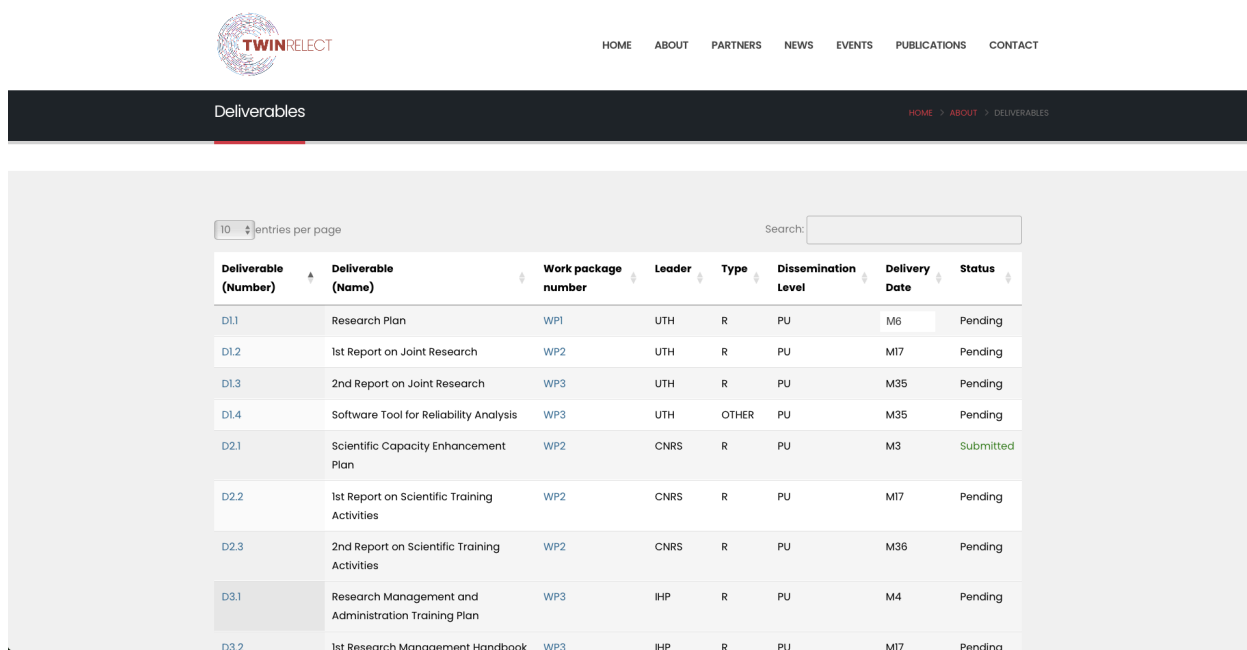

Figure 2: Homepage of TWIN-RELECT website

Figure 3: "Deliverables" section from TWIN-RELECT website

4.2 Articles, interviews and posts in media

Throughout the project, a broad spectrum of channels and activities will be utilised for communication and dissemination. Every project accomplishment, update and milestone will be published on the "NEWS" page of the TWIN-RELECT website, ensuring that all stakeholders stay informed. In compliance with the EU Social Media Guide [1], social media accounts have been established on YouTube, Instagram, LinkedIn, and Twitter/X to engage diverse audiences and foster collaboration.

The Linkedin account (TWINRELECT) will serve as a key platform for networking with industry experts, researchers, and other EU-funded initiatives, in order to provide a space for networking and knowledge exchange. The Instagram account (twinrelect) will primarily focus on sharing visual content such as photographs from workshops, visits, and training schools, aiming to inspire and engage a younger, less technical audience. The Twitter/X account (twinrelect) will be utilised as a tool to track the updates from other EU-funded projects, share important project announcements, and interact with the broader research community. All significant video content produced by TWIN-RELECT, including presentations, educational materials, and partner meetings, will be hosted on the official YouTube channel (TWINRELECT), ensuring accessibility and engagement.

