| Project no | 101207598 | | |
|---|---|---|---|
| Project full title | Deterministic 6G-V2X Systems: A New Paradigm for Reliable V2X Networks | | |
| Project acronym | Deterministic6G-V2X | | |
| Call | HORIZON-MSCA-2024-PF-01 | | |
| Topic | HORIZON-MSCA-2024-PF-01-01 | | |
| Project start date | 01/09/2025 | Duration | 24 months |

# D1.1– MOBILITY DECLARATION, PROJECT MANAGEMENT & RISK MITIGATION PLAN

| Due date | 28/11/2025 |
|---|---|
| Work package | WP1 |
| Author | Keyvan Aghababaiyan |
| Version | V1.0 |
| Dissemination level | Public |

## TABLE OF CONTENTS

## 1   INTRODUCTION

This project management handbook summarizes the key elements involved in organizing and coordinating the project. It outlines the overall structure, covering work packages, deliverables, and milestones, describes the core management procedures to be followed, and details the communication pathways and activities that will support implementation throughout the project. The handbook also documents the researcher's mobility status, confirming full compliance with the MSCA mobility rule, an essential requirement for the eligibility of the Deterministic6G-V2X fellowship. As a dynamic document, the handbook may be updated during the project lifecycle whenever adjustments are required to address emerging needs or changes in project execution.

## 2   MOBILITY AND ELIGIBILITY OF THE RESEARCHER

In accordance with the MSCA mobility rule, Dr. Keyvan Aghababaiyan fully meets the eligibility requirements for the Deterministic6G-V2X MSCA Postdoctoral Fellowship. During the five years preceding the call deadline, the researcher's main place of residence and professional activity has been outside Spain. Specifically, from 11/09/2019 to 23/01/2024 (1596 days), Dr. Aghababaiyan resided and worked in Iran, where he held a postdoctoral research position at the University of Tehran and collaborated with several research groups and technology companies. He joined Spain only recently, from 24/01/2024 to 11/09/2024 (232 days), to work as a Senior Postdoctoral Researcher in the European 6G-SHINE project at the UWICORE laboratory (UMH).

The researcher's mobility record demonstrates continuous full-time research activity outside Spain for the vast majority of the 5-year reference period. His total presence in Spain before the call deadline remained well below the 12-month limit required by the MSCA PF mobility condition. Therefore, Dr. Aghababaiyan fully satisfies the MSCA eligibility criteria while bringing significant international experience from Iran and prior involvement in an EU-funded 6G research environment.

## 3   PROJECT OVERVIEW

The Deterministic6G-V2X project is a two-year initiative supported by the European Commission through the Horizon 2020 Marie Skłodowska-Curie Actions (MSCA) Postdoctoral Fellowships program. According to the grant agreement, the Universidad Miguel Hernández (UMH) in Elche, Spain, serves as the coordinating institution. The research activities will be conducted by Dr. Keyvan Aghababaiyan (the researcher) at the UWICORE laboratory of UMH, under the supervision of Prof. Javier Gozalvez.

### 3.1   RESEARCHER INFORMATION

Keyvan Aghababaiyan is an MSCA Postdoctoral Fellow and postdoctoral researcher at the Universidad Miguel Hernández (UMH) in Elche, Spain, contributing to the 6G-Shine project and leading the development of the Deterministic6G-V2X research program. His work at UMH focuses on deterministic communication–computing–control co-design for next-generation 6G vehicular systems, integrating AI-driven scheduling, stochastic modelling, and real-time network analysis. Before joining UMH, he held a prestigious postdoctoral fellowship at the University of Tehran, funded by the Iranian

National Elite Foundation, where he worked on nanoscale, molecular, and neuro-spike communication systems. He received his PhD in Telecommunication Engineering from the University of Tehran with the highest distinction (Excellent), following an MSc from Sharif University of Technology and dual BSc degrees in Electronics and Telecommunication Engineering from Amirkabir University of Technology, where he ranked 1st among all Electrical Engineering students. Earlier, he placed 340th out of more than 400,000 applicants (top 0.08%) in the national university entrance exam, reflecting exceptional academic performance from the outset of his career. His research focuses on 6G wireless systems, V2X communications, stochastic modelling, AI-assisted signal processing, and nanoscale/neuro-inspired communication.

