



**Integrating Risk
Perception and
Action to Enhance
Civil Protection-
Citizen Interaction**



Overview

Increasingly complex and interconnected risks globally highlight the need to enhance individual and collective disaster resilience. Awareness of risks and levels of preparedness across Europe remain low with gaps between the risk perceptions and actions of citizens, and between the risk perceptions of citizens and Civil Protection Authorities (CPAs). The RiskPACC project seeks to understand further and close this Risk Perception Action Gap (RPAG).

Through its dedicated co-creation approach and its six case studies, RiskPACC will facilitate interaction between citizens and CPAs to jointly identify their needs and develop potential procedural and technical solutions to build enhanced disaster resilience. Importantly, RiskPACC will provide an understanding of disaster resilience from the perspective of citizens and CPAs, identifying resilience building initiatives and good practices led by both citizens (bottom-up) and CPAs (top-down).



The “Risk Pack” of solutions will include a framework and methodology to understand and close the RPAG, a repository of international best practice and toolled solutions based on new forms of digital and community-centered data and associated training guidance.



RiskPACC Framework

The RiskPACC Collaborative Framework is designed to help co-create strategies and tools for communicating about risks based on an ongoing two-way conversation between CPAs and citizens. It is made up of four related modules:

- **RELATE:** build risk reduction relationships between CPAs and citizens.
- **UNDERSTAND:** jointly develop an understanding of the local risk and social contexts through dialogue.
- **SHARE:** CPAs and citizens share and discuss their risk perceptions and expectations regarding risk management.
- **BUILD:** jointly build risk communication tools and strategies – based on 1, 2, and 3

RiskPACC Co-creation Methodology

RiskPACC is concerned with developing increased levels of cooperation and collaboration between CPAs, CSO's and citizens; in essence co-creating solutions and approaches by bringing different viewpoints, voices and data practices into decision-making, and to better understand how local communities and official accounts, perceive and act upon risk and integrate these perspectives in pursuit of greater disaster resilience. The RiskPACC co-creation process follows the four main phases of foundation, rapid prototyping, refining and implementation. All four phases build on the active engagement of CPAs and citizen organisations in our 7 case studies. Through co-creation 'lab' sessions with the case study partners, RiskPACC was able to identify current aspects of the RPAG in the case study areas, as well as CPA and citizen needs, and jointly prototypes solutions. The co-creation approach and peer-learning have been successfully applied by several project partners, such as Fraunhofer INT, USTUTT and UoW in projects such as "Horizonte Erweitern" funded by the German Federal Ministry for Education and Research (BMBF), "Waterproofing data" funded by the Belmont Forum, or Smarter2gether funded by the EC



RiskPACC Platform

Tools, Training Materials and Framework

The RiskPACC online platform aims to enhance disaster resilience by bridging the gap between risk perception and action (RPAG) through a co-creational approach. This platform facilitates collaboration between citizens, CPAs, and other stakeholders to develop innovative solutions for disaster preparedness and response. Key features include a framework and methodology to understand and close the RPAG, a repository of international best practices, and tool-based solutions utilizing digital and community-centered data. These solutions are tested in seven case studies focusing on various hazards to improve overall disaster resilience

Physical Risk Pack

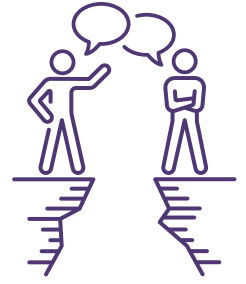
The Physical Risk Pack serves as a key output designed to improve disaster risk management. It is a comprehensive collection of the project's key results, specifically curated to help municipalities, CPAs and citizens enhance their understanding and management of disaster risks. The contents of the Physical Risk Pack includes:

- Key findings and Documents, such as the best practices report, lab methodology and glossary, and training materials
- The RiskPACC Game, a serious, table-top board game designed to facilitate understanding of the project's findings and solutions.