A number of posts , posts have already been made, highlighting key project events, including the Kick-Off Meeting hosted by the University of Thessaly (UTH) in Volos, Greece, and the first training school organized by the University of Montpellier/CNRS in Montpellier, France. These posts (as they are displayed in Figure 4) help showcase the active involvement of partners and disseminate the project's early activities.

Moreover, engaging articles will be prepared for popular newspapers and science-focused web portals, accompanied by contributions to esteemed international magazines such as EDN. To further boost the project's visibility, reports will be showcased on local television channels to reach a broader audience. Additionally, all partners are encouraged to publish project updates on their institutional websites and include them in their annual newsletters.

To maintain active communication, all social media channels will be continuously updated with the latest project developments, events, and activities, ensuring consistent engagement with the target audiences throughout the entire project lifecycle.
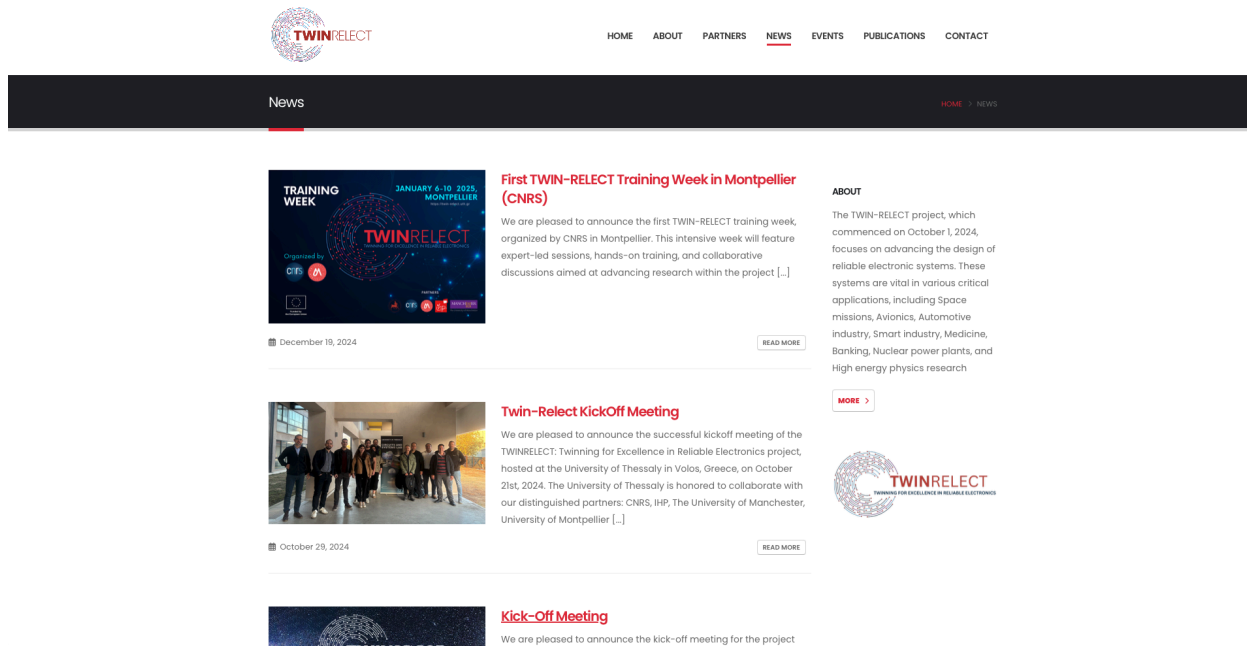
Figure 4: "News" Section from TWIN-RELECT website

4.3 Outreach events

Outreach events play a pivotal role in TWIN-RELECT's communication and dissemination strategy. These events serve as a platform for engaging with various stakeholders, like researchers and industries. The primary objectives of the outreach events are to disseminate the results of TWIN-RELECT to the relevant stakeholders, to raise awareness of the project and its contribution to the field of reliable electronics and finally to promote engagement and collaboration with academic and industrial audiences.

According to the Grant Agreement, multiple events will be organized over the three years of the project to facilitate knowledge transfer, foster collaboration, and strengthen networking within the reliability community. These events are categorized into **webinars, special sessions, business forums and the final symposium**. Below is a detailed overview of each category, including information on the event type, organizer, target audience, and objectives in Table 5.