He has published extensively in leading IEEE journals, including IEEE Internet of Things Journal, IEEE Transactions on Communications, IEEE Communications Letters, and IEEE Transactions on Nanobioscience. He also serves as a reviewer for 25 high-impact journals such as IEEE Transactions on Vehicular Technology, IEEE Transactions on Communications, IEEE Internet of Things Journal, IEEE Wireless Communications Letters, and several IET and Elsevier journals. His scientific career has been recognized through multiple elite scholarships, two consecutive Best PhD Student Awards, and a full postdoctoral fellowship from the Iranian National Elite Foundation. Keyvan Aghababaiyan brings a strong interdisciplinary background that directly supports the development of deterministic communication–computing–control frameworks for future 6G V2X systems.

## 3.2    SUPERVISOR INFORMATION

Javier Gozalvez is a Full Professor at UMH and serves as the director of the UWICORE laboratory, where he leads research in Connected and Automated Mobility (CAM), V2X communications, and next-generation 5G and 6G networking technologies, as well as topics related to industry 5.0. He is widely acknowledged internationally for his scientific contributions, with a publication record exceeding 120 works and more than 9,700 citations. His technical leadership is reflected in his role as principal investigator at UMH in 6 European research projects, including Horizon Europe initiatives such as 6G-SHINE, RE4DY, and Zero-SWARM, along with 17 national projects, 18 regional initiatives, and 31 industry-funded R&D contracts.

His collaborative network includes leading institutions such as King's College London (UK), the Italian National Research Council (CNR), and the Karlsruhe Institute of Technology (Germany). Prof. Gozalvez previously served as Editor-in-Chief of IEEE Vehicular Technology Magazine (a Q1 JCR journal in the CAM domain), and President of the IEEE Vehicular Technology Society (VTS), and continues to be a member of its Board of Governors. Over the past decade, he has supervised more than 13 doctoral candidates and over 20 R&D engineers, and he currently supervises 5 postdoctoral researchers. Many of his former trained researchers now hold prominent positions across Europe, including, for example, the European V2X technical lead at Hyundai in Germany.

## 4    PROJECT STRUCTURE

The structure and scheduling of the Deterministic6G-V2X project are presented in the Gantt chart in Table 4.1. This table outlines the planned activities and timeline as defined in the grant agreement,

covering all scientific, training, and management tasks. The distribution of effort across the Work Packages (WPs) has been designed to maintain a balanced progression between research activities, supervision and training, and administrative duties. The timing of each deliverable and milestone has been strategically organized to support continuous monitoring of the project's advancement and to ensure the timely completion of all objectives.

*Table 4.1. Gantt chart of the project, including Milestones (MS) and Deliverables (D).*

| Month | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 | 21 | 22 | 23 | 24 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| WP1 | D1.1 | | D1.1 | | | | | | | | | | | | | | | | | D1.1 | | | | |
| WP2 | Phase 1 | | | | | D2.1 | | | | | | D2.2 | | | D2.2 | | | | | | D2.1 | Phase 2 | | |
| WP3 | | | | | | | | | | D3.1 | | | | | D3.1 | | | | | | D3.2 | | | D3.2 |
| WP4 | | | D4.1 | | | | | | | | | | | | | | | | D4.1 | | | | | |
| WP5 | | | | | | | | | | | D5.1 | | | | | | | | | D5.1 | | | | |
| MSs | MS1 | | MS2 | | | | | | | | | | | | MS3,4 | | | | | MS5 | MS6 | | | MS7 |

## 4.1 WORK PACKAGES

The work plan of the Deterministic6G-V2X project is organized into five Work Packages, as summarized in Table 4.2. The non-technical components include project management (WP1), training and knowledge transfer (WP4), and dissemination, exploitation, and communication activities (WP5). The scientific tasks are grouped into two tightly connected technical WPs: WP2 develops stochastic models for deterministic communication–computing–control co-design, while WP3 builds upon these models to design elastic and predictive scheduling frameworks for 6G-enabled V2X systems. The modelling foundations established in WP2 directly support the scheduling and co-design strategies addressed in WP3, while the results of WP3 provide performance indicators to refine and validate the stochastic models. As indicated in Table 4.1, both technical WPs follow a two-phase structure, ensuring that complexity is managed progressively and that the execution of the project proceeds smoothly from data-driven co-design (Phase 1) to predictive AI-driven techniques (Phase 2).