The Physical Risk Pack aims to bridge the gap between CPAs and citizens by enhancing two-way communication and fostering a better understanding of disaster risks. It is particularly useful for workshops and Training Sessions the long-term legacy of the project results

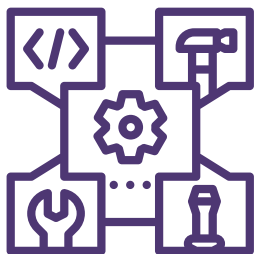
Key Takeaways

RiskPACC fosters an understanding of the "Risk Perception-Action Gap", i.e. misalignments among citizens and civil protection authorities in risk perceptions, related actions, as well as mutual expectations.



Applying a co-creation methodology, RiskPACC partners, civil protection authorities and citizens have jointly identified needs, and jointly developed solutions to address the Risk Perception-Action Gap.

A combination of strategic, technical, and procedural solutions facilitates engagement and two-way communication between citizens and civil protection authorities.



The RiskPACC collaborative framework guides citizens and civil protection authorities in closer collaboration, structured along (a) Understanding the context (of risk and of the community), (b) Sharing (of knowledge, risk perceptions, and expectations), (c) Relating (developing relationships of trust), and (d) Building (of collaborative solutions to enhance communication).

RiskPACC's two-way communication tools take advantage of crowd-sourcing and volunteered geographical information (VGI) technologies, while acknowledging and addressing related challenges (e.g. digital divide)





Tool #1

Aeolian App

The Aeolian AR Mobile App is a groundbreaking, powerful tool designed to establish bidirectional communication between citizens, volunteers, and Civil Protection Authorities (CPAs) during all phases of the disaster management cycle. This immersive app provides timely information, warnings, and media exchange to enhance prevention, preparedness, and response to natural and anthropogenic hazards. Seamlessly blending real environments with virtual objects through augmented reality (AR) technology, the app offers an accessible and user-friendly format. With features like hazard maps, reports, training modules, notifications, and emergency calls, the Aeolian AR Mobile App empowers users to actively contribute to inclusive disaster management, knowledge exchange, and increased disaster preparedness. Download the app now from the Google Play store and embark on a transformative journey towards effective communication and collaboration in disaster management.

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Tool #2

HERMES

HERMES is an innovative platform designed to bridge the communication gap between Civil Protection Authorities (CPAs) and citizens. By leveraging modern social networking principles, HERMES enables the creation of community groups, facilitates the sharing of critical information, and supports bilateral communication for improved disaster risk management. The platform offers a user-friendly interface that allows easy registration and profile customization, making it accessible for all users. HERMES provides real-time alerts to immediately notify users about emergency situations and hazards, ensuring timely awareness and response. One of the standout features of HERMES is its ability to foster community building. Users can form groups based on shared interests or local contexts, promoting a sense of collective responsibility and cooperation. Additionally, HERMES includes a comprehensive knowledge repository, granting users access to guidelines, best practices, and educational materials to enhance their preparedness and resilience. A key aspect of HERMES is its bilateral communication system, which enables direct messaging between CPAs and citizens. This functionality ensures a seamless exchange of information and feedback, allowing for quicker and more effective disaster response. HERMES empowers communities to stay informed, engaged, and prepared, fostering a collaborative approach to disaster resilience and safety.



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Tool #3

PublicSonar

Through Artificial Intelligence (AI), PublicSonar supports you in gaining quick and easy real-time insights from an infinite number of messages. Through the user-friendly interface, you can:

