LUMEIK-5G

LOCALIZATION AND MMWAVE EXTENSION FOR INDUSTRIAL 5G COMMUNICATION

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D6.1: DISSEMINATION, EXPLOITATION, AND COMMUNICATION PLAN

LUMEIK-5G project is funded under the research and technology development of gigabit applications as part of lighthouse projects Breitband Austria 2030: GigaApp financed by the Austrian Federal Ministry of Finance and by the Austrian Research Promotion Agency (FFG) under the grant agreement n. FO999923407. Breitband Austria 2030: GigaApp was initiated by the Austrian Federal Ministry of Agriculture, Regions, and Tourism.

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1 Executive Summary

This deliverable presents the communication and dissemination strategy of the LUMEIK-5G project. LUMEIK-5G adopts a systematic communication and dissemination approach aimed at achieving a high impact of the project activities and results. In this context, LUMEIK-5G results will be exploited at multiple relevant industrial, academic, and societal forums. The objective of the communication, dissemination, and exploitation plan is to provide LUMEIK-5G partners with guidelines on the different communication and dissemination activities, available tools, and channels for dissemination, and planned actions to achieve the exploitation of the results. The communication activities identified in this document aim at interacting with both technical and non-technical audiences with the overall aim of spreading awareness of the LUMEIK-5G project and its results. In terms of communication, dissemination, and exploitation, the following are the main areas identified in this document:

- Internal and external communication and dissemination strategy
- Target audience and communication channels
- Relevant scientific publication societies and venues of high scientific impact
- Industrial and academic conferences and workshops
- Specific standardization and regulation synergies including potential contributions
- Exploitation strategy for the project including key exploitable results
- Exploitation plans for individual partners

2 Introduction

The objective of this document is to provide communication, dissemination, and exploitation strategies for the LUMEIK-5G project to maximize the impact of the project. The LUMEIK-5G project focuses on developing 5G services to help improve the efficiency and flexibility of manufacturing and automotive industry. Localization and situational awareness services will be realized to support automation for the manufacturing industry through multi-robot collaborations. These services will also be beneficial for the automotive industry to provide safety and more controlled traffic for road users in tunnels. The impact and dissemination strategies are crucial to help industries adopt 5G systems and services for their respective applications.
The overall goal of the dissemination and impact plan is to outline a path to increase the visibility of the project and to promote the exchange of knowledge regarding the project outcomes. LUMEIK-5G will help the Austrian and global industry in using wireless technologies for new and effective services.
The communication plan presented in this document aims at describing the planned efforts by the LUMEIK-5G project to reach out to relevant stakeholders including industry, academia, society, and standardization bodies. This document provides concrete plans on the impact and dissemination of LUMEIK-5G.
Multiple activities and communication channels have been identified to be used for the promotion of the project and its results to relevant audiences. Moreover, internal, and external communication protocol as well as visual branding of the LUMEIK-5G project in terms of project logo, templates for slides and deliverables have been prepared. The dissemination strategy outlined provides a clear plan on how knowledge and results obtained in LUMEIK-5G are planned to be transferred to potential users, including, for instance, the scientific community, industrial partners, policymakers, and standardization bodies.
The exploitation plan of LUMEIK-5G presented in this document provides the strategy on how the project results could be effectively used. Moreover, key exploitable results of the project have been identified that will be used for a contribution towards scientific publications, while papers, and potentially standardization activities. To ensure a coordinated approach to impact and dissemination by all partners of the consortium, LUMEIK-5G has a separate work package that is dedicated to impact and dissemination. The leader of this work package will coordinate the dissemination activities with all project partners.

2.1 Objective of the document

The purpose of this document is to outline an effective communication, dissemination, and exploitation strategy for the LUMEIK-5G project. All project partners can follow this plan for their communication and dissemination strategies to allow a consistent approach. This will result in an active promotion of the project throughout the duration of the project. This will not only ensure a successful impact and dissemination of the project but will also enhance the visibility of

the project that is targeted toward relevant audiences. The industrial partners will approach their relevant academic and industry sectors.

2.2 Structure and scope of the document

The structure of the document is as follows: Section 2 introduces the deliverable document. Section 3 details the communication and dissemination protocol for the exchange of information within and outside the consortium. Section 4 outlines the potential ways for the dissemination activities including targeted industrial and scientific venues. The last section 5 specifies how the project results can potentially be fed into standardization and how the project partners will individually exploit the project results.

