Bridging Ecosystems for European Technological Advancement

Deliverable	**Initial Dissemination, Communication and Exploitation Plan**		
Deliverable File	D7.1		
Project	Cynergy4MIE	**Grant Agreement Number**	101140226
Lead Beneficiary	IOTAM	**Dissemination Level**	Public
Involved SC's	n/a	**Related Task/s**	T7.1, T7.2, T7.3
Due Date	M03	**Actual Submission Date**	27.11.2024
Status	Draft	**Version**	V1.0
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Document history			
V	**Date**	**Author**	**Description**
0.1	09.10.2024	Siranush Akarmazyan	Initial template
0.2	11.11.2024	Athanasia Thraskia	1st draft version ready
0.3	21.11.2024	Siranush Akarmazyan	Ready for internal review
0.4	26.11.2024	Benjamin WIMMER	Internal review completed
0.5	27.11.2024	Siranush Akarmazyan	Internal review comments and suggestion implemented
1.0	27.11.2024	Siranush Akarmazyan	Final and reviewed Version ready for submission

Acknowledgement

The Cynergy4MIE project is supported by the Chips Joint Undertaking and its members, including the top-up funding by National Authorities under Grant Agreement No 101140226.

Co-funded by the European Union
Chips JU

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1 Executive summary

This document sets out the initial plans for dissemination, communication and exploitation of the Cynergy4MIE project results. The objective of this deliverable is to primarily establish the project dissemination, communication and exploitation methodologies by presenting an initial strategy that will be enforced during the project lifetime. It introduces the dissemination and communication activities that the project's consortium intends to carry out during the project lifespan. Furthermore, it provides all the steps needed to be taken during and after the project to achieve maximum effect of the dissemination process and reach to the relevant target audiences. Finally, it handles the exploitation strategy and plan within the project and highlights the guidelines that need to be followed by all consortium members during the project's lifespan. The initial planning of exploitation is aligned with the Cynergy4MIE Description of Work (DOW) and the Grant Agreement (GA). In this context, this document presents the initial definition and proposed methodology of exploitation within the project.

Given the very early stage in the project development (M3) and the novelty of the Cynergy4MIE technologies under development, the initial dissemination, communication and exploitation plans presented in this document are preliminary in nature and will be expanded and revised as more specific results and experiences from the project become available. Thus, the strategy and plan of dissemination, communication and exploitation will be continually monitored, updated and reported during the project. In this sense, it is a living document that will develop through the project, and it will change in accordance with the needs of the dissemination, communication and exploitation process.

2 Publishable summary

The deliverable 7.1 "Initial Dissemination, Communication and Exploitation Plan", represents the sum of the core dissemination, communication and exploitation goals and objectives of the Cynergy4MIE project consortium. It serves as a guide for the implementation of dissemination, communication and exploitation objectives of the project and identifies the consortium's strategic actions to promote and exploit the delivered results and achievements within the project.

In this regard, the deliverable 7.1 composes:

- The Cynergy4MIE dissemination and communication plan, elaborating on the communication channels, activities as well as on project dissemination objectives, actions, and strategies, in relation to the selection of targeted audiences.
- The Cynergy4MIE exploitation strategy, describing the actions and followed objectives of each consortium member, together with the impact expected and the uptake potential of the project deliverables in the European and the global industrial ecosystem.

The dissemination and communication strategy and actions will be performed throughout the 36 months project lifecycle. The outlined dissemination activities are aiming to augment the awareness on project's expected innovation impacts, objectives and deliverables through international conferences, workshops, expositions, trade shows, fairs and symposia presentations, seminars, publications.

Dissemination resources are effectively allocated to provide both the highest level of the project visibility and the right use of the results.

3 Introduction & Scope

3.1 Purpose and target group

This deliverable presents the communication, dissemination and exploitation plan which identifies, organizes and defines the management of the promotion of the Cynergy4MIE project. It is based on the preliminary dissemination and exploitation plan drafted on the project GA, adding relevant material on the dissemination and communication strategy. The deliverable objectives are to establish:

- The communication and dissemination strategy and timelines.
- The communication and dissemination channels, material and activities to be applied in order to reach an optimal dissemination level.
- The relevant target stakeholder for communication, dissemination and exploitation activities.
- The exploitation approach for the project which combines both the overall project expected impact and the individual exploitation perspectives of each partner.

This report is a strategic document prepared for the following audiences:

- **Cynergy4MIE consortium:** to be informed and guided towards effective implementation of dissemination and exploitation actions and activities, within and outside of the consortium.
- **Project reviewers:** to assess the feasibility of the outlined approaches and strategies for the dissemination and exploitation of the project results.
- **General public:** to provide information relevant to the overall dissemination, communication and exploitation strategy and contact the upcoming and planned WP7-related activities of the project.

3.2 Contributions of partners

The entire Cynergy4MIE consortium is involved in dissemination, communication and exploitation activities of the project thus for the purpose of this document, contributions from each partner were collected. Below are presented the partners who have contributed to the writing process of this document.

TABLE 1: PARTNER CONTRIBUTION

Chapter	Partner	Contribution
All	IOTAM	IOTAM leads WP7 and is responsible for the preparation of D7.1
6.1.3	TG	TG as a communication manager contributed to the subsection 6.1.3

3.3 Relation to other activities in the project

The preparation of D7.1 is supported by Task 7.1, Task 7.2 and Task 7.3. The development of the project communication and dissemination strategy is a horizontal activity which spans the work of all work packages of the project.

4 An Overview of Dissemination, Communication and Exploitation Management

Managing and reporting dissemination, communication and exploitation activities is very important for the successful implementation of WP7, and it demands the close collaboration of all partners. In Cynergy4MIE, the dissemination, communication and exploitation activities are coordinated by the Dissemination and Exploitation Manager of the project. IOTAM is leading this effort and is responsible for coordinating the dissemination and communication activities during the project lifecycle. However, all Cynergy4MIE consortium members are responsible for actively supporting and providing contributions to such activities.

Dissemination, communication and exploitation activities cover different aspects of the project, target different audiences, and send different messages. All are linked with and influence each other, but their fundamental goals are different: communication activities encompass all aspects of the project, whereas dissemination concerns mainly project results and paves the way for exploitation, which refers to the uptake of project results for further research, the commercialisation of products or services, the adoption of new standards or the adoption or revision of policies. Dissemination, communication and exploitation measures should be understood as “horizontal” that run alongside and complement research activities throughout the project’s life cycle, with the main goal to maximise the expected impact of the Cynergy4MIE technologies. It is thus advisable to implement a structured and systematic approach to manage (plan, coordinate, monitor and assess) all impact-related activities.

4.1 Policy and rules

The policies for the dissemination of knowledge from the project (e.g., press releases, joint publications), along with the exploitation of foreground and background knowledge are clearly stated in the Grant Agreement of the project. Prior notice of any planned dissemination shall be given to the other Parties at least 30 calendar days before the publication. Any objection to the planned publication shall be made in accordance with the Grant Agreement by written notice to the coordinator and to the Party or Parties proposing the dissemination within 14 calendar days after receipt of the notice. If no objection is made within the time limit stated above, the publication is permitted.

By exception to the 30 calendar days notice, the prior notice period shall be reduced to 14 calendar days only for the following dissemination activities: poster presentations, slides and abstracts for oral presentations at scientific meetings. In this case, any objection to the planned dissemination shall be made in writing to the coordinator and to the Party or Parties proposing the dissemination within 10 calendar days after receipt of the notice. If no objection is made within the time limit stated above, the dissemination is permitted.

For dissemination actions, a common graphic identity is defined to allow for better visibility and recognition of the project. All dissemination material (deliverables, reports, presentations) include:

- the name and the logo of the project
- the website of the project
- acknowledgment to EU/CHIPS JU funding agencies

Every publication produced within the scope of Cynergy4MIE is entitled to an acknowledgement section stating the following: "*The Cynergy4MIE project is supported by the Chips Joint Undertaking and its members, including the top-up funding by National Authorities under Grant Agreement No 101140226".*

4.2 Monitoring and reporting

Monitoring and reporting communication and dissemination activities is very important for the successful implementation of WP7, and it demands the collaboration of all partners. Therefore, partners will be responsible for undertaking their activities and reporting back to the Dissemination and Exploitation Manager of the project. For this purpose, it has prepared and circulated a Dissemination and Communication Masterfile (see APPENDIX I – Dissemination and Communication Masterfile) to all partners requesting to complete the conducted activities.

For monitoring purposes, the dissemination activities are analysed and reassessed regularly by the Dissemination and Exploitation Manager and will be incorporated to the corresponding project periodic reports.

4.3 Target groups and stakeholders

The medium of dissemination used to maximize the impact of the project, depends on the audience group we are targeting, thus a preliminary targeted audiences/stakeholders' analysis is necessary to support the Cynergy4MIE dissemination and communication activities. This analysis will allow us to identify and target specific stakeholders which can be interested in the outcomes of the project. The objective of the stakeholder engagement strategy is to engage representatives from the Cynergy4MIE target groups, provide insights and get feedback on the project's development. In this respect, carefully selecting a stakeholder engagement approach and technique by ensuring that the project receives expected attendance and feedback into the project's research is a crucial aspect.

The Cynergy4MIE stakeholder engagement strategy can be divided into four key components illustrated below:

Phase I - Discover: This phase requires conducting our strategic stakeholder analysis by identifying and mapping stakeholders, recognizing dependencies and prioritizing primary and secondary stakeholders.

Phase II - Plan: Presents the actions required to engage stakeholders across every level of the project development and create a schedule of actions and milestones through the life cycle of the project.

Phase III - Transfer: Involve and communicate with key stakeholders early in the decision-making process, in ways that are meaningful and accessible, and continue the communication throughout the project life. Bringing multiple key players together for cross-border collaboration can support and facilitate the transfer of Cynergy4MIE R&D results into both academy and market.

Phase IV - Measure: The final step of the strategy includes evaluating the stakeholder engagement performance in the context of the engagement plan, project objectives, expected impact and reveal the degree of end-user acceptance.

5 Dissemination Strategy

The objective of the dissemination strategy is to identify and organise the activities to be performed with the aim of maximizing the impact of the project by delivering the outcomes of Cynergy4MIE to citizens, industry stakeholders and the research community. In this regard, the Cynergy4MIE consortium has an open attitude towards the release of information, and we will explore all reasonable routes to maximize impact through dissemination, since this is essential to ensure that the project produces its full impact. Dissemination in the context of Cynergy4MIE is considered both as a typical information process targeting the industry, the scientific community and the wider public through the usual channels, but also more so as a significant marketing initiative aiming to promote Cynergy4MIE design, innovation and digital transition in Mobility, Infrastructure & Energy, Digital Industry and Society.

The objectives of the dissemination strategy are:

- The definition of targeted audiences/stakeholders that will potentially use the Cynergy4MIE results.
- The analysis, selection, disclosure of the key exploitable project results by appropriate means, including scientific publications, to get them used from interested sectors.
- The choice of relevant tools to disseminate results according to the interests/ needs of the defined target audiences during and after the project.
- The definition of a coherent strategy for knowledge management addressing background knowledge used by the project as well as new results generated by the project.
- Possible ways to ensure active stakeholder involvement/management, i.e., through workshops with potential users interested in project results.

Typical dissemination means and channels to effectively disseminate the Cynergy4MIE project and its results, according to the information needs of the envisaged user group, are:

- Scientific/non-scientific paper publications by respecting Horizon Europe open access requirements.
- Organisation of events: workshops, end-user trainings, demo days, cluster events and meetings.
- Participation in third-party events: industry fairs, scientific conferences, policy roundtables, Brokerage events/Investor pitches.
- Other dissemination support: policy briefs/ Recommendations, white papers, online tools, and trainings for specific target groups.

The Cynergy4MIE consortium is planning a rich dissemination framework ensuring that the project results are effectively dispersed among industrial and scientific communities as well as the general public at all phases. In this regard,

- Industrial dissemination will be promoted through the participation in events and international fairs that will be planned within WP7 activities. On the fairs there will be introduced industrial means, products and skills and innovations. These events will include hands-on technology demonstrations, debates, and presentation of emerging scenarios for

the proposed approach. Efforts will also focus on maximisation of the project results and achievements among the wider European and global industrial community. Through participation in industry-relevant fairs, conferences, and symposia, the Cynergy4MIE project results will be highlighted among industry stakeholders and peers from Europe and outside the EU.

- Scientific dissemination will include multiple publications in conferences, scientific journals, and magazines, which will promote and publicize the Cynergy4MIE results, scientific approaches and new methods. The publication activity will be based on the green (self-archiving enabling open access) as well as on the gold model (specific scientific journals) of publications open access.
- Public awareness on the project intentions, news and results will be elaborated throughout the whole project. It will be realized through presentations, workshops, videos about project results, etc., attracting interested people from multiple domains.

The dissemination strategy will follow principles and best practices successfully tested by the partners in other projects and in line with the EC guidelines for successful dissemination.

5.1 Dissemination phases and timing

The main goal of the project's dissemination is to raise awareness on an individual and organisation level about the benefits of the Cynergy4MIE outcome and the view of a sufficient number of stakeholders, so that they will become aware of the project's new ideas, services and results, ultimately accept and adopt it. To achieve this goal the dissemination and communication strategy follows the three (3) phases that are briefly summarised below:

Phase-I: Brand awareness (M1-M12): this phase aims to promote the project, putting emphasis on awareness raising, ensuring that the project is appropriately recognized on a wide scale and securing an engagement of interested stakeholders. During this period, the project's visibility will be achieved by: redesigning the project logo which is the project's unique identity, designing and developing the project website, launching the social media profiles of the project, setting a clear communication and dissemination strategy and liaising with relevant projects and networks.

