WORKSHOPS

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Scenario-based Workshop: Integrated scientific advice during pandemic outbreaks

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ABSTRACT

Ongoing biological threats such as avian influenza and climate related disease outbreaks highlight the need for strong emergency preparedness and response mechanisms. However, the response to the Covid-19 pandemic lacked interdisciplinary collaboration that bridged the biomedical, social, and economic domains to properly address disease containment policy measures. The Pandemic and Disaster Preparedness Center (PDPC) has developed a series of scenario-based simulation exercises designed to strengthen interdisciplinary collaboration and integrated scientific advice during pandemics and related crises. Drawing from recent lessons of Covid-19 and ongoing threats such as avian influenza and climate-driven outbreaks, these exercises highlight the urgent need for preparedness that bridges and overarches biomedical, social, and economic domains.

Approach
The scenario-based exercise consists of two rounds. In the first round, the participants will be divided into multiple subgroups representing various disciplinary backgrounds relevant to pandemic outbreaks. Within these subgroups, the participants are tasked with familiarizing themselves with the provided background information, assessing the potential impact of the scenario & formulating possible response measures to mitigate the impact. During the second round, the participants are mixed into two large groups and are tasked with integrating the various perspectives & response measures into an integrated advice, promoting interdisciplinary collaboration while balancing different arguments, values and types of knowledge. The exercise concludes with a reflection and evaluation session, discussing the experiences of the participants and stimulating the learning and skill-building process of the workshop.

Objectives
1. To train participants in identifying and integrating diverse disciplinary perspectives into coherent and balanced advice.
2. To strengthen skills in interdisciplinary teamwork, critical thinking, and decision-making under uncertainty.
3. To explore the values and trade-offs underlying crisis response, ensuring that advice is evidence-based and socially and ethically informed.

Main take home messages:
1. Scenario-based exercises are effective tools for skills- and network-building in pandemic preparedness.
2. Integrated scientific advice helps bridge disciplinary divides and prevent fragmented decision-making.
3. Future preparedness requires not only planning for specific pathogens or disasters, but building adaptive capacity to confront uncertainty during crises.

Prepare to be Unprepared – An Experience-based Training Template for Cultivating Preparedness and Crisis Literacy in Organisations

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ABSTRACT

The collective risks posed by natural hazards, cybersecurity, artificial intelligence, critical infrastructure and climate change are defining features of our era. Crisis preparedness has thus evolved from a niche concern to a fundamental imperative for societies, individuals, and businesses. However, a significant paradox plagues the corporate landscape: while the need for resilience is undeniable, small and medium-sized enterprises (SMEs) face increasing economic pressures that make allocating resources for preparedness difficult. This financial strain is exacerbated by a psychological barrier; employees often grapple with fear regarding potential disruptions, while rapidly shifting regulatory and market requirements create an environment of confusion. The scarcity of accessible training options intensifies this crisis, fostering a pervasive sense of helplessness and resignation among leadership and staff who feel ill-equipped to navigate uncertainty and collective risks.

To counteract these challenges, the proposed workshop shifts the paradigm from resource-intensive planning to human-centric empowerment. The core objective is to cultivate "crisis literacy", a dynamic capability that enables organisations to detect early warning signs of disruption, interpret them within a broader systemic context, deduce specific implications for their unique operations, and implement suitable, agile measures. By focusing on literacy rather than rigid infrastructure, SMEs can build genuine resilience without prohibitive costs.

Designed for up to 24 participants, this 3-hour session offers a hands-on, experience-based template tailored to the realities of smaller organisations. Rather than theoretical lectures, it immerses attendees in practical exercises that simulate real-world complexities and black-swan events. The workshop is intended for a diverse audience that includes SME leaders, managers, and key operational staff, with the aim of democratising crisis management skills throughout the organisation. Taking an interdisciplinary approach, it synthesises three powerful methodologies: systems thinking to understand interconnectivities and feedback loops; strategic foresight to anticipate and visualise plausible future scenarios; and design thinking to prototype and refine actionable responses.

Through this integrated framework, participants will learn to identify potential threats and reframe crises as manageable variables within a larger system. They will explore changing contexts collaboratively, develop scenario-based strategies, and leave with a concrete, customised roadmap for enhancing their organisation's preparedness. The expected outcome is a workforce that feels confident and capable of adapting swiftly to change, rather than being paralysed by it. Ultimately, the aim of this workshop is to transform the narrative of crisis management from one of fear and resignation to one of proactive agency and strategic readiness, ensuring that SMEs can thrive even amidst turbulence. By accepting that perfect prediction is impossible, the workshop empowers teams to act decisively despite ambiguity, turning the fear of the unknown into a catalyst for agile, confident decision-making in real time.