3 Communication

For the duration of the project a communication plan is created and will be maintained. It will include the ways how we want to communicate internally and externally, what we want to communicate and via which channels we want to communicate. The following sections outline the communication plan.

3.1 Project branding and visibility

The project is commonly identified by its name LUMEIK-5G and its logo, as presented below.

Figure 1: The LUMEIK-5G Logo

The project logo is created for better recognition and visibility, as well as for its branding. Therefore, all dissemination tools and activities must refer to or include the name and logo of the project. In addition a reference to the FFG funding must be included as follows:
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agreement n. FO999923407. Breitband Austria 2030: GigaApp was initiated by the Austrian Federal Ministry of Agriculture, Regions, and Tourism.
For the sake of project branding and visibility, templates for project slides, reports, and deliverables are also prepared. These templates should be used, wherever possible, for the representation and dissemination of the project activities.

3.2 Notice on the release of content for dissemination

During the course of the project, the dissemination of project activities or results by one or several project partners should be notified to the members of the consortia. A prior written notice of the final version of any planned publication shall be given to other partners at least seven (07) days before the planned publication submission date. Any objection to the planned publication shall be made in writing to all partners after receipt of the written notice. If no objection is made within the time limit stated above, publication is permitted. Any and all objection(s) shall include, to the extent possible, a precise request for necessary modifications.

3.3 Open science practices

The consortium aims at providing benefits to the general academic-industrial community and promoting open science methods in this respect. Already today, several LUMEIK-5G partners either engage in open-source software projects or in open access with respect to project deliverables and publications. For LUMEIK-5G, it is planned to systematically increase the level of engagement in open science methods throughout the project. It is believed that by engaging in open science practices, on the one hand, feedback can be incorporated faster while, on the other hand, synergy effects can be created. The following approaches and tools will be leveraged in detail:

- Project planning and evolution will be made publicly available through the documentation on a project website.
- Project data collections will be provided through our webpage, usually either in relation to deliverables or in relation to project publications.
- Project deliverables, standardization contributions and project publications will - to the extent possible - be published through open access outlets, together with underlying material (software) and data.

The open science approach has to be balanced with the interest of the project partners to keep certain aspects of their contributions confidential.

3.4 Internal Communications

Communication within the consortia is important to exchange information, develop knowledge together, and inform each other on the progress of proposed work package activities. Internal

communication between the consortia members is also needed to enhance and optimize external communication and dissemination activities. Internal communication will be ensured through regular exchange of information via e-mails and meetings to discuss the progress of the project, upcoming activities, deadlines, and issues arising on achieving the milestones of the project. This section explains the communication and dissemination protocol within the consortia members.
Communication among the consortia members is performed via the exchange of emails and regular work package (WP) meetings.
A list of all project members with their e-mail addresses is provided in the project folder.
The WP leaders and task leaders will organize and invite to the project meetings.
A common project workspace in Microsoft Teams is set up to share documents, related material, and videos. The common workspace is well organized forming it an easy access platform for all members of the consortia.
Minutes of the meetings are recorded for each meeting where action items and discussion items are furnished to track the project progress. The minutes are recorded with OneNote in Teams.
Meetings are held via Microsoft Teams or as face-to-face meetings. Locations for the face-to-face meetings will be agreed between the project partners.

3.5 External Communications

The external communication will be done via the project webpage and social media.

3.5.1 Website

The LUMEIK-5G project website is the central point for all information about the project. It gives a project overview, lists the objectives of the project and the work plan, introduces the project partners and allows the download of all deliverables (as soon as they are released). In the future it is planned to also provide information about Private 5G systems and related use cases, and references to other relevant websites (e.g. 5G-ACIA). A snapshot of the project webpage is presented in Figure 2. The website is accessible at https://www.LUMEIK-5G.at. The website will be managed by SAL, content can be provided by all project partners. Care has to be taken with confidential information from project partners, which should not be added to the the website.