Phase-II: Knowledge Share (M13-M24): this phase focuses on development and understanding of the project's technical specifications and requirements and the planning of various workshops. During this phase, the Cynergy4MIE partners will disseminate the project's results in different third-party events by pursuing further engagement with key stakeholders. Establishing contacts and relations with new stakeholders and initiating knowledge sharing with other similar projects is an important part of the current project stage. Within this phase, based on important milestone accomplishment, an updated set of various promotional materials (posters, newsletter, etc.) will support to spread a word and create new contacts.

Phase III: Intensify communication phase (M25-36): this phase involves the wide and effective dissemination of the final results via online and offline activities, building on the project's favourable reputation and established relationships with the target groups. Moreover, WP7 will motivate further participation of stakeholders in the project events and promote exchange of experiences and knowledge sharing with related initiatives and take-up of the project results. Finally, it will also include the formulation of business models and go-to-market strategies.

Phases and timing	Goal	Dissemination and communication action
Phase I: Brand awareness (M1-M12)	•Raise awareness •Create online and offline tools •Announce the project widely •Define the dissemination strategy and action plan •Identify the target groups	•Project logo •Project website •Project social media •Project posters, brochure, presentation, templates, •Project newsletter •Contact with other projects and networks •Project deliverables
Phase II: Knowledge Share (M13-M24)	•Better understanding of the project •Intensification of dissemination activities focused on the platform and the services •Dissemination of the interim results •Encouragement of further engagement with key stakeholders •Update of promotional materials	•Organisation of events •Participation in third party events •Publishing activities •Co-creation workshops •Newsletters and other promotional materials
Phase III: Intensify communication phase (M25-36)	•Effective dissemination of the project results •Creation of the final promotional tools •Organization of the final dissemination activities •Support further take-up of the project's results	•Final conference •Final brochure and video for promotional purposes of the co-creation events •Exploitation plan, business models and go-to market strategies

5.2 Cynergy4MIE dissemination categories

In this section the Dissemination categories of Cynergy4MIE is identified. It gathers a set of activities that with the combination of communication activities will help to share the project's scope, objectives and results to the Cynergy4MIE target audiences. The following dissemination categories are selected to execute to dissemination activities:

Dissemination activities (DA)	Description
DA1	Paper publication
DA2	Events organization and third-party event participation (exhibitions, workshops, end-user trainings, industry fairs etc.)
DA3	Project networking & synergies

5.2.1 Paper publications

Paper publication is a broad-based dissemination tool. The partners will strengthen the impact of dissemination activities by preparing and publishing reports and scientific articles. This will ensure the long-lasting impact beyond project duration, particularly in relation to academic discourse in the area. The consortium will select the most appropriate journal(s) for each specific paper. Indicative list of targeted journals is given below.

ACM Transactions on Reconfigurable Technology and Systems	IEEE Transaction on Cyber Physical Systems
Composites Science and Technology	IEEE Transactions on Industrial Electronics

Elektronik automotive	IEEE Transactions on Industrial Informatics
IEEE Robotics and Automation Letters (RA-L)	IEEE Transactions on Intelligent Transportation Systems
International Journal of Robotics Research (IJR)	IEEE Transactions on Parallel and Distributed Systems
Journal of Intelligent & Robotic Systems (JINT)	IEEE Transactions on Vehicular Technology
Elsevier Robotics and Autonomous Systems	IEEE Transactions on Visualization and Computer Graphics
Open access MDPI Robotics	International Journal of Distributed Sensor Networks
IEEE IoT Journal	Journal of Systems Architecture
IEEE Transactions on Computers	Computers in Industry Journal

In addition, the partners will actively participate in international conferences and publish papers in corresponding conference proceedings. The table below presents a selection of already known international conferences where the Cynergy4MIE consortium will seek to present the project and its results.

ACM Conference on Human Factors in Computing Systems (CHI)	IEEE Intelligent Vehicles (IV)
ACM International Symposium on Highly Efficient Accelerators and Reconfigurable Technologies (HEART)	IEEE International Conference on Application-specific Systems, Architectures and Processors (ASAP)
ACM/IEEE International Conference on Automation of Software Test (AST)	IEEE International Conference on Automated Software Engineering (ASE)
ACM SIGSOFT International Symposium on Software Testing and Analysis (ISSTA)	IEEE International Conference on Emerging Technologies and Factory Automation (ETFA)
AI Hardware Summit; Mountain View, CA Mountain View: AI Hardware for Neural Network and machine learning models	International Conference on Intelligent Robots and Systems (IROS)
Conference on integrated power systems (CIPS)	The Autonomous – yearly workshop at TTTech
Coordination Models and Languages (COORDINATION)	International Conference on Industrial Technology
Design, Automation and Test in Europe Conference (DATE)	IEEE International Conference on Robotics and Automation (ICRA)
European Conference of Power Electronics (EPE)	IEEE Transactions on Vehicular Technology
European Forum for Electronic Components and Systems (EFECS)	IEEE Transactions on Industrial Electronics
IEEE IECON conference	International Conference on Embedded Software (EMSOFT)
IEEE/RSJ International Conference on Intelligent Robots and Systems (IROS)	IoT Week Conference

5.2.2 Event organisation and participation

To disseminate the Cynergy4MIE results and the expected advantages several Cynergy4MIE focused meetings, workshops, and specific presentation meetings will be organized. In this regard, a specific dissemination plan will be put in place targeting various industrial and academy stakeholders. In addition, events and workshops co-organized by CHIPS JU initiative and the clustering projects will be considered. Furthermore, training and education seminars will be organised to actively boost the project awareness and utilize its exploitation potential via dedicated trainee lessons and seminars focused either on the project as a whole or on its specific technological aspects.

Furthermore, the partners will participate at external events relevant to the project in order to: a) present the project and project results to broader audiences, b) promote the project, c) increase the project visibility, establish new contacts and d) exchange knowledge and experience. Indicative events where partners plan to take part may include:

Semicon Europa	Embedded Technology
Teknologia fair	ELECTRONICA, Munich
Hannover Messe	SPS - Smart Production Solutions -fair
European Forum for Electronic Components EFECS	IFAC World Congress
European Robotics Forum	USENIX Security Symposium
European Forum for Electronic components and Systems	VALVE WORLD EXPO

Other events are mentioned in the individual dissemination plan per partner.

5.2.3 Networking and liaison

Cynergy4MIE consortium will pursue the establishment of an open dialogue with the other relevant projects to actively transfer and gain knowledge in the CHIPS JU community. To begin with, online research will be conducted about similar projects that belong in the same thematic area as Cynergy4MIE and first contact will be made with them. Furthermore, the Cynergy4MIE consortium has a group of research institutes, universities, industries and SMEs with strong networking profiles, which will be used to collaborate with industry and public/private sectors.

5.2.4 Initial dissemination plan per partner

In the context of designing and developing the initial dissemination plans of each beneficiary all the partners were kindly requested to fill in a questionnaire (see APPENDIX- II Initial Dissemination and Communication plan per partner). This questionnaire included two parts, Part A and Part B.

Partner	Dissemination actions
AVL	AVL actively promoted the project from the very beginning, starting with the Autonomous Conference in Vienna (M1), where Reiner John, as the keynote speaker, outlined the objectives of Cynergy4MIE. The project will also be showcased at the EFECS in Ghent (M3) and at Strategic Talk 2025, organized by AVL and scheduled for early 2025. Additionally, AVL organized a Quantum Sensor Workshop, which will take place in M4. This project clustering event will focus on quantum sensor topics, by discussing project goals and results, with partners from the A-IQ Ready and Archimedes projects. More dissemination opportunities will be defined in 2025.

SAL	SAL will present the research findings at conferences such as International Conference on Data Mining (ICDM), International Conference on Machine Learning and Applications (ICMLA), International Conference on Industrial Cyber-Physical Systems (ICPS) and International Conference on Principles of Diagnosis and Resilient Systems (DX). Additionally, SAL plans to publish papers in Journal of Computing and Informatics, Neural Computing and Applications, IEEE Access.
IFAT	IFAT plans to release statistical models for publications at scientific conferences and high-quality journals together with KFU.
VIF	VIF will seek high-impact publications in various journals such as the International Journal of Robotics Research (SAGE-IJRR), IEEE Transactions on Intelligent Transportation Systems (IEEE-TITS), and the International Journal of Connected Automated Vehicles (SAE-IJCAV). Additionally, VIF will target well-known conferences such as the Intelligent Vehicles Symposium (IEEE-IV), Intelligent Transportation Systems Conference (IEEE-ITSC), International Conference on Robotics and Automation (IEEE-ICRA), and the International Symposium on Robotics and Sensor Environments (IEEE-ROSE) or similar. VIF will also participate with its teams from the A-IQ-Ready, Archimedes, and Cynergy4MIE projects in the Quantum Sensors Workshop organized by AVL and FAU on December 10, 2024. VIF will further support project dissemination activities in events such as the EFECS, Conference and the Transport Research Arena (TRA).
BUT	In recent years BUT has prioritized publishing the results of its research at well-recognized international conferences and in high-impact journals. For upcoming publications, BUT plans to take advantage of IECON 2025, which will be held in Madrid to present its latest findings. Another key conference BUT is targeting is the Energy Conversion Congress & Expo (ECCE 2025) in Birmingham, UK. In terms of journal publications BUT aims to submit work to IEEE Transactions on Industrial Electronics, a top-tier journal renowned for its high impact, rigorous review process, and relevance to the fields of electronics, automation, and industrial applications. Additionally, BUT plans to publish in IEEE Access, ensuring broad visibility and accessibility for our research.
TUG	The Institute of Electrical Measurement and Sensor Systems of the Graz University of Technology will publish key research findings of the metamaterial-based sensor concept in the Journal of Sensors and Sensor Systems (JSSS), IEEE Sensors Journal, and IEEE Transactions on Industrial Electronics, as well as at the I²MTC 2025 and IEEE MEMS 2026 conferences.
I&M	I&M will use dedicated communication channels, such as its social media platforms (e.g.: LinkedIn) and website to disseminate news and findings related to Cynergy4MIE, ensuring broader outreach and engagement with industry professionals and potential customers. Additionally, I&M plans to disseminate the project's outcomes by publishing in industry journals and/or possibly presentation at workshops, conferences and trade fairs.
VER	VER plans to disseminate the project results in Embedded World, Incose workshops and seminars, Formal Methods Europe, possibly Bits&Chips event in Eindhoven. More dissemination activities will be defined in 2025.
VTT	VTT's initial plans involve writing a scientific article for an IEEE conference. Additionally, the Cynergy4MIE Finnish steering group will consider how to disseminate the results in Finland when the time is appropriate.
THRO	THRO will publish in various journals and participate in conferences such as the Journal of Intelligent Manufacturing, the IEEE International Conference on Robotics and Automation (ICRA), the International Conference on Machine Learning (ICML), and the Proceedings of the Thirty-Third International Conference on Automated Planning and Scheduling (ICAPS).

EDI	EDI will use its communication channels to disseminate all project material online (e.g., social media, EDI website). EDI will put effort to present relevant material in both internal and external events (European researcher's night, Seminar to Latvian Quantum Initiative members, Presentation to LETERA members (Latvian Electrical Engineering and Electronics Industry Association)) creating synergies among different projects and organisations, more will be defined in 2025.
GIM	GIM will use dedicated communication channels, such as its social media platforms (e.g.: LinkedIn) and website to disseminate news and findings related to Cynergy4MIE, ensuring broader outreach and engagement with industry professionals and potential customers. Furthermore, GIM plans to disseminate the project's outcomes by publishing in industry journals and/or possibly presentation at workshops, conferences and trade fairs.
CONV	CONV will use its communication channels to disseminate all project material online (e.g., social media, newsletter, CONV website). CONV will put effort to present relevant material in both internal and external events (scientific conferences, trainings, project meetings e.g. Researcher night, Athens Science Festival) creating synergies among different projects and organisations.
IOTAM	IOTAM serves as the project dissemination, exploitation, and communication coordinator for Cynergy4MIE. Collaborating closely with the project coordinator, IOTAM oversees the overall project dissemination management and coordination. IOTAM will establish mechanisms to ensure timely and accurate execution of individual partner dissemination plans. Furthermore, IOTAM is responsible for both scientific and non-scientific dissemination of project results, maintaining an active online and offline project presence. IOTAM will contribute to the organization of technical workshops, events, and meetings, and will propose innovative initiatives to maximize project impact, engage key stakeholders, and encourage their participation. To enhance project visibility, IOTAM will assist in designing and regularly updating the project website, will develop a comprehensive communication and dissemination action plan, and will create initial communication materials (brochures, posters, newsletters, videos) with a plan for regular updates. Additionally, IOTAM will actively promote the project, emphasizing awareness-raising efforts to ensure broad recognition and secure the interest and engagement of key stakeholders.
NXP-NL	NXP will use its online channels to communicate about the project. Dissemination of the project results will be done through open-source software communities. Software for our prototype board is added to open-source software frameworks like Nuttx, PX4, Zephyr or Cognipilot. Next to that the prototype hardware is used to create reference boards that can be listed on the NXP website. There, the information on the targeted reference boards will be openly available to customers. NXP is showcasing their mobile robotics solutions at many exhibitions, for example Embedded World, PX4 Conference, ROSCON. NXP disseminates its AIML R&D activities through invited courses at Dutch Technical Universities (TU Eindhoven, TU Delft and TU Twente), through publications and in conferences such as European Conference on Edge AI, European Radar Conference, etc.
VAISTO	Vaisto will promote the project's results on its social media channels. Dissemination actions will take place in industrial technology fairs, events and related interest group seminars. Vaisto participates in German market area events like Hannover Messe and showcases the results to event visitors. Vaisto will also disseminate the results in VDMA industrial technology events and local Badem-Würtemberg Allianz Industrie 4.0 events and Karlsruhe Cyberforum events.
ZF	ZF aims to dissemination the project results through: • Publication in scientific paper with FAU Erlangen in 2026. • Exhibition of demonstrator on exhibition in 2026 (i.e. Electronica in Munich, not yet defined).

