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5G for a Better Tomorrow: Protecting Lives and the Environment in Riga and Turin
Grant Agreement No 101133716

5G4LIVES D5.1_TRAINING PACKAGE_1

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5G4LIVES
D5.1_Training Package_1

Project Title:	5G for a Better Tomorrow: Protecting Lives and the Environment in Riga and Turin
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REVISION TABLE

Version	Date	Comments
1.0	11.06.2025	First version to be reviewed by the Coordinator and the WP Leader
1.1	27.06.2025	Final draft to be reviewed by Lead Partner

Disclaimer
The work described in this document has been conducted within the 5G4LIVES project.

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5G4LIVES ABSTRACT

In an era where technology is advancing at an unprecedented pace, the project takes centre stage as an initiative committed to harnessing innovation for the greater good. This project unfolds its transformative vision across two distinct geographic clusters, Latvia and Italy. It strategically leverages 5G connectivity alongside cutting-edge technologies such as Unmanned Aerial Vehicles (UAVs or drones) and alternative hydrogen power. With a dual mission of enhancing public safety and environmental health, the project unfolds a narrative where data-driven forecasting and real-time aerial situational awareness become the bedrock of a more secure, efficient, and sustainable future.

At its core, the project seeks to enable optimal emergency management and data-driven forecasting, a mission encompassing the entirety of public safety. Through the dynamic fusion of 5G connectivity and UAVs, this initiative aims to provide real-time aerial situational awareness and automatic vulnerability assessment for at-risk areas. The project's scope extends beyond traditional rescue operations, pushing the boundaries of innovation to safeguard both human lives and the environment.

The project in Latvia involves using drones and 5G technology for monitoring and rescue operations, especially at Vecaku Beach and Kisezers Lake in Riga. This approach aims to enhance police efficiency, particularly in challenging terrains. In Turin, the focus is on developing a 5G-enabled service for situational awareness and vulnerability assessment to counter natural disaster threats. This includes testing anti-drone hacking technology, integrating satellite data, and improving pilot-drone command for better emergency response. The project also includes research in Riga on safety protocols and procedures for urban drone operations and beyond-visual-line-of-sight (BVLOS) flight methodologies with EU-wide relevance. A significant aspect of the project is to engage in extensive communication to inform and educate local, national, and EU networks about these technological solutions.

By leveraging 5G and drones, the project promises quicker and more effective emergency response, addressing staff shortages in law enforcement and expanding their skill set. In Latvia, the use of drones and 5G connectivity will empower law enforcement to intervene more swiftly, addressing staff shortages and expanding the skill set of police officers. In Italy, the project will mitigate the threat of natural disasters and test innovative anti-drone hacking technologies, leading to more efficient emergency responses. Additionally, developing safety protocols and procedures for urban drone flights and validating BVLOS flight methodologies will set new standards for public safety and security. The project emphasises community involvement and knowledge sharing, ensuring that the benefits of these technological advancements extend beyond immediate emergency management to foster a more resilient and informed society.

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ABBREVIATIONS AND ACRONYMS

TP1	Training package 1
TP2	Training package 2
AI	Artificial Intelligence
BVLOS	Beyond visual line of sight
EU	European Union
SME	Small and Medium-sized Enterprise
UAV	Unmanned Aerial Vehicle
ROCC	Remote Operation Control Centre
GDPR	General Data Protection Regulation
KPI	Key performance indicator
ISO	International Organization for Standardization
SORA	Specific Operations Risk Assessment
EASA	European Union Aviation Safety Agency
ENAC	National School of Civil Aviation
CAA	Civil Aviation Agency
AWS	Amazon Web Services
ROS2	Robot Operating System 2
TTS	Text-to-speech
WP	Work Package

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EXECUTIVE SUMMARY

The present deliverable is D5.1, which is the first in a two-part educational series developed by the 5G4LIVES project to build stakeholder capacity in deploying 5G-enabled technologies for emergency response and environmental monitoring. It introduces Training Package 1, a structured, multimedia learning tool designed to translate the project's technical innovations into accessible knowledge for first end-users—primarily public authorities, emergency responders, and technical staff in Latvia and Italy. TP1 supports early-stage adoption by providing clear, scenario-based guidance on system architecture, use cases, and operational workflows.

Organised into four thematic modules - (1) Foundations of 5G4LIVES and Emergency Response Innovation, (2) Building the System – Technology and Operations, (3) Real-world Deployment and Measurable Impact, and (4) Strategic Outlook and Policy Considerations - TP1 offers a coherent learning path supported by professionally produced video content, infographics, and simplified technical language. Each module is designed to be understandable and engaging for both project participants and external stakeholders across Europe.

Training content was co-created with project partners and features subject matter experts actively involved in the 5G4LIVES pilots. By translating complex technical documentation into practical training material, the package fosters shared understanding, confidence, and operational readiness among civil protection teams and institutional users.

To maximise accessibility and impact, the training package is being published on a dedicated YouTube channel, accompanied by downloadable presentation slides, transcripts, and descriptions. The use of open-access video platforms ensures broad dissemination while enabling integration into ongoing communication, dissemination, and stakeholder engagement activities.

Complementing the digital content, a live demonstration event in Riga (autumn 2025) will offer hands-on exposure to drone operations and 5G-enabled emergency response systems in the project's real-world pilot zones. This blended learning format - combining multimedia instruction with in-person engagement - strengthens knowledge retention and prepares the ground for replication and upscaling across other EU regions.

The document presents a significant step in bridging innovation and implementation. Through Training Package 1, the project delivers an inclusive and impactful learning resource that empowers early adopters, supports cross-border knowledge exchange, and sets the stage for broader public sector innovation. A follow-up training package (TP2), incorporating field-based insights and user feedback, will further deepen impact and extend the learning to a wider community of stakeholders.

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INTRODUCTION

The 5G4LIVES project leverages advanced 5G connectivity and drone technology to enhance public safety and environmental monitoring in Riga and Turin. To prepare stakeholders for real-world deployment and to foster early adoption of these innovations, WP5 focused on the development of a structured, accessible Training Package. This first TP1 translates technical knowledge into user-friendly learning materials, supporting the operational readiness of emergency responders, public authorities, and technical staff across the pilot regions.

The training effort was designed to ensure that complex concepts - such as BVLOS operations, 5G-based situational awareness, and integrated command systems - are presented in a way that is practical, clear, and engaging. Delivered through multimedia content, TP1 builds foundational knowledge while encouraging cross-sector collaboration, shared understanding, and consistent system implementation. By targeting first end-users and offering open access to wider European audiences, the training initiative strengthens both internal capacity and external outreach, positioning 5G4LIVES as a replicable model for smart emergency response.

1. ABOUT THE 5G4LIVES TRAINING PACKAGE

This training package represents the first of two planned learning resources developed within the 5G4LIVES project to build stakeholder capacity and support the implementation of 5G-enabled technologies in observation, search, and rescue operations.

The primary goal of this initial package is to prepare first end-users for the upcoming demonstration phase. It provides a structured introduction to the 5G4LIVES concept, technologies, operational scenarios, and key considerations, using accessible language and multimedia formats to ensure broad usability.

This first edition serves as both a foundational knowledge resource and a communication tool for wider engagement. A second, updated version of the training package will follow two seasonal cycles of demonstrations. It will incorporate practical insights from field operations and be tailored for a broader audience, including indirect stakeholders and external collaborators.

1.1. TRAINING PACKAGE OBJECTIVES

The main objective of the first training package is to provide practical, accessible, and foundational knowledge to key stakeholders involved in the early phases of the 5G4LIVES project. Specifically, it aims to prepare first end-users - including emergency responders, technical staff, and public sector representatives - for the upcoming demonstration activities by introducing the project's core concepts, technologies, and operational use cases. The package also seeks to ensure a shared understanding of the system architecture, roles, and workflows, and to support consistent implementation across different pilot sites. Additionally, by using clear language and engaging multimedia formats, the training material is designed to raise awareness, build confidence, and encourage early adoption of 5G-enabled solutions in real-world observation and rescue contexts.

1.2. TARGET GROUPS

The first training package is primarily designed for first-end users involved in the 5G4LIVES pilot activities, with a focus on stakeholders from Latvia and Italy, where the initial demonstrations are taking place. This includes emergency services personnel, municipal and national public authorities, technical operators, and local implementation partners. However, the package is also intended for a broader European audience, serving as an open-access resource for other EU stakeholders interested in the potential of 5G in crisis response and public safety. By ensuring the materials are accessible, clearly structured, and available in English, the training package supports knowledge transfer beyond the immediate pilot regions, inviting

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engagement from policymakers, researchers, civil protection agencies, and innovation ecosystems across Europe who are exploring similar applications of advanced connectivity in public service delivery.

1.3. Production of the Training Package

The first training package was designed to equip stakeholders and target audiences with the essential knowledge and skills to understand, use, and eventually implement the 5G4LIVES technologies in observation, search, and rescue operations. Initially targeting first end-users following the pre-demo stage, the training materials will also serve as the foundation for a second, expanded version of the package that will address the needs of a wider group of "entangled persons," including support staff, policymakers, and external collaborators.

This training package contributes not only to capacity-building within the project but also to wider stakeholder engagement. It supports the dissemination of insights, tools, and operational frameworks developed throughout the project lifecycle in an accessible and structured format.