- **Perform situational search:** the time-saving wizard allows you to stay in control of your searches at any time. Among other things, the wizard offers you AI-powered word and location suggestions to avoid missing messages when people express themselves with diverse speech.
- **Set up real-time alerts:** through personalised alerts via text or e-mail, you are immediately informed when a situation escalates.
- **360-degree imaging:** with Machine Learning and Natural Language Processing, you can instantly recognise signals and analyse situations. In addition, the crowd analysis feature not only gives you insight into what is happening, but Deep Learning also reveals how a situation is being experienced.
- **Data enrichment:** add real-time data from a wide range of social media channels and other (semi-)open sources to your investigation and analysis. Furthermore, it is possible to enrich your data with Named-Entity Recognition (NER). This involves training algorithms to detect specific situational information, such as location and characteristics of a perpetrator, from texts.
- **Collaborate efficiently:** through dashboards and reports, you can easily collaborate and share insights with colleagues and other stakeholders.
- **Work compliantly:** built-in controls and feedback make it easy to comply with laws and regulations.

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Tool #4

Mapping Damage Tool

(Based on VGI)

The Damage Mapping tools were developed together with the Greek Center for Security Studies (KEMEA) and the Municipality of Rafinas-Pikerniou, Greece, and focus on understanding better how risk- and disaster-related volunteer contributions can best support CPAs. In this tool two different mapping activities were set up, one focusing on flooding, the other on wildfire. They are implemented in a platform called GeoCitizen, designed for volunteer contributions. It is desktop-based, hence not meant to be used in field. The tools can also be set up for external municipalities to test and gain information on how the questionnaire-based mapping approach works, and how volunteers are used to create the geoinformation.



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Tool #5

Thermal Comfort Tracker

(Based on VGI)

The tool was developed together with the Municipality of Padua that has been working on reducing heat hazard in the city. The purpose of the survey is to obtain information on how people in a given situation perceive their personal thermal situation. The city has decided to install a network of external sensors throughout the city allowing a more elaborate thermal volunteer-based perception survey outside this tool. The existing Thermal Comfort Tracker tool was developed and adapted to the region of Padua and can therefore not simply be used and applied by other municipalities, but the research elements may still be relevant for other municipalities. To explore the tool and determine whether such an approach would be of interest to your municipality, you can create a GeoCitizen account. The setup of the tool itself - how to assess thermal comfort and thermal perception - has a clear scientific basis, and this also provides external municipalities with insights on how to gain such knowledge. Therefore, municipalities interested in learning more about how thermal comfort information can be used together with physical temperature and humidity measurements, and also couple this with digital modelling, can contact the University of Twente for more information.

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RiskPACC

Pilots

The case studies addressed natural hazards, human-made hazards such as terrorism, and pandemics. Furthermore, RiskPACC enabled an all-hazards approach by adapting the developed tools and procedures to several use-cases. The 6 case studies have a variety of focal risks that they planned and prepared for. It is through the case studies that the different RiskPACC solutions are designed and developed, ensuring a practical relevance from the outset. All developments are accompanied by the development of different forms of training materials: material to guide CPAs and citizens on the framework to close the RPAG, advance general collaboration principles and the use of co-creation methodology, as well as guidance on the technical solutions including the use of the repository and the application and use of the RiskPACC toolbox. The material produced encompasses guidelines, gamified tests as well as demonstration and explanatory videos. Where relevant, guidance and training material are translated into the local language of the case study areas to facilitate the running of the co-creation sessions



Pilot #1

Attica, Greece

In Attica, the case study focused on assessing and enhancing risk awareness and perception with respect to wildfires and flooding including vulnerability patterns related to wildland-urban interfaces as well as the interconnectedness between wildfires and flood risk. It furthermore dealt with the enhancement of evacuation planning and communication of respective routes explored through the use of VGI and crowd-sourcing and gamification approaches. Also the challenges related to collaborative image-based damage mapping, both in terms of suitable bi-directional ICT solutions and regarding better understanding how to instruct and guide volunteers were addressed. Finally, it addressed the interaction between citizens and CPAs and citizens during different disaster resilience phases.