*Table 4.2. List of WPs.*

| WP | WP Title | Duration | PMs |
|---|---|---|---|
| WP1 | Project management | M1-M24 | 2 |
| WP2 | Stochastic models for communication, computing, and control co-design | M1-M21 | 7 |
| WP3 | Communication, computing, and control co-design | M4-M24 | 9 |
| WP4 | Training and transfer of knowledge | M1-M24 | 4 |
| WP5 | Dissemination, exploitation, and communication | M1-M24 | 2 |

## 4.2 DELIVERABLES

Deliverables serve as key instruments for tracking the progress of Deterministic6G-V2X and documenting the implementation and main results of each Work Package. Every WP is linked to one or more deliverables, and the project includes the full set defined in the grant agreement (see Table 4.3). These deliverables cover both technical and non-technical outputs, ensuring a comprehensive reporting of scientific advances, training activities, management procedures, and dissemination efforts.

The technical deliverables associated with WP2 and WP3 (D2.x and D3.x) will be updated across the two project phases to reflect the incremental development of stochastic models and co-design frameworks. This phased updating guarantees that the deliverables offer an accurate, up-to-date representation of the project's technological evolution. Non-technical deliverables from WP1, WP4, and WP5 provide structured reporting on management, training, knowledge transfer, and dissemination, ensuring continuous and transparent monitoring throughout the project duration. All deliverables marked as "PU" will be publicly released on the project website.

*Table 4.3. List of deliverables.*

| ID | Deliverable Name | WP | Level | Deadline |
|---|---|---|---|---|
| D1.1 | Mobility Declaration, Project Management & Risk Mitigation Plan | WP1 | PU | M1(1st)/M3(2nd)/M20 (3th) |
| D2.1 | Stochastic models for communication–computing–control co-design | WP2 | PU | M6 (1st) / M21 (2nd) |
| D2.2 | CAM scenarios and generated datasets | WP2 | PU | M12 (1st) / M15 (2nd) |
| D3.1 | Communication–computing–control co-design | WP3 | PU | M10 (1st) / M15 (2nd) |
| D3.2 | Predictive communication–computing–control co-design | WP3 | PU | M21 (1st) / M24 (2nd) |
| D4.1 | Training program, career development plan, and evaluation questionnaire | WP4 | SEN | M3 (1st) / M19 (2nd) |
| D5.1 | Plan for dissemination, exploitation, and communication | WP5 | PU | M12 (1st) / M20 (2nd) |

## 4.3 MILESTONES

The Deterministic6G-V2X project comprises eight milestones in total. The non-technical milestones (MS1, MS2, MS5) serve to confirm the proper execution of management, communication, dissemination, exploitation, and training activities, as well as the timely fulfillment of reporting obligations. The technical milestones (MS3, MS4, MS6, MS7, MS8) are intended to track the scientific progress of the project and assess whether the technical objectives defined in the grant agreement are being achieved.

Verification of each milestone is ensured through the preparation of the corresponding deliverables (see Table 4.3) and through the open availability of the project's main outputs, including code and

datasets generated across WP2 and WP3. A consolidated overview of all milestones is provided in Table
4.4.

*Table 4.4. List of milestones.*

| ID | Milestone description | WPs | Month | Verifiability |
|---|---|---|---|---|
| MS1 | Project kick-off and website launch. | WP1 | M1 | Deliverables (Deliv.) |
| MS2 | Initial deliverables completed and training program. | WP1,4 | M3 | Deliv. |
| MS3 | CAM scenarios, and datasets. | WP2 | M15 | Deliv. & Datasets |
| MS4 | Communication, computing, and control co-design. | WP3 | M15 | Report & Deliv. & code |
| MS5 | Dissemination, exploitation, and communication plan ready and revised. | WP5 | M20 | Deliv. |
| MS6 | Stochastic models. | WP2 | M21 | Deliv. |
| MS7 | Predictive communication, computing, and control co-design. | WP3 | M24 | Report & Deliv. & code |

# 5 PROJECT MANAGEMENT

The overall management of Deterministic6G-V2X, including financial oversight and administrative coordination, will be carried out by the researcher, with continuous support from the supervisor and the EU projects office and administrative units of the host institution.