Design

The content of the first training package was based primarily on earlier project deliverables and technical documentation from the pre-demo phase. However, recognising that many intended users may not be familiar with the project's background or terminology, the material was substantially adapted to be more accessible, practical, and user-friendly. This included:

- Presentation slides and video content were created with the assistance of a professional graphic designer and videographer.
- All training materials followed a consistent visual identity and formatting, using a unified template.
- Videos were filmed in a professional studio setting to ensure high audio-visual quality.
- Supporting visual materials, such as infographics and diagrams to aid understanding, were created.
- Design elements (typography, icons, colour schemes) were chosen to enhance readability and ensure visual consistency across all modules.
- Translating technical documentation into plainer, non-specialist language.
- Reorganising content into intuitive, thematic modules for easier navigation and comprehension.
- Inserting contextual explanations, operational examples, and simplified definitions of technical terms.
- Ensuring the material would be understandable to a broader audience, including local authorities, civil protection staff, SMEs, and observers not previously involved in the project.

This inclusive approach ensures that the training package can be used not only for internal capacity-building but also as a public-facing educational tool to raise awareness of 5G-enabled solutions in crisis response.

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FIGURE 1. BEHIND THE SCENES OF THE PRODUCTION OF THE TRAINING PACKAGE VIDEOS FEATURING STEFANO PRIMATESTA (POLITECNICO DI TORINO)

PUBLISHING PLATFORM

The training package videos will be published on a dedicated YouTube channel here: https://www.youtube.com/@5G4LIVES

YouTube is selected for its accessibility, ease of use, and wide reach. YouTube allows high-quality video hosting with no login requirements, making it an ideal platform for open educational content. The TP1 videos will be placed in four playlists, thus creating four learning modules:

CONTENT DEVELOPMENT

The development of the training content was a collaborative effort involving several project partners and key stakeholders directly engaged in the 5G4LIVES activities. To ensure the credibility, relevance, and authenticity of the material, all presenters featured in the training videos were selected from among the actual stakeholders and experts participating in the project. These individuals brought first-hand experience and insight into the concepts, technologies, and operational frameworks underpinning 5G4LIVES.

FIGURE 2. BEHIND THE SCENES OF THE PRODUCTION OF THE TRAINING PACKAGE VIDEOS FEATURING ŅIKITA KAZAKĒVIČS (LMT)

To support the speakers and ensure consistency across all video modules, dedicated speaker notes were created for each presentation. These notes outlined key messages, topic flow, and timing guidance to help presenters communicate complex topics clearly and effectively. The speaker notes were reviewed and refined in coordination with each speaker and their respective partner institutions. This process ensured that the content was both technically accurate and aligned with the overall communication objectives of the training package.

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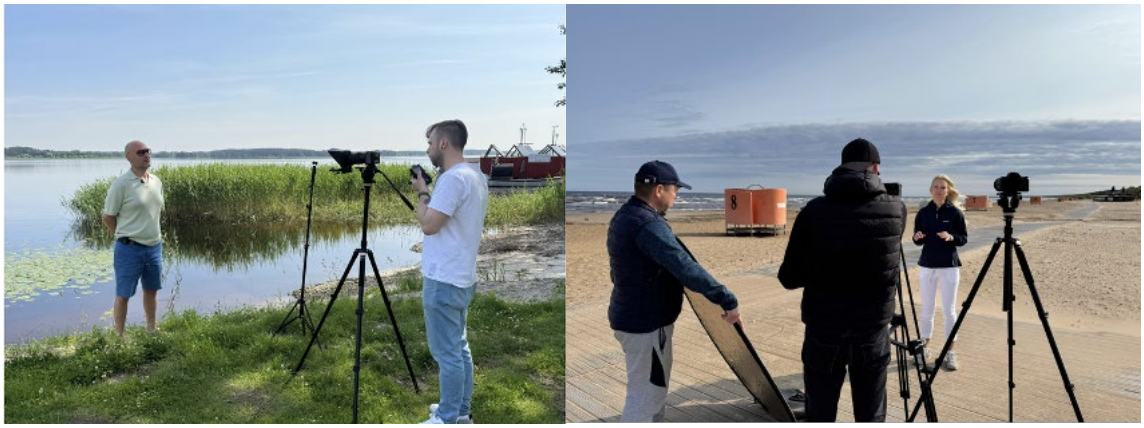

FIGURE 3. BEHIND THE SCENES OF THE PRODUCTION OF THE TRAINING PACKAGE VIDEO "RESIDENTS ON DRONE USAGE IN RESCUE OPERATIONS"

FIGURE 4. BEHIND THE SCENES OF THE PRODUCTION OF THE TRAINING PACKAGE VIDEOS FEATURING LORENZO PESSOTTO (COMUNE DI TORINO)

1.4. Dissemination Plan

To ensure maximum accessibility, visibility, and ease of dissemination, the training package is to be published via the YouTube platform. YouTube was selected as the primary hosting solution due to its widespread familiarity among users, support for high-quality video playback, and compatibility across devices and operating systems. Its intuitive interface, low access barriers, and global reach make it an ideal channel for reaching both project stakeholders and the wider public.

A dedicated YouTube channel for the 5G4LIVES project is being established to host all training videos and related visual content. This centralised channel will serve as the main repository for audiovisual learning materials produced throughout the project, supporting discoverability and thematic organisation.

All training videos are uploaded with publicly accessible links, ensuring that users can freely view the materials without registration. Each video is accompanied by a short written description summarising the topic, speaker, and relevance to the 5G4LIVES concept. Importantly, the descriptions also include:

- Downloadable links to the presentation slides featured in the videos.
- Text-to-speech (TTS) versions or transcripts to improve accessibility for diverse user needs and learning preferences.

In addition to the dedicated channel, the videos will be actively disseminated through the 5G4LIVES social media platforms, newsletters, and official websites of the project and the project partners. This decentralised sharing strategy ensures that the materials reach a wider audience, leveraging existing stakeholder networks to maximise visibility and engagement.

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2. OVERVIEW OF TRAINING PACKAGE 1

2.1. MODULE 1: FOUNDATIONS OF 5G4LIVES AND EMERGENCY RESPONSE INNOVATION

2.1.1. Description

The first module lays the conceptual foundation for the training package, introducing participants to the 5G4LIVES project, its purpose, and its strategic use of 5G and drone technologies in emergency response. It provides a non-technical, yet informative overview designed to orient public authorities, civil protection teams, and interested stakeholders to the project's vision and operational value. By combining technological context with real-world pilot examples, this module sets the stage for deeper technical exploration in subsequent modules.

2.1.2. Learning Objectives

After completing this module, participants will be able to:

- Explain the motivation and goals of the 5G4LIVES project.
- Understand the role of 5G in enabling fast, secure, and real-time drone operations.
- Identify key benefits of using drones in civil protection scenarios.
- Recognise the pilot environments in Riga (Latvia) and Turin (Italy), and their strategic importance.

2.1.3. Content Overview

1. INTRODUCTION TO THE 5G4LIVES CONCEPT

Presented by:

- Inga Barisa, Adviser, EU digital innovations, Riga City Council Digital Agency.

The module begins by contextualising 5G4LIVES as an EU-funded initiative supporting civil protection via 5G-connected drones. It highlights the relevance of the project in modernising emergency response, particularly in environments such as beaches, lakes, and hilly terrain that pose access or visibility challenges for human responders.

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FIGURE 5. INTRODUCTION TO THE 5G4LIVES CONCEPT TITLE SLIDE AND VIDEO SCREENSHOT.

2. WHAT IS 5G, AND WHY DOES IT MATTER

Presented by:

- Arnis Gulbis, Director, Riga City Council Digital Agency

This section explains the unique technical features of 5G—including ultra-low latency, high bandwidth, and reliable multi-user support—that make it ideal for drone operations. It introduces the concept of the Remote Operation Command Centre (ROCC) and how 5G enables drones to transmit high-resolution video and telemetry in real time, even from remote or hazardous zones.

FIGURE 6. WHAT IS 5G AND WHY DOES IT MATTER, AND A VIDEO SCREENSHOT?

3. DRONES IN PUBLIC SAFETY

Presented by:

- Laila Zemīte, Lead Project Manager, Riga City Council Digital Agency

The final segment of the module focuses on the operational advantages of drones, such as faster deployment, cost-effective surveillance, and enhanced situational awareness. It showcases drone capabilities like optical and thermal imaging, automated missions, and the ability to detect incidents in real time. The section uses concrete examples from Riga (e.g. beach rescues and ice monitoring) and Turin (e.g. landslide and wildfire monitoring) to illustrate these benefits.