Pilot #3

The Olomouc & Moravian-Silesian Regions, Czechia

Pilot #2

Brussels, Belgium

The multi-hazard Brussels case study addressed the translation of risk assessments into interaction and communication with the general population. It evaluated the impact of running information campaigns (launched in late 2019) with a particular focus on children and schools including parents and teachers. This specific campaign includes an online game for children aged 8-12 to extract recommendations for closing the RPAG. In doing so, it developed an impact assessment of measures closing the RPAG and to enhance risk awareness campaigns and material.

The case study in two regions in Czechia addressed the responses to the leakage of toxic chemical substances from a factory in an industrial but highly populated area. It also addressed cumulative and cascade effects associated with fires or explosions and the airborne spreading of dangerous substances. The case study addressed the low knowledge of the population about CBRN warnings and self-protection measures and sought to enhance cooperation between the public and CPAs in case of emergency. Overall, this case study brought together different risk perceptions from civil protection authorities, factory management as well as population and representatives of the municipalities and sought to establish joint VGI-based mapping approaches, enhanced two-way communication and new training formats.



Pilot #4

Eilat, Israel

The Israel case study attempted to analyse and understand the preparedness of volunteers in the Municipality of Eilat (MoE) and at Magen David Adom (MDA), for earthquakes. The current levels of individual and family preparedness are assessed as very low despite volunteers being aware of the earthquake risk. This case study of the preparedness of MoE and MDA volunteers will allow for a consideration how different organisational aspects effect the ability to generate effective preparedness plans. In order to further assess the impact of organisational culture on risk perception and actions, volunteers of the Jordanian Red Crescent from Aquaba (a city neighbouring to Eilat) were invited to the workshops. The case study sought to work with gamification approaches to preparedness training, as well as producing joint needs assessments as well as stress tests and the revision of training material.



Pilot #5

Padova, Italy

The Padova case study focused upon developing and communicating a new civil protection instrument, including a citizen informed resilience and adaptation plan, for managing climatic risks notably flooding, heat waves and extreme rainfall or wind gusts. Existing plans are outdated and traditional communication methods often fail to reach all relevant societal groups, especially the elderly and vulnerable. The new plan will function as a live instrument and be constantly updated in line with stakeholder consultation. New IT tools will be advanced for warning and informing citizens and for integrating volunteer groups and civil society organizations into the early warning system and communication planning. In doing this there will be an increased awareness of risks and better identification of how to best protect vulnerable groups



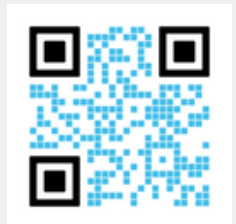
Pilot #6

Global Pilot

The ongoing COVID-19 pandemic has seen the rise of novel, yet controversial, tracking apps used to monitor the spread of the virus, for contact tracing, quarantine enforcement, travel and social distancing monitoring. Despite their utility in monitoring disease transmission, such applications have reported privacy and security risks that have undermined trust in public health efforts, as well as risking civil liberties and data privacy where individuals have been asked, or compelled, to give up personal data. Overall uptake has been mixed, which raises critical questions how such tracking apps could be designed to provide useful data, while at the same time protecting personal information. There is an urgent need to determine how pandemic control plans for the COVID-19 partnerships can be best developed, written, and communicated to wider partners, specifying their role and responsibility in the outbreak response; how to most effectively collaborate with citizens to ensure good behavioural practices are understood and adhered to and to understand possible at-risk communities e.g. the elderly and ethnic minority groups. By comparing and contrasting different international experiences of the development and uptake of such apps or monitoring techniques (from Taiwan, Singapore, Japan, UK, Germany, Brazil, as well as across cities that are part of the Efus network). This case study used a series of virtual workshops/webinars to derive insights and recommendations for how European authorities can best to utilise tracking apps and similar technologies within disaster resilience to mitigate and/or manage risk and crises in the future.

Interested?

If you are interested in learning more about the RiskPACC project or what to dive deeper into our results, please make sure to check out our website (<https://www.riskpacc.eu/>) or social media channels!



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