## 5.1 PROJECT REPORTING

Project reporting for Deterministic6G-V2X will be carried out by the researcher and is structured around three core components: timesheet documentation, internal monitoring meetings, and the preparation of project deliverables. Each month, the researcher will complete timesheets detailing the hours allocated to each Work Package (WP). These timesheets will be submitted to the host institution's administrative office and shared with the supervisor.

To ensure continuous oversight, the researcher will hold bi-weekly meetings with the supervisor to review scientific progress and to evaluate the status of non-technical activities, including dissemination, communication, and training. In addition, project reporting will be formalized through the deliverables outlined in Section 3.2. All deliverables will be drafted by the researcher and subsequently reviewed by the supervisor prior to their public release.

## 5.2 OPEN ACCESS

Both the supervisor and the researcher have an established history of releasing open-source software, datasets, and preprints. Building on this shared commitment, the Deterministic6G-V2X project will adopt a comprehensive set of open-science practices:

• Early and open access to scientific publications: The project will ensure that all scientific outputs are made available as early as possible through open repositories such as arXiv and Zenodo. Whenever suitable, journal submissions will target high-impact venues offering gold open-access options to maximize the visibility and accessibility of the research.

• Research data management aligned with FAIR principles (Findable, Accessible, Interoperable, Reusable): All datasets, code, and models produced during the project will be publicly released on Zenodo at the time of the related preprint's publication (Accessibility). Zenodo will assign a DOI to each output, ensuring Findability. Comprehensive deliverables and technical documentation will accompany all releases and will be made available both on Zenodo and the project website to support re-use and integration by the research community (Interoperability). All materials will be distributed under a CC BY, or equivalent, license to guarantee Reusability.

• Reproducibility of research outputs: Every scientific publication will include the necessary methodological information, design assumptions, simulation parameters, tested scenarios, analytical tools, and AI components, to allow independent validation of the project's findings. Extended methodological details will also be documented in project deliverables and published on the project website, ensuring full reproducibility despite the page-length limitations imposed by many journals.

## 5.3 RISK MANAGEMENT

The objective of the project's risk management procedure is to reduce the likelihood that internal or external factors disrupt or delay the execution of Deterministic6G-V2X, thereby safeguarding the technical progress and overall quality of implementation. Table 5.1 summarizes the scientific and non-scientific risks identified for the project, indicating the associated Work Packages, the proposed mitigation strategies, and the assessed Severity (S) and Likelihood (L) of each risk. These risks will be actively monitored throughout the entire project duration, with regular reviews led by the researcher. Additional risks, and corresponding mitigation measures will be incorporated as necessary to ensure continuous and proactive management.

*Table 5.1. Critical implementation risks and corresponding mitigation measures.*

| Description | Proposed risk-mitigation measures | WP |
|---|---|---|
| Stochastic models complexity. S: Med. L: Med. | Model derivation can be complex. The researcher and supervisor (R&S) have a strong mathematical background and extensive analytical expertise. If complexity becomes intractable, we will apply reasonable assumptions and partial numerical methods. | WP2 |
| Challenge in joint scheduling. S: Med. L: High. | If complexity hinders closed-form solutions for co-design (WP3), we will simplify with adjustments while maintaining deterministic principles. Offline AI will be explored for predictive co-design if real-time is challenging (WP2-3). | WP2-3 |
| Datasets for predictive co-design. S: Med. L: Low. | AI-based predictive co-design requires comprehensive datasets that may be unavailable in the community. We will progressively generate these datasets with varying granularity to ensure timely availability and support project progress. | WP2-3 |

| | | |
|---|---|---|
| Simulation cluster limitations. S: High. L: Low. | WP2-3 is simulation-intensive and requires AI-processing capabilities (GPUs). The UWICORE lab has its own simulation cluster (400 CPUs, 900 GB RAM, 8 GPUs). In case of Failure or congestion, the researcher will use UMH's simulation cluster. | WP2-3 |
| CAM simulator is not ready. S: High. L: Low. | The host lab already has a working version of the simulator that bridges AUTOWARE, CARLA, and V2X communication models. Two researchers and a technician are available to integrate additional functionalities as needed to meet project requirements. | WP2-3 |
| Training program not adequate. S: Med. L: Low. | UMH has organized 3 editions of the Conoce TP and is committed to future editions or alternatives as part of its EU HRS4R and HR Excellence Award commitment. UMH will also offer relevant TPs regularly organized by RUVID. | WP4 |
| WPs KPIs cannot be met. S: Low. L: Med. | KPIs are set based on previous R&S performance and Deterministic6G-V2X potential. The dissemination plan identifies alternative journals if initial submissions aren't accepted. R&S will continue working on publications after the project concludes. | WP5 |

