



5G-Hub Stakeholder Event - <https://www.5g-hub.eu/>

“5G via Satellite for Humanitarian Response and Emergency Services”

May 14, 2026, Italian Red Cross - National Preparedness Center, Via Gian Carlo Clerici 5,
20091, Bresso (MI), Italy

PROGRAM - draft

9:30 – 9:45 | Welcome and registration

9:45 – 10:15 | Opening and introduction Keynote

EUSPA Representative – details to come

10:15 – 11:00 | Coffee Break with Guided Tour to the CRI Rubble Field for Earthquake Preparedness Exercises, CRI drone exhibition, ONESOURCE demonstration

11:00 – 12:15 | Mission-Critical Services and Operations on the Field

Mission-Critical technological gaps and R&D advancements in Search and Rescue operations.

Harris Georgiou – Hellenic Rescue Team of Attica – Greece

Abstract: in Search and Rescue (SAR) operations, the First Responders (FR) are called upon to act in a wide range of environments, conditions and limitations, associated to both external and internal factors. Weather, location, access, infrastructure, travel time, are only some of these external factors, while team’s readiness level, organization, skill level and experience, toolkits available, are some of the most important internal factors. For Urban Search and Rescue

(USAR) the most critical factor, besides FR safety, is speed. Every USAR mission is an effort against time, beginning as a speed race during the first few hours after the disaster event and gradually becoming a marathon run as the hotzone gets cleared in a more focused way. Lack of preparedness, coordination and poor perimeter monitoring is, as expected, a major factor in large-scale disasters. Specific differences in task prioritization and speed are evident between small-scale events like train accidents and large-scale events like devastating earthquakes, leading to corresponding changes in the deployment or even the planning phases of a SAR mission. Citizens and spontaneous volunteers are important assets often overlooked. The “last mile gap” and changes in First Aid / medical response are also crucial factors that emerge more evidently as the scale of the disaster increases. In the non-operational context, a few important guidelines and good practices can be proposed for SAR-related R&D projects. Specifically, several limitations and hindering factors in developing new technologies may work counter-productively, often very early on while in design or prototyping phases. These include very limited or no provision budget-wise for full IPR protection of the developed technologies, the low Technology Readiness Level (TRL) expectancy, limited focus to standardization and interoperability outcomes, as well as the inherently limited / highly specialized FR “market” for these products and tools. Based on the experience from DRS cluster projects of EU Horizon H2020 in recent years, important guidelines and good practices can be formulated in relation to expectation management for both FRs and technical partners, early end-user involvement in all the phase and extensive field trials throughout the projects’ lifetime.



CV: Harris Georgiou (MSc,PhD) is the current LEAR, scientific advisor and field operator with the USAR and Water elements of the team since 2008. He is a Machine Learning and Data Scientist specializing in mobility analytics, big data, dynamic systems, complex systems, signal/image processing, industrial process optimization, Bioinformatics and Artificial Intelligence. He is a R&D consultant and senior researcher for more than 25 years in the field in multiple post-doctorate assignments, focusing on in sparse learning models and fMRI/EEG signal for applications in Biomedicine and Bioinformatics, next-generation air traffic control, maritime surveillance & urban mobility via Big data analytics & Machine Learning methods. Since 2016 he is the active LEAR, R&D team coordinator, scientific advisor and field operator (USAR, underwater/scuba) with the Hellenic Rescue Team of Attica (HRTA) in several EU-funded R&D projects (H2020-H2022) for civil protection, miniaturized robotic equipment & sensors for SAR operations and next-

generation advanced technologies for first responders. He is also a course leader/lecturer, as well as a private consultant and project participant, in collaboration with over 250 academic institutions, organizations, and companies. He has published 97 peer-reviewed journal & conference papers, plus 148 independent & open-access works, technical reports, magazine articles, software toolboxes and open-access datasets, an academic textbook on Data Science, a two-volume book series on medical imaging and diagnostic image analysis, contributed in six other textbooks and one U.S. patent in related R&D areas. He has been a member of over 130 technical committees in international scientific journals & conference.

