Ref. Ares(2022)4697703 - 27/06/2022

ROADMAP

euROpean observAtory on Disaster risk and crisis MAnagement best Practices

Project Details | Start date: **1st January 2021** | End date: **30th June 2022** | Duration: **18 Months**
Reference: **101017776 – ROADMAP – UCPM-2020-KN-AG**

D4.2 - Roadmap webinars

WP - Task WP	WP4 – Task 4.2	**Version**	V1
File name	ROADMAP_D4.2_ Roadmap webinars	**Dissemination level**	Public
Programmed delivery date	30/06/2022	**Actual delivery date**	26/06/2020
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Reviewed by	All		
Abstract	In the framework of Roadmap project, a series of Webinars were developed involving international experts in Disaster Risk Management. The main objective was to disseminate and raise fruitful discussions on relevant topics related to the management of various risks and their respective phases, also to find good practices and propose guidelines to the Community of Stakeholders at EU, national and local levels involved in the process. The ROADMAP webinars raised and shared information on relevant topics, which were also extracted from the bulletins and the Thematic Papers contents. These topics were discussed with outstanding experts, including the Advisory Group, but also external experts from the DRM community. The present document details relevant information about the webinars held, main topics addressed as well as the number of participants and views, representing the interest of the DRM community.		

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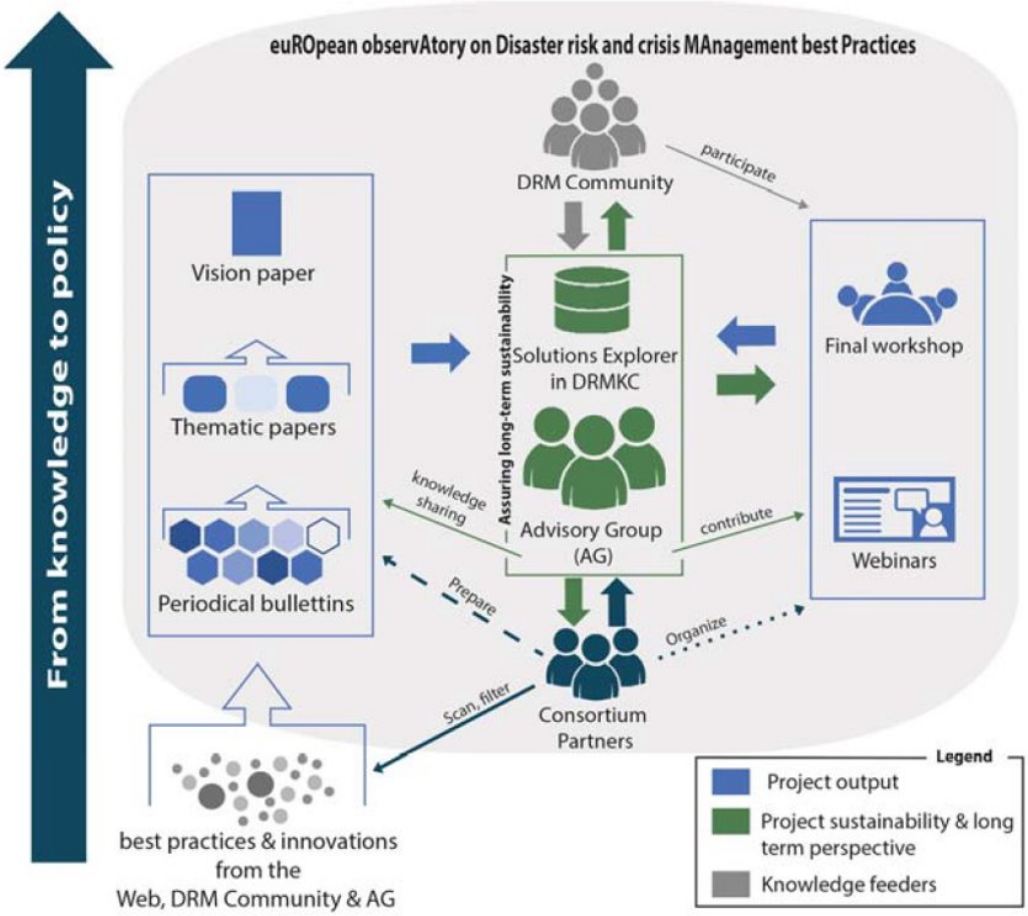