	• Further dissemination steps will be defined in 2025.
INSAR	INSAR will actively promote the project's scientific results and operational benefits at both national and international levels. Key dissemination activities include participation in prominent conferences such as the 76th International Astronautical Congress (IAC) in Sydney, Australia (planned booth presence and project material distribution), ESA's Living Planet Symposium, ESA's Industry Space Days, and ESA Fringe events. Presentation is also planned at the International Conference on ENTERprise Information Systems (CENTERIS) in Portugal. These efforts will be complemented by peer-reviewed publications, ensuring broad visibility and alignment with the project goals enhancing partners diversification potential in various space-related domains.
XENOMATIX	XenomatiX intends to promote the project results during exhibitions and events dedicated to the geospatial and road maintenance industries, as well as to the Automotive sector. For example, Intergeo & GeoWeek annual conferences, and events organized by the Road Profile User's Group (RPUG) and the International Road Federation (IRF). We will also disseminate our activities & findings within this project on our dedicated communication channels, such as in our quarterly newsletters and on our social media (LinkedIn). Finally, we will organize webinars on a regular basis to present new product and feature releases to customers & stakeholders.
SSOL	SSOL plans for high impact publications in scientific magazines/ journals (2), conferences (2) and workshops (1).
IMA	IMA will actively present its activity and achievements as well as achievements of the project to its important customers and potential users. IMA will: organize a technology workshop session within the annual IMA Info Day focusing on Cynergy4MIE sensor technology, will present project achievements within automotive workshops at WITTE Automotive, mother company of IMA, will periodically update project achievements on company web site as well as IMA's social media channels. Finally, IMA plans to distribute knowledge on sensor technology within consultation with IMA business partners.
Fraunhofer	Fraunhofer plans to publish at least one conference paper per year. Relevant conferences are: • Conference on Computer Vision and Pattern Recognition (CVPR) • European Conference on Computer Vision (ECCV) • International Conference on Computer Vision (ICCV) • IEEE Intelligent Vehicles Symposium (IV) • FHG will have a booth on the following fairs, where we can introduce the project: • Consumer Electronics Show (CES) • IAA Mobility (International Motor Show Germany)
PRODRIVE	PRODRIVE will share results of the project internally with employees and with partners within the Cynergy4MIE consortium as well as externally with external organizations on events and exhibitions on hydrogen and power electronics. Furthermore, PRODRIVE is in direct contact with key players in the hydrogen market worldwide and will share results of the Cynergy4MIE project with them accordingly. Lastly, within the collaboration with the TU/e PRODRIVE will contribute to any research publication that might follow as a result.
KFU	Research results are planned to be published in high impact scientific journals such as Technometrics, IEEE Transactions on Reliability, Journal of Applied Statistics, Quality and Reliability Engineering International. They will also be presented at prestigious statistics conferences such as NORDSTAT, COMPSTAT, CMSTATISTICS, ENBIS.
DRIVEU	DriveU will leverage its commercial expertise to amplify the impact and visibility of Cynergy4MIE project outcomes. As a leader in teleoperation and multi-agent communication systems, DriveU plans to implement the following dissemination activities:

	Industry Events: DriveU will present the Cynergy4MIE results at major industry trade fairs and technology forums. These platforms will enable DriveU to engage with industry professionals and potential clients, focusing on advancements in teleoperation technologies and communication protocols. **Product Demonstrations and Webinars:** DriveU will organize live demonstrations and webinars for targeted stakeholders, showcasing the practical applications and business value of project results. These events will be directed at sectors like automotive, logistics, and robotics, with an emphasis on operational efficiency and multi-agent collaboration. **Strategic Partnerships and Networking:** DriveU will pursue collaborations with technology partners and industry associations to foster knowledge exchange and broader dissemination across relevant sectors. **Digital Channels and Media Outreach:** DriveU will use its digital platforms, including social media and its website, to share updates, case studies, and project milestones. This digital outreach is aimed at attracting a wider audience and raising awareness about Cynergy4MIE's contributions to multi-agent systems and teleoperation.
TU/e	For each PhD, TU/e plans on contributing to two conferences per year and publishing three journal papers during the project. The journals and conferences we target are: • IEEE/CvF Conference on Computer Vision and Pattern Recognition (CVPR) • IEEE/CvF Winter Conference on Applications of Computer Vision (WACV) • European Conference on Computer Vision (ECCV) • CvF International Conference on Computer Vision (ICCV) - International Conference on Concurrency Theory (CONCUR) • Int Con on Software Engineering (ACM & IEEE): ICSE • International Conference on Tools and Algorithms for the Construction and Analysis of Systems (TACAS) • International Symposium on Formal Methods (FM) • International Conference on Formal Methods for Industrial Critical Systems (FMICS) • International Journal on Software Tools for Technology Transfer (STTT) Furthermore, TU/e will support 3 PhD theses/works and demonstrate results to industrial partners – in the region and in CS-lab.
ST-I	ST-I is a member of EPoSS and SRIA and plans to participate at trade shows and scientific conferences.
TUD	Through the PhD and Postdoc research activities TUD intends to publish 1-2 papers per year at top Computer Vision and Robotics conferences, such as CVPR, ICCV, ECCV, ICRA, IV and NeurIPS. Results will be disseminated at keynotes and the various workshops that TUD is organizing.
GRO	GROPYUS shall use its communication infrastructure to promote project results across media and online (e.g., news outlets, social media) landscape. The project's results will also be presented in both internal and external events GROPYUS is taking part in (e.g. partner and investor events, trade shows, scientific conferences).
KTH	Research results are planned to be initially disseminated through IEEE/ACM conferences and/or presented in relevant workshops. Following these initial presentations, KTH aims to actively publish project's findings via paper publications in high-impact journals such as IEEE/ACM, and major conferences.
STRIKERSOFT	STRIKERSOFT shall use its communication infrastructure to promote project results across media and online (e.g., news outlets, social media) landscape. The project's results will also be presented in both internal and external events we are taking part in (e.g. partner and investor events, trade shows, scientific and/or Health conferences such as

	Vitalis, Almedalen and/or mVTE. STRIKERSOFT will seek to co-author research papers with KTH during Cynergy4MIE.
MURATA	MURATA plans to present scientific results in conferences such as Transducers, IEEE MEMS, IEEE International Solid-State Circuits Conference - (ISSCC), and its digest of Technical Papers and in journals IEEE Journal of Solid-State circuits and Sensors and Actuators A: Physical. Furthermore, product news, releases and prototypes will be presented in events like Semicon Europe, CES and Sensor convergence fairs.
MEDISYS	Medisys will leverage connections to international group companies, business partners outside of the project, key industry players and tech influencers to present project results and create awareness and enhance the opportunities for potential business collaborations. The dissemination plan of Medisys aims to maximize the visibility and impact of the project results through strategic outreach, active participation in industry events, and effective communication channels. Activities will also include creation of links to other relevant projects and publications in high profile and prestigious conferences and journals. Medisys will showcase project objectives and early results through a presence at the European Forum for Electronic Components and Systems (EFECS). Moreover, Medisys will foster clustering activities with other relevant projects such as A-IQ Ready, Archimedes and ShapeFuture to enhance the exchange of knowledge and explore solutions that can be applied across projects, such as non-causal reasoning models or robust data integration techniques.
TAAT	TAAT will leverage its existing communication and marketing infrastructure to promote the results of Cynergy4MIE. This includes disseminating project information through social media, press releases, and relevant industry networks. Additionally, TAAT plans to present the project outcomes at external events in which TAAT participates, such as "The Autonomous" conference, as well as at trade fairs, internal events with partners, and customer meetings. These efforts will ensure broad and targeted communication of the project results.
POLITO	POLITO aims to improve knowledge about edge computing and AI, allowing for an increase in the level of its collaboration with other universities and companies. The results from the Cynergy4MIE project will be useful in publishing novel scientific papers on physiological parameters analysis, computer vision techniques, and data fusion. This novel knowledge will be integrated into teaching courses like Technologies for Autonomous Vehicles and Model-Based Software Design.
SAT	SAT plans to showcase the project at relevant industry events such as Autosense China in November 2024, Autosense US in June 2025 and ITS World Congress 2025 in Valencia. Collaboration with POLITO will also allow SAT to participate in scientific and technological workshops and conferences, fostering partnerships and promoting joint publications. Furthermore, SAT will use its social media platforms and website to disseminate news and findings related to Cynergy4MIE, ensuring broader outreach and engagement with industry professionals and potential customers.
MEV	MEV will use its social media platforms such as LinkedIn and website to disseminate news and findings related to Cynergy4MIE. MEV also plans to disseminate the project's outcomes by presentation at workshops, conferences and trade fairs.
TG	TG represented Cynergy4MIE project at EEAI (October 2024), as well as will promote the project in EFECS (December 2024) international conference, Quantum Sensor Workshop (December 2024) and at TechTalk 2025 strategic event (January 2025). The plan of conferences in 2025 will be defined later.
ITRI	ITRI plans to share research findings at relevant technical conferences or exhibitions. In addition, ITRI aims to connect with industry partners for technical exchanges.
UNEV	UNEV plans to share research results via academic conferences and workshops related to Artificial Intelligence and Robotics. Additionally, UNEV will deploy V2X technologies

	that result from project research through its partnerships with municipal transit agencies in the United States.
FAU	FAU plans to promote the project via Journal "Physical Review Applied", Journal "Advanced Quantum Technologies", Quantum sensor workshop organized by FAU in December 2024, Journal "Review of Scientific Instruments".
RECHI	Rechi plans to share the achievements of Cynergy4MIE through participation in commercial exhibitions, which provide platforms for industry interaction. Additionally, Rechi aims to build deeper collaborative relationships with key existing supply chain partners and clients, using demonstration and promotion to offer energy-saving solutions.

6 Communication Strategy

Communication aims to inform, raise awareness, and increase public visibility of the project throughout the full lifespan of the project. The focus will be on the societal challenge being addressed by the project and the general scientific or technical approach and on the benefits the project will have for citizens. Communication activities will start at the project outset and will be adapted to each stage of the project to raise awareness of the Cynergy4MIE objectives and aims, build up the relevant target audience and network with related communities. Compared to dissemination, the communication activities will focus on promoting Cynergy4MIE's work and make it universally understandable. In fact, the target groups of communication activities are not only the scientific and industrial community, but also include potential end-users, local authorities and the general public emphasizing more on the impacts and benefits.

The research results of the Cynergy4MIE project and innovations, will be introduced and presented to a wide public. The main objective of communication activities is to create awareness about the full project' s research and development pipeline: from scientific results over technology advancements to success stories in industrial use cases, pilots, demonstrators. This strategy will address the industry, regulatory bodies, the research community and wider public by organizing events, workshops, publications, and presentations. The goal is to present the Cynergy4MIE results towards potential users and to open the discussion to a broader scientific and industrial community. The overall objectives of the Cynergy4MIE strategy are:

- Create awareness and interest in the project concept.
- Define strategic and targeted measures to promote the action itself and its results to multiple audiences beyond the project's own community.
- Define clear & measurable communication objectives.
- Define the audiences that Cynergy4MIE will reach.
- Inform multiple audiences about the project's results.
- Formulate key messages for each target group and the right means to transport them.
- Strengthen the partner's reputation on regional, national, and international level.
- Support the European Commission in demonstrating the success of European collaboration projects.

6.1 Cynergy4MIE communication categories

Common communication means and channels to effectively raise awareness of the project and its results, according to the information needs of the envisaged user group, are:

Communication activities (CA)	Description
CA1	**Visual identity:** logo and colours
CA2	**Online communication:** project website, social media accounts
CA3	**Brand-building material:** posters, flyers, factsheets, presentations, podcasts, or online demonstrators
CA4	**Material for the press**: newsletters, press kit.
CA5	**Other communication tools:** infographics, videos.

6.1.1 Cynergy4MIE visual identity

The project logo is one of the most important elements of the project's identity. Its main purpose is to directly and effectively represent the core message of the project. That is why it is one of the basic means of the dissemination strategy. The project's logo has already been redesigned and presented in Figure 1.

FIGURE 1: CYNERGY4MIE LOGO

Closely linked with the project logo preparation the palette with the selected colours of the project is illustrated in Figure 2.

FIGURE 2: CYNERGY4MIE COLOUR PALETTE

6.1.2 Cynergy4MIE website

Cynergy4MIE website (https://cynergy4mie.eu/) has been designed by IOTAM in M3. It includes following sections:

- **About page:** Providing a brief project information highlighting the background, purpose, objectives, work plan, supply chains.
- **Consortium:** Presenting each of the Cynergy4MIE partners and a link to their websites.
- **Knowledge Hub:** Enabling access to the Cynergy4MIE public deliverables.
- **News & events:** Summarizing the latest information about Cynergy4MIE events including consortium meetings, attendance to conferences, workshops, fairs, etc.
- **Dissemination:** Providing access to the project dissemination (publication, press kit, newsletters, videos etc.) activities.
- **Footnote:** Direct access to the social media pages (LinkedIn, Twitter, YouTube)
- In the footnote it illustrates the key facts of the project and duly acknowledges EU, CHIPS JU initiative and National Authorities for funding by claiming "*The Cynergy4MIE project is supported by the Chips Joint Undertaking and its members, including the top-up funding by National Authorities under Grant Agreement No 101140226*".

The website will be continually updated throughout the project so that it will constantly present updated information for the interested stakeholders. More information about the project website can be found in D7.2 "Communication Channels and Project Website".

6.1.3 Cynergy4MIE social media

Today, social media is a very powerful information-sharing tool. People distribute knowledge, organize, and form opinions on their activities through social media. At the same time, the concise nature of social media exchanges presents challenges with more sophisticated, scientific knowledge. With this in mind, social media can be used to create an online buzz around specific events or publications

through tags and the provision of links to more detailed information materials. Taking this into account, the Cynergy4MIE project currently has two main project social media accounts: X and LinkedIn (Figure 3).