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Voices Across Crises: Stakeholder Perspectives and Opportunities for AI Speech Technologies

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ABSTRACT

Effective communication is critical for public safety during crises, particularly for vulnerable communities facing barriers to accessing timely information. Emergency responders, humanitarian organizations, and affected populations rely on rapid information exchange across several key functions: situational awareness, information management, needs assessment and coordination, risk communication and early warning, and recovery and long-term monitoring. Crisis communication often happens through spoken channels such as emergency hotlines, radio, and voice messaging apps. These channels are inherently multilingual and speech-based, creating significant barriers for vulnerable communities and responders alike. Actors across the crisis ecosystem, government agencies, humanitarian NGOs, broadcasters, community leaders, and affected populations, must rapidly exchange information across languages under pressure.

Recent advances in artificial intelligence (AI), including automatic speech recognition (ASR), speech translation, and multilingual large language models (LLMs), have opened new opportunities for crisis communication. However, these technologies are often developed without a thorough understanding of operational realities. Different stakeholders have distinct needs: government agencies coordinate logistics, NGOs manage field operations, and community leaders relay local needs. It remains unclear whether emerging speech and voice technologies adequately address the needs of responders, vulnerable communities, and other crisis actors.
This workshop explores how voice technologies and AI tools could support communication and information sharing during emergencies, with a focus on vulnerable and linguistically diverse communities. We draw on ongoing surveys and interviews with crisis communication stakeholders, including government representatives, radio and streaming organizations, humanitarian NGOs, and community leaders, to ground the discussion in real-world experiences. Participants will reflect on these findings, share their own perspectives, and identify key communication challenges. Small group activities will map communication practices across the crisis ecosystem and explore potential applications of speech and voice technologies across use cases such as situational awareness, early warning, and needs coordination, including associated risks and limitations.

This workshop is intended for crisis management researchers, practitioners, policymakers and technology researchers. Attendees will develop a clearer understanding of multilingual communication challenges in crisis settings and the potential of AI and voice tools to address them. Expected outcomes include a validated understanding of speech-based communication practices across the crisis ecosystem, prioritized use cases for speech and AI technologies, and concrete insights to inform future research.

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Developing Strategies for Making ISCRAM Sustainable

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ABSTRACT

ISCRAM in defines its mission as:

- ISCRAM is a learned society for researchers and practitioners interested in Information Systems for Crisis Response and Management.
- ISCRAM endeavors to promote cooperation among all parties involved in this domain, including researchers, practitioners and professionals, technical experts and other experts and policy makers; develop activities that contribute to the primary mission.

The annual ISCRAM conferences diverge greatly as to the degree to which they do engage practitioners and promote cooperation among researchers, practitioners and policy makers. In addition, and disturbingly, organisers of ISCRAM conferences and practitioners often disappear from the map (they do not attend ensuing ISCRAM conferences). Presumably, these features contribute to keeping ISCRAM membership low and causing the high turnover of members of ISCRAM.

To make ISCRAM sustainable (including an increase of a stable membership), ISCRAM must succeed to a higher degree than before in its primary mission, viz., developing activities promoting cooperation among all parties involved in this domain, including researchers, practitioners and professionals, technical experts and other experts and policy makers.

This workshop addresses the question: developing impactful and practical strategies for making ISCRAM sustainable. The workshop will conduct a facilitated participatory modelling exercise using causal strategy mapping with Strategyfinder™ to identify barriers and elicit strategies deemed impactful and practical by the participants. The workshop should appeal to members of ISCRAM, and those persons who repeatedly invest time and effort in proposing and leading tracks.

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Designing a minimum viable incident data system for the fire service: Lessons from crisis negotiation

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ABSTRACT

Reliable and relevant data registration is increasingly recognized as a core requirement for effective crisis management. Data supports operational decision-making, enables evidence-based policy, and fuels innovation in areas such as predictive modelling, risk assessment, and resource allocation. To truly benefit from data-driven insights, organizations need information systems that support structured, consistent, and meaningful data collection.

Currently, the Dutch fire service has access to emergency response data from dispatch centers, which includes all alerts and deployments of the fire brigade. This data has proven valuable for research and has been used in several (inter)national studies. However, dispatch systems are primarily designed to mobilize emergency services, not to provide detailed registration of incidents. It is becoming increasingly clear that the currently available data does not provide sufficient details, and this lack of detail limits the possibilities for advanced data analytics.