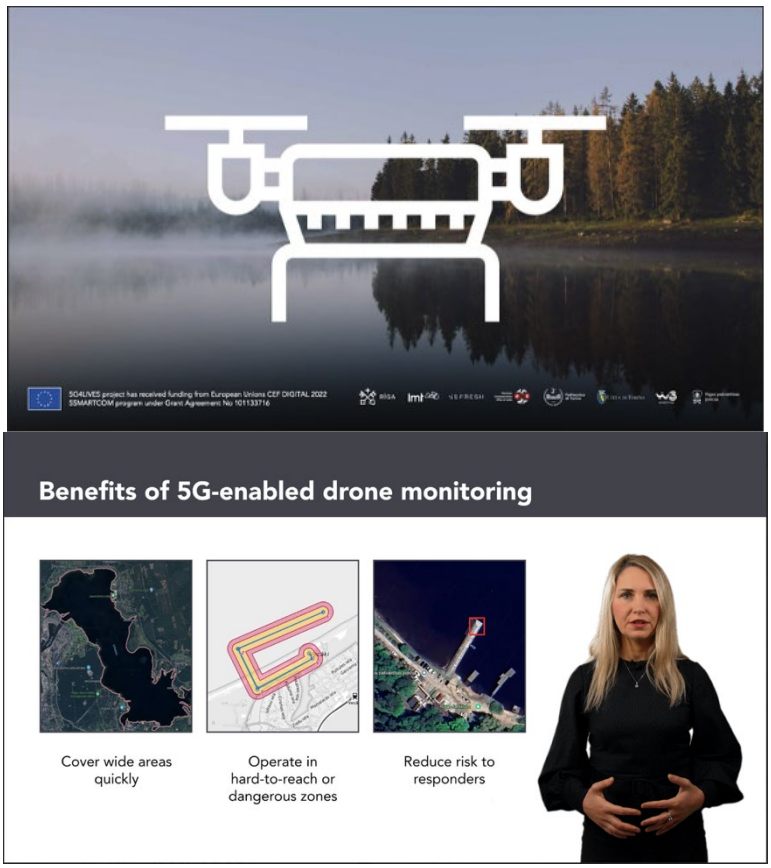

FIGURE 7. DRONES IN PUBLIC SAFETY TITLE SLIDE AND VIDEO SCREENSHOT.

By the end of Module 1, participants have a clear, high-level understanding of how 5G and UAVs intersect in the context of civil protection, and how the 5G4LIVES project is piloting these technologies in real-world scenarios.

3.2. MODULE 2: BUILDING THE SYSTEM – TECHNOLOGY AND OPERATIONS

3.2.1. Description

Module 2 presents the technical and operational backbone of the 5G4LIVES system. It explores how individual technologies—including UAVs, 5G networks, software platforms, and command centres—interact to create a reliable, responsive, and safe solution for real-time emergency monitoring and response. The module translates complex system components into understandable concepts, with an emphasis on safety, coordination, and practical implementation.

3.2.2. Learning Objectives

After completing this module, participants will be able to:

- Describe how UAVs and 5G networks function together in live civil protection missions.
- Understand the principles and regulatory context behind Beyond Visual Line of Sight (BVLOS) drone operations.
- Identify the key system components and workflows used in planning, launching, and managing drone missions.
- Recognise the technical and safety infrastructure required for deployment, including cybersecurity and GDPR compliance.

3.2.3. Content Overview

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1. BVLOS Flights Explained

Presented by:

- Staņislavs Šeiko, Head of Strategic Planning, Riga Municipal Police.

The module begins by introducing the concept of Beyond Visual Line of Sight (BVLOS) operations, where drones are flown without the pilot having direct visual contact. It explains how BVLOS enables large-area coverage and faster emergency response. Emphasis is placed on the importance of compliance with the European SORA framework, as well as safety measures such as geofencing, fallback communication, and Return-to-Home functions.

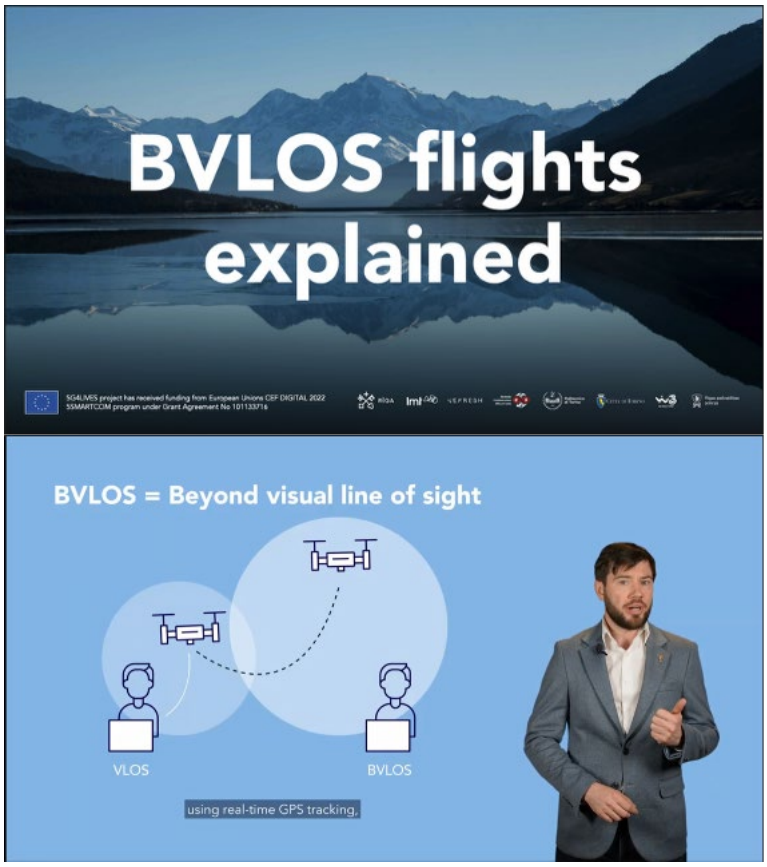

FIGURE 8. BVLOS FLIGHTS EXPLAINED TITLE SLIDE AND VIDEO SCREENSHOT.

2. 5G + UAVs: Working Together

Presented by:

- Staņislavs Šeiko, Head of Strategic Planning, Riga Municipal Police.

This section highlights the synergy between drones and 5G networks. With ultra-low latency and high data throughput, 5G enables real-time video, dynamic rerouting, and responsive control—all essential for safe, flexible, and scalable UAV missions. Use cases illustrate how drones adapt to changing environmental conditions through ROCC-based control.

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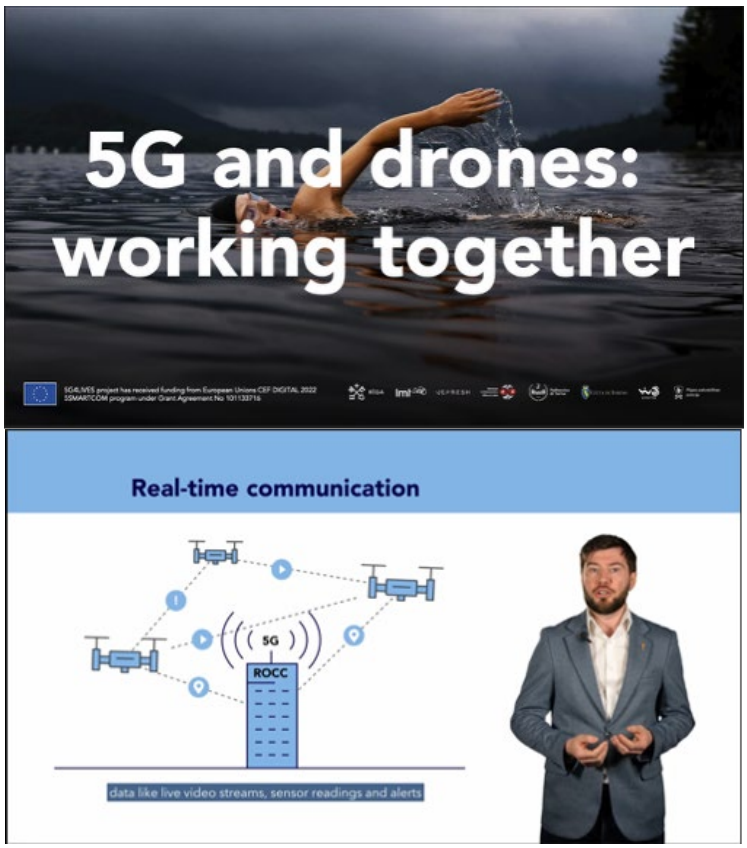

FIGURE 9. 5G + UAVS: WORKING TOGETHER, TITLE SLIDE AND VIDEO SCREENSHOT.

3. The Lifeguard Platform and Workflow

Presented by:

- Klāvs Balamovskis-Kalniņš, Chief Project Manager of Smart City Projects, Riga City Council

The 5G4LIVES platform integrates drones, AI, sensors, and command infrastructure into a unified safety system. The module describes how this platform allows for automated, continuous monitoring of areas like Vecāķi Beach and Ķīšezers Lake. Examples show how the platform reduced rescue response times by over 10 minutes and allowed 24/7 patrols with fewer human resources.

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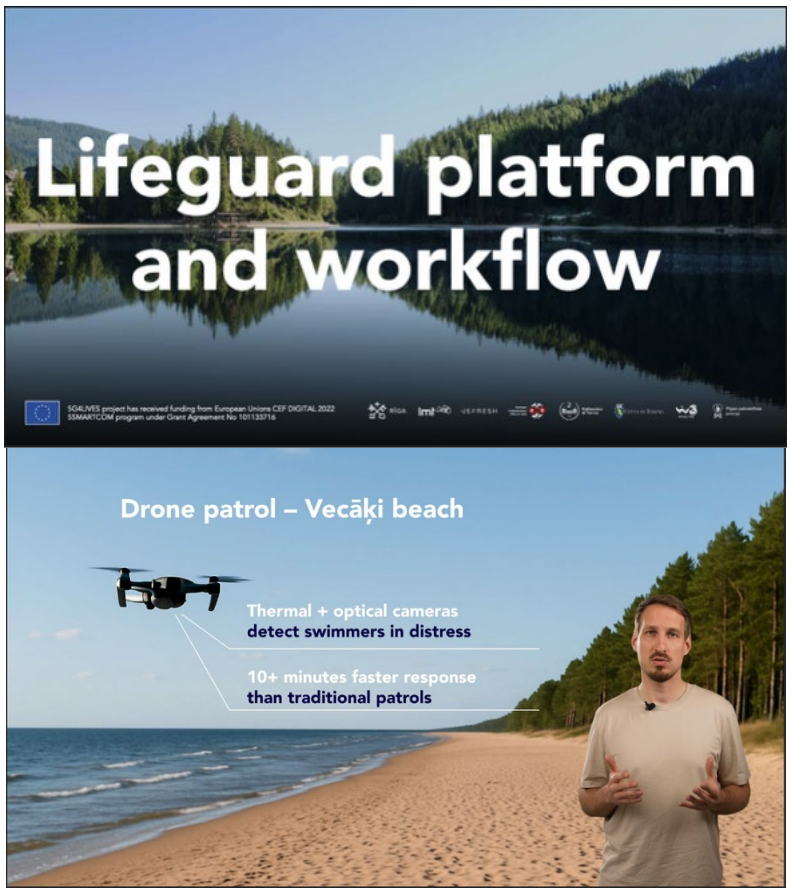

FIGURE 10. LIFEGUARD PLATFORM, WORKFLOW TITLE SLIDE, AND VIDEO SCREENSHOT.