3.5.2 Social Media

LinkedIn platform will be used for social media postings whereby YouTube will be used as an option to share presentations and videos of demonstration.
The LUMEIK-5G LinkedIn page can be found under: https://www.linkedin.com/company/LUMEIK-5G/. The LinkedIn account will be managed by SAL, content can be provided by all project partners. Care has to be taken with confidential information from project partners, which should not be included to social media postings.
Social media will be mainly used to direct people to the project website (see section 3.5.1).

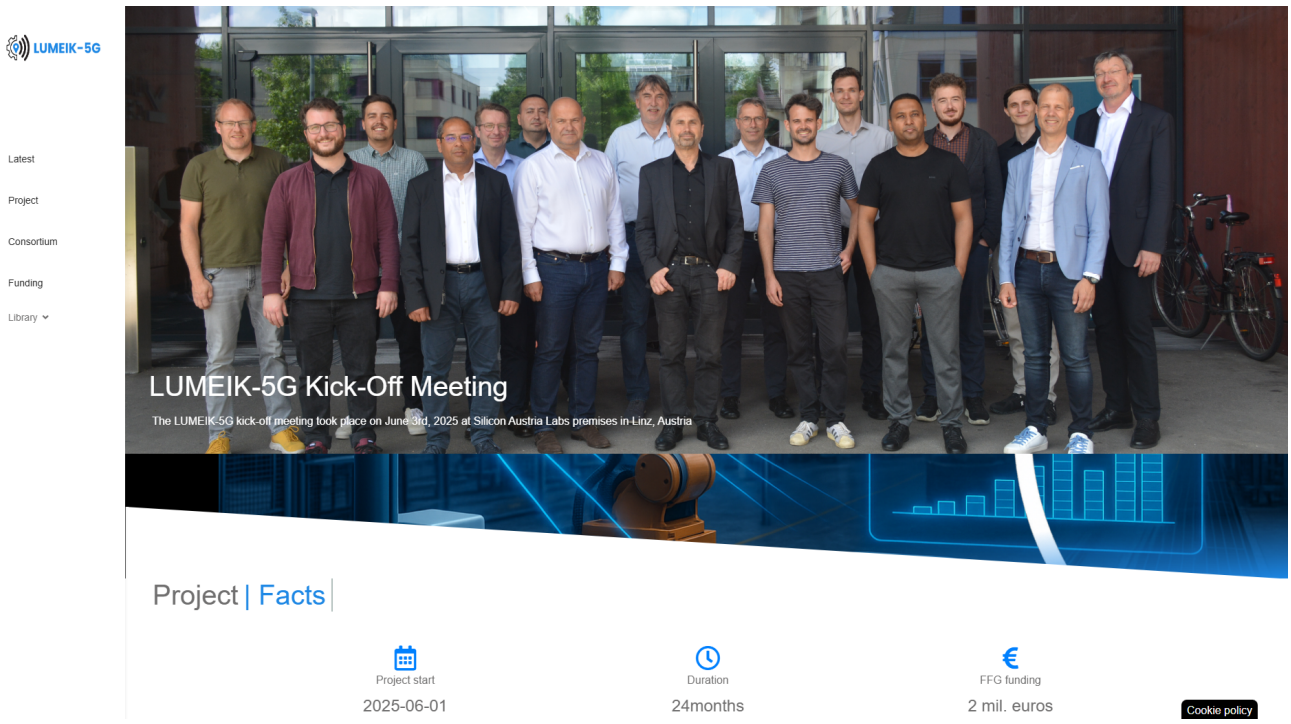

Figure 2: LUMEIK-5G webpage snapshot

3.5.3 Press Releases

Press releases are planned to be published after major milestones or achievements in the project. A draft of the press release will be circulated to the project members to allow them a cross-check with their communication and public relations departments. Once the press release is approved by all partners, it will be distributed. All project partners can use their own distribution channels for the press release. Press releases can be targeted also at local newspapers (e.g., Der Standard, Die Presse, Austria Press Agency APA-OTS).

4 Dissemination

The project will target the scientific and industrial communities for the dissemination of the project results. The scientific dissemination will be led by SAL, the industry dissemination will be mainly be led by industry partners.

4.1 Scientific Publications

The following societies are identified for dissemination of scientific results.
Our target groups are:

- Industrial Electronics Society
- Communications Society

- Robotics and Automation Society
- Vehicular Technology Society

4.2 Industry Publications

The following industry forums are identified for dissemination of project results and outcomes.

