

# Elements of a Digital Strategy for Information Management in Safety and Security

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<https://www.dena.at/index.php/de/fachtagung-katastrophenforschung-2023.html>*





# Structure

- Situation and Complexity of Current Tasks
- Information Management
- Some Challenges
- Recommendations for Action



# Situation and Complexity of Current Tasks (1)

The massive complexity of cross-organizational information flows for decision support and operational management for emergency services, public administration, law enforcement agencies, critical infrastructure operators, the private sector, civil society organizations/institutions and civil-military cooperation requires comprehensive interoperability for information in all phases of disaster management (prevention, resilience management, long-term and short-term preparedness, early action, first aid/response, aftercare and reconstruction).





# Situation and Complexity of Current Tasks (2)

Based on the current recommendations on how to proceed and with clear demands for adequate information management

at global, European and national level (UN Sendai Framework Midterm Review, G7, European Union Disaster Resilience Goals 2030 and National Resilience Strategy)

the task is to ensure the required homogeneity, coherence and synergy for cross-organizational, cooperative and cross-border use.



# Situation and Complexity of Current Tasks (3)

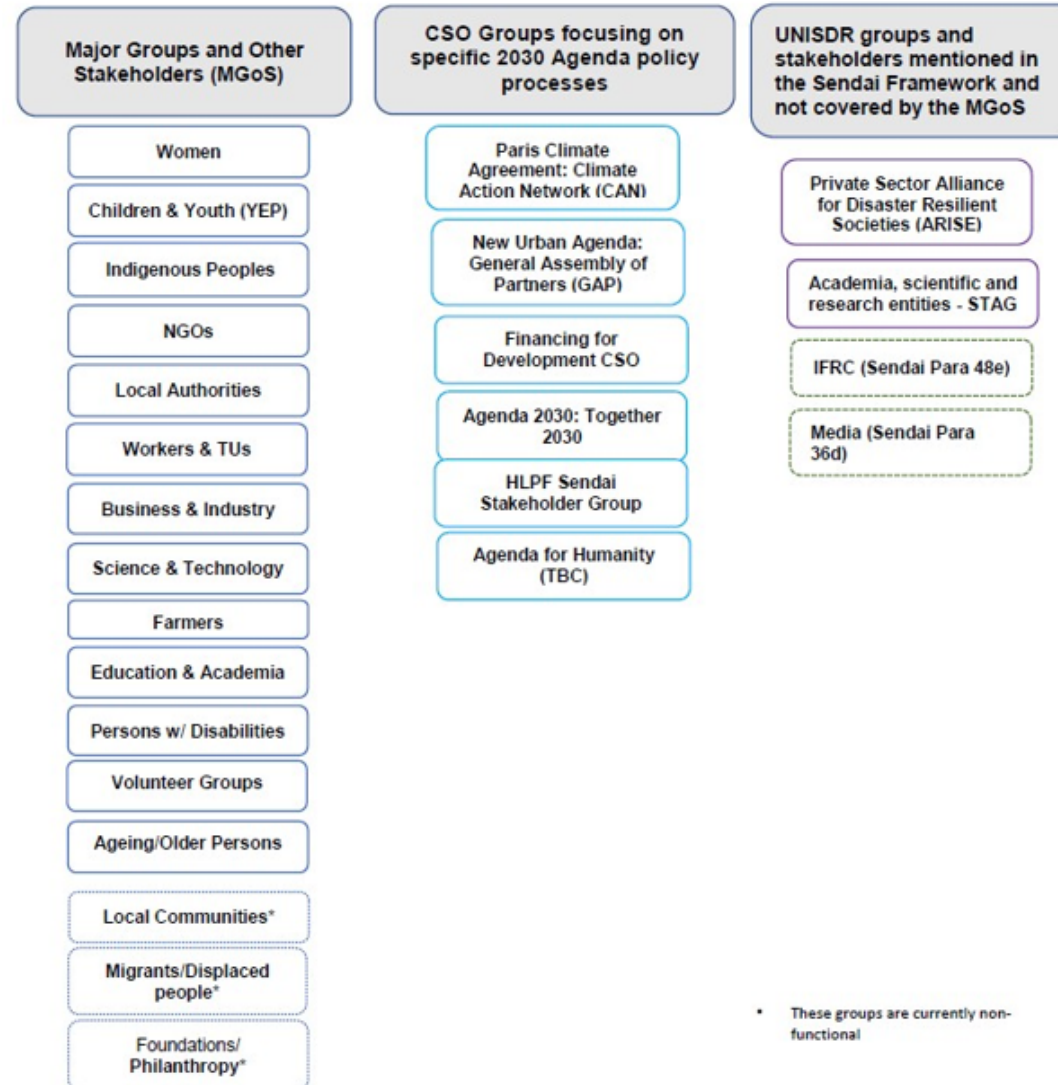
## Decision Support

- for all
- at any time
- just-in-time

## Annex II List of Stakeholder groups

Core

### Stakeholder Advisory Group Visual



\* These groups are currently non-functional







# Stakeholders / Pillars of Societal Resilience in all Phases of the Disaster Management Cycle

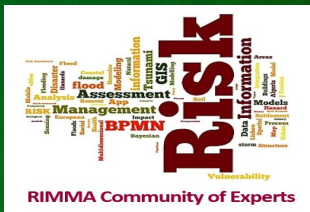
- Organizations that stand up for people
- Parliamentarians
- Lawyers
- Insurance companies
- Local and national charities
- Organizations for family caregivers
- Technical and material assistance for reconstruction
- Damage repair in relation to race, education and poverty
- Support in the search for financial aid
- Medical associations
- Chambers of pharmacists
- Chambers of nurses
- Chambers of psychotherapists
- Health insurance companies
- Property owners' associations
- Chambers of industry and commerce
- Chambers of engineers
- State Council for Building Regulations
- Surveillance
- Sociologists, psychotherapists, psychologists and behavioral consultants
- Refugee-migrant organizations of people with disabilities (OPDs)
- Organizations run by deaf people
- Promoting policies that benefit children
- Faith-based organizations and communities
- Health institutions (local, regional, national)
- Nurses (practitioners, professional organizations, etc.)
- Ambulatory care midwifery
- Advocacy for patients
- Children in care homes
- Salvation Army, missions
- Health and care providers
- Organizations and Associations (public and private services)
- School services/parent-teacher associations
- Medical care organizations
- Community research and service centers
- Amateur radio associations
- Media (radio, TV, newspapers, magazines, etc.)
- Social media
- Food industry, nutrition logistics, transportation and distribution
- Animals (zoo, pets, farm animals)
- Consumer protection organizations
- Auditors (public and private)
- Legislators
- Standardization organizations



# Potential Hazards

- Natural hazards
- Climate hazards
- Technical hazards
- CBRN-E
- Security
- War
- Hazardous substances
- Blackout





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## The main capabilities we need to develop are:

- **Descriptive analytics** that help us answer “What happened?” by evaluating historical data, for example to measure results or costs against targets.
- **Diagnostic analytics** to help us understand “Why did it happen?” through data discovery, data mining or correlation analysis.
- **Predictive analytics** that tries to give an answer to the question “What will happen?” based on historical data, statistical modelling and machine learning.
- **Prescriptive analytics**: analyses the best course of action given a certain scenario, incl. through machine learning.

*United Nations Decade of Action: Data Strategy of the Secretary-General for Action by Everyone, Everywhere 2020-2022* <https://www.un.org/en/content/datastrategy/index.shtml>



# Basic Elements of Management

- Gaps and deficits analysis
- Decision, action and control cycle management
- Transparent analysis