Outreach Event	Organizer	Target Audience	Objectives
Webinars	UTH	Researchers and institutions engaged in various reliability projects and/or past Twinning projects	Exchange knowledge on ongoing research activities and discuss possible collaborations.
Special Sessions	UTH, CNRS, IHP	Researchers, Industries, Academic Teams	Facilitate networking within the reliability community; promote advanced methodologies in fault modeling, characterization, and fault-driven circuit optimizations;

			strengthen ties with international experts and foster collaboration opportunities.
Business Forums	UTH	Members of the Stakeholders Network (Companies and Lawmakers)	Discuss opportunities for transferring research results into real products and applications, fostering collaboration and future cooperation between research and industry.
Symposium	UTH	Researchers, academics, and professionals from partner institutions and beyond	Present scientific papers, foster collaboration among researchers, and promote the publication of the best papers in selected international journals.

Table 5: Webinars, Special Sessions, Business Forums and Symposium

Furthermore, leveraging its existing collaborations with elementary and high schools across Greece, the University of Thessaly plans to organize talks in at least eight schools. These efforts aim to promore the importance of reliability in electronic systems among the schoolchildren. Additionally, the University of Thessaly will showcase the project during its annual Open Day event, further increasing its reach and impact. Moreover, by actively participating in Researchers' Night—a prominent European initiative held in over 400 cities—the University of Thessaly will significantly enhance the visibility and public engagement of the TWIN-RELECT project, showcasing its contributions to the field of reliable electronics on a broader scale.

All of these events will be widely advertised to ensure maximum visibility and participation. Posts will be shared across all social media accounts, including LinkedIn, Instagram, and Twitter/X, tailored to the platform's audience to effectively communicate the event details and objectives. The TWIN-RELECT website will feature dedicated announcements and updates in the "NEWS" section. Additionally, appropriate promotional materials such as flyers, banners, and email campaigns will be prepared and disseminated to target audiences, ensuring that the events reach the intended stakeholders and foster engagement within the broader research and reliability community.

In addition to the outreach events outlined in the Grant Agreement, TWIN-RELECT actively seeks opportunities to participate in other events related to the project's research focus. Prof. Sotiriou, from the University of Thessaly, has been invited to deliver the opening keynote at the prestigious TUZ-Workshop on Test Methods and Reliability of Circuits and Systems. The workshop will take place in Berlin in February 2025 and offers an excellent opportunity to share the project's research goals, build collaboration and connect with experts and key stakeholders in the field.

Furthermore, TWIN-RELECT aims to establish collaborations with other European-funded projects. A potential collaboration is being explored with AIDA4Edge, another Horizon European-funded initiative

involving the University of Niš (FEEUNI), the Leibniz Institute for High Performance Microelectronics (IHP), University of Manchester (MAN) and University of Ferrara (UNIFE). By working together, the two projects could organize joint activities, including co-organized workshops, collaborative research papers and training programs to build capacity among researchers and stakeholders.

5. Visual Identity and Promotional Material of TWIN-RELECT

The creation of promotional materials is an essential component in maximizing the visibility and outreach of the TWIN-RELECT project. These materials play a vital role in effectively communicating the project's objectives, progress, and impact to diverse audiences.

The official TWIN-RELECT logo, serving as the visual ambassador of the project, will be consistently featured across all templates, reports, and dissemination activities throughout the project's duration. There are two main variations of the logo: one with the explanatory title and another with just the sign and the project name. Both versions are designed to ensure consistent branding and recognition across all communications and outreach efforts. These two variations are presented in Figure 5.
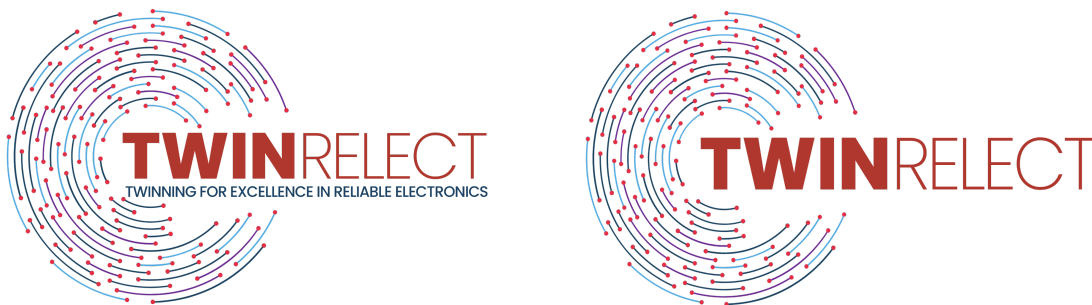