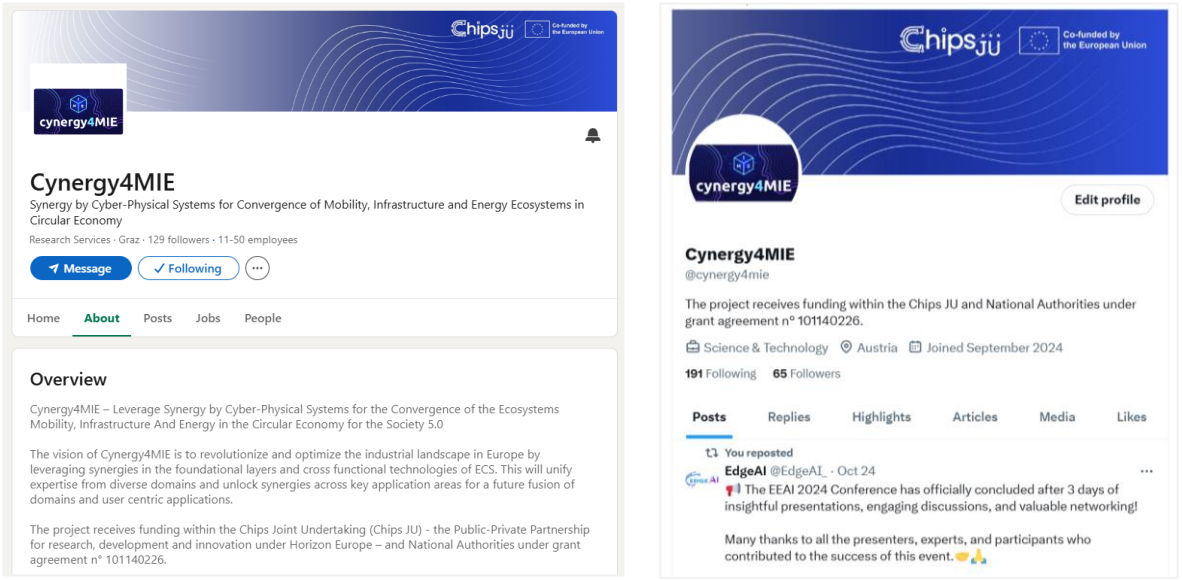

FIGURE 3: CYNERGY4MIE SOCIAL MEDIA ACCOUNTS (LINKEDIN, X)

Presence on social media enables the project to:

- To create awareness
- Promote Cynergy4MIE identity and build a strong reputation
- Engage and encourage stakeholders and the public in dialogue
- Disseminate project news, results, actions and events.

Cynergy4MIE will use these communication channels for frequent project presentation and status updates, reflecting the progress and the project-related actions of the core team and the whole consortium.

In the later project stages, when some videos are available, Cynergy4MIE will present them a dedicated YouTube account[1]. These media channels are highly evaluated because of many possible benefits:

1. Broad Audience Reach: YouTube has billions of users, making it one of the best platforms to reach a global audience. It's a great way to increase visibility and introduce your project to a larger group beyond immediate contacts.
2. Engagement and Feedback: YouTube allows for viewer engagement through comments, likes, and shares. This feedback can help gauge audience interest, answer questions, and even spark ideas for project improvements.
3. Improved SEO and Discoverability: YouTube videos often rank high in Google search results. By optimizing video titles, descriptions, and tags, the project can become more discoverable to people searching for related topics.
4. Visual Appeal: Videos allow you to showcase the project with visual aids like demos, infographics, or animations, which make complex information easier to understand and more memorable.

[1] https://www.youtube.com/@Cynergie4MIE

5. Trust and Credibility: A video presentation can help establish credibility. Seeing the people behind a project, their passion, and the work they've put into it builds trust with the audience.
6. Easily Shareable Content: YouTube videos are easy to share across other platforms, like social media or in newsletters, making it simple to expand reach without extra effort.

Presenting on YouTube essentially builds both a public portfolio and a platform for ongoing engagement, which can be key to a project's growth and success.

6.1.4 Brand-building material

Brand-building material such as posters, flyers, roll-ups will be produced and released within the course of the project. Handouts will be used during the events organized by the project and at external events where the Cynergy4MIE partners are participants.

The project will regularly release newsletters to present the project, its objectives, and achieved results. It will introduce the partners (first issue) and provide information on initiatives and on the progress of the project's work. In addition, press releases will also be distributed together with Mailing lists will be created for informing interested parties about the progress of the project.

6.1.4.1 Poster

The 1st informative poster about the project has been already designed and will be presented in the upcoming dissemination events (Figure 4).

6.1.4.1 Flyer

The 3-fold flyer with core information about the project has been already prepared (

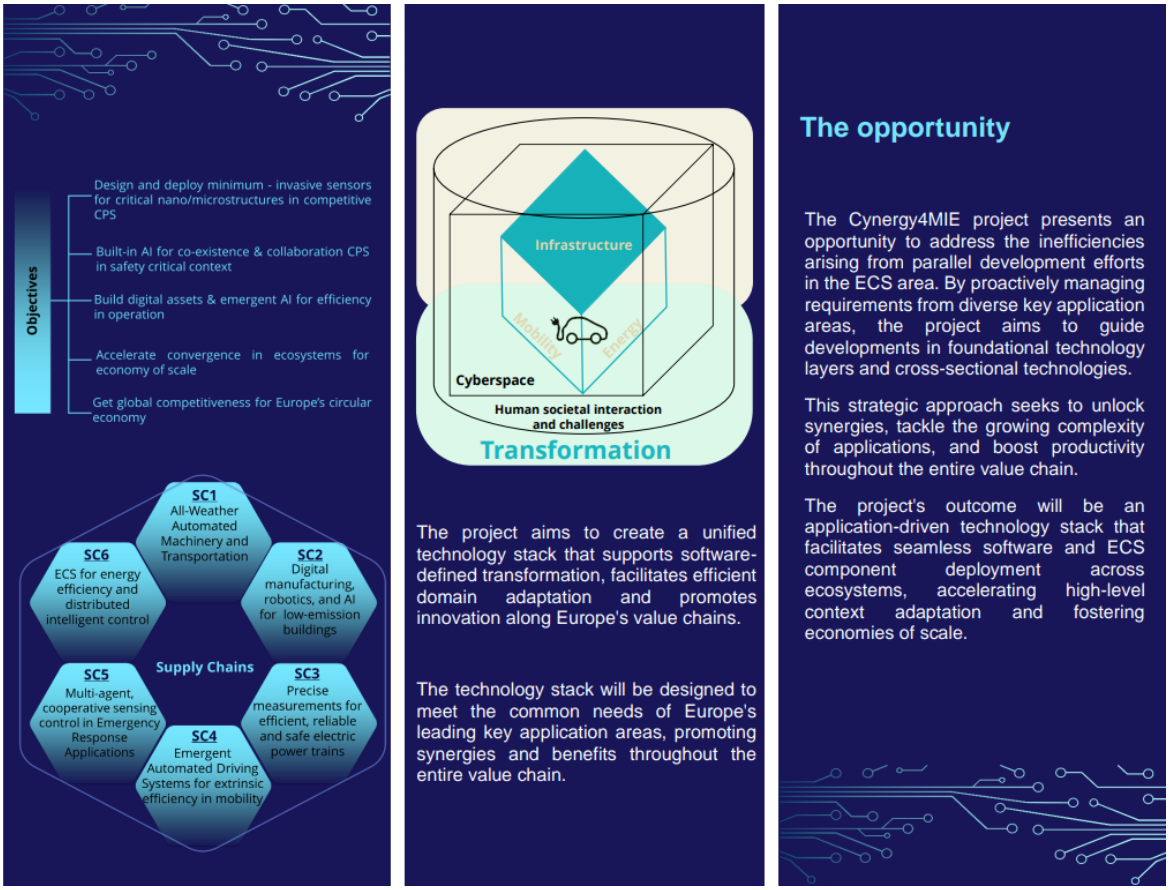

Figure 5) and will be distributed in the upcoming dissemination events. The flyer will be printed and used in various events by providing audiences with an attractive and written overview of the project's main objectives and characteristics.

6.1.4.1 Roll-up

The Roll-up banner of the project, with introductory information about the project, has been prepared and ready to be used for dissemination purposes. It will be uploaded on the project website and will be openly available to the general public (Figure 6).

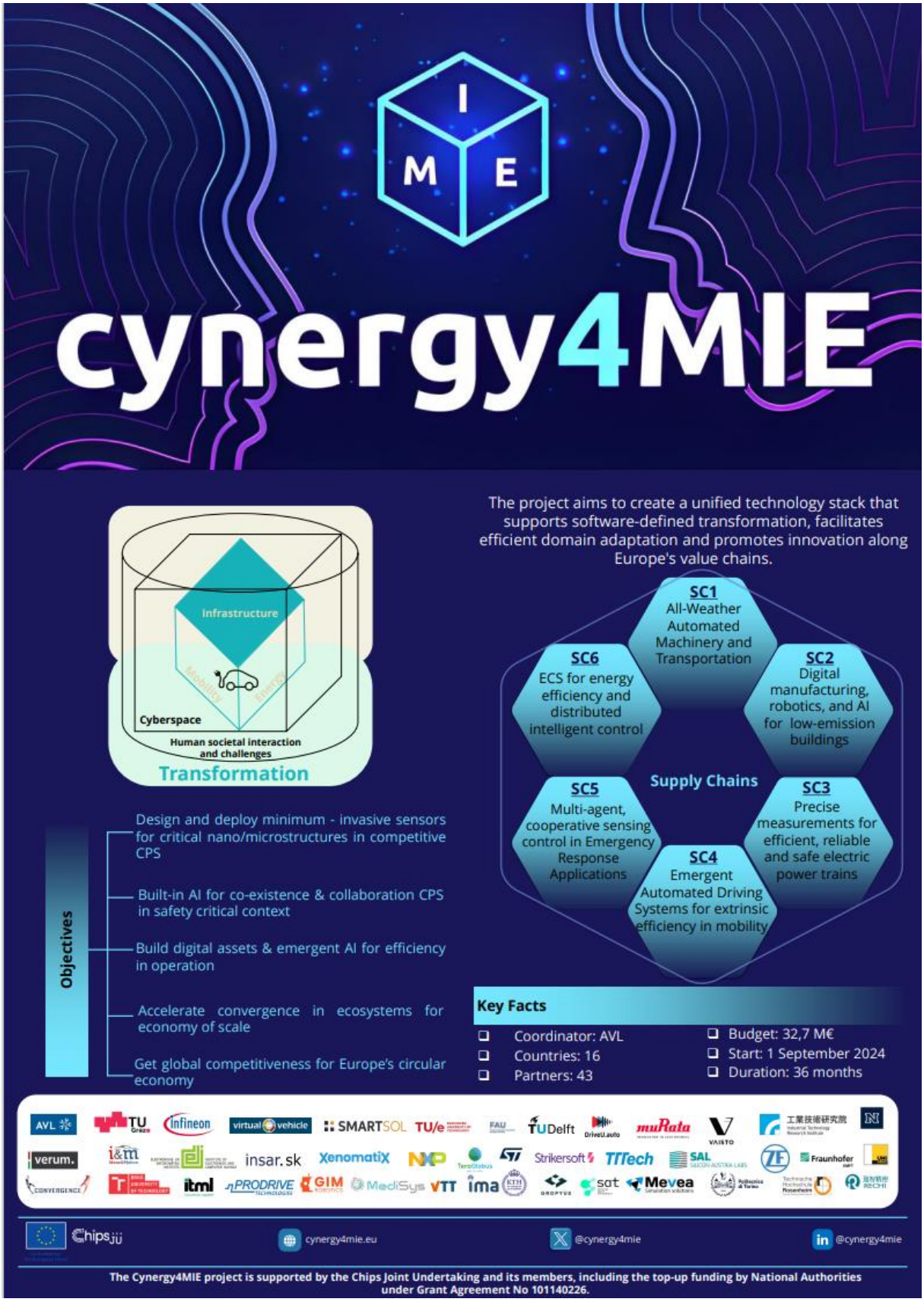

FIGURE 4: CYNERGY4MIE POSTER

FIGURE 5: CYNERGY4MIE FLYER

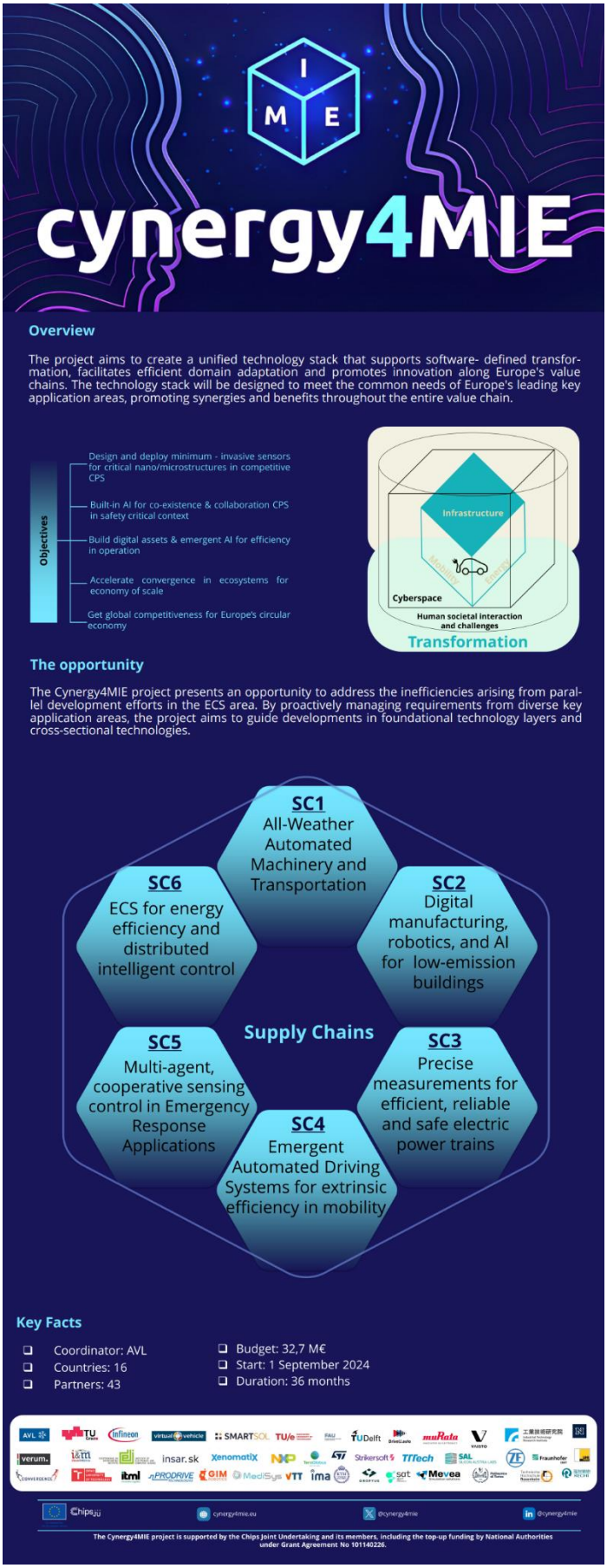

FIGURE 6: CYNERGY4MIE ROLL-UP

7 Exploitation Strategy

Exploitation aims at stimulating and maximizing the impact of the project-generated results by optimizing their value, enabling active use and uptake of the project delivered results by the industrial, scientific and academic communities in Europe and globally. The exploitation activities will be delivered together with dissemination activities in a coordinated manner, allowing global stakeholders to identify and benefit from pursued scientific and technological innovations and outcomes of the Cynergy4MIE project. Exploitation efforts will be driven by the entire consortium to ensure the largest possible visibility, impact and uptake of the project-generated results and findings in support of the widest adoption of delivered innovations in the broad industry and scientific ecosystem.