To illustrate what is possible when a structured, well-designed data collection system is implemented, we will present the development of the Negotiator Database Netherlands (NDB-NL). A database developed by a multidisciplinary steering group of practitioners, scientists, and developers, designed to systematically record crisis negotiations in the Netherlands. Using the NDB-NL as a case study, we will present effective practices and key challenges in developing and implementing a national incident database. We discuss design choices, pitfalls, and trade-offs in defining, measuring, and recording incidents in a way that works reliably under real-world constraints. Particular attention is given to practitioner engagement, highlighting that data quality relies not only on system design but also on the motivation of those entering the data and on showing the system's value to maintain high-quality engagement.

In this workshop, we explore why high-quality incident registration is essential for the fire service of the future. After presentations on the current state of fire-service data in the Netherlands and lessons from the NDB-NL, participants will work in small groups to design a minimum viable incident registration system (MVP) tailored to the fire-service context. Groups will consider which information is essential in the data collection, the analytical value of the collected data, the time and effort required from responders or what is needed to keep responders motivated to register information. The workshop concludes with brief pitches in which each group presents their MVP and reflects on the challenges and opportunities for building better incident databases.

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Understanding Evolving Collaborative Networks with C2Sketch

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ABSTRACT

Crisis response often demands a collaborative effort from multiple individuals and organisations. To coordinate the efforts of the various actors and effectively allocate and align tasks, effective information sharing is essential. To understand these information exchanges we must also acknowledge the dynamic nature of crises. Information needs, tasks and organizations change as events unfold.

Although practically any basic tool (spreadsheets, pen and paper, whiteboard) could be used to map out and describe the actors, tasks and information exchange in such collaborative scenarios, there is an advantage to using a structured (formalized) approach. Agreed upon structured models can be algorithmically verified and processed to identify potential problems and weaknesses. However, formal modeling languages always embed certain assumptions about their intended domains. Business- oriented (i.e. BPMN) or software oriented (i.e. UML) models are therefore not automatically applicable to the context of information sharing during crises.

C2Sketch is a modeling package for modeling, analysis, and simulation of information driven collaborative work systems. At its core is a formal modeling language in which the networks of actors, their tasks and the interconnected information spaces that are used to share information can be rigorously described. To capture the dynamic evolution of these networks, an event language is provided to construct timelines of changes to the networks over time. The formal structure that these languages provide enables logical reasoning about models for both static and dynamic validation. To facilitate the authoring of models, but also their analysis and graphical visualisation, C2Sketch is distributed as a package for the Python programming language. This package contains modules and API's for convenient use of the models in Python programs but also provides a web-based GUI for easy authoring and analysis.

This workshop will focus on modeling the dynamic change of collaborative networks over time. Based on a fictional scenario, we will construct an initial model of the involved actors, their tasks, locations and information spaces. We will then construct a timeline of events in which the initial model is updated at each step as the scenario unfolds.

The main format of the workshop is a guided tutorial. After a brief introduction of the languages and tools, participants are invited to follow along as the example model is constructed. Although an example scenario will be prepared, there will be room to deviate from this example based on participants' interests. Participation in the workshop requires no prior knowledge, but some experience with modeling or programming languages is beneficial.

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Think Global, Act Local: How Human-Centric AI Can Empower Communities for Sustainability-Related Crisis Resilience

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ABSTRACT

The relationship between global environmental challenges and local community action lies at the heart of the most pressing questions in crisis and disaster management today. Climate change, biodiversity loss, resource scarcity, and cascading systemic risks are phenomena that are planetary in scale yet felt most acutely at the community level. The principle of "Think Globally, Act Locally" offers a powerful organising framework for understanding how Human-Centric AI can transform crisis response and resilience-building in an era of increasing complexity.

Within the workshop, we define Sustainability-Related Crisis Resilience (SRCR) is the capacity of communities, organisations, and ecosystems to anticipate, absorb, and recover from crises in ways that strengthen, rather than merely restore, long-term environmental integrity, social equity, and economic stability. Unlike traditional crisis resilience, which focuses on restoring pre-crisis conditions, this concept integrates the four pillars of sustainability as interdependent dimensions of recovery, ensuring that humanitarian response does not trade short-term relief against long-term planetary and community health. It demands the alignment of crisis response with ESG frameworks and the United Nations' Sustainable Development Goals, embedding preventive, adaptive, and regenerative capacities into the systems through which humanitarian action is organised and delivered.

Empowering communities to think globally and act locally means equipping citizens, first responders, NGOs, and local authorities with the awareness, tools, and agency to understand interconnected global challenges while deploying solutions that are precisely adapted to their geographic, cultural, and socioeconomic contexts. Global sustainability targets, aligned with the UN Sustainable Development Goals and net-zero commitments, require disaggregated, place-based action where communities exercise real agency. Local actors bring irreplaceable assets: indigenous knowledge, rapid adaptive capacity, and solutions that achieve higher adoption rates through cultural alignment. Distributed local actions, when connected, create cumulative global impact through emergent systems change.