Figure 5: TWIN-RELECT logo variations

Additionally, two alternative variations of the logo, rendered in white, are presented in Figure 6. To ensure visibility, a black background has been applied to these white logos. Notably, the white logo variation is also utilized on the project's website.
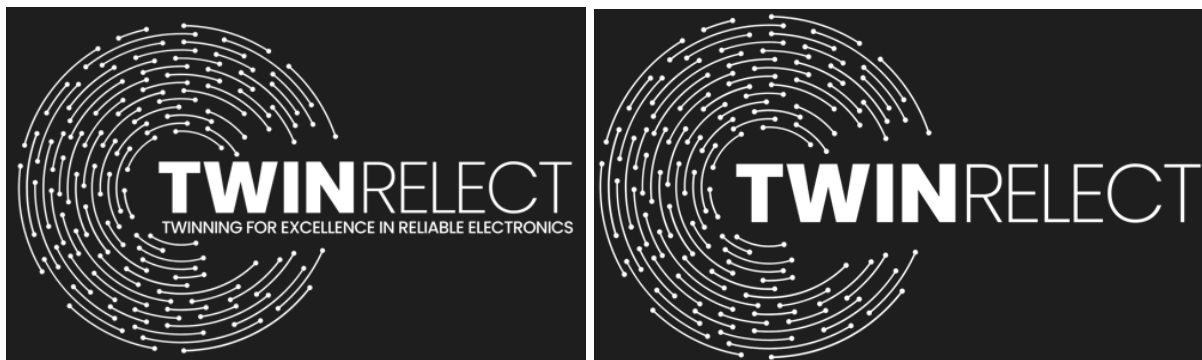

Figure 6: TWIN-RELECT white logo variations

The primary colours of the TWIN-RELECT project, as illustrated in Figure 7, are strategically employed across all project channels, tools, and activities. These colours have been thoughtfully chosen, drawing inspiration from the logos of the project's partner organizations, to create a unified and visually cohesive identity that reinforces the project's collaborative nature and enhances its recognition.

Figure 7: TWIN-RELECT Colour Pallete

Custom-designed notebooks, featuring the TWIN-RELECT logo on the cover, were produced and distributed to project partners during the Kick-Off Meeting held in Volos (21 October 2024). These notebooks serve as both a practical tool and a branding asset, reinforcing the project's identity. In addition to being provided to partners, the notebooks will also be distributed to participants of training schools, workshops, and other related events throughout the project. The cover design, presented in Figure 8 reflects the project's professional image and will be a visible reminder of the TWIN-RELECT initiative at key gatherings.

Figure 8: Custom-designed TWIN-RELECT Notebook Cover

TWIN-RELECT will be actively showcased at a variety of events, conferences, and other opportunities to share the project's progress and outcomes, further strengthening its dissemination efforts. To ensure a cohesive and professional approach, various templates have been provided to project partners for use in milestones, deliverables, presentations (PPT), and other materials. These templates are customized for each partner, incorporating their respective logos, ensuring consistent branding while maintaining a unified strategy for reporting and disseminating the project's activities and results.

Finally, in compliance with the Grant Agreement, all materials used for communication and dissemination purposes will include the EU emblem along with the statement that the project has received funding from the Horizon Research and Innovation programme. The EU logo will be prominently displayed on all promotional and dissemination materials associated with the project.