Mission-Critical Decision Support and Data Ecosystems for Humanitarian Response Enabled by 5G and Satellite Networks

Simone Sterlacchini – Consiglio Nazionale delle Ricerche – Italy

Abstract: The increasing frequency and severity of extreme events require mission-critical digital infrastructures able to ensure operational continuity, reliability, and timely decision support in highly dynamic emergency contexts. Within this framework, two integrated technological solutions designed and implemented to directly support humanitarian operations and emergency management activities of the Croce Rossa Italiana, are presented. The first solution is a Decision Support System (DSS) based on the formalization of executable procedural workflows, fully compliant with institutional regulations and operational protocols. The DSS supports decision-makers throughout preparedness, alert, and emergency phases by providing guided actions, role-based responsibilities, resource availability, and real-time scenario updates. Its mission-critical nature lies in its ability to operate under time pressure and infrastructure stress, ensuring traceability, coordination, and adaptive response even during rapidly evolving and large-scale emergencies. The second solution is an integrated data analysis and management GIS-based platform for institutional data, research products, and next-generation data streams, including satellite observations, UAV-based sensors, in situ monitoring systems, and human sensors through Volunteered

Geographic Information (VGI). The platform enables real-time data ingestion, validation, and fusion, forming the information backbone of the DSS and ensuring continuous situational awareness through dynamically updated hazard, impact, and exposure maps. Both the DSS and the GIS-based platform were operationally deployed and tested during the REDLEX real-world exercise, conducted by the Croce Rossa Italiana in October 2024. The solutions supported emergency managers in executing procedural workflows, accessing real-time multi-source data, and adapting response strategies across multiple simulated extreme-event scenarios. Their use during REDLEX demonstrated the mission-critical reliability of the DSS and platform under realistic operational conditions, including time pressure, data heterogeneity, and complex coordination needs. The exercise validated the effectiveness of the integrated approach in enhancing situational awareness, decision traceability, and inter-unit coordination. Overall, REDLEX provided concrete evidence of the readiness of these technologies (TRL \approx 7) for real humanitarian and emergency response operations. Together, the DSS and the GIS-based platform constitute a mission-critical digital ecosystem for humanitarian response, capable of transforming heterogeneous, multi-source data into actionable operational knowledge, reducing decision-making time, enhancing coordination efficiency, and strengthening the overall resilience of disaster response systems. The expected integration of the DSS and GIS-based platform with emerging 5G networks and satellite communication systems could significantly strengthen the resilience and responsiveness of emergency operations. In operational settings, 5G capabilities such as ultra-low latency would allow priority access for first responders and humanitarian actors, even in congested environments. This could enable near real-time transmission of geospatial data, live video feeds from drones, and sensor information directly into the DSS, improving situational awareness and shortening decision-making cycles. At the same time, satellite communication systems would provide complementary wide-area coverage and redundancy. In scenarios where terrestrial infrastructure is damaged or unavailable, satellite links could ensure continuity of command-and-control functions, sustained access to critical geospatial information, and operational continuity during partial network disruptions. Together, a hybrid terrestrial–satellite communication architecture could provide a resilient backbone for mission-critical and humanitarian services, supporting coordinated action across agencies and ensuring access to decision-support capabilities throughout all phases of emergency management.



CV: Simone Sterlacchini is a senior researcher at the Italian National Research Council (CNR), with long-standing experience in risk cycle: from hazard analysis to risk communication, including exposure, impact, vulnerability, expected loss, and territorial monitoring and emergency management. His scientific activity focuses on the integration of geospatial data, multi-hazard analysis, risk assessment and decision support systems for emergency management to support decision-makers. He has held key scientific and coordination roles in numerous national and European research projects, collaborating closely with civil protection authorities and humanitarian organizations. He has contributed to the development of operational DSS platforms adopted in real emergency and training contexts. His work bridges research and practice, fostering the transfer of scientific knowledge into institutional and operational

frameworks. He is actively involved in advisory and technical committees at national and international level. He has authored numerous peer-reviewed publications and technical reports. He regularly contributes to capacity-building and training activities for emergency managers and public institutions.