- 5G-ACIA
- 5GAA
- ÖVE (e & i)
- FEEI
- 5G for Industry

We will need to produce a description of the scenario which we can then enhance with content for the specific target groups. A few pages with a general description of the project may help to answer general media interests.
Potential industry conferences where we should present the LUMEIK-5G project:

- CMM (cmm-expo.com) - a new conference with focus on 5G
- 5Gtechritory (www.5gtechritory.com)
- ÖVE Events
- Hannover Messe
- PMRexpo (www.pmrexpo.de)
- Mobile World Congress

4.3 White Papers

Some topics for possible white papers have been identified:

- 5G services for automotive and manufacturing industries
- Practical learning on deployment and usage of 5G mmWave and sub-6 frequencies
- Localization and situational awareness techniques
- Options for building 5G campus systems in Austria
- Higher level paper for the general public to understand the topic and challenges addressed under the project

4.4 Videos

Once results are available from the LUMEIK-5G project, demonstration videos will be produced and disseminated.

5 Exploitation

Following are the identified key exploitable results for the LUMEIK-5G project.

- Requirement analysis in terms of key value indicators and key performance indicators for targeted automotive and manufacturing applications where 5G communication technology can be utilized
- Evaluation of 5G deplyment with mmWave frequency band for automotive and manufacturing industrial applications
- Improved localization techniques and methodologies with the integration of mmWave, sub-6 GHz frequencies together with UWB technology
- Enhanced environmental perception and situational awareness using AI support
- Demonstration and validation of the concepts explored under the project

5.1 Standardisation

A potential exploitation of the project is to contribute the findings to standardization. Potential contributions will be identified during the project for standardization.

5.2 Regulation

Another group of target bodies is the regulators. The LUMEIK-5G project may reveal certain gaps in local or global regulations which we can identify and make the regulators aware of it. These may include activities for assigning local spectrum licenses for industrial sites (campus licenses) or regulations for safety (e.g. the German Berufsgenossenschaft, which produces standards for safety).

5.3 Individual Exploitation Plans

In addition to the overall exploitation strategy, individual partners have specific exploitation plans that are summarized below. Any exploitation plan(s) will be reviewed and updated during the entire life cycle of the project, so it will accord with the project findings and overall exploitation strategy. The final version of the exploitation plan(s), which will detail all future exploitation activities at the consortium level, will be contained in the final impact and dissemination report.

5.3.1 Silicon Austria Labs

SAL is actively involved in R&D of wireless communication including 5G/6G technologies focusing on deterministic, dependable, and trustworthy communication supporting factories of the future. SAL will exploit the project results via its networks and platforms on European and International levels to engage consortia partners through its linkages and networks. SAL will use the research carried out as part of the LUMEIK-5G project to attract partners from industry and academia and to raise awareness of the activities carried out. To maximize the impact and collaboration of the research activities, SAL will also project the outcomes of LUMEIK-5G through its networks and platforms at European and international level such as 5G-ACIA and international standardization bodies such as the National Institute for Standards and Technology (NIST, USA). Furthermore, the project results will be disseminated at European and international level in the form of publications in peer-reviewed journals and conferences.

5.3.2 CANCOM Converged Services GmbH

Cancom will incorporate the knowledge gained as part of the LUMEIK-5G project into future 5G Campus products and solutions. The project supports the further expansion of the Cancom solution ecosystem. Cancom expects both a deepening of the cooperation with the project partners as well as impetus for collaboration with other application and solution providers in the 5G environment. As part of its own public relations work, Cancom plans to report on the FFG project in order to draw attention to 5G as a pioneering technology.

5.3.3 Arico Technologies e.U.

Arico Technologies will use the results of the LUMEIK-5G project to work on further consultancy projects in the field of industrial 5G application. Relevant results will also be included in future training courses. The results will be presented on an international level. Arico Technologies will support necessary further standardization in the relevant European and international standardization bodies.

5.3.4 AGILOX Services GmbH

AGILOX intends to utilize the findings of the LUMEIK-5G project for future features and products. While customers especially in the European market are still heavy relying on WiFi-infrastructure for factory floor communication, the need for 5G-based communication on the market is expected increase significantly throughout the next 3-5 years. This trend can already be seen in China, where 5G is utilized more often. AGILOX expects the share of its robots shipped with 5G modules to be around 5-10% in 2026 and 20% in 2028. As part of the project also one patent application is planned.