6. Exploitation Strategy

The successful implementation of a research project includes not only the delivery of the scientific findings, but the development of a robust exploitation strategy. TWIN-RELECT's exploitation strategy aims to maximize the impact of the project's scientific outcomes while ensuring its sustainability and relevance beyond its funding period. To this end, the key results of the project with strong exploitation potential will be identified early and continuously throughout the project's duration. The collaboration among the partners will be critical in developing this strategy, while ensuring and evaluating the progress of the exploitable results.

6.1 Key Exploitable Results

To facilitate the development of a robust exploitation plan it is essential to identify and thoroughly characterize the key results that hold potential for innovation, practical application, or commercialization. A Key Exploitable Result (KER) encompasses any tangible or intangible outcome of the project that can be leveraged to create value through technological advancement, market opportunities, societal impact, or other forms of benefit. By recognizing these results, stakeholders can maximize their potential, ensuring significant contributions to both the project's objectives and innovation, in general.

In the context of TWIN-RELECT, to efficiently exploit the results of the project, three main exploitation models will be followed:

- **Scientific exploitation:** Refers to the KERs related to joint publications, future research collaborations and writing proposals for future projects
- **Educational exploitation:** Refers to the KERs related to the upgrade of the UTH's educational program at all education levels through various methods
- **Commercial exploitation:** Refers to the KERs related to the commercialization by creating a product and/or service or founding a spin-off company

Table 6 presents the initial Key Exploitable Results of TWIN-RELECT as those identified in the Grant Agreement. However, note that the identification of the KERs is a dynamic process that starts with a preliminary list outlined at the proposal phase and continues as new expected outcomes may emerge, while some initial ones may prove unfeasible.

Key Exploitable Result (KER)	Description	Exploitation type	Target stakeholders	Exploitation pathway
Scientific publications	Open-source publications of all results achieved during the project, supporting the open-source policy and archiving	Scientific	Research community, policymakers, academic institutions	Open access via journals and project website

Joint exploitation of scientific results	Exploit project results for joint publications and research proposals, defining a long-term joint research strategy	Scientific	Research community, academic institutions, funding agencies	Develop joint research proposals and establish a joint research strategy
Electronic repository of project lectures	Collection of lectures and presentations from scientific and networking events, published electronically online	Educational and scientific	Research community, students, educators	Accessible on project website
Online literature repository	Open-source database for knowledge sharing, aimed at stakeholders, students, and researchers	Educational and scientific	Students, educators, stakeholders	Public access via project website
Enhanced educational curriculum	Upgraded educational program and novel courses at all education levels, incorporating project results	Educational	Academic institutions, students	Integration into academic programs
MSc and PhD Theses	Research conducted by MSc and PhD students contributing to academic and industrial advancements	Educational	Academic institutions, students	Student participation in project activities
Integration into training programs	Incorporation of project knowledge into IHP's, CNRS's, and UOM's training programs	Educational	Trainees, industry professionals	Training programs and professional courses
Reliability Simulation and Design Tool	A software tool for reliability simulation and electronic design	Commercial	Technological companies, EDA industry, Academic institutions	Licensing, consultancy, joint commercialization strategy
Individual developed IPs	Framework for evaluating and commercializing project-developed IPs (models and algorithms)	Commercial	Technological companies, EDA industry, Academic institutions	Licensing, joint commercialization strategy

Table 6: Initial Key Exploitable Results

6.2 Evaluation of Exploitable Results

A key enabler for the development of the exploitation strategy will be the Exploitation Committee. This Committee will be established in the first quarter of the project and will include one representative from each partner. Its primary responsibility will be to continuously monitor the project results, identifying those relevant for scientific, educational, and commercial exploitation. To ensure alignment with appropriate exploitation pathways, it will evaluate the Technology Readiness Levels (TRLs) of the

outcomes. Additionally, the Committee will review the exploitation activities, ensuring all the partners are informed about them, coordinating the interventions from the different partners, evaluating potential risks, and reporting any major issue to the Executive Board when necessary.