Therefore, the exploitation objectives of the Cynergy4MIE consortium have been defined in accordance with the following core principles:

- **The market context of the project's impact**: addressing the opportunities and exploitation possibilities with respect to global industrial development, leading to a stronger market position of the participating partners. The exploitation strategies and opportunities are developed regarding the changing market and consumer preferences.
- **The project innovation capabilities and deliverables potential**: will determine the technological boundaries of innovation and the resulting potential up-take of the project's results by the wider industry with regards to the licensing decision of the project.
- **Project partner's interest and objectives**: individual exploitation objectives of each of the Cynergy4MIE partners are the base for secure and sustainable investment opportunities. The objective of individual exploitation strategies pursues near-term goals, integrating overall project vision driving partners' long-term strategies.

The exploitation strategy pursues the identification of potential users, stakeholders, and investors as application segments for the technological uptake of the Cynergy4MIE achievements. The strategy addresses gaps in digitalized manufacturing and compares the needs of the technology manufacturing sector affiliated industries to the long-term outcomes produced by the project. Options for further exploitation range from scientific research, collaboration on internal procedures development building on the Cynergy4MIE deliverables, joint venture or standardization activities. Two groups of users will be primarily targeted: project consortium members, their stakeholders, and external audiences, namely stakeholders from **industry, academia, RTOs (Research and Technology Organisation)** and **government at local, regional and global levels**. The following examples of target groups are indicative:

- **Industry / companies**, including all enterprises in the digital industry as well as solution providers. The Cynergy4MIE industrial partners are interested (a) in the commercial exploitation model, providing the project results to the end users and (b) in the technological exploitation model, developing, and delivering products and/or services built on top of the project open-source results. Companies outside the consortium will capitalize on the second model.
- **Policy makers and standardization bodies** (e.g., national ministries, government, councils, etc.), authorized to draft national/regional policies and determine standardisation procedures in digital technologies services; the latter will be duly informed on the Cynergy4MIE

achievements, so as to capitalise on the project results, the demonstrator outcomes and the best practices identified.

- **Education and Research organisations** (e.g., universities, public/private technology providers, research centres, etc.), interested in the research exploitation model, aspiring re-utilisation of the research expertise acquired in future research activities. In terms of commercial exploitation, they are interested in founding spin-offs and start-ups to commercially exploit the developed research results.

7.1 Exploitation phases and timing

Phase	Explanation
Phase I **Definition of the exploitation Strategy**	• What are the key exploitable results? • Who are the key targeted stakeholders? • How will each partner exploit and benefit from the results? • How can the future exploitation of results be prepared during the lifetime of the project (e.g., through business plan trainings, strategy IP management, etc)? • Is joint exploitation of results by different partners an option, and how can this be encouraged and facilitated (especially considering IPR)?
Phase II **Exploitation activities during the project**	• Exploitation roadmap to facilitate the commercial and non-commercial exploitation in the short, medium, and longer-term, including ensuring support, or even commitment, from key stakeholders and networks. • Market analysis, e.g., through PESTEL and SWOT analyses. • Identification of exploitable outcomes, development of suitable planning of path-to-market. • Scientific dissemination and data management, in line with open access strategy and EU requirements. • IP management and standardisation strategy. • Strategic grant planning, to identify suitable funding schemes for further technology development and estimate the resources required to launch follow-up R&D projects.
Phase III **Post project activities**	• Further development of a prototype or market launch of an output (e.g., a new service). • Uptake of policy recommendations in policy decision-making. • Further research grants to follow up on the project results. • Set-up of initiatives (e.g., product/service launch, new projects, new educational master programmes, etc.) using insights from the project.

7.2 Cynergy4MIE exploitation categories

Exploitation activities (EA)	Description
EA1 - Individual Exploitation activities	In this respect the project partners will attempt to identify the strongest project exploitation potential *at the level of each partner*, as the individual partner's interests and opportunities will drive the Cynergy4MIE exploitation.
EA2 - Joint Exploitation activities	This will support the achievement of partners' current exploitation activities, as well as to possibly enable the embracement of new *joint exploitation opportunities* to pursue further exploitation collaboration both for market services and towards new research projects. The second path seeks to define a longer-term vision for Cynergy4MIE where partners can conduct joint exploitation activities aligned with the project's technical progress.

7.3 Cynergy4MIE Key Exploitation Results

This section describes the project's Key Exploitable Results (KERs) envisioned to be developed and exploited in the scope of the project. The table illustrates the partner owning the KER, each KER's relation with project objectives (O1-O5) and Key Targets (KT1-KT7) as well as their key achievement, innovation potential, TRLs (start/end) and pathways to exploitation. It should be mentioned that the tables presenting the KERs of the project are going to be continuously updated to reflect the project's technical progress throughout the project duration.

KER#1	Satellite InSAR monitoring in multi-agent environment
Lead partner	INSAR
Reference to project objectives	O1
Reference to key targets	KT2
Key achievement	Impactful application of satellite InSAR monitoring in multi-agent environment demonstrating effectiveness of emergent systems in improving road safety and search and rescue (SAR) operations
Related innovation potential	The use of satellite data with other data sources yields quick identification of changes that may pose a safety risk and improve the timeliness of responses in decision making and resilience
TRL level- start	TRL 2
TRL level-end	TRL 4
Pathway to exploit result	• launch the alpha version of the product (TRL4) and engage with customers • conduct market research to extend the base of potential customers • establish partnerships and collaborations with key stakeholders, such as government agencies and industry associations, to promote the product • develop a business plan that outlines the product's features • product development loop to reach higher TRLs

KER#2	Advanced quantum sensors
Lead partner	FAU
Reference to project objectives	O1, O2
Reference to key targets	KT2
Key achievement	Quantum sensing
Related innovation potential	Quantum sensors are a new technology platform which is not established yet for industrial applications
TRL level-start	TRL 2
TRL level-end	TRL 5
Pathway to exploit result	• Education of engineers • Scientific publications and presentations • IP generation

KER#3	Accurate and real-time measurements for optimised batteries' assessments
Lead partner	AT
Reference to project objectives	O5
Reference to key targets	KT2, KT3

Key achievement	Batteries play a key role in the adoption of clean energy solutions whenever the end-use is providing electric energy and power. Current Li-ion technology proves the technical feasibility but has many issues undermining its long-term scalability and sustainability. As such the whole supply chain must be taken into consideration, from mining the raw materials to a safe and practical use as well as recyclability. Before new technologies can be applied, they must be thoroughly understood and investigated covering multiple aspects such as safety, thermal behaviour, energy and power density, lifetime, cost-efficiency, manufacturability, etc. This requires investigation at the theoretical level but also at the practical level by instrumenting the cells for more accurate measurements, developing real-time monitoring and control strategies as well as developing simulation and development tools to predict and evaluate batteries before they are built.
Related innovation potential	The work focuses on hybrid super capacitors as these pose some challenges due to high power capability as well as the long cycle life, aspects that are less relevant in the classical lithium-ion market. Hybrid super capacitors have the capability to surpass lithium-ion battery cells, moreover as new chemistries like sodium-based ones also address the issue of the dependency on raw materials like lithium and cobalt.
TRL level-start	TRL 3
TRL level-end	TRL 5
Pathway to exploit result	Selected cell technologies will be introduced as building blocks for batteries if they prove to be better than existing technologies. AT's focus is on hybrid super capacitors that is gradually catching up with Li-ion battery cells. New cells reach up to 20000 cycles, 250 Wh/kg while being 100% safe and being able to operate at very cold as well as very warm temperatures. New chemistries eliminate Lithium and other problematic materials (e.g., cobalt) by using activated carbon, sodium and Silicon-based compounds.

KER#4	Emergent cooperative mobility and SAR solutions
Lead partner	VIF
Reference to project objectives	O2, O3, O4, O5
Reference to key targets	KT3, KT4, KT5
Key achievement	Development of algorithms for cooperative perception and planning algorithms involving multiple agents demonstrating effectiveness of emergent systems with respect to improvement of road safety and search and rescue (SAR) operations.
Related innovation potential	• The use of emergent estimation and cooperative perception algorithms originating from road vehicles for collaborative estimation of safety critical parameters such as the road condition and instantaneous hazards (SC4) • Algorithms for collaborative execution of SAR missions thereby significantly improving mission performance and effectiveness (SC5)
TRL level-start	TRL 2
TRL level-end	TRL 4
Pathway to exploit result	• Reutilization of demonstrator platforms (collaborative robotic/flying agents) and results (emergent AI algorithms) in follow-up projects with a view to deploy the developed solutions in real-life end user solutions and products • Establish partnerships and collaborations with key stakeholders, such as government agencies and industry associations, to promote the solutions • Launch the alpha version of the product (TRL4) and engage with customers and stakeholders • Product/solution development loop to reach higher TRLs

KER#5	Safety critical situations identification enabler
Lead partner	VTT
Reference to project objectives	O2, O3

Reference to key targets	KT6/KT7, KT8
Key achievement	A toolbox for extending automated driving functions in adverse weather and providing evaluation scores for safety benefits. This toolbox enables interaction between virtual simulations (e.g., Mevea's forest road simulations) and real-world environments (e.g., GIM's positioning systems), supporting comprehensive testing and safety validation.
Related innovation potential	Application of AI and traditional software modules in the automated vehicle sector to expand operational design domains (ODDs) for gravel roads and snowy conditions without lane markings.
TRL level-start	TRL 2
TRL level-end	TRL 5
Pathway to exploit result	• Set up robust hardware components for reliable outdoor operation • Set up simulations • Package the software algorithms into deployable modules • Generate patents and IP for licensing rights to enable commercial use

KER#6	**Smart and flexible runtime verification**
Lead partner	TUG
Reference to project objectives	O3
Reference to key targets	KT4
Key achievement	The suggested smart and flexible runtime verification (SAFR) will be applied to distributed application scenarios like automated and autonomous driving considering interactions and information exchange between a car and its environment. SAFR will provide means for identifying critical situations in automated and autonomous driving based on current sensors, communication, and vehicle status during operation. Timely identification of critical situations increases trustworthiness and can be used for increasing efficiency. This will be demonstrated in 2 SC4 demonstrators. In addition, we will suggest a SAFR method for easy deployment in development processes.
Related innovation potential	Current runtime verification approaches, i.e., methods and tools for identifying violations of given properties, are restricted to single systems to be checked or have limitations regarding the formulation of properties. In addition, such approaches require expertise and trained personnel for formulating properties and integration into existing development processes. The suggested smart and flexible runtime verification approach will provide means for easily specifying properties and its easy integration into system development. The approach is intended to be also used in distributed settings comprising collaborative agents.
TRL level-start	TRL 3
TRL level-end	TRL 4/5
Pathway to exploit result	The first step is to outline the foundations behind the SAFR methodology based on the requirements of concrete use cases. This will be done utilizing 2 SC4 demonstrators. Foundations will be made available to the public via scientific publications. In the second step, we will implement a prototype of SAFR and apply it to the demonstrators. From the resulting experiences, we want to come up with a general methodology describing the development, deployment, and use of SAFR. The SAFR methodology will be made available as open source to be integrated into existing products and tools in order to exploit the results.

KER#7	**Sensor system for human-machine (robot) interaction**
Lead partner	IMA
Reference to project objectives	O2, O3

Reference to key targets	KT6, KT8
Key achievement	Sensor system for human-machine (robot) interaction and position awareness within a production or logistic area.
Related innovation potential	Improvements on safety and security issues, collision avoidance and situation awareness. Radar implementation on machines (robot arm, manipulator, conveyor) to protect human and assets.
TRL level-start	TRL 3
TRL level-end	TRL 4
Pathway to exploit result	Deployment within manufacturing and logistic relevant real-time environment, testing the system, professional survey in place. Validation of the system involving stakeholders assessing the requirements matching.

