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

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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).

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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

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Annex II List of Stakeholder groups

Core

Stakeholder Advisory Group Visual

Major Groups and Other Stakeholders (MGoS)

- Women
- Children & Youth (YEP)
- Indigenous Peoples
- NGOs
- Local Authorities
- Workers & TUs
- Business & Industry
- Science & Technology
- Farmers
- Education & Academia
- Persons w/ Disabilities
- Volunteer Groups
- Ageing/Older Persons
- Local Communities*
- Migrants/Displaced people*
- Foundations/ Philanthropy*

CSO Groups focusing on specific 2030 Agenda policy processes

- Paris Climate Agreement: Climate Action Network (CAN)
- New Urban Agenda: General Assembly of Partners (GAP)
- Financing for Development CSO
- Agenda 2030: Together 2030
- HLPF Sendai Stakeholder Group
- Agenda for Humanity (TBC)

UNISDR groups and stakeholders mentioned in the Sendai Framework and not covered by the MGoS

- Private Sector Alliance for Disaster Resilient Societies (ARISE)
- Academia, scientific and research entities - STAG
- IFRC (Sendai Para 48e)
- Media (Sendai Para 36d)

* These groups are currently non-functional

UNDRR SEM Terms of Reference 2019, p. 6

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

Services in Information Management

- find
- classify
- catalog
- complete
- provide
- utilize
- analyze
- archive

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

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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

End - of - Presentation

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

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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.

https://RIMMA.org