## 5.4  MANAGEMENT OF INTELLECTUAL PROPERTY (IPR)

The researcher and the supervisor maintain a strong commitment to open science and to the unrestricted dissemination of the project's outcomes. Accordingly, no Intellectual Property (IP) barriers are anticipated during the execution of Deterministic6G-V2X. Should an unexpected result arise that warrants IP protection, the Intellectual Property Rights (IPR) office of the host institution will provide the necessary guidance, and the project's dissemination plan will be adjusted to ensure proper handling of the protected material.

## 5.5  ACKNOWLEDGEMENT OF FUNDING

All materials produced or disseminated as part of the project's communication, exploitation, and dissemination activities, including deliverables, presentations, scientific publications, software releases, and any other publicly shared outputs, will include the European Union emblem and the required funding acknowledgment. Figure 1 illustrates the standard acknowledgment format to be used.



*Figure 1. Acknowledgment of funding.*

Whenever appropriate, the following statement will also be included:

**"This project has received funding from the European Union under the 2024 MSCA Postdoctoral Fellowship program (project no. 101207598)."**

# 6    COMMUNICATION

## 6.1    INTERNAL COMMUNICATION

Internal communication within Deterministic6G-V2X refers to the communications between the researcher, the supervisor, and the host institution. Regular interaction between the researcher and the supervisor will be maintained through bi-weekly technical meetings and ongoing email correspondence. Additional meetings will be arranged when required by the project's scientific or administrative needs. The researcher's office is in close proximity to the supervisor's workspace, which naturally facilitates informal technical discussions alongside the scheduled meetings. Communication with the administrative and EU-projects staff of the host institution will primarily take place via email, ensuring timely coordination of financial and administrative matters.

## 6.2    EXTERNAL COMMUNICATION

External communication encompasses all actions aimed at presenting and disseminating the project's objectives, activities, and results to a broad audience, including both technical stakeholders and the public. These activities will be carried out continuously throughout the duration of the project and will be documented in the relevant dissemination and communication deliverable (D5.1, see Table 4.3). The specific external communication measures planned for Deterministic6G-V2X are detailed in the following sections.

### 6.2.1    Website and social media

The project website will serve as the central platform for presenting the vision, objectives, and activities of Deterministic6G-V2X. It will be updated on a regular basis with news, intermediate and final results, deliverables, scientific publications, and presentation materials, including recorded talks. The website is intended to function as the most comprehensive and authoritative source of information on the project's progress and achievements. The project's website is available at [1]. Project updates will also be shared through the researcher's LinkedIn profile, with each post linking back to the project website to ensure consistency and visibility. To further increase outreach, these posts will be re-shared by the supervisor through his LinkedIn account, helping broaden the dissemination of project outcomes across professional networks.

### 6.2.2    Press and media coverage

The project plans to issue a minimum of two press releases. The first will be distributed at the start of the project to introduce the vision, objectives, and expected contributions of Deterministic6G-V2X. A second press release will be prepared at the project's conclusion to highlight the key scientific results and the overall impact achieved. With the support of the host institution's press office and RUVID, these press releases will be disseminated widely through regional and national media channels. The objective of these releases is to increase the project's visibility and to encourage broader communication through radio and television interviews at both local and national levels. Within the Valencian region,

dissemination will also be supported through institutional outlets such as the UMH Sapiens magazine and other UMH communication platforms.

### 6.2.3 Other communication activities

Additional communication activities will focus on public outreach and STEM promotion, particularly among young students. These actions aim to increase societal awareness of the relevance and impact of Deterministic6G-V2X. The project will seek participation in outreach initiatives organized by local institutions, such as the EU Researchers' Night MEDNIGHT GTS coordinated by the Valencian universities, as well as events hosted by the University Miguel Hernández, including the Elche/UMH Week of Science and the UMH Open Days.

## 7 REFERENCES

[1]   Deterministic6G-V2X project website: https://keyvanaghababaiyan.github.io/Deterministic6G-V2X/