KER#8	**New control paradigms for robotics collaborating with humans and/or other robots**
Lead partner	THRO
Reference to project objectives	O2
Reference to key targets	KT3
Key achievement	The key achievement lies in the development of new control paradigms for robotics collaborating with humans and/or other robots. The solution is to be validated in a relevant industrial environment that is provided by our local lab proto_lab and/or by the industry partner.
Related innovation potential	The project has a high potential for innovation, as the new methodology is fundamentally different from the traditional paradigm of using a set of hand-crafted rules for predefined static environments. It also reveals significant potential for industrial applications and beyond.
TRL level-start	TRL 2
TRL level-end	TRL 5
Pathway to exploit result	The new methodology is to be tested/demonstrated within the project in an industrial setting to further elaborate on the question whether an economical exploitation is reasonable. If a high economic potential is evident, further R&D activities are planned.

KER#9	**Low latency and high bandwidth algorithms using IoT, V2X, 5G, and other wireless technologies**
Lead partner	DRIVEU
Reference to project objectives	O3
Reference to key targets	KT3/4
Key achievement	Key achievements related to these objectives could include the development of algorithms for real-time synchronization and information exchange between robotic and human entities, as well as the implementation of multi-agent autonomy in complex and uncertain environments. The exploitable result could be a software solution that provides low latency and high BW video transmission along with synchronized information exchange and AI-based decision making for robotic and human entities, with potential innovation in the field of teleoperation and multi-agent systems
Related innovation potential	By developing a software-based solution that enables large-scale deployment of robots and autonomous vehicles through teleoperation, the project can significantly advance the field of robotics and automation. The project's research into low latency and high bandwidth using IoT, V2X, 5G, and other wireless technologies can lead to innovations in the development of more reliable and efficient communication networks. Additionally, the project's focus on synchronization and information exchange between robotic entities and between robots and humans can lead to the development of more

	sophisticated and collaborative robotics systems. Overall, the project has the potential to advance the state-of-the-art in the field of robotics and automation and to drive innovation in related fields such as wireless communication and artificial intelligence.
TRL level-start	TRL 3
TRL level-end	TRL 6
Pathway to exploit result	One potential pathway to exploit the results of the project could be to develop a commercial teleoperation platform for deployment of robots and autonomous vehicles in various industries. This platform could be marketed to companies and organizations looking to incorporate teleoperation into their operations, such as in manufacturing, logistics, and healthcare. The platform could offer reliable, low-latency teleoperation service with high-capacity/low-latency dynamic video encoding and cellular bonding technologies, using IoT, V2X, 5G, and other wireless technologies. The platform could also incorporate minimum invasive sensors and AI for co-existence and collaboration CPS in safety-critical contexts, providing AI methods for multi-agent autonomy in uncertain environments. The exploitation plan could include conducting pilot tests with early adopters, partnering with industry leaders and stakeholders, and conducting marketing and outreach efforts to promote the platform's features and benefits.

KER# 10	**Highly accurate, high resolution digital twin for road condition**
Lead partner	XENOMATIX
Reference to project objectives	Extrinsically efficient collaborative mobility with multi-channel cooperative sensing and communication Traffic flow optimization for increased safety and efficiency and reduced travel costs
Reference to key targets	KT3
Key achievement	Highly accurate, high resolution digital twin for road condition and road defects based on sensor fusion for superior detection
Related innovation potential	Sensor fusion, detection algorithms, digital twin integration
TRL level-start	TRL 2
TRL level-end	TRL 4
Pathway to exploit result	Results will be exploited in collaboration with Automotive OEM’s, Tier I’s and their supply chain. In parallel road infrastructure owners / operators will be targeted.

KER#11	**Adaptive privacy- and ethics-by-design framework for trustworthy AI for CPS**
Lead partner	SSOL
Reference to project objectives	O2, O3, O4, O5
Reference to key targets	KT3, KT6
Key achievement	• Creation of an adaptive privacy and ethics-by-design framework for trustworthy AI for CPS • Novel explainable, and affective human-AI methods
Related innovation potential	• Design and validate an ethical framework for CPS that can extend existing privacy-by-design approaches and algorithmic accountability tools by integrating sustainability and data-efficiency requirements into the early definition phase and along the design and development phases of AI systems and services. The framework will create an actionable, adaptive and continuous process for developing energy-efficient and trustworthy AI systems. • Increase the trust level of AI systems interacting with humans by distilling explainability in the AI pipeline, methods and algorithms concerning the data used for their training. We will detect relevant use-case-specific indicators and create models for continual assessment of an individual's emotional state in interaction with an Embodied AI (EAI)-controlled agent, of actions that can be taken to reach desirable

	emotional states and trust, and of the ability to objective encode these to allow AIs to learn and adapt. In addition, we will learn from human behaviour and extract supportive and contradictory reasoning paths as explanations to establish trustworthy human-AI interactions.
TRL level-start	TRL 2
TRL level-end	TRL 3
Pathway to exploit result	By focusing on key enablers such as affective human-AI interactions, compliance with ethics and privacy, and energy efficiency, SSOL embodies a commitment to making AI more accessible, transparent, and beneficial to society. Integrating the SSOL framework in CPS promotes transparency and interpretability in AI decision-making, empowering users to understand the reasoning behind AI-generated decisions and outcomes. This focus on explainability enhances trust and inclusiveness, ensuring that AI systems are more accessible to diverse users. Affective human-AI interactions are central to SSOL's vision, emphasising the importance of incorporating emotional reactions and evolutionary learning in AI systems. This allows AI to interact with humans more intuitively and empathetically, fostering a human-centred approach that caters to the needs of diverse users. Finally, SSOL addresses compliance with ethics and privacy by advocating for a design and implementation framework that adheres to international regulations and evolving legislation. The above vision will bring a new AI product to the EU market, which clear exploitation outcome as shown below • Breakthrough for adopting SSOL vision in real-world CPS process. • Innovative SSOL vision outcome on dataset optimisation and data-efficient AI • Boosting EU research leading in AI. • Fostering AI applications to promote cooperation and competitiveness among industries from different markets. • Lead EU industries' familiarisation with AI technologies. • Promote upskilling and strengthen the sustainable competitiveness of EU employees.

KER#12	**Formal verification and validation of components, modules, (cyber-physical) systems and systems of systems**
Lead partner	VER
Reference to project objectives	O1, O2
Reference to key targets	VERUM will create the concepts, toolboxes and methods regarding the formal verification and validation of components, modules, (cyber-physical) systems and system of systems.
Key achievement	Development of the key enabling technology to support the key target.
Related innovation potential	Very high (it provides an innovative approach to the process of software engineering)
TRL level-start	TRL 3
TRL level-end	TRL 4
Pathway to exploit result	Product: VER technology is complex and accepting what it does, can be difficult to process for a person. Mitigation: VER will add methods and tools to make the technology more accessible. Dissemination: To explain the technology VER and partner(s) will write (scientific) papers explaining and validating the technology.

KER# 13	**Powertrain control using novel flux, current and torque sensors**
Lead partner	BUT
Reference to project objectives	O1, O2, O3, O4
Reference to key targets	KT2, KT3

Key achievement	The designed powertrain control systems will allow energy efficient control of the machine using data from new flux, current and torque sensors. It will also allow virtual sensor redundancy to handle possible faults errors.
Related innovation potential	Innovative concept will be based on a combination of new sensors including quantum flux and current sensor allowing precise measurement of quantities necessary for the machine control and diagnostics. It will allow precise flux control to fully exploit machine performance capabilities while improving energy efficiency. It is also expected that high accuracy measurement of stator currents will provide information on possible faults and weaknesses that can be handled by proper control adaptation. Precise flux measurement will also allow reliable rotor position estimation even in very low speed regions to provide virtual position sensors as a mean or redundancy for safety critical applications.
TRL level-start	TRL 3
TRL level-end	TRL 4
Pathway to exploit result	BUT as an academic partner plans to use the result within education activities and follow-up research projects. BUT also intends to exploit the result within contractual research contracts ordered by industrial partners.

KER# 14	**AI based safety- and security- mechanisms**
Lead partner	NXP-NL
Other owners	TUE, TUDelft
Reference to project objectives	O2
Reference to key targets	KT3
Key achievement	New components for robotics including heterogeneous control, safety- and security-mechanisms that can have a wide deployment in automation for industrial, logistics and mobility applications, as well as mechanisms for efficient neural network development of radar-based environment perception for e.g., ADAS (Advanced Driving Assistance Systems)
Related innovation potential	Investigation and prototyping of multi-objective optimization methods for radar based ADAS, that not only optimize for the environment perception task, but also for secondary metrics (such as e.g., latency). Applying new application processors providing heterogeneous control capabilities (low-level/real-time processing in combination with high-level compute) with embedded AI acceleration.
TRL level-start	TRL 2
TRL level-end	TRL 4/5
Pathway to exploit result	Part of the methodologies investigated will become part of NXP's toolkit for AI developers. Part of the subsystems developed will become reference boards for customers, by which they can evaluate the NXP IC's inside and its system solutions

KER#15	**Friction coefficient estimation system for cars**
Lead partner	Fraunhofer
Reference to project objectives	O1
Reference to key targets	KT2
Key achievement	Camera for road condition
Related innovation potential	System which could estimate the friction coefficient in front of the car. A new forward-looking camera-based system for specific parameters.
TRL level-start	TRL 3

TRL level-end	TRL 5
Pathway to exploit result	In 2-3 years after the project an integration of different features on one camera chip for a low-cost solution will be carried out. With the new camera chip an entire sensor system should be developed and realized for friction estimation as a product for integration in a car.

KER# 16	**A software abstraction layer between MES planning and production plant robotic cells**
Lead partner	GRO
Reference to project objectives	O4, O5
Reference to key targets	KT1, KT8
Key achievement	• Adaptive motion planning concept • Predictive discovery of interruptions and delays concept • Integration API layer for digital twins and MES planning tools • Demonstration of the proposed technologies
Related innovation potential	The manufacturing of multi-story buildings using prefabricated elements using sustainable materials such as timber in an automated fashion is a major breakthrough in the construction industry. Connecting this to a software platform that uses generative design to produce all necessary components of the building and prepare production plans introduces the ability to design and produce buildings with minimal effort. The proposed technology ads adaptability to the production floor, such that any delays can be predicted and mitigated.
TRL level-start	TRL 2
TRL level-end	TRL 4
Pathway to exploit result	GRO set goals to produce sustainable smart buildings within general limits of affordability. For that the whole supply chain needs to be modernized and brought to the digitalization level which is an integrated process from design to assembly. In this project we will focus on several aspects in the value chain. Namely, transfer of designed elements to the manufacturing execution system (MES), creation of production schedule and optimal robotic production. In particular we want to create an intelligent software layer that is able to predict production stalls and failures and mitigate delays by adapting roles and low-level tasks of the robots. This will be the basis for future lot size 1 production line that is fully decupled form planning and fully adaptive. The future production plant shall have the capacity of 150.000 m^2/floor plan.

KER#17	**GaN-based power device deployments**
Lead partner	AT
Reference to project objectives	O1
Reference to key targets	KT2
Key achievement	Embedded innovative sensor technology in the discrete GaN-based power device; Novel discrete GaN-based power device; Accurate device models for the developed GaN-based power device.
TRL level-start	TRL 2
TRL level-end	TRL 4
Pathway to exploit result	Prior to commercialization the following activities will be done: • Multiple cycles-of-learning to improve and optimize the sensor design and technology. • Extensive characterization and reliability investigation

	• Application testing • Qualification

KER#18	Traffic flow optimization in manual, mixed, and automated traffic with communication
Lead partner	AVL
Other owners	TUG, DRIVEU, IFAT
Reference to project objectives	O2, O3, O4, O5
Reference to key targets	KT1, KT3, KT4, KT6, KT7, KT8
Key achievement	The simulation of traffic situations and traffic flow in manual, mixed, and automated traffic, in combination with Vehicle-to-Everything (V2X) communication, represents a highly promising approach towards addressing common traffic congestion issues. Through the optimization of Advanced Driver Assistance Systems (ADAS) and Automated Driving (AD) features, and with the aid of V2X communication, it is possible to effectively mitigate traffic congestion and enhance the overall traffic flow.
Related innovation potential	Achieving better traffic stream by utilizing cutting-edge technology for resolving the widely prevalent issue of traffic congestion. The provision of real-time information regarding the current situation helps the oncoming traffic plan the journey in a more efficient and effective manner.
TRL level-start	TRL 2
TRL level-end	TRL 4
Pathway to exploit result	As a logical step forward in the testing process, the proposed solution for enhancing traffic flow should be deployed in physical demonstrators, in conjunction with the requisite hardware components, such as sensors and communication devices. The development process should be continued, preferably within the context of a customer demonstrator project, to ensure that the solution meets the exacting standards of the automotive industry with regards to reliability and robustness.

KER#19	Cooperative Agents for Survivor Detection in Natural/Manmade Disasters
Lead partner	VIF
Other owners	INSAR, IFAT, KFU, AVL
Reference to project objectives	O2, O3, O4
Reference to key targets	KT1, KT3, KT4, KT5, KT7, KT8
Key achievement	Simulation of cooperative agents in natural/man-made disasters for efficient execution of SAR missions. Collaborative SLAM for optimization of mission strategy.
Related innovation potential	Efficient scene analysis by collaboration within a multi-agent system which allows better optimization of mission strategy.
TRL level-start	TRL 2
TRL level-end	TRL 4
Pathway to exploit result	Everything learned from simulations should be implemented on a physical demonstrator. Deployment of s solution in a real-life situation to gather data for further improvement through simulation.

KER# 20	Electric drive simulation
Lead partner	ZF

Other owners	AVL, BUT, FAU, IFAT
Reference to project objectives	O1, O3, O4, O5
Reference to key targets	KT2, KT4, KT7, KT8
Key achievement	The simulation of different electric drives based on application and their combination and interaction with other components that complete an electric powertrain.
Related innovation potential	Optimized operation of the electric powertrain with respect to operation, efficiency and material economy.
TRL level-start	TRL 3
TRL level-end	TRL 5
Pathway to exploit result	The complete design and simulation as well as optimization of the electric powertrain has to be tested on the test bench and later on also in the field so that the component models can be verified and validated. Subsequently the models have to be adapted based on the test results. Together with electric powertrain component providers and users the individual specifications and requirements must be adopted and implemented.