4. Mission Planning Essentials

Presented by:

- Stefano Primatesta, Assistant Professor, Department of Mechanical and Aerospace Engineering, Politecnico di Torino

This chapter outlines the tools and planning procedures used to prepare UAV flights. It covers the use of high-resolution maps, weather forecasts, and 5G signal heatmaps to design safe and efficient flight paths tailored to seasonal risks or operational needs.

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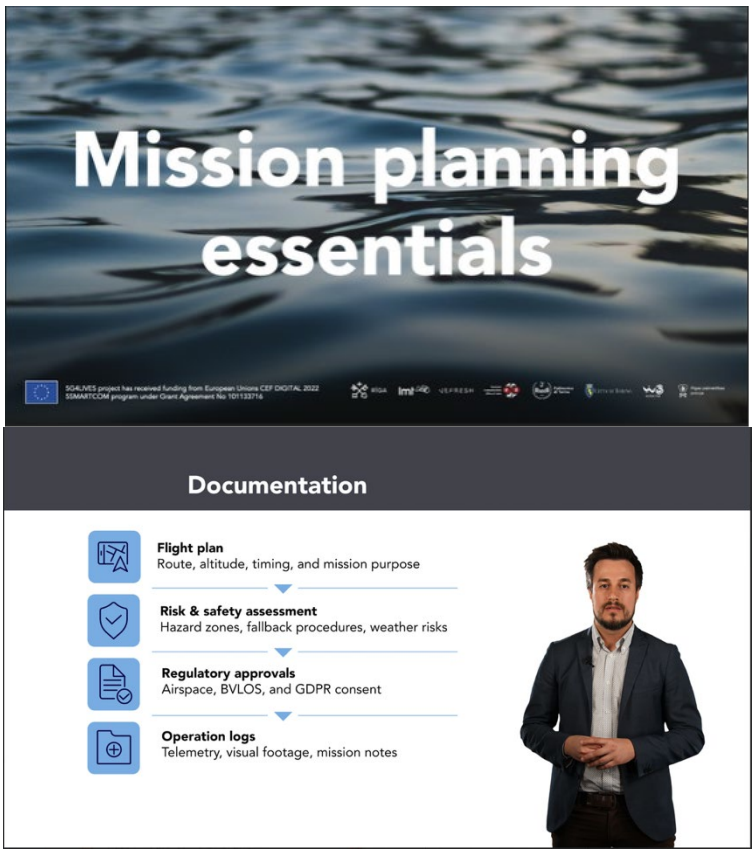

FIGURE 11. MISSION PLANNING ESSENTIALS TITLE SLIDE AND VIDEO SCREENSHOT.

5. SETTING UP THE TECHNOLOGY

Presented by:

- Ņikita Kazakevičs, Ecosystem Partnerships Lead, Innovation Development Division, LMT
- Stefano Primatesta, Assistant Professor, Department of Mechanical and Aerospace Engineering, Politecnico di Torino

The section explains the technical setup behind 5G4LIVES operations, from fixed 5G base stations in Riga to mobile 5G vans in Turin. It introduces UAV docking stations as smart hubs that support automated take-off, charging, and environmental monitoring. The module also covers the software architecture (AWS, ROS2) used for mission planning and control.

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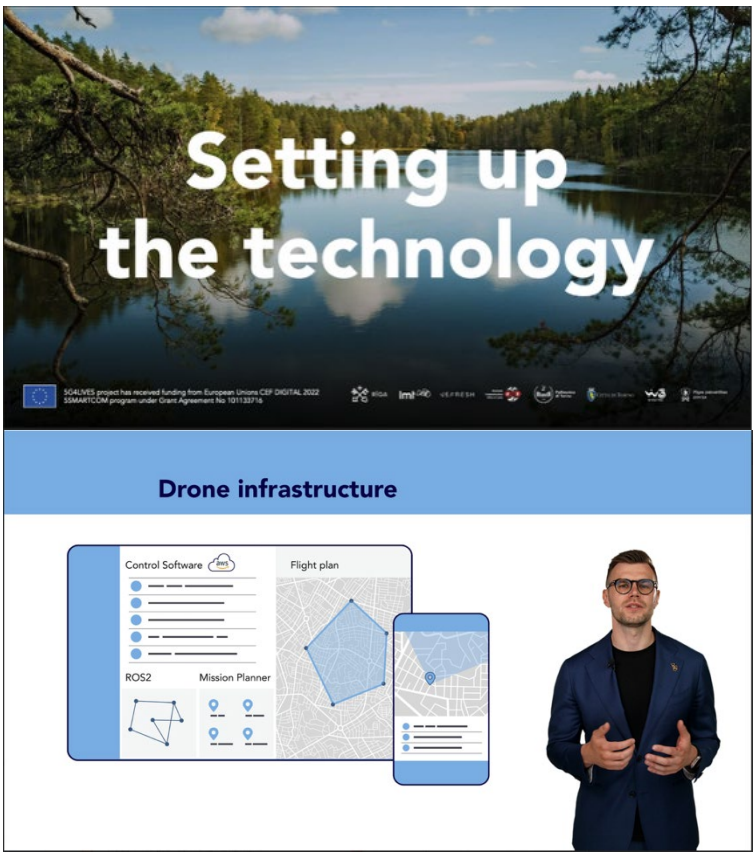

FIGURE 12. SETTING UP THE TECHNOLOGY TITLE SLIDE AND VIDEO SCREENSHOT.

6. SAFETY AND CYBERSECURITY

Presented by:

- Stefano Primatesta, Assistant Professor, Department of Mechanical and Aerospace Engineering, Politecnico di Torino

The chapter focuses on system integrity. It presents multiple safety redundancies for UAV operations and explains how pilots can intervene manually at any point. It also details cybersecurity protocols, GDPR alignment, data encryption, and access controls, ensuring missions remain secure, compliant, and trustworthy.

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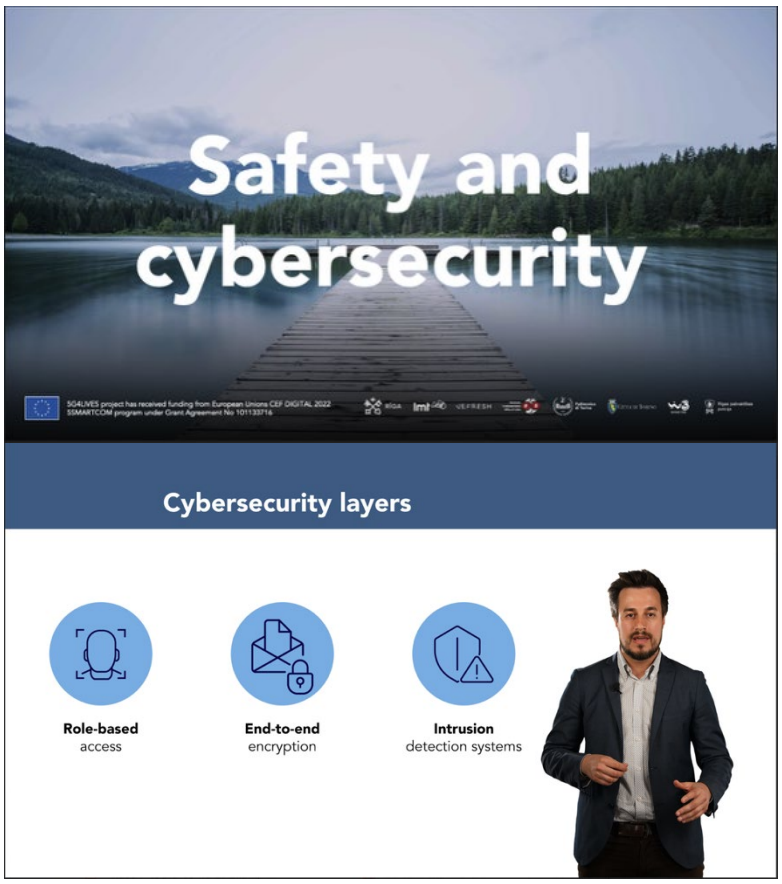

FIGURE 13. SAFETY AND CYBERSECURITY TITLE SLIDE AND VIDEO SCREENSHOT.