- Compliance with regulations and other constraints
- Phases and techniques to ensure traceability
- Detailed financial structures
- Financial instruments (financial budgets, subsidies) and their use
- Reporting and controlling
- Targets achievement and effectiveness control
- Human resources
- Operational concept
- Avoidance of misconduct
- Analysis of weaknesses and vulnerabilities
- Innovations
- Accountability





# Basic Elements of Information Management

- Homogenized / coherent terminology / vocabulary
- Formats (syntax)
- Meta information (semantics)
- Standardized workflows (pragmatics)
- Service Level Agreements
- SOPs - Standard Operating Procedures (automation, quality, traceability)



# Vocabularies

- Lists of authorities, institutions
- Glossaries
- Dictionaries
- Gazetteers
- Code lists
- Taxonomies
- Indexes
- Thesauri



# Ontologies

Explicit formal specification of a common conceptualization

- Terms
- Properties
- Relations
- Identity
- Status
- Context
- Annotation
- Role
- Causality
- Semantic networks
- Procedural networks

with processing options

**Comparison, Merge, Abstraction, Coherence Analysis**







# The Advantages of Modularity / Synergies

- Optimization of resources at all levels
- Ensuring coherence between sets of rules
- Documentation of analyses, alternatives, decisions and audits
- "Just-in-time" information logistics in the all-hazards approach
- Networked cross-organizational processes lead to systemic procedures
- Scalability
- Easier integration with partners
- Easier integration of other application services and processes
- Flexible enough to support new technologies



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# selected Challenges

- Big data, IoT, process models, AI, decision support, documentation
- From facts to situations
- From the visualization of complexity to the implementation of complexity
- Implementation of complexity on the basis of standards, scalability, traceability and technical and administrative coherence (with regard to regulations, rules, guidelines)
- Analysis of documented complexity (e.g. parliamentary committee of inquiry into the Ahr flood disaster)
- Data infrastructures for just-in-time support in the overall social sense (overcoming the research-practitioners gaps)
- National/European/global status of development, objectives, governance structures
- Personnel / human resources / education / curricula
- Legal framework
- Creating the **Common European RISK Information Space**



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# Towards a Comprehensive and Structured Approach

1. Creating a cross-sector governance structure
2. Understanding complex dependencies, resilience and vulnerabilities
3. Cross-Organizational common understanding of deficits, synergies, risks, resilience and vulnerabilities
4. Negotiate resilience goals that can be implemented and achieved
5. Prioritize measures across the entire life cycle of Critical Infrastructure and beyond
6. Ensuring accountability and monitoring the implementation of resilience measures
7. Consider the cross-border dimension of information infrastructure systems





# Governance

- Office / Secretariat - Coordination / Communication / Cooperation / Documentation
- Committees
- Focus-/Working Groups
- (Technical) Drafting Teams
- Feasibility studies
- Prototypes / Testbeds
- Roadmaps for Objectives: 2 years, 5 years, 20 years
- National SENDAI Platform
- EU
  - DG HOME, Directorate-General Migration and Home Affairs
  - DG ECHO, Directorate-General for European Civil Protection and Humanitarian Aid Operations
  - JRC, Directorate-General Joint Research Centre



# Our Common Goals:

**Digital innovation and Information Management**

**Increasing and ensuring efficiency**

**Cross-organizational coherence**

**granting just-in-time information availability and use**

**in line with professional and social expectations**



For more detailed presentations, further information,  
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**End - of - Presentation**

## CoE International Community of Experts and Interdisciplinary International Conference Series on RISK Information Management, Risk Models and Applications



### RIMMA Community of Experts

The RIMMA Community on Risk Information Management, Risk Models, and Applications will enable sharing of digital strategies, best practices as well as giving space for discussing methodological problems in risk (NaTech) and security (CBRNE) modeling from the information systems point of view for all phases of the disaster management cycle.