KER# 21	**Wide bandgap semiconductors and advanced distributed control**
Lead partner	PRODRIVE
Other owners	TUE
Reference to project objectives	O1, O3
Reference to key targets	KT4
Key achievement	Demonstrate performance of wide bandgap semiconductors and distributed control in bulk converter application for green hydrogen production
Related innovation potential	Based on the project results, wide bandgap semiconductors and advanced distributed control can be applied in large scale bulk converter systems to enable more efficient production of green hydrogen. Due to the improved controllability the system efficiency can be significantly improved compared to the current state-of-the-art thyristor-based solutions, as well as significant improvements in grid quality and potentially grid stability.
TRL level-start	TRL 2
TRL level-end	TRL 5
Pathway to exploit result	In order to bring the product to the market, the modules and conversion units must be developed and demonstrator in order to test its functionalities. For PRODRIVE, this project helps in realizing the first prototypes necessary to develop the concept into a product. One key focus is realizing the control of new wide-bandgap components in the design. After this, the full-scale converter is the next step to come to a market-ready product within 5 years.

KER# 22	**Heat pump water heater and air conditioning systems**
Lead partner	ITRI, RECHI
Other owners	PROD
Reference to project objectives	O2, O3, O4, O5
Reference to key targets	KT1, KT2, KT3, KT4, KT5

Key achievement	Heat pump water heater and air conditioning systems solutions with the goal of maximizing comfort and minimize energy consumption. Depending on the dynamic heat demand, optimizing problems under the dynamic and rapid changes in load and demands.
Related innovation potential	Heat-pump water heater and A/C systems with quickly deployment, flexible operation and maintenance, high energy efficiency, recyclable and reconfigurable.
TRL level-start	TRL 2
TRL level-end	TRL 4

KER# 23	**SiLago – Lego inspired design framework**
Lead partner	KTH
Other owners	STRIKERSOFT
Reference to project objectives	O1, O2, O3, and O4
Reference to key targets	KT1, KT4, KT8
Key achievement	Silicon-proven Edge AI systems for two industrial use-cases that are end-to-end automated, correct-by-construction, 10X-100X better energy-delay product compared to COTS (GPUs, FPGAs, TPU)
TRL level-start	TRL 3
TRL level-end	TRL 5
Pathway to exploit result.	Atlas Copco will use the SiLago framework to design their chips. This will encourage other actors that need efficient AI solutions but need more expertise and budget to make custom chips the traditional way.

KER# 24	**Sensor fusion for contactless medical parameters**
Lead partner	STRIKERSOFT
Other owners	KTH
Reference to project objectives	O2, O3
Reference to key targets	KT2, KT3
Key achievement	Sensor fusion for contactless medical parameters Efficient data processing for mmRadar technology
TRL level-start	TRL 2
TRL level-end	TRL 4
Pathway to exploit result	STRIKERSOFT will use the result to further develop their SwipeCare product for patient at home/move monitoring in collaboration with global sensor manufacturers/distributors. Knowledge and framework: mmWave DSP and AI framework, coupled with the creation of our dataset, will democratize access to radar technology. This empowers non-specialists and smaller entities to leverage the potential of AI in radar research.

KER# 25	**Automotive Power Converters based on SiC/GaN technology and Q-sensor technology for improved efficiency and cost effectiveness.**
Lead partner	I&M
Other owners	ST-I
Reference to project objectives	O1, O2, O3, O4, O5

Reference to key targets	KT2, KT3, KT4, KT6, KT7
Key achievement	Automotive power converters based on SiC/GaN technology and Q-sensor technology for improved efficiency and cost effectiveness. The proposed solutions will feature: flexible and modular architecture compliant with safety standards, WBG power switches and integration of quantum sensor for innovative control algorithms.
Related innovation potential	The automotive power inverter supports the development of innovative algorithms for e-mobility applications and relies on SiC and GaN switches. The architecture is scalable and composable to better fulfil the customer requirements. Focus on mechanisms to support functional safety which will be assessed and validated on a dedicated test bench.
TRL level-start	TRL 2
TRL level-end	TRL 5
Pathway to exploit result	Testing and validation of the system which will lead to the refinement of the architecture and the development of a mature product. Parallel growth, within the company, of the sales and business development structure supporting the go-to-market activity. Product maturity achievable in 2-3 years after the end of the project.

7.4 Initial exploitation plan per partner

The following table describes the Cynergy4MIE partner's individual exploitation actions in detail (collected via a questionnaire presented in APPENDIX-III), yet these actions will be constantly updated during the project:

Partner	Exploitation Interest	Initial Exploitation Plans & Strategies
AVL	Traffic flow optimization in manual, mixed, and automated traffic supported with V2X communication	By optimizing Advanced Driver Assistance Systems (ADAS) and Automated Driving (AD) features, supported with V2X communication, it is possible to effectively mitigate traffic congestion and enhance the overall traffic flow. The proposed solution should be deployed in physical demonstrators. The development process should continue within a customer demonstrator project to meet the automotive industry's high standards for reliability and robustness.
SAL	• Know-how and experience in federated learning and model reduction. • Know-how, experience and standardization of highly accelerated life-time tests (HALT).	• Disseminate research findings in renowned journals and conferences. • Establish connections to other partners to gain knowledge and collaborate on related research topics. • Contribute to standardization of HALT
IFAT	• Statistical Models for p Optimization of production processes	• Statistical Models for p Test runs in production

VIF	• Expertise in autonomous mobile robotics and robot swarms (UAVs/UGVs) for SAR applications in emergency response missions. • Know-how and expertise in "multi-agent" and "emergent" systems, as there are numerous applications and opportunities, particularly outside the automotive sector. • Estimate and provide the full coverage of road conditions to the oncoming traffic in a dynamic fashion which can find interest from road operators and map providers.	• Develop the related demonstrators in SC4 and SC5 and gain experience in the related technical field. • Disseminate the results in high-quality journals and conferences. • Establish partnerships with other partners to gain expertise and collaborations on related research activities.
BUT	Powertrain control and diagnostics using novel flux, current, torque and virtual sensors.	• Combining new sensors including quantum flux and current sensor allows precise measurement of quantities in machine control and diagnostics. • It allows precise flux control leading to high performance, improved energy efficiency and increased lifetime. • High accuracy measurements provide information on faults, weaknesses and degradation that can be handled by proper control adaptation. • Reliable rotor position estimation even in very low speed region with the help of virtual position sensor can assist in safety critical applications.
TUG	Research on a metamaterial-based torque sensor	TUG will conduct research with focus on journal publications on a completely new sensor concept for torque measurement in the form of a metamaterial torque sensor. This concept is characterized by scalability in the torque range and has the advantage of a contact-free measurement in contrast to conventional systems. The approach for the development of the sensor within the SC3 of the Cynergy4MIE project consists of exploration of highly sensitive sensing structures by means of modelling and simulation. A special emphasis will be placed on the development of the mechanical structure to integrate the sensor concept to a rotating shaft, followed by measurements on a test stet-up which represent the real operating environment of the technology.
I&M	Automotive power inverter utilizing advanced SiC/GaN technology, enhancing power density and reliability for improved efficiency and cost-effectiveness.	• The proposed solution will be implemented in physical demonstrators within SC3 and tested in a laboratory setting to gather

		experience in the relevant technical field. • Establish partnerships with other partners to leverage expertise and collaborations on related research activities.
VER	• Science • End-user communities • Companies • Government supporting trustworthy/ cybersecure software	Dissemination for VER will consider the following angles: • Science: VER works on foundational technologies which will require validation by scientific institutes. • The technology developed in Cynergy4MIE will be presented to companies that profit from it in their DevOps. • End-users and companies need to adapt to a changing world in which the developed technology can support.
VTT	Enhancing research in sensor technologies, safety validation for autonomous vehicles in adverse weather, and development of PMUT technology for monitoring physiological indicators in vehicles.	VTT will use the project outcomes to strengthen its research on visibility and safety in adverse weather, particularly for automated vehicles. These results will contribute to scientific publications and foster industry collaborations. Additionally, VTT is developing PMUT (Piezoelectric Micromachined Ultrasonic Transducer) technology to monitor driver and passenger physiological indicators, including chest movements and heartbeats. VTT plans to develop control electronics for signal processing and ultrasonic beam steering. The technologies will be demonstrated through prototypes and used in collaboration with Finnish companies to explore commercialization.
THRO	Develop and implement a reinforcement learning framework to train Job Shop Scheduling Problem (JSSP) agents for optimized production planning.	THRO's exploitation strategy for the Cynergy4MIE project focuses on integrating a reinforcement learning framework to train Job Shop Scheduling Problem agents for production planning. Our aim is to optimise production processes while promoting sustainable manufacturing practices by increasing efficiency, reducing energy consumption and improving resource utilisation. The proposed solution will be implemented as a demonstrator in our local production laboratory, proto_lab.
EDI	Electronics supply for Nitrogen-Vacancy centre diamond quantum sensing.	First and foremost, EDI builds upon technology developed under Horizon Europe projects: A-IQ Ready (G.A. 101096658) and ARCHIMEDES (G.A.

		101112295). EDI intends to further improve the control and pre-processing subsystem of the quantum sensor by improving sensitivity, size and power consumption by developing specialised IC solution while simultaneously delivering SotA samplerate and latency. The sensor costs are still relatively high for the consumer market. Therefore, the first focus will be towards fields of science, health and defence. There have already been some initial discussions, including national innovation supplier – LMT (Latvijas Mobīlais Telefons), which standbys for a deployment-ready prototype. Furthermore, EDI will leverage its membership in Latvian Quantum Memorandum as well as European and local industry associations (INSIDE, LETERA).
GIM	GNSS and other supportive infrastructure free localisation for outdoor mobile machinery even in adverse weather conditions.	Developed algorithms and implementations will be validated in two separate real-world demos (forestry and urban). The results will enable the commercialization of next generation GNSS-free localisation solutions after the Cynergy4MIE project.
CONV	CONV is an NPO and will have no exploitation plan/results. Will be contributing towards: • HITL approaches • Existing or evolving standards & Best practices • Standardization procedures	CONV, at an organisational level, has no exploitation plan in place. However, CONV through the relevant task (T74) will be contributing towards and focusing on user and societal acceptance of ADAS and the full exploitation of the deployed integrated and validated solutions to various organisations. 1.Specific procedures and good practices (e.g. regarding standardization) shall be shared with industrial companies when appropriate. 2. Enhance of public trust through the development and promotion of inclusive and market ready material regarding standards will be promoted.
IOTAM	IOTAM is interested in leveraging its existing knowledge in ML/AI technologies and enhance its current product offerings' ADS application.	IOTAM aims to leverage the outcomes of Cynergy4MIE to enhance its market position by capitalizing on synergies in the foundational technology layer and cross-sectional technologies between the Mobility-Infrastructure-Energy (MIE) ecosystems. Furthermore, IOTAM envisions exploiting its existing expertise in Machine Learning and AI tools and technologies, building upon the project's findings to enhance its current product offerings. Lastly, IOTAM will utilize the

		project's insights to strengthen its position within the EU market and research domain, fostering partnerships and agreements for future collaborations with major corporations involved in Cynergy4MIE.
NXP-NL	• Supply know-how on heterogeneous control, security and monitoring/recovery capabilities of the NXP ICs. • Incorporate prototypes to development environments	• NXP targets sales of complete (sub-) systems beyond the IC as part of its system-solutions strategy. The mobile robotics (sub-)systems, demonstrating the targeted capabilities, are showcased at major exhibitions, as mentioned in the dissemination section. • NXP's AIML R&D project prototypes may be further considered for module-development for its eIQ© machine learning software development environment and/or its radar-solutions software development kit.
VAISTO	Study machine vision platform and related dataspace technology and industrial OT/IT convergence standards and interfaces	Vaisto targets to enter international machine vision markets and start deploying intralogistics tracking and manufacturing process related machine vision services.
ZF	• Optimizing motor control strategies • Optimizing current measurement technologies in inverters	By measuring with high sensitivity magnetic field sensors more information about the state of the electric machine can be gained and the motor control strategy can be optimized. Whether this is done during development to improve simulation model and will be done on-the-fly in upcoming projects will be decided based on the experimental results. If the results are promising next generation inverters might be equipped with high sensitivity magnetic sensors to be less prone to assembly tolerances.
INSAR	INSAR focuses on leveraging satellite synthetic technology for enhanced road safety and Search and Rescue (SAR) operations. INSAR aims to demonstrate the effectiveness of the satellite monitoring system in multi-agent environments.	INSAR aims to provide a validated product that supports infrastructure monitoring and decision-making through the integration of satellite data with other sources for rapid change detection, enhanced decision-making, and resilience.
XENOMATIX	We aim at validating the use of high-resolution digital twin of the road surface as ground truth in the Automotive (e.g. for developing ADAS functions) and Road maintenance (road health assessment & predictive maintenance).	In this project, we intend to extend the technology TRL and develop new solutions for our customers, such as a proving ground for testing & validating Tire Pressure Monitoring System (TPMS).