7. SMART SKIES: HOW 5G SPECTRUM KEEPS DRONES CONNECTED

Presented by:

- Lauris Labanovskis, Head of National Spectrum Monitoring Division, Electronic Communications Office of Latvia

This section introduces the basics of mobile spectrum use for drones and explains why 5G is the preferred option over Wi-Fi or 4G for UAV operations. 5G offers lower latency, higher capacity, and more stable connections - essential for BVLOS flights and real-time video streaming. Participants learn that UAVs must operate within regulated frequency bands, which are harmonised at the EU level but are still subject to national restrictions.

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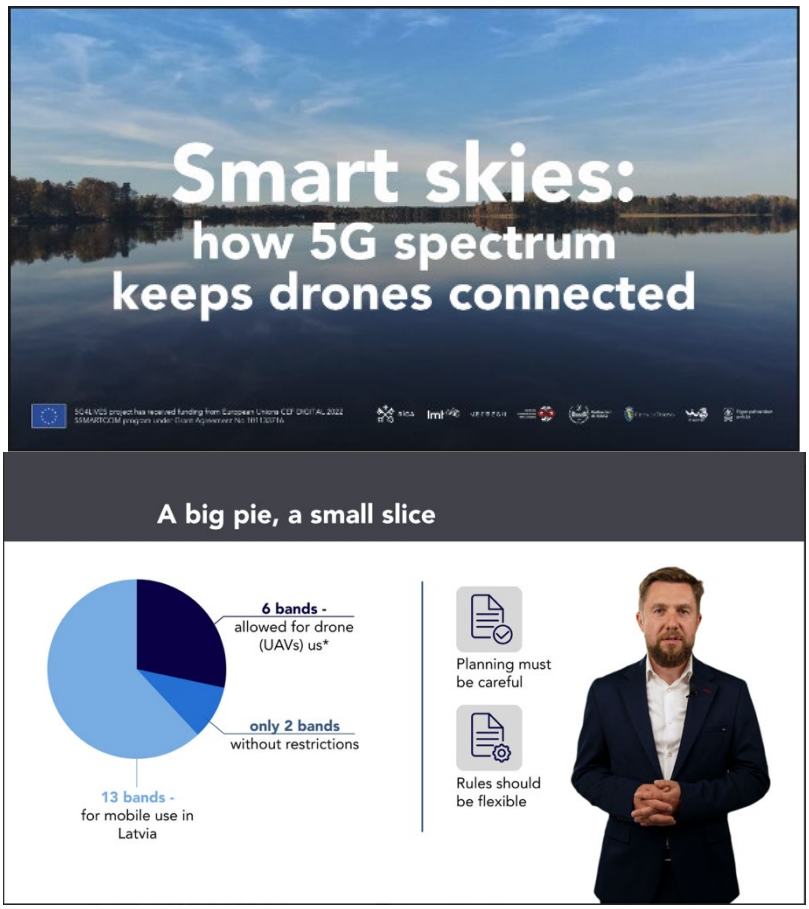

FIGURE 14. SMART SKIES: HOW 5G SPECTRUM KEEPS DRONES CONNECTED, TITLE SLIDE AND VIDEO SCREENSHOT.

8. SKY-CHECK: MEASURING 5G FOR DRONES

Presented by:

- Lauris Labanovskis, Head of National Spectrum Monitoring Division, Electronic Communications Office of Latvia

The chapter explains how 5G4LIVES tested real-world 5G coverage for drone flights. Since mobile networks are designed for ground-level use, signal strength and quality in the air can vary significantly. The project developed a practical measurement approach using UAVs to assess both signal coverage (passive testing) and network performance (active testing).

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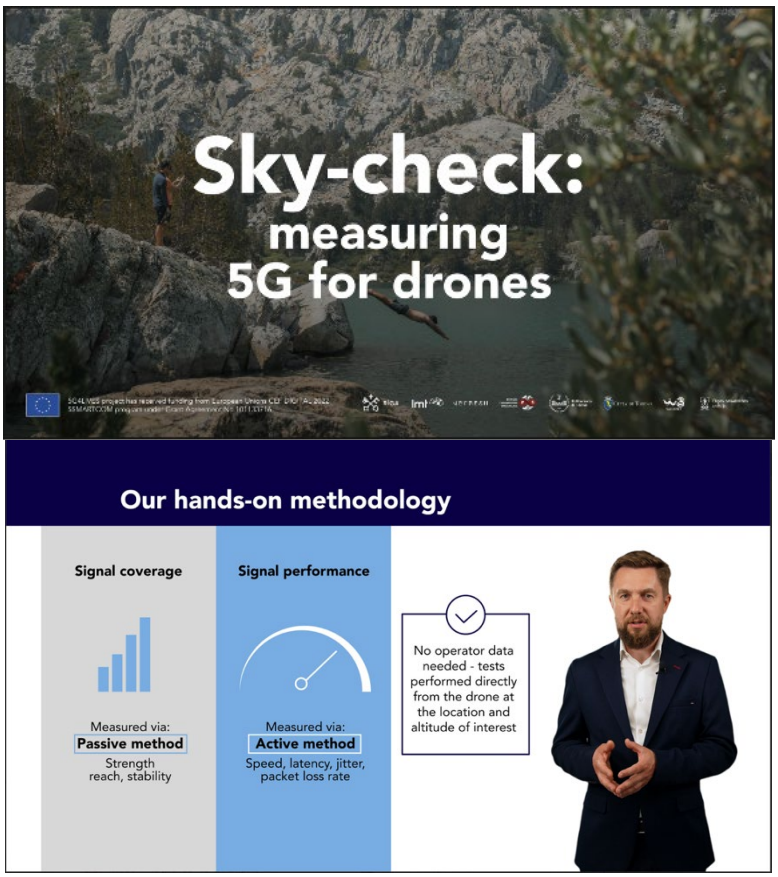

FIGURE 15. SKY-CHECK: MEASURING 5G FOR DRONES TITLE SLIDE AND VIDEO SCREENSHOT.

By completing Module 2, participants gain a comprehensive understanding of the technical architecture behind the 5G4LIVES system and the operational procedures that enable real-time, safe, and effective drone missions in public safety contexts.

2.3. Module 3: Real-world Deployment and Measurable Impact

2.3.1. Description

Module 3 focuses on how the 5G4LIVES system performs in real-world conditions. It showcases live deployments in Riga and Turin and highlights how the integrated 5G + UAV platform was used during water rescues, wildfire simulations, and landslide surveillance. The module also introduces a framework for assessing the system's effectiveness using performance metrics, environmental sustainability indicators, and social benefits for citizens.

2.3.2. Learning Objectives

After completing this module, participants will be able to:

- Describe how the 5G4LIVES system was deployed and tested in actual urban and natural environments.
- Understand key performance indicators used to evaluate speed, efficiency, and coordination.
- Identify how the project contributes to sustainability goals and environmental impact reduction.
- Recognise the broader social benefits of faster, safer, and smarter emergency response systems.

2.3.3. Content Overview

5G4LIVES project has received funding from European Union's CEF Digital programme 5G for Smart Communities under grant agreement no. 101133716

1. Demonstrations in Action

Presented by:

- Staņislavs Šeiko, Head of Strategic Planning, Riga Municipal Police
- Stefano Primatesta, Assistant Professor, Department of Mechanical and Aerospace Engineering, Politecnico di Torino

This section highlights pilot deployments in both countries. In Riga, drones are to be used to detect and respond to real-time rescue scenarios at Vecāķi Beach and for ice monitoring at Ķīšezers Lake. In Turin, drones are to be deployed in wildfire simulations and BVLOS landslide monitoring missions. Each example demonstrates faster incident detection, improved coordination, and smarter resource use.

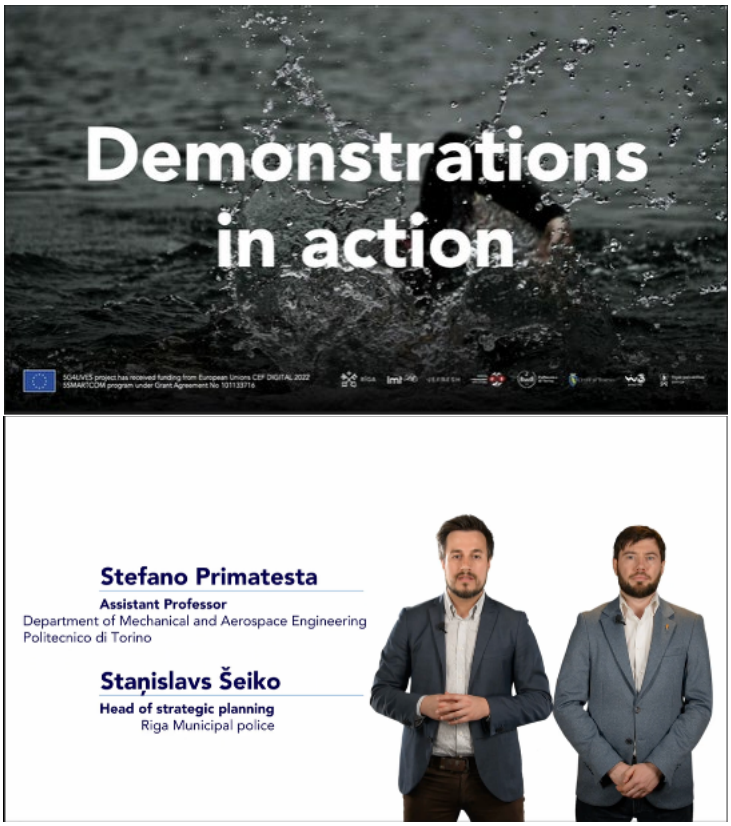

FIGURE 16. DEMONSTRATIONS IN ACTION, TITLE SLIDE, AND VIDEO SCREENSHOT.