Mission-Critical Services and Operations on the Field: Lessons Learned from the Implementation of Full-Scale Preparedness Exercises and the Role of Satellite Communications

Christos Dimopoulos – CERIDES European University of Cyprus – Cyprus

Abstract: Full-Scale Preparedness Exercises provide a rare opportunity for civil protection authorities to comprehensively identify communication and coordination gaps in their capacity to respond effectively to disaster events. This presentation examines relevant findings from the evaluation of several Full-Scale Preparedness Exercises which were conducted under the European Union Civil Protection Mechanism (UCPM) Full-Scale Exercises Program. The Search & Rescue scenarios, developed in relation to various natural hazards, are initially described, and the communication platforms used during the

implementation of the UCPM Full-Scale Exercises are explained. The gaps and areas of improvement that were identified with regard to the use of communication platforms in real-life search and rescue operations are subsequently presented. Finally, the presentation discusses the role of broadband satellite services in addressing the identified communication and coordination gaps and limitations in the implementation of disaster response operations.



CV: Christos Dimopoulos is an Associate Professor of Computer Engineering and Decision Sciences at European University Cyprus and serves as the Co-Director of the Centre of Excellence in Risk and Decision Sciences (CERIDES). He holds a PhD and an M.Sc. in Control Systems from the University of Sheffield, along with a B.Sc. in Automation from the Technological Educational Institute of Piraeus. His academic and research expertise spans safety science, risk management, disaster management, and decision support systems. Dr. Dimopoulos has played a pivotal role in numerous high-profile international research projects, particularly within the Erasmus+ and DG-ECHO frameworks, focusing on civil protection and emergency response. Notably, he has served as the Head Evaluator for large-scale disaster simulation exercises (FSX) and is a recognized expert in the development of smart safety systems for industry. His work bridges the gap between theoretical decision sciences and practical applications in occupational safety and public health.

Title to be Defined - from remote

Marie-Christine Bonnamour – PSC-Europe – Belgium

Abstract: TBD



CV: Marie-Christine Bonnamour has long served as the Secretary General of Public Safety Communication Europe (PSCE), a Brussels-based organization dedicated to enhancing public safety through advanced communication technologies. With extensive experience in managing European networks and professional forums, Bonnamour coordinates the activities of the AISBL forum, facilitating collaboration between researchers, industry stakeholders, and end-users (such as law enforcement and emergency responders). She has represented the organization in numerous EU-funded projects, including EUCCS and BroadWay, and has spearheaded strategic partnerships, such as the one with the European Space Agency (ESA) to integrate satellite solutions into public safety missions. In addition to her operational leadership, she has contributed to publications and legal analyses regarding EU crisis response and single market regulations, solidifying PSCE's role as a vital bridge between European institutions and the operational communities in the field.

Title to be Defined - from remote

Presentation by a Representative of [emergency.lu](https://www.emergency.lu)

12:15 – 13:30 | Service Continuity with 5G Terrestrial and Federated Satellite Systems

Provisional: Presentation on IRIS² in the GOVSATCOM Context

Pietro di Giacomo – SES - Technical Lead EU Programmes – Luxembourg

Abstract:

CV:

Non-Terrestrial Networks standardization and integration with terrestrial networks

Giovanni Romano – Novamint – Italy

Abstract: In Release 17 3GPP specified Non-Terrestrial Networks (NTN) supporting voice, data and IoT applications. One of the key features of the 3GPP solution is the support of Direct-to-Device communication, i.e., the capability to connect commercial 5G smartphones to satellite network. This speech will provide an insight on the work done by 3GPP on the specification of NTN features, the adoption of 3GPP solutions as part of the ITU Recommendation on IMT-2020 satellite and on the requirement to provide global coverage with 6G technologies.