SSOL	SSOL intends to focus further on the enhancement and optimization of proposed load-balancing schemes in autonomous driving systems.	SSOL exploitation plans and strategies focuses on the following: 1. Designing and developing load-balancing schemes and optimization mechanisms for key performance indicators such as energy consumption, security and robustness of AI algorithms. 2. Design and development of Distributed Continual Learning (DCL) algorithms that combine the advantages of distributed learning and continuous learning techniques.
IMA	• Sensor systems design, development and implementation • Time of Flight, Radar technology for object movement detection • AI & ML tool chain application, experiments and demonstration	IMA will pursue an effort to exploit the project results within company products development. Exploitation focus will aim at specific area of manufacturing and logistics, new contract possibilities will be investigated using possible support of European OEM companies having a significant role in identification technology.
Fraunhofer	• IP Licensing • Collaborative Integration Contracts • Competitive Market Advantage	Fraunhofer plans to utilize its advancements in preemptive road condition monitoring by collaborating with industry partners to enhance automotive safety systems. Fraunhofer will share its innovative predictive models and mitigation strategies to support partners in advancing their product development roadmaps. While Fraunhofer may explore opportunities for intellectual property protection, the focus will be on knowledge transfer and collaborative projects that promote the adoption of research findings.
PRODRIVE	• Knowledge on SiC and GaN performance and reliability • SOTA SiC-based bulk rectifier for green hydrogen production	PRODRIVE intends to exploit the result of the Cynergy4MIE directly as part of their development on the SiC-based bulk rectifier for green hydrogen production. Indirectly, PRODRIVE intends to use the knowledge and insights gained on SiC and GaN reliability and control strategies in other development projects in the future with a focus on high-end electronics.
KFU	Exploitation for educational purposes by providing research material to students of master and PhD programs allowing for further research in the field of statistics.	Presentation of research results in the courses at the university and providing topics for PhD master and bachelor theses to initiate ongoing research.

DRIVEU	Leverage developments in scalable communication protocols for autonomous vehicle infrastructure to position DriveU as a leader in energy-efficient communication systems.	• **Intellectual Property**: Secure patents for communication protocols and algorithms, focusing on multi-agent communication and channel optimization. • **Prototyping and Demonstration**: Develop prototypes to showcase energy-efficient communication solutions for electric vehicle infrastructure. • **Standardization and Partnerships:** Engage with standards bodies and pursue commercial partnerships to promote and license DriveU's innovations in V2X and autonomous systems. • **Internal R&D:** Integrate project results into DriveU's product roadmap for V2X communication and fleet management applications.
TU/e	Transfer of IP and educational contributions regarding reliability of GaN-based semiconductors considering both modeling and mitigation methods. Support our industry partner NXP with advancing their product roadmaps in artificial intelligence. Furthermore, the algorithms and techniques developed in Cynergy4MIE will allow our industrial partner Verum B.V. to further advance their tool suite.	Integration of developed knowledge in relevant courses within the university and through trainings/workshops. Selling IP (if applicable) to commercial partner(s). Strengthen our scientific impact by advancing the state-of-the-art in computer vision and publishing our results in top-tier academic channels. Apply our verification technology to (embedded) software systems that are up to several orders of magnitude larger than those we can currently handle and publish these results in first-rate academic outlets.
ST-I	Automotive power module using advanced Wide Band Gap SiC technology, improving power density and reliability for better efficiency.	The Power Module will be implemented in physical demonstrators within SC3. Papers publications.
TUD	TUD researches federated learning technologies for radar-based perception. TUD will closely collaborate with NXP to further their research and development roadmaps in this area.	TUD will perform the following activities: • Publication of our works as papers and/or patents. • Validation of the technology in simulation and in the real world. Sharing the resulting code in Open Access to enable other companies to build upon them.
GRO	Integration of the project results in the production line of GROPYUS is the main exploitation goal.	The proposed work and the corresponding results will be segmented in several stages where each stage will have basic research, development, integration and validation and product release. GRO aims to finalize research and experimental development within

		Cynergy4MIE and provide plans for final integration and product release phases.
KTH	Advancing the SiLago framework to deliver ASIC-level efficiency to non-specialists and small enterprises, supporting complex industrial applications.	• Supporting dynamic applications on an open-source software platform • Enhancing DRRA hardware with SIMD and approximate computing • Creating a RISCV-based systems around of DRRA fabric • Plan to manufacture the Silago chip as part of KTH education. We are collaborating with other companies for manufacturing
STRIKERSOFT	STRIKERSOFT will seek to use the project result to further develop their SwipeCare product for patient at home/move monitoring in collaboration with global sensor manufacturers/distributors. Knowledge and framework: mmWave DSP and AI framework framework, coupled with the creation of our dataset, will democratize access to radar technology. This empowers non-specialists and smaller entities to leverage the potential of AI in radar research.	AI algorithm modelling and FPGA prototypes tested in Cynergy4MIE enable defining key performance specifications and target markets for the new functions and adjuncts to be further advancing TRL levels towards commercialization after the Cynergy4MIE project. Potential partners will be identified and approached for further development. We will also continue our mmWave research in our IOT and AI lab.
MURATA	Development of new MEMS inertial sensor concepts and products into automotive and industrial markets.	Sensor modeling and prototypes tested in Cynergy4MIE enable defining key performance specifications and target markets for the new inertial sensors commercialized after the Cynergy4MIE project.
MEDISYS	The exploitation plan for Medisys aims to transform the developed technologies and knowledge into tangible business opportunities, leveraging the company's expertise in robust and safe computation and communication platforms. This plan outlines strategies for integrating advanced AI-enabled algorithms, knowledge-based decision-making, semantic modeling, and AI trust and security into MEdisys' portfolio to drive value in UAV collaborative systems domain and related industries.	Develop AI algorithms for multi-UAV collaboration. These features will be packaged into modules that can be licensed or integrated as part of Medisys' UAV platform. Expand Medisys' reach into new sectors where UAV collaboration and AI-driven decision-making are gaining interest, such as environmental monitoring, logistics, and smart city infrastructure
TAAT	Leverage Cynergy4MIE results to advance a virtual testing concept for safety-critical real-time networking solutions in autonomous driving systems. The aim is to demonstrate reliability and integration of cyber-physical systems, enhancing vehicle safety and efficiency.	The initial plan is to validate the virtual testing concept with key customers through a brief demonstration project. This will showcase the project's outcomes, with the goal of securing further collaborative development. Cynergy4MIE results will also be integrated into ongoing product developments, particularly in real-time communication platforms, with plans to embed this technology in future product series. Additionally, TAAT will explore the

		application of these innovations in related R&D projects to foster knowledge exchange and broader impact.
POLITO	Improving knowledge on Physiological signals analysis, edge computing, applications of AI, computer vision.	Plans include publishing novel scientific papers on physiological parameters analysis, computer vision techniques, and data fusion. This novel knowledge will be integrated into teaching courses like Technologies for Autonomous Vehicles and Model-Based Software Design.
SAT	• Leveraging data analysis and IoT integration for industrial energy efficiency and automation. • Developing advanced systems for real-time physiological monitoring in an energy efficient manner. • Enhancing knowledge on physiological signals and data analysis • Enhancing capabilities in edge computing and AI-driven decision-making. A scalable approach to apply solutions in other sectors, such as ports and airports.	SAT plans to incorporate the results from Cynergy4MIE into its existing health monitoring solutions, improving system efficiency and real-time physiological data processing capabilities. The developed technologies will be demonstrated in pilot projects with industrial partners, showcasing their application in safeguarding the user's health. SAT will actively seek collaborations with industry partners and research institutions to explore commercialization opportunities and develop industry-focused applications.
MEV	Develop capability for realistic real-time simulation of a wheeled or tracked vehicle in challenging forest terrain and difficult weather conditions. Including the necessary sensors and interfaces for remote control and autonomy.	Diversifies the solutions offered to current customers and explores the possibilities of expanding to a new market segment.
TG	Know-how based communication on social media strategy to evaluate the growth in brand awareness, followers, and project reach, focusing on the increase in visibility and engagement over time.	The know-how gained in the project and the best practices in the engagement increasing will be applied in other projects' Communications and Dissemination activities. Participation in the project provides networking possibilities and helps to ensure a position in the market.
ITRI	ITRI aims to enhance the technological capabilities of heat pump systems, focusing on high efficiency, modularization, and portability. ITRI seeks to integrate high-performance and sustainable energy solutions to support energy sustainability goals.	ITRI will conduct the integration of technical outcomes and disseminate findings at seminars and exhibitions. Concurrently, ITRI will engage in collaborations with industry partners to realize high-performance, cost-effective system applications.
UNEV	Research in V2X technologies and applications, particularly related to public transit. Artificial Intelligence (ML, RL) technologies that improve the performance of automated systems, including automated driving systems and intelligent transportation infrastructure.	UNEV plans to incorporate results from Cynergy4MIE into systems it is deploying in partnership with municipal transit agencies in the United States. It will also explore opportunities for tech transfer and commercialization as appropriate.

FAU	Advance portable quantum sensor technology, contributing to enhanced magnetic field sensing capabilities, with potential applications in diagnostics, industrial monitoring and environmental sensing. Improve and expand the sensor's sensitivity and usability, creating a practical tool for use in various fields.	FAU plans to utilize project findings to enhance the performance and industrial viability of NV-based quantum sensors. Dissemination will occur through academic publications, conferences, exploitation through partnerships with industry, to support the path toward commercialization and broader adaption.
RECHI	Deepening the technological capabilities of key components in heat pump systems (such as compressors, motors, and other core components), along with system integration, performance testing and validation, and system optimization to enhance efficiency and reliability.	Develop prototype samples based on research findings. Collaborate with key current supply chain partners and clients for demonstration and promotion, providing energy-saving solutions.

8 Conclusion

The document provides a clear understanding of the WP7 activities, the roles, and responsibilities of WP7 partners towards these activities and the strategy that will be used to approach the potential stakeholders of the project. Moreover, it briefly describes the methodology for exploitation activities followed by the last sections of the document, which is the analysis of the Key Exploitable Results (KERs) of the project and initial individual exploitation plans of each partner.

The results of all the activities/plans/strategies illustrated in this document are going to be revisited and examined in M12 for Dissemination and Communication activities and in M18 for exploitation activities. Thus, updated information and 1st year WP7 activities are going to be reported in the future version of this deliverable, D7.3 "Annual Dissemination Reports & Plan Updates – Year 1" and D7.6 "Updated Exploitation Plans Including Individual Plans".

9 List of Figures

10 Appendices

APPENDIX I – Dissemination and Communication Masterfile

EVENTS										
a/a	Partner(s)	Full Name of the Event	Type	Location	Date	Contact person	Participation details (presentation? / poster? Etc.)	Participate / Organise	Status	Short Paragraph and photos to IOTAM/TG
1										
2										
…										

PUBLICATIONS										
a/a	Partner(s)	Full Name of the Event	Type	Location	Date	Contact person	Participation details (presentation? / poster? Etc.)	Participate / Organise	Status	Short Paragraph and photos to IOTAM/TG
1										
2										
…										

PROJECT NETWORKING WITH OTHER PROJECTS							
a/a	Partner	Project name	Contact person of the other project	Further information	Cynergy4MIE Contact person initiating the networking	Status	Details and Next Steps
1							
2							
…							

TRAINING - SEMINARS								
a/a	Partner(s)	Type of training (courses, seminars, etc.)	Target groups	Further information	Contact person	Status	Final number of participants	Short Paragraph and photos to IOTAM/TG
1								
2								
…								

DISSEMINATION MATERIAL - MEDIA							
a/a	Type of dissemination material (newsletters, leaflets, press releases, etc.)	Date	Involved Partners	Contact person	Status	Link	Website
1							
2							
…							

APPENDIX II – Initial Dissemination and Communication plan per partner

Purpose of this Questionnaire

*Dear partner, in the context of preparing D7.1 "Initial Dissemination, Communication and Exploitation Plan" (M3) of the Cynergy4MIE project you are kindly invited to state your **initial plans** (**max 125 words**) in terms of dissemination and communication of the Cynergy4MIE results. In particular:*

***All Academic / Research partners**: Please, provide **(at least 4)** Cynergy4MIE relevant **(i) scientific journals, (ii) magazines, (iii) conferences, (iv) special issues in scientific journals, (v) seminars/workshops/training sessions** in which you will disseminate the project's findings.*

***All Industry/Large Enterprises/SME partners:** Please, provide (**at least 3)** Cynergy4MIE relevant **events (fairs / exhibitions / forums / conventions /workshops** in which you normally participate in and can disseminate / exploit the project's findings.*

***All partners:** Please include any other activity (**networking/synergy with relevant projects, webinars, info days, hackathons etc.**) that you plan to execute for successful dissemination and communication of the project results.*

Partners	Dissemination and Communication Plans
AVL	*Your input here*
…	
…	

APPENDIX III - Initial exploitation plan per partner

Purpose of this Questionnaire

1. **Cynergy4MIE Individual Exploitation Pathways**

*Dear partner, in the context of preparing D7.1 "Initial Dissemination, Communication and Exploitation Plan" (M3) of the Cynergy4MIE project you are kindly invited to state your individual interests/goals/strategies/channels (**max 125 words**) in terms of exploitation of the Cynergy4MIE results.*

Partners	Exploitation Interest	Initial Exploitation Plans & Strategies
AVL	*Your input here*	*Your input here*
…		
…		

2. **Exploitation Channels**

Explain what channels your organisation has at its disposal to exploit the Cynergy4MIE results (some examples are provided below)

- *End user communities which could uptake / review / further disseminate the Cynergy4MIE results*
- *Units and initiatives within your university or company*
- *Contribution to existing products or research topics*
- *Other, please specify*

Partners	Exploitation Channels
AVL	*Your input here*
…	
…	

11 Internal review

	Reviewer 1: Benjamin WIMMER	Reviewer 2: Optional

1. Is the deliverable in accordance with:

		Answer	*Comments*	*Type**	*Answer*	*Comments*	*Type**
(i)	the description of work?	**yes**/no		M/m/a	yes/no		M/m/a
(ii)	the international state of the Art?	**yes**/no		M/m/a	yes/no		M/m/a

2. Is the quality of the deliverable in a status that:

		Answer	*Comments*	*Type**	*Answer*	*Comments*	*Type**
	allows to send it to ECSEL JU?	yes/**no**		M/m/a	yes/no		M/m/a
(ii)	needs improvement of the writing by the originator of the deliverable?	**yes**/no	Some very minor improvements need to be done -> see comments.	M/m/a	yes/no		M/m/a
(iii)	needs further work by the partners responsible for the deliverable?	yes/**no**		M/m/a	yes/no		M/m/a

* Type of comments: M = major comment; m = minor comment; a = advise

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