6.3 Collaborative Approach to Exploitation

To ensure the successful exploitation of the project results, we will implement a comprehensive strategy that aligns the individual partner activities, such as training schools, workshops, etc., with the goals of the TWIN-RELECT project. Thus, each partner will be assigned clear roles and responsibilities for the exploitation tasks. At the same time, the partners will leverage their networks to identify key stakeholders, both regional and international. Based on the partners' expertise, a joint post-project commercialization strategy will be followed to efficiently exploit the project's developed IPs. Additionally, the collaborative efforts of the partners will result in the submission of at least one follow-up project proposal. To this end, regular project meetings under the Exploitation Committee will facilitate coordination and the sharing of insights to identify new exploitation opportunities.

The outreach events presented in Section 4.3 will hold a key role not only for the dissemination but also for exploitation purposes. Specifically, the business forums, the webinars and the special sessions will expedite the development of strategic partnerships with industry, academia, and policymakers promoting the seamless adoption of the project's outcomes. The sustainability beyond the project's lifetime will be reinforced through licensing models and potential spin-off opportunities. Finally, to ensure the effective exploitation of the project results, progress will be closely monitored using Key Performance Indicators (KPIs), as outlined in the Grant Agreement. Table 7, which details these KPIs, will be used to facilitate continuous assessment and optimization of the exploitation strategy

Key Progress Indicators (KPI)	Before Project	During Project	After Project	Comments
Journal Publications	4	8	10	The University of Thessaly will lead four publications and actively contribute to all others, with advanced partners taking the lead on additional publications.
Conference Publications	7	12	13	The University of Thessaly will lead the preparation of six publications and actively participate in other publications led by the advanced partners.
International Research Grant Applications	0	1	2	The collaboration with advanced partners will lead to the development of new joint proposals for EU-funded projects.

New Products/Services	0	1	2	A new software tool for the analysis and design of reliable electronics will be developed.
No. of Female Scientists involved in research actions	4	6	10	The University of Thessaly will adhere to gender equality principles in selecting participants for the project, with a particular emphasis on involving a greater number of female participants in all project tasks.
No. of Staff members involved in mobility actions with foreign partners	4	10	14	At least four senior staff members and six PhD students (with work-oriented contracts) will be involved in training activities at advanced partner institutions.
No. of conducted experiments related to reliability testing	0	5	8	A minimum of five joint experiments, including both training and research experiments, are planned. The University of Thessaly staff will actively participate in all experiments.
No. of research management and administration tools	0	3	6	The University of Thessaly will implement at least three research management tools to facilitate agile management and administration of research projects.
No. of organized international scientific conferences	0	1	1	The University of Thessaly will organize one international conference and one training school, with plans to continue these events after the project, in collaboration with project partners.
No. of organized training seminars	0	1	1	
No. of organized business events and webinars	0	2	3	The University of Thessaly will organize two business events and two webinars, focusing on networking with companies involved in the design of reliable electronics and EDA tools.

Table 7: Key Progress Indicators for University of Thessaly

7. Data Management for the Dissemination and Exploitation Plan

7.1 Data Management, open access, and ethical issues

Data availability will be a vital priority for the TWIN-RELECT project, following restrictions related to privacy, ethical concerns, intellectual property rights, and commercial exploitation. Personal data will be anonymized, and any data connected to proprietary technologies or innovations will be subject to access constraints, with precise explanations provided. In particular, for personal data management, the General Data Protection Regulation (GDPR) will be utilized to ensure that all data associated with individual rights is handled and protected with the most elevated degree of respect.

The FAIR principles (Findability, Accessibility, Interoperability, and Reusability) will be adopted for data management in the context of the TWIN-RELECT project. These principles ensure that all data that will be produced during the project will be Findable, Accessible, Interoperable, and Reusable.