2. Performance Metrics

Presented by:

- Staņislavs Šeiko, Head of Strategic Planning, Riga Municipal Police

Participants are introduced to a structured set of KPIs used to evaluate the system's effectiveness. These include:

- Time to dispatch (UAV launch time after incident detection)
- UAV-to-human coordination (communication and decision-making)
- Data quality (accuracy, reliability, and actionability of video and sensor data) - the results show significant reductions in average rescue response times (by 8–12 minutes), 97% flight reliability, and high user satisfaction across both pilot sites.

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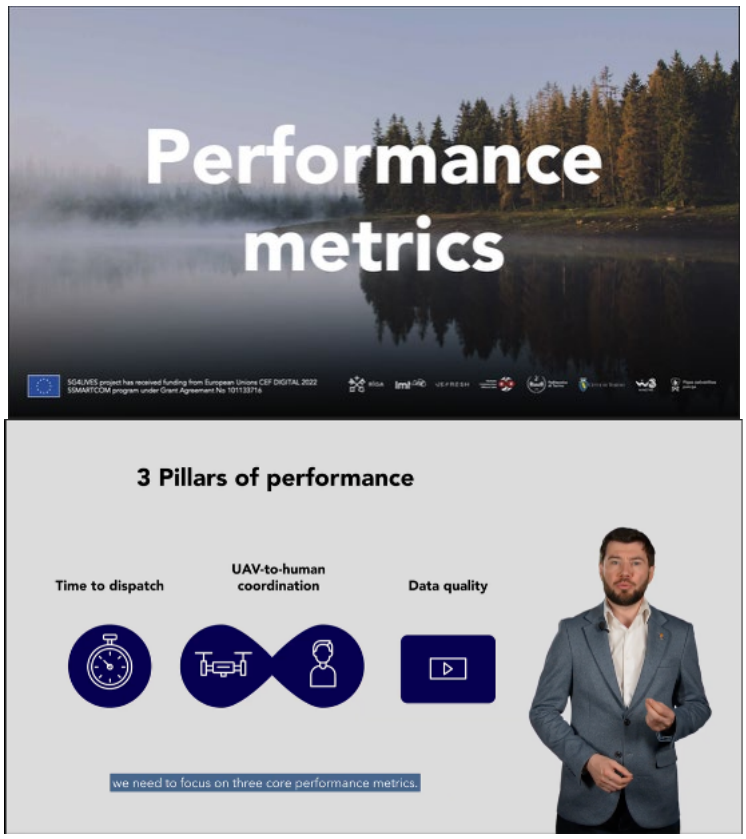

FIGURE 17. PERFORMANCE METRICS TITLE SLIDE AND VIDEO SCREENSHOT.

3. GREEN TECHNOLOGY AND SUSTAINABILITY

Presented by:

- Andris Bačkurs, Director, Project Manager, Latvian Hydrogen Association

The Chapter outlines the environmental benefits of using electric UAVs over fossil fuel-powered patrol vehicles or boats. Drones reduced CO_2 emissions (up to 120 kg/month in Riga), minimised noise pollution, and demonstrated more energy-efficient operations through optimised flight paths. Smart routing and reusable drone components further support a circular and low-impact technology model.

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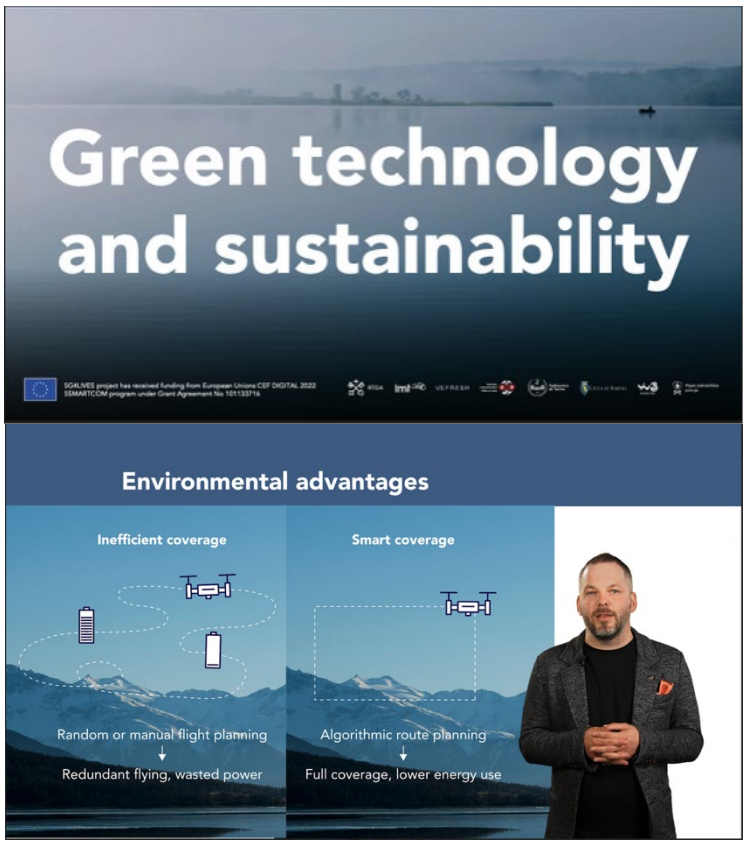

FIGURE 18. GREEN TECHNOLOGY AND SUSTAINABILITY TITLE SLIDE AND VIDEO SCREENSHOT.

4. Social Benefits for Citizens

Presented by:

- Lorenzo Pessotto, Director, European Projects Expert, Innovation and EU Projects Division, Comune di Torino

Beyond technology, this section explores how 5G4LIVES improves safety outcomes for residents. Drones extend coverage to remote or poorly lit areas, enabling proactive monitoring and early intervention. Real-time situational awareness improves decision-making and reduces responder fatigue. Public workshops and transparent communication strategies are also introduced to foster citizen trust and acceptance.

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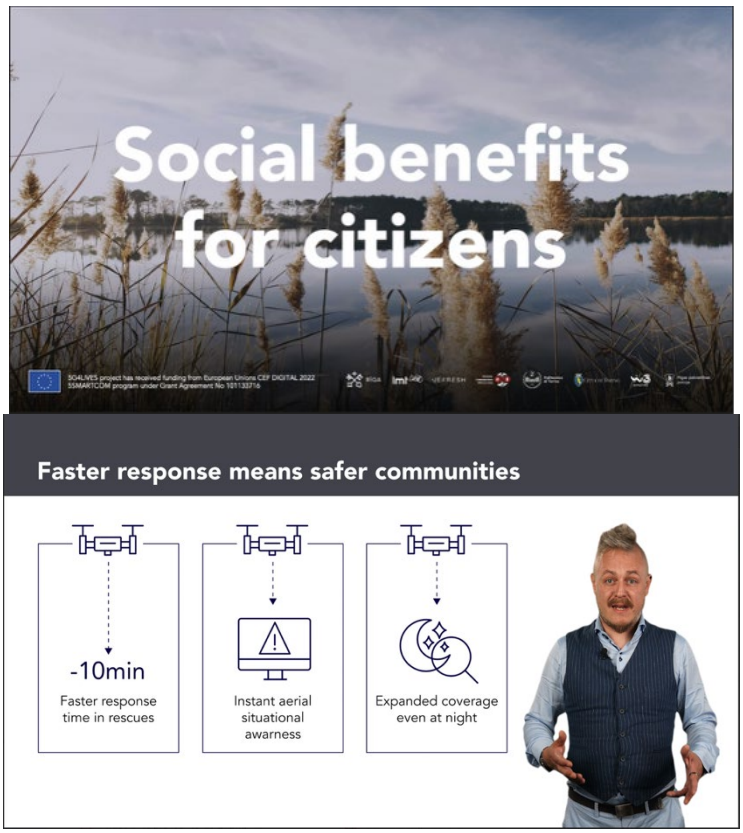

FIGURE 19. SOCIAL BENEFITS FOR CITIZENS: TITLE SLIDE AND VIDEO SCREENSHOT.

By the end of Module 3, participants will have a solid understanding of the measurable value of the 5G4LIVES system, both in terms of operational impact and broader social and environmental benefits.

2.4. Module 4: Strategic Outlook and Policy Considerations

2.4.1. Description

Module 4 provides a forward-looking perspective on how the 5G4LIVES system can be scaled, replicated, and governed responsibly across diverse European regions. It explores the legal and ethical frameworks guiding drone deployment, strategies for community acceptance, and the institutional tools needed to expand the system beyond the pilot sites. The module concludes the training package by summarising strategic insights for municipalities and decision-makers.

2.4.2. Learning Objectives

After completing this module, participants will be able to:

- Understand the regulatory and ethical requirements for deploying UAVs and 5G in civil protection.
- Identify the conditions for replicating and scaling the system in new environments.
- Recognise the importance of involving end users and citizens early in the adoption process.
- Explore strategic pathways for long-term integration and funding of 5G-enabled emergency technologies.

2.4.3. Content Overview

1. Legal and Ethical Aspects

Presented by:

- Staņislavs Šeiko, Head of Strategic Planning, Riga Municipal Police

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This section explains how 5G4LIVES operates within the EU and national regulatory frameworks, including compliance with EASA, national aviation bodies (ENAC, CAA), GDPR, and ISO-certified data standards. Topics include airspace coordination, mandatory insurance, public notifications, and the ethical review process involving local ethics boards (e.g. in Turin). The focus is on building trust while upholding privacy, transparency, and safety.