CV: Giovanni Romano is an ICT Consultant exploiting the experience acquired in 31 years with TIM Group to support SMEs on wireless standards and European Funded Projects. Since 2023 he is working with Novamint as 3GPP Expert, representing the company at 3GPP TSG RAN and with the role of 3GPP RAN ITU-R Ad-Hoc convener, the 3GPP appointed coordinator for the exchange of information between 3GPP and ITU-R. In TIM Group he was Coordinator of radio standards and actively participated to several standardization groups with the roles of alternate Board Member and Executive Committee member in O-RAN ALLIANCE and NGMN Alliance, and 3GPP TSG RAN vice-chair (2013-2017). Until 2005, Giovanni was project leader of several activities within the R&D center of Telecom Italia, including UMTS performance evaluation, quality of service verification, standardisation, field trials and testing. He is also author of papers and books (see “IMT-2020

Requirements and Realization”, published by Wiley). In 2020 Giovanni was indicated as one of the 100 most influential people on 5G by telecoms.com

Rethinking Global Digital Connectivity with Non-Terrestrial Networks

Giuseppe Piro – Politecnico di Bari – Italy

Abstract: Non-Terrestrial Networks are emerging as a pivotal component for extending the reach and robustness of global digital connectivity, complementing terrestrial infrastructures in the 5G-Advanced and early 6G landscape. The keynote examines the transition from conventional satellite communications toward 3GPP-based Non-Terrestrial Networks. It then presents recent research activities carried out within the PNRR RESTART project, focusing on integrated TN-NTN architectures, end-to-end orchestration and optimization methods, and representative proof-of-concept implementations. Particular emphasis is placed on the expected benefits in the application scenarios addressed by the 5G-HUB project. The keynote concludes by outlining open challenges and a forward-looking roadmap toward fully operational space networks, also supported by reproducible and scalable experimentation frameworks.

CV: Giuseppe Piro is a Full Professor in Telecommunications at the Polytechnic University of Bari (Italy) and co-



responsible of the “Experimental Laboratory of Integrated Terrestrial and Non-Terrestrial Networks and Services (iTNT-NS)” developed in the context of the PNRR PE14 RESTART Partnership. He received a first-level degree and a second-level degree (both cum laude) in Telecommunications Engineering from “Politecnico di Bari”, Italy, in 2006 and 2008, respectively. He received the Ph.D. degree in Electronic Engineering from “Politecnico di Bari”, Italy, in March 2012. His main research interests include mobile communication systems, integrated terrestrial and non-terrestrial networks, physical and network layer security, intent-based networking, Internet of Things, Software-Defined Networking, Information-Centric Networking, nano-scale communications, and network simulation tools. At the time of this writing, he holds the role of Principal Investigator for the PRIN project “Integrated Terrestrial/Space wireless networks for broadband connectivity and IoT services (INSPIRE)” and of Local Investigator (at the

Polytechnic University of Bari) for the ISP5G+ Innovative Security Paradigms” project funded by the PNRR PE7 SERICS Partnership. He has been Local Investigator for the PRIN project “Realtime Control of 5G Wireless Networks: Taming the Complexity of Future Transmission and Computation Challenges” and of two projects funded by the European Space Agency (SATIABLE, NB-IoT4Space). He has been also involved in EU H2020 projects (FANTASTIC-5G, BONVOYAGE, symbloTe, and GUARD), Italian MIUR PON projects (Pico&Pro, FURTHER, AGREED, RAFAEL), and Italian MISE projects (Casa delle Tecnologie di Matera, Pre-commercial trials of 5G technology using spectrum in the 3.6 GHz-3.8 GHz range). He founded 5G-air-simulator, LTE-Sim, and NANO-SIM open-source projects. He is regularly involved as a member of the TPC of many prestigious international conferences. Currently, he serves as Associate Editor for Internet Technology Letter (Wiley), Wireless Communications and Mobile Computing (Hindawi), and Sensors (MDPI).

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Alberto Fontana – Ericsson – Italy

Abstract: TBD



CV: Alberto Fontana is a Senior Account Manager at Ericsson, based in Rome. With extensive expertise in Operations, Enterprise, and Mission Critical Networks, he plays a pivotal role in managing strategic accounts and driving digital transformation. His work focuses on delivering robust connectivity solutions for vital infrastructures and enterprise sectors

13:30 – 14:45 | Networking Lunch

14:45 – 15:45 | Workshop round table

15:45 – 16:15 | Coffee Break

16:15 – 16:45 | Questionnaire collection and closing remarks