- **Findability:** Each consortium partner will contribute to data curation within the research context, ensuring consistent and effective management. A unique and persistent identifier will be assigned to any data within the Virtual Knowledge Platform developed for the project, ensuring easy discoverability and access. The platform will serve as a trusted repository for organizing, sharing, and managing data, ensuring long-term accessibility.
- **Accessibility:** In TWIN-RELECT's Virtual Knowledge Platform, all data will be stored and made available for download in open file formats, ensuring accessibility without needing specialized software. This approach will align with Horizon 2020's authorization for open-access publishing. Furthermore, all data, except those related to patentable inventions and trade secrets, will be openly accessible. In other words, for confidential data, access will be provided, if necessary, by the appropriate permissions. The license of all datasets will be Creative Commons BY, which allows any re-use of the data, including modification, as long as the user credits the creator. The Virtual Knowledge Platform will also offer an organized and user-friendly space for accessing data, featuring both public and private sections. The primary goal is to ensure that data is preserved, as much as possible, in an open and easily accessible format.
- **Interoperability:** The data will be formatted according to widely recognized open standards to ensure compatibility with other data sources and tools. Therefore, international interoperability standards will be followed for data to potentially be utilized and combined with other datasets. The data will be shared in a manner that allows for reproducibility, such as providing the necessary code or methodology in cases where proprietary software or instruments are involved.
- **Reusability:** The data generated within the TWIN-RELECT project will be made available for reuse by others, provided that ethical considerations, including proper citation and attribution, are precisely adhered to. Each dataset will include comprehensive documentation and metadata detailing how the data was generated and processed and any specific requirements for reuse. To facilitate the general and ethical reuse of data, Creative Commons (CC) licenses will be applied, ensuring that the privacy and confidentiality agreements will be followed.

Furthermore, the project will ensure that intellectual property (IP) generated during the project will be managed by the EU regulations and project guidelines. IP ownership and usage rights will be clearly

defined in the Consortium Agreement (CA), specifying the rules for publication, patenting, and commercialization of results. The project will emphasize transparency in terms of scientific data and publications, while also protecting confidential information.

- **Commercial exploitation and IP implementation:** IP agreements will be implemented to protect any data or results that could lead to a patentable invention or commercial product. Open access to most scientific publications and data will be promoted, whereas the interests of all project partners will be considered. Furthermore, appropriate licensing or commercialization agreements will be utilized to ensure the protection of data that will potentially be exploited for commercial purposes.
- **Publication of results**: All project outcomes, including data, materials, scientific articles, and reports, will be publicly available in the project's Virtual Knowledge Platform, which will serve as an open-access repository. This process will be a part of the dissemination strategy since the main target is to promote transparency, reproducibility, and collaboration within the scientific community, ensuring that the results of the project will be accessible to stakeholders.

Finally, in deliverables 7.1 and 7.2, the 1st and 2nd Data Management Plan, more detailed analysis and information will be provided regarding this considerable issue.

7.2 Internal Communication

Efficient internal communication is a significant factor in ensuring the success of the TWIN-RELECT project. Specifically, the exchange of ideas and the progress of updates will be facilitated through communication and collaboration among partners, contributing effectively to the ongoing project evolution. Many strategies and tools can be proven beneficial and lead the project in the right direction.

- **Project website**: The TWIN-RELECT project will maintain a dedicated website to foster internal communication and public engagement. The website will primarily function as a protected platform for partners, encouraging the sharing of vital materials such as conference presentations, deliverables, and general reports. This centralized hub will guarantee convenient and consistent access to project-related information, facilitating effective cooperation among the partners. Furthermore, the Virtual Knowledge Platform, integrated into the project's website, will feature dedicated sections accessible to public stakeholders. These sections will facilitate the dissemination of key project outcomes, including publications, deliverables, and other essential materilas, ensuring broad accessibility and engagement. More precisely, the platform will ensure that datasets and publications will be available to the broader academic and scientific community providing a reliable and centralized resource for open access. Therefore, the website will serve as a dual-purpose tool by integrating internal and external functionalities, enhancing the project's internal coordination and engagement with the broader public and academic stakeholders.
- **Platforms supporting document sharing and real-time communication:** In the context of the TWIN-RELECT project, except for the Virtual Knowledge Platform, some other useful platforms like Google Drive (for document management) Google Meets, and Microsofts Teams (for video conferencing and collaboration) will be utilized, too. In particular, all partners will have easy access to project documents, datasets, and results through these platforms and maintain beneficial communication and discussion, regardless of geographic location.
- **Internal meetings**: Regular meetings will be crucial in ensuring effective collaboration among partners. These meetings will provide an opportunity to discuss and refine methodologies,

organize training schools, plan webinars, and address any issues that require a unified strategy from all project members. Furthermore, for each work package (WP) regular internal meetings will be organized to discuss specific tasks, milestones, and deliverables. These meetings will be scheduled based on the needs of each WP, ensuring that all partners are engaged and contributing actively. These meetings will be held via Google Meets, Microsoft Teams , or in person, depending on availability and necessity.