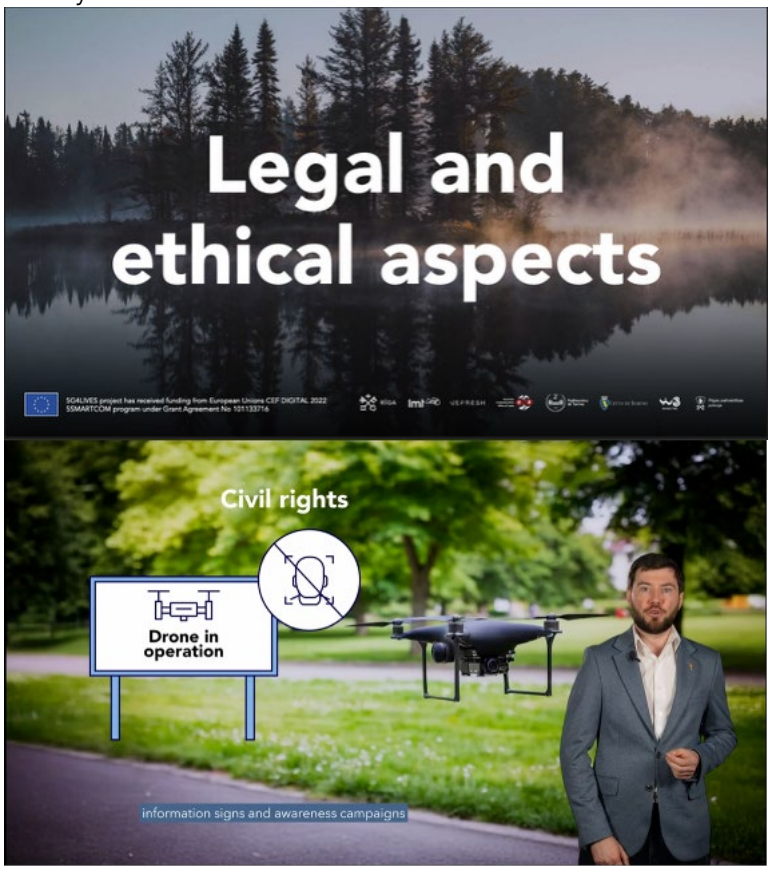

FIGURE 20. LEGAL AND ETHICAL ASPECTS TITLE SLIDE AND VIDEO SCREENSHOT.

2. Replication and Scale

Presented by:

- Domenico Spanò, Business Marketing Manager, Wind Tre

Participants learn how the 5G4LIVES system has been designed with modularity and open standards in mind, allowing cities of varying sizes and infrastructures to adapt the system to their own needs. Examples include scaling from a few drones and one base station to a full regional network. The use of interoperable components reduces vendor lock-in and supports integration with existing emergency response platforms.

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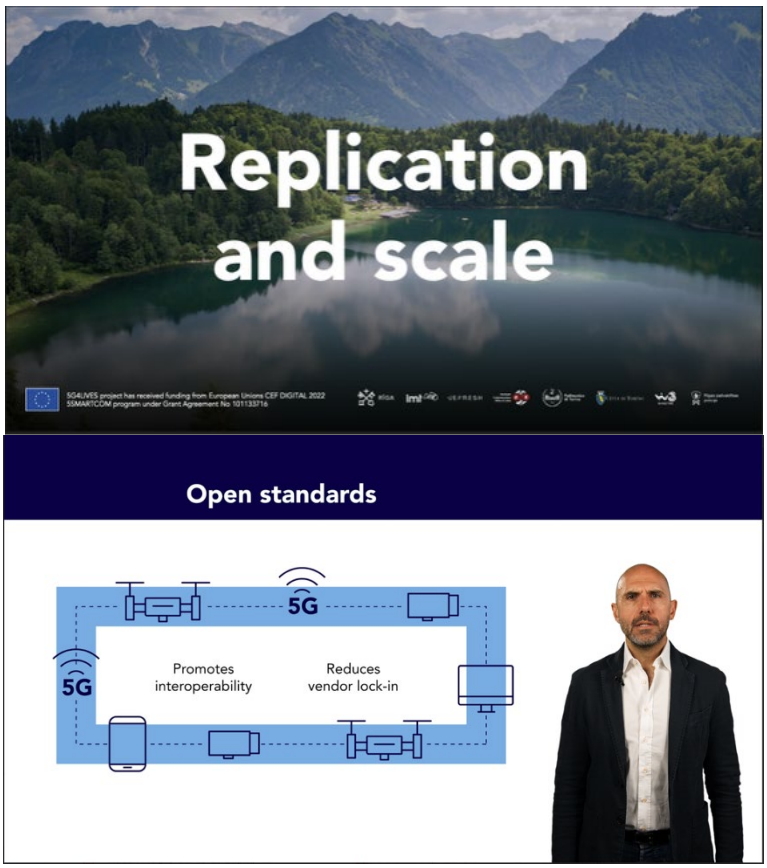

FIGURE 21. REPLICATE AND SCALE THE TITLE SLIDE AND VIDEO SCREENSHOT.

3. Local Residents on Drone Usage in Rescue Operations

Presented by:

- Olga Bogdanova, Vecāķi resident
- Anrī Leimanis, Mežaparks (near Ķīšezers Lake) resident

To ensure local relevance and social acceptance, 5G4LIVES engaged nearby residents early in the project. Two interviews were conducted with residents from Vecāķi and Mežaparks (near Ķīšezers Lake), who shared real-life examples of emergencies where drones could make a difference.

4. Summary and Strategic Outlook

Presented by:

- Laila Zemīte, Lead Project Manager, Riga City Council Digital Agency

The final chapter outlines steps municipalities can take to begin implementing similar systems. Recommendations include identifying high-risk zones, involving local responders early, securing funding through EU programs (e.g. Digital Europe, Smart Communities), and planning for long-term integration into urban safety strategies. The training ends by reinforcing the idea that even small-scale pilots can yield meaningful results and pave the way for broader adoption.

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FIGURE 22. SUMMARY AND STRATEGIC OUTLOOK TITLE SLIDE AND VIDEO SCREENSHOT.

After Module 4, participants gain the strategic insights needed to move from pilot deployment to sustainable adoption, ensuring that the lessons and tools of 5G4LIVES can be replicated effectively in other EU contexts.

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3. WEBINARS AND TRAINING EVENTS

3.1. PRESENTATION ON PARTNERS MEETING (10.06.)

FIGURE 23. PRESENTATION OF THE PROGRESS OF THE TRAINING PACKAGE DURING THE 5G4LIVES MID-TERM MEETING

A key milestone in the development process was the presentation of the progress of Training Package 1 at the 5G4LIVES Mid-Term Meeting on 10 June 2025 in Riga. This meeting provided an opportunity to share our methodology, early outputs, and preview content, and to call for partner engagement in the development of the second training package (TP2).
The presentation was divided into four main parts:

1. How we planned and structured the Training Package

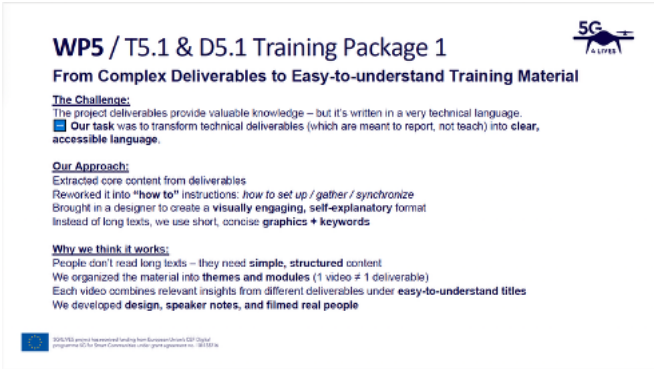

FIGURE 24. MID-TERM MEETING TRAINING PACKAGE 1 PRESENTATION

The starting point for TP1 was the recognition that most project deliverables—although rich in technical content—are not formatted for educational purposes. Our task was to:

- **Extract relevant insights** from various project outputs, including deliverables.
- **Reframe the content** into practical, easy-to-understand "how-to" material.
- **Visualise workflows and systems** via design and multimedia.
- **Create a modular structure** based on thematic coherence rather than a 1:1 mapping with deliverables.

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This approach resulted in a format focused on **short, structured videos** and **visually engaging slides** rather than dense text. A professional designer and videographer supported the development to ensure clarity, consistency, and visual appeal.