ROADMAP IN A NUTSHELL

The ROADMAP (euROpean observAtory on Disaster risk and crisis MAnagement best Practices) Project (Fig. 1), is a 18 months project funded by DG-ECHO under the call UCPM-2020-KN-AG. The project started on the 1st January 2021 and the main objective is to establish a European "Doctrine on disaster risk and crisis management", funded on the cooperation between scientific communities and DRM authorities. The doctrine, which is intended as "a shared understanding of disaster management between decision-makers and scientific actors", will be based on selected experiences, good practices and implemented solutions in EU Member States.

The Advisory Group (AG; https://roadmap.ci3r.it/advisory-group/) is formed by selected experts on both science and decision-making in DRM from several Countries, covering different risks and phases of DRM cycle. The networking activities between the Project Consortium -which is composed by recognized research institutes, competence centres for disaster risk reduction and Civil Protection authorities- and the Advisory Group will result in the establishment of a European think tank/observatory on disaster risk and crisis management good practices that could represent a first step towards a Community of Practice to operate within the Union Civil Protection Mechanism, in collaboration with the Disaster Risk Management Knowledge Centre (JRC).

Figure 1 – ROADMAP project



Source: the proposal of the ROADMAP project

ROADMAP CONSORTIUM

The Consortium "Italian Centre for Risk Reduction (CI3R)" operates on a non-profit basis with the aim of promoting and sustain the research, the technology transfer and training activities in the field of multi-risk reduction, for a more profitable achievement of the objectives pursued by public policies in this field, in accordance with the relevant national, European and international programmes. CI3R benefits from the multi-risk competence and skills of its three founding entities that are all Competence Centres of the Italian Civil Protection Department, operating in different sectors of catastrophic risks. The three founders of the Consortium are a combination of public and private institutions: the EUCENTRE Foundation, a well-known non-profit training and research centre with dedicated sections specialising in disaster risk research; the ReLUIS Consortium, a no-profit inter-university consortium established with the purpose to develop and coordinate research activities in the field of structural and earthquake engineering and seismic risk; and the CIMA Foundation, a non-profit research organization committed to promote the study, scientific research, technological development and higher education in engineering and environmental sciences, within the fields of civil protection, public health and aquatic and terrestrial ecosystems conservation.

PROTEZIONE CIVILE
Presidenza del Consiglio dei Ministri
Dipartimento della Protezione Civile

The Civil Protection Department has been grounded in the offices of the Presidency of the Council of Ministers since 1982.It has a guiding role, in agreement with regional and local governments, of projects and activities for the prevention, forecast and monitoring of risks and intervention procedures that are common to the whole system. The Department coordinates the response to natural disasters, catastrophes or other events – events of C type – that intensity and extent, should be faced with extraordinary powers and means. Moreover, also in agreement with the regional governments and local authorities, working in the drafting of legislation on the prevention of risks and regulatory measures needed to cope with disasters and minimize damage to people and property. It promotes drills, national and international training projects and activities that contribute to spreading the culture of civil protection.

Associação para o Desenvolvimento da Aerodinâmica Industrial

The Association for the Development of Industrial Aerodynamics (ADAI) is a non-profit private institution created in 1990, associated to the Department of Mechanical Engineering of the Faculty of Sciences and Technology of the University of Coimbra (UC), which promotes activities of research, development, demonstration, training, specialized consulting and services to the industry. ADAI is structured in two research groups, namely 'Energy, Environment and Comfort' and 'Forest Fires and Detonics', carrying out activities in three laboratories: 1) Laboratory of Industrial Aerodynamics (LAI, 1986), located near Polo II of the UC, with 1500 m2 of built area, and partially accredited according to the rule NP EN ISO/IEC 17025 with the certificate n.º L0177; 2) Laboratory of Forest Fires Studies (LEIF, 1995), located at the airfield of Lousã, with 1100 m2 and equipped for forest fire research activities; and 3) Laboratory of Energetics and Detonics (LEDAP), located in Condeixa-a-Nova, aimed at the study of detonation and combustion processes of energetic materials.