5.3.5 Empirisch Tech GmbH

Empirisch Tech is a startup, working on the cutting-edge topics of Generative AI and AutoML. Empirisch Tech had partnered on an R&D project with Max Planck Institute on Plasma Physics and is also now the member of Microsoft startup program. It will take an active part in the development of AI algorithms for situational awareness. It will target the latest GenAI Image and Video models for situational awareness and implement them from the perspective of edge computing and federated learning, while exploiting the latest 5G standards. The aim is to exploit the high bandwidth and low latency ensured by 5G. This will lay the foundation for future prospect of 5G and other GenAI domains such as speech-to-speech translation, compressed form of large language models, etc. to provide near real time responses for which 5G will play a fundamental role due its reduced latency and high bandwidth capacity. The results will be advertised on various communication channels, e.g., LinkedIn, 5GMED and along with participations and publications in prestigious European and USA based conferences on GenAI..

5.3.6 Johannes Kepler Universität Linz, LIT Factory

The JKU LIT Factory serves as a pilot factory for digitalization and digital transformation, using the example of plastics processing. One goal of the facility is to demonstrate new developments and methods and to give SMEs in particular an insight into new technologies. In the LIT Factory, UC1 thus demonstrates the latest methods in automation and mobile robotics, also in connection with data linking along the production chain based on asset administration shells. The LIT Factory thus presents the results to industry together with SAL on the basis of the UC, uses the results in teaching and demonstrates the research to society, e.g., at events such as the "Lange Nacht der Forschung".

5.3.7 LIWEST Kabelmedien GmbH

The results of the research work are used by Liwest to better assess the requirements of different industry groups for 5G campus solutions in terms of runtime, bandwidth, and number of devices. For further research and customer projects, it is necessary to be able to estimate indoor area coverage, interference, and positioning accuracy so that these can then be incorporated into offers or solutions. Liwest also expects to develop and specify new applications and the associated requirements for the 5G network. A further result that can be derived is an estimation of the interference between campus networks and existing 5G mobile networks.

5.3.8 phine.tech GmbH

Phine.tech is a 5G startup that specializes in the development of 5G software solutions and provides the Virtual 5G Lab. As part of this project, Phine.tech takes on the central task of extending the existing Location Management Function (LMF) of the 5G core in the laboratory to enable precise positioning via mmWave. Phine.tech is currently working on the development of its innova-

tive product, the Virtual 5G Lab, which accelerates the development of 5G use cases, such as in this project. The integration of mmWave positioning into the Virtual 5G Lab could thus continue to contribute to development even after the project and support continuation of use case to its customers.

5.3.9 Kapsch TrafficCom AG

Kapsch TrafficCom AG is a globally recognized provider of traffic solutions for sustainable mobility. Innovative solutions in the application areas of tolling, tolling services, traffic management and demand management contribute to a healthier world without traffic jams. As part of the Kapsch Group, headquartered in Vienna, Kapsch TrafficCom AG has subsidiaries and branches in more than 25 countries and has been listed in the Prime Market segment of the Vienna Stock Exchange (symbol: KTCG) since 2007. In the financial year 2022/23, around 4,000 employees generated revenues of around EUR 550 million. Kapsch has successfully implemented projects in more than 50 countries around the globe. With one-stop solutions, the company covers the entire customer value chain, from components and design to the implementation and operation of systems. As part of the "Connected Corridor" strategy, road sections and intersections are continuously equipped with video detection systems and C-ITS communication infrastructure.
Real-time situational awareness about the traffic situation in tunnels is currently an unsolved challenge. While tunnel operators are dependent on surveillance cameras with more or less accurate video-based alarm facilities, which very often provide a lot of false positive errors, vehicle drivers suffer from lack of navigation in tunnels. Furthermore no easy means to transmit collision avoidance warnings in real-time yet exists on the market. Using 5G technology with the aforementioned mmWave extension opens a promising and widely available solution for solving this safety problem. This opens up a huge market for delivering extensions to existing tunnel SCADA systems as well as for system deliveries for every new tunnel planned. The in-vehicle applications can be addressed by automotive companies and may also be integrated as a part of the ITS-G5 deployment in Europe.