2. Key Content Structuring Decisions

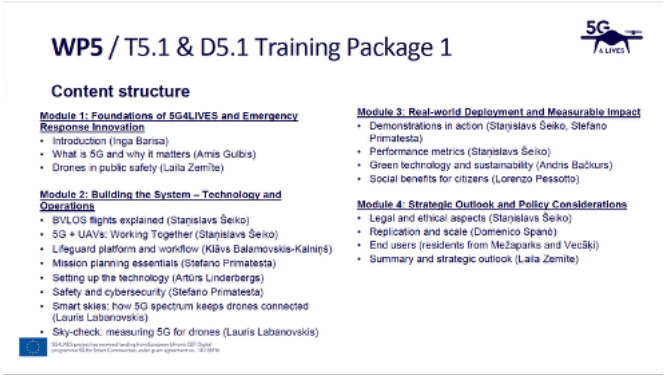

FIGURE 25. MID-TERM MEETING TRAINING PACKAGE 1 PRESENTATION

At the Mid-term Meeting, we outlined the rationale for splitting the content into four thematic modules:

- Module 1: Foundations of 5G4LIVES and Emergency Response Innovation
  Introduces the 5G4LIVES project, its purpose, and its use of drones and 5G in public safety contexts.
- Module 2: Building the System – Technology and Operations
  Explains how UAVs and 5G networks interact in practice, focusing on BVLOS, mission planning, cybersecurity, and system infrastructure.
- Module 3: Real-world Deployment and Measurable Impact
  Highlights demonstration results from Riga and Turin, performance metrics, environmental sustainability, and societal benefits.
- Module 4: Strategic Outlook and Policy Considerations
  Covers legal/ethical considerations, scaling potential, and long-term strategy for replication in other EU regions.

Each module was composed of concise video segments delivered by project partners directly involved in the work, including police, municipal representatives, drone operators, and technical experts. Speaker notes were prepared to ensure message consistency and technical accuracy.

3. Preview Materials and Behind-the-Scenes

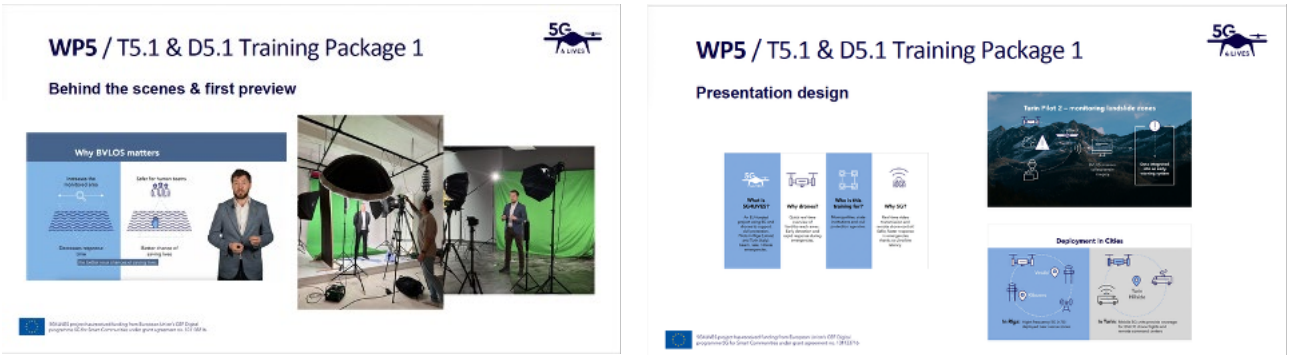

FIGURE 26. CONTENT OF THE MID-TERM MEETING TRAINING PACKAGE 1 PRESENTATION

During the meeting, we shared:

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- A **first preview video** clip demonstrating the visual style, speaker delivery, and content pacing. (Link: https://drive.google.com/file/d/1OZkFyzQzKeq-WxAtYuJ7XX_F8P2dPhon/view)
- **Behind-the-scenes images** and production notes, including footage preparation, speaker briefing, and studio filming.

This preview confirmed the importance of showing real people from the project and using high-quality, structured media.

4. Call for Partner Engagement – Towards TP2

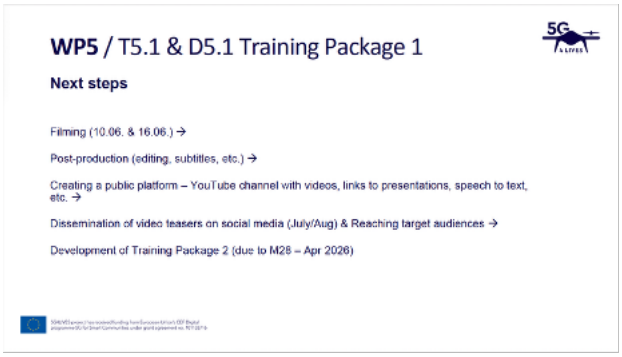

FIGURE 27. MID-TERM MEETING TRAINING PACKAGE 1 PRESENTATION

As part of the presentation, we emphasised the need for proactive partner involvement in the next phase (TP2). As Training Package 1 mainly covers the pre-demo stage of the project, TP 2 will build upon real-world demonstrations and field lessons, requiring timely input from those directly participating in deployment and monitoring activities.
We highlighted several risks that must be mitigated:

- Incomplete or delayed demo results may affect content readiness for TP2 (due to M28).
- Additional materials (e.g., case studies, resident feedback, visuals) must be submitted promptly to allow integration.

Partners were asked to:

- Document key insights during live demos (autumn 2025/winter 2026).
- Provide feedback on TP1 content and structure.
- Identify speakers and local narratives for the next wave of training videos.

3.2. Training Events Plan

While the primary dissemination format for Training Package 1 (TP1) is through an online, open-access platform, additional training activities will be organised to ensure broader stakeholder engagement and deeper learning impact.

In autumn 2025, a major project demonstration event is planned to take place in Riga, Latvia. This event presents a key opportunity to complement the online training content with live, hands-on activities and stakeholder interaction.

The demonstration programme will be closely aligned with the structure and thematic focus of TP1. During the event, participants will be introduced to the content architecture of Training Package 1, including its four core modules and key learning objectives. This will be supported by live drone demonstrations in real operational environments, specifically the 5G4LIVES pilot zones in Ķīšezers and Vecāķi, Riga.

These on-site demonstrations will reinforce the training content by offering a practical, visual illustration of the concepts and workflows explained in the online materials, such as BVLOS flights, mission planning, and real-time situational awareness enabled by 5G-connected UAVs.

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The event is expected to attract a diverse group of stakeholders, including:

- Local and regional authorities from municipalities across Latvia.
- Representatives of technology companies and civic organisations involved in digital transformation and emergency services.
- International stakeholders, such as municipal and police representatives from various European countries, engaged in public safety innovation.

This blended training approach — combining digital resources with live demonstrations and peer exchange — is designed to ensure better knowledge retention, network building, and encouragement of replication efforts beyond the pilot regions.

These stakeholder interactions and practical sessions will also serve as a valuable input for the development of Training Package 2, which will build on real-world demonstration insights and target a wider audience with post-demo reflections and applied lessons.

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4. OUTLOOK AND NEXT STEPS

With the completion of Training Package 1, the 5G4LIVES project sets the stage for an expanded and more immersive training phase aimed at broader stakeholder engagement. While TP1 is disseminated primarily via an online platform for open access and long-term availability, complementary in-person activities are planned to deepen impact and support knowledge transfer through live interaction and practical application.

A key activity in this regard will be the autumn 2025 demonstration event in Riga, where the TP1 structure and core modules will be showcased alongside live drone operations at the pilot sites of Ķīšezers and Vecāķi beach. These demonstrations will bring the training content to life, highlighting practical applications such as BVLOS flights, real-time monitoring, and 5G network performance in emergency scenarios. The event is expected to attract a diverse group of stakeholders, including local authorities, emergency responders, technology providers, and public sector representatives from across Europe.

The Riga event will also serve as a bridge toward the development of Training Package 2 (TP2), scheduled for Month 28. TP2 will build upon field-tested experience, use-cases and demonstration feedback, offering a more advanced and inclusive learning resource for a wider range of end-users and collaborators. In addition to updated content, TP2 will incorporate feedback collected from TP1 users, as well as statistics on audience reach, engagement, and usability, helping to refine both the content and delivery formats. Partner input will be essential to ensure the integration of real-world insights, success stories, and lessons learned. To that end, all partners are encouraged to document key findings from the demonstrations and actively contribute speaker input, visuals, and contextual content for TP2 production.

This blended training approach—combining structured digital content with live, applied learning—will support long-term capacity building and replication of the 5G4LIVES model across other EU regions, contributing to a safer, smarter, and more connected public safety ecosystem.

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CONCLUSIONS

The development and launch of TP1 mark a key milestone in the 5G4LIVES project's mission to build stakeholder capacity and prepare the ground for scalable 5G-enabled emergency response solutions. TP1 has successfully translated technical insights from early project phases into a clear, engaging, and accessible learning format, equipping first end-users in Riga and Turin with the foundational knowledge needed to operate and adopt the system.

The training materials—designed in close collaboration with project partners—have combined technical accuracy with high production quality and user-focused presentation. By integrating real-world use cases, local narratives, and multimedia elements, TP1 supports learning across professional profiles and cultural contexts, while also reinforcing the project's broader communication and community-building goals.

Beyond its educational function, TP1 has contributed to the wider visibility and legitimacy of the 5G4LIVES initiative. It serves as a public-facing resource that showcases the societal value of drone-based emergency technologies and fosters interest among external stakeholders, from municipal leaders to civil protection agencies and European innovation networks.

This deliverable also lays the groundwork for the next phase of the training programme. The upcoming TP2 will integrate lessons learned from real-world demonstrations, user feedback, and performance data, offering a deeper and more applied learning experience. Planned live events and demonstration activities—starting with the autumn 2025 showcase in Riga—will further enhance the reach, relevance, and impact of the training.

In summary, D5.1 confirms that the 5G4LIVES project is on a strong trajectory toward replicable, impactful, and well-communicated innovation in public safety. As the project moves into its next phase, TP1 provides both a solid educational foundation and a scalable communication model, enabling broader adoption and long-term integration of 5G-enabled emergency technologies across European regions.

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