Human-Centric AI is uniquely positioned to bridge this global-local divide. Unlike extractive or top-down technological deployments, Human-Centric AI integrates machine learning with socio-ecological frameworks to optimise resource management, climate adaptation, and community resilience, while maintaining human agency at every stage. By incorporating participatory design methodologies, ethical constraints, transparent algorithms, and multi-directional stakeholder feedback loops, these systems ensure that AI-driven interventions genuinely align with social equity, environmental integrity, and long- term resilience objectives.

Within the ISCRAM community, this intersection is especially significant. Crisis informatics, emergency management, and humanitarian response are domains where the quality of information flows can determine outcomes. AI-powered platforms that support community air quality monitoring, neighbourhood energy-sharing, food waste prevention, and hyperlocal environmental sensing are not merely sustainability tools: they are crisis resilience infrastructure. They transform citizens from passive recipients of crisis communications into active participants and co- creators of safer, more adaptive communities.

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This workshop proposes to explore how Human-Centric AI design patterns can be systematically developed, documented, and deployed to support the "Think Global, Act Local" paradigm. Drawing on a pattern language methodology the session will bring together researchers, practitioners, policymakers, and community voices to co-develop a framework that bridges the global and the local, the technical and the human.

The workshop objectives are:

- Examine how Human-Centric AI can close the gap between global crisis data and local community action.
- Explore design patterns and ethical frameworks for community-empowering AI systems in crisis and sustainability contexts.
- Identify key challenges and opportunities at the intersection of participatory technology design, environmental monitoring, and crisis informatics.
- Begin co-developing a pattern language for Human-Centric AI systems supporting local sustainability and resilience.

Mapping with Communities

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ABSTRACT

In disaster management, missing local context can be fatal. While state-of-the-art remote sensing, GIS and artificial intelligence provide extensive spatial overviews, these systems often bypass the granular, situated knowledge required to sustainably mitigate and face upcoming crises across the full disaster management cycle. The "Mapping with Communities" workshop series introduces participatory mapping (PM) not only as a tool for filling data gaps, but also as a fundamental process for meaningful data co-creation. By prioritizing data sovereignty, ethical engagement, and community empowerment, PM ensures that local populations are not just subjects of mapping, but the primary authors of their own resilience.

This 4-hours-workshop facilitates a thoughtful discussion about the impact of PM as a "community- driven" and "user-centered" method relevant for crisis management and anticipatory action frameworks. It is designed as a collaborative session split into two phases:

- Firstly, a showcase of real-world PM case studies from diverse disaster contexts will serve to highlight practical approaches and tools as well as methodological challenges.

- Secondly, we will hold an interactive session for participants to analyse these case studies, focusing on identifying the impact produced, while pinpointing technical and institutional barriers to integrating community data into existing and official crisis information systems. We will conclude by assessing how these methodologies can be adapted and replicated across diverse disaster contexts.

We are actively inviting participants to submit additional case studies as abstracts and short presentations. We particularly welcome participants who prioritize the intersection of geospatial technologies and social justice, viewing community-generated data as a rigorous, trustworthy source of information. Participants will gain a deeper understanding of PM as a practice of citizen science. Also, they will discuss the potential impact as well as the challenges faced when using PM for engaging wider societal groups.

Our goal is to bring together those eager to bridge the gap between academic theory and operational field-level practice to ensure that crisis information systems are grounded in local reality. Ultimately, this workshop serves as a platform for exchanging experiences and mutual learning, to ensure the value of PM is recognized as a cornerstone for building long-term resilience and leveraging the diverse resources available within communities for crisis management.

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Platforms for increased preparedness

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ABSTRACT

Preparing individuals, teams, and communities for disasters and critical incidents increasingly depends on digital platforms that can deliver scalable, adaptive, and context-relevant training. These often include technologies such as mobile devices, virtual reality (VR), serious games applications, and AI-supported tools, which promise to enhance situational awareness, decision-making, and coordination under pressure. Yet their integration into real preparedness ecosystems remains uneven, and many solutions struggle to move beyond pilots, prototypes, or isolated use cases. This workshop brings together researchers, practitioners, and technology developers to demonstrate current platforms and critically examine their role in strengthening preparedness capabilities. The session will showcase a range of technologies designed for emergency response training. Through live demonstrations and guided walkthroughs, participants will experience how these systems model complexity and uncertainty, elements that are difficult to reproduce in traditional training formats. Beyond demonstration, the workshop invites a structured discussion on the opportunities and limitations of technology-enhanced preparedness training.