- **Dissemination and activities**: Dissemination and exploitation activities will be an integral part of the project, with every partner contributing to outreach efforts through an efficient collaboration. Presentations at scientific conferences, publishing methodologies and results in peer-reviewed journals, as well as each partner's communication channels will all contribute to promoting the project objectives. Partners will also cooperate on the production of materials like reports, flyers, articles, and posters will be available for download on the project website and will be employed to attract and engage stakeholders. The Virtual Knowledge Platform will contribute to this effort since it will serve as a central repository for documents, and interactive virtual training exercises, enhancing accessibility and collaboration.

- **Email communication**: A mailing list will be created to include project coordinators, work package leaders, and all relevant team members. This internal communication tool will ensure the efficient and effective sharing of critical project information, updates, and deadlines. It will serve as a central channel for promoting collaboration and maintaining alignment within the team. In other words, communication through emails will enable the direct and quick exchange of information and ideas about the project's progress and development. The mailing list will be used for regular status updates to keep everyone informed about key developments and milestones. Furthermore, it will provide a convenient way to clarify tasks and responsibilities, helping to address any questions or uncertainties related to each partner's role in the project.

- **Data and knowledge transfer**: Partners will collaboratively define specifications for input and output data formats, benchmark circuits, and fault models to validate and enhance the robustness of the proposed tool-flow methodology. Critical test circuits, including state-of-the-art deep learning accelerators, RISC-V architectures, and commercial IC devices, will be shared among partners to assess reliability and radiation hardening across various scenarios and technologies. Furthermore, knowledge transfer will play a critical role in the project, fostering collaboration and encouraging all partners to contribute their expertise and experience toward the project's advancement. The staff, particularly at the University of Thessaly, will have the opportunity to enhance their skills in designing reliable circuits, gaining valuable insights from the collective expertise of the other partners.

8. Conclusion and Future Plan

A comprehensive framework of the dissemination, exploitation, and communication plan is outlined in this deliverable to ensure the efficient promotion of the TWIN-RELECT project's activities, objectives, and outcomes. The primary plan aims to maximize the interest of the scientific and public audience by leveraging multiple communication channels, following strategic exploitation opportunities and generally engaging diverse stakeholders.

The sustainability and further evolution of the project will be the fundamental target of TWIN-RELECT's consortium. A key objective will be the ongoing maintenance of the project website and Virtual Knowledge Platform, which will be regularly updated with new materials to ensure the continued sharing of knowledge and long-term accessibility. These platforms will remain operational beyond the project's duration. Furthermore, collaborations with other related projects and the promotion of new research initiatives will be fostered to enhance the impact of the TWIN-RELECT project on the scientific community. These endeavors will partly be fulfilled through participation at leading top-ranked conferences and publishing findings in international journals.

To raise awareness and inform schools, universities, and the broader public about the significance of reliability in electronic systems educational activities and events such as webinars, workshops, special sessions, and training schools will constitute a priority from all considerable efforts. Also, the project's team will aim to seek opportunities for the commercial utilization of project outcomes, improving exploitation actions. The organization of a successful business forum will contribute to this considerable effort since there will be chances to develop cooperation with industry stakeholders, informing them about the project's purposes.

Through the aforementioned actions, the TWIN-RELECT project focuses on establishing and promoting a lasting excellence in the field of reliable electronics, enhancing its contributions to the design of more robust and resistant systems.

References

[1] Social media guide for EU funded R&I projects - EU Grants: HE Social Media Guide: V1.0 – 01.10.2023