Key themes:
Transfer of learning: How well do immersive and digital platforms support real-world performance, and what evidence is needed to validate their impact? Inclusivity and accessibility: How can platforms be designed to accommodate diverse user groups, including volunteers, frontline workers, and individuals with varying physical or cognitive abilities? Scalability and sustainability: What organizational, technical, and economic factors influence long-term adoption? Interoperability: How can platforms support shared situational understanding across agencies, sectors, and national contexts? Ethical and practical considerations: Data privacy, psychological safety, and the balance between realism and user wellbeing.

Participants will engage in hands-on exploration, small-group reflection, and a facilitated dialogue to identify design, development, and implementation pathways. The workshop will conclude with a collaborative mapping exercise to outline future directions for platform-based preparedness training, including opportunities for co-design with end users and integration with existing emergency management frameworks. By combining demonstration with critical discussion, this workshop aims to advance a shared understanding of how emerging technologies can meaningfully contribute to preparedness for disasters and incidents, moving beyond technological optimism toward evidence-based, inclusive, and practice-grounded innovation.

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From Knowing to Doing: Bridging Systemic Risk Analysis and Crisis Management Practice Using Systemic Risk Networks and the ABC Method

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ABSTRACT

In the field of crisis management, understanding complex crisis scenarios requires a systemic exploration of risks and the interdependencies that shape their dynamics. Systemic models are grounded in scientific work, which presents a challenge when translating them into more practical tools that support strategic, tactical, and operational decision-making. This workshop addresses this gap by exploring how insights from systemic risk network analysis can meaningfully connect to the realities of crisis management practice.

Based on earlier work, participants will work hands-on with a pre-prepared systemic risk network featuring a power outage scenario at its core. After being introduced to the underlying method, they will explore the structure and behaviour of the network, enrich it by adding new risks or causal relations, and experiment with a range of analytical possibilities, such as identifying causal loops, central nodes, and risks with high inflow or outflow.

Subsequently, we establish the connection to the ABC method: a structured and practical approach for converting systemic insights into actionable frameworks for crisis management, developed by the Netherlands Institute for Public Safety. These frameworks are based on key "areas of attention" within the systemic risk network and provide a scope for further formalisation of desired effects and concrete actions across multiple levels of the crisis response hierarchy. Together, participants will consider how specific network analyses can inform the development or refinement of such frameworks, and what opportunities, limitations, or practical considerations emerge when applying systemic models in real-world organisational contexts. This workshop is targeted at anyone who is interested in experiencing scientific risk analysis methods in a practical context.

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Modelling human-autonomy interaction using the Joint Control Framework – a drone SAR scenario tutorial

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ABSTRACT

Participants will learn to model episodes of human interaction with autonomous and semi-autonomous systems using the joint control framework. A basic assumption in the JCF framework is that humans and autonomous systems form joint human-machine systems that strive towards certain goals, such as locating missing persons or fighting fires. The tutorial is hands-on and will be based on emergency response and crisis management scenarios. It includes live demonstration of simulated scenarios where different kinds of semi-autonomous drones are used in emergency response operations.

The tutorial starts with a brief introduction to the theoretical underpinnings of the JCF for modelling human-autonomy interaction. The framework is rooted in cognitive systems engineering, macro-cognition, situational awareness theory, and human-autonomy teaming. The course takes a critical stance towards simplistic approaches to human-automation interaction such as levels of autonomy, and emphasizes the importance of context and competence when analyzing human interaction with automated systems.

Questions walked through during the tutorial:

- What is meant by autonomous systems?
- What is meant by control and joint control in relation to autonomous systems?
- How do we disentangle concepts such as “levels of automation” into context-sensitive, continuously changing modes of cognitive control?
- How do we describe interaction with autonomous system in an applied scenario in a systematic way?

The tutorial includes a scenario-based introduction of the different analytical steps in JCF: Process mapping (identifying involved actors and processes), Levels of Autonomy in Cognitive Control (in what way is a function to be considered autonomous and at what level of cognition?), and Human-Machine Interface Temporal analysis (analyzing episodes of interaction in terms of perception, decision, and action).

Two scenarios will be used, both based on the use of highly automated drone services:

- Missing person in an urban environment
- Maritime search and rescue

One scenario will be used to walkthrough the analytical steps, and the other will be used in a short hands-on analysis conducted by the participants in the tutorial. The tutorial will last for about 4 hours, including breaks and refreshments. The JCF framework has been used in several studies, dissertations, and student thesis since published. All participants will receive a certificate of participation.

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