University of Stavanger

The University of Stavanger (UiS) is Norway's sixth largest university. UiS has approx. 13000 students and some 1700 faculty, administration and service staff. Academic life at UiS is organised into six faculties, comprising a total of 14 departments and two National Research Centres. UiS is a member of European Consortium of Innovative Universities, the leading international consortium of universities with collective emphasis on innovation, creativity and societal impact, driving the development of a knowledge-based economy. UiS is an experienced participant of international projects, which include FP7 projects and H2020 projects, COST Actions, EEA projects in addition to nationally funded projects. The H2020 projects RUNIN (The Role of Universities in Innovation and Regional Development), Triangulum (The Three Point Project / Demonstrate. Disseminate. Replicate), CO-LAB (Improving collaborative working between correctional and mental health services) serve as examples.

1. BACKGROUD INFORMATION

The goal of ROADMAP webinars:

The main goal of the ROADMAP webinars was knowledge raise and sharing activities, to improve DRM community and prepare stakeholders. The ROADMAP webinars were based on the bulletins and the thematic papers contents, being organized to discuss selected topics with outstanding experts, including Advisory Group members but also key external experts. During these events, good practices, recommendations, and lessons learnt in prevention, preparedness and response were shared and collected. On the other hand, the ROADMAP webinars were also a tool to reach a wider audience mostly in Europe, but also worldwide, helping to exploit the project results in the dissemination within DRM community and other stakeholders. Ultimately, these online events contributed to the formation of a European observatory on disaster risk and crisis management best practices, that will be visible and available through webinars, the recordings still available on YouTube and on the ROADMAP website as well.

Organisation of the ROADMAP webinars:

The ROADMAP webinars were organized using the ZOOM platform, being all members asked to do a quick registration to allow the communication of information and the certificate of attendance. The presentations and Q&A sections are fully available on ROADMAP website: https://roadmap.ci3r.it/ as well as on the YouTube channel available here: https://www.youtube.com/user/ceif2011.

After the selection of the relevant topics to be targeted in each webinar, well known Speakers have been chosen, namely from the AG, but also from the DRM community.

Challenges and risks:

The ROADMAP project is being developed under a pandemic context caused by COVID-19. Among many other relevant challenges and having in mind the outcomes from ROADMAP webinars, people are being confronted by many online meetings and events, including webinars. Consequently, the ROADMAP consortium in collaboration with the Advisory Group members, extended invitations to their network and implemented several dissemination strategies to broaden participation from the DRM community. On the other hand, to avoid reduced participations in ROADMAP webinars, typically interesting areas were selected to be addressed. Moreover, recognised speakers were invited within the AG and the DRM community to motivate greater interest by the audience.

2. WEBINARS ORGANIZED

1st ROADMAP webinar – 25th of June, 2021 at 10.00CET

available here: https://roadmap.ci3r.it/publications/ and https://www.youtube.com/watch?v=PIidmLIwstw&t=1s

1. Title:

"The nexus between Scientists and Decision Makers in Disaster Risk Management"

2. Content:

The first Webinar was dedicated to the very important role of scientists and decision makers in the DRM process in order to understand how the connection between these two groups can be improved.

3. Goal:

Speakers were invited to give their views on criticalities in the collaboration science - policy, based on their experience and expertise either as a scientist, a decision maker or both. The Speakers were also asked to address the bullet points mentioned below to better frame the presentations and the discussion during the webinar:

- How can we better integrate scientific knowledge and decision making to improve DRM?
- How can we improve DRM in a practical way in each phase of the crisis/disaster management cycle, particularly in the case of complex processes?
- What are the criticalities in the nexus between scientists and decision makers and how can we overcome them?
- How can we involve other stakeholders – namely the citizens and the politicians – in the nexus between scientists and decision makers and in which capacity?
- Which issues of trust do we consider most relevant between scientists and decision makers, especially in crises and disasters?
- Can you identify good practices and good lessons from this collaboration, eventually based on your own experience?

4. Target audience:

We agreed that the audience should be a mix of scientists and decision makers involved in disaster risk management. We used our own networks to promote the webinar. Of course, we also invited the AG members to use their networks to further promote the webinar.

5. Speakers and presentations:

We agreed to have 4 speakers (two of them scientists + two as decision makers), which were mainly selected because of their great interest and insights provided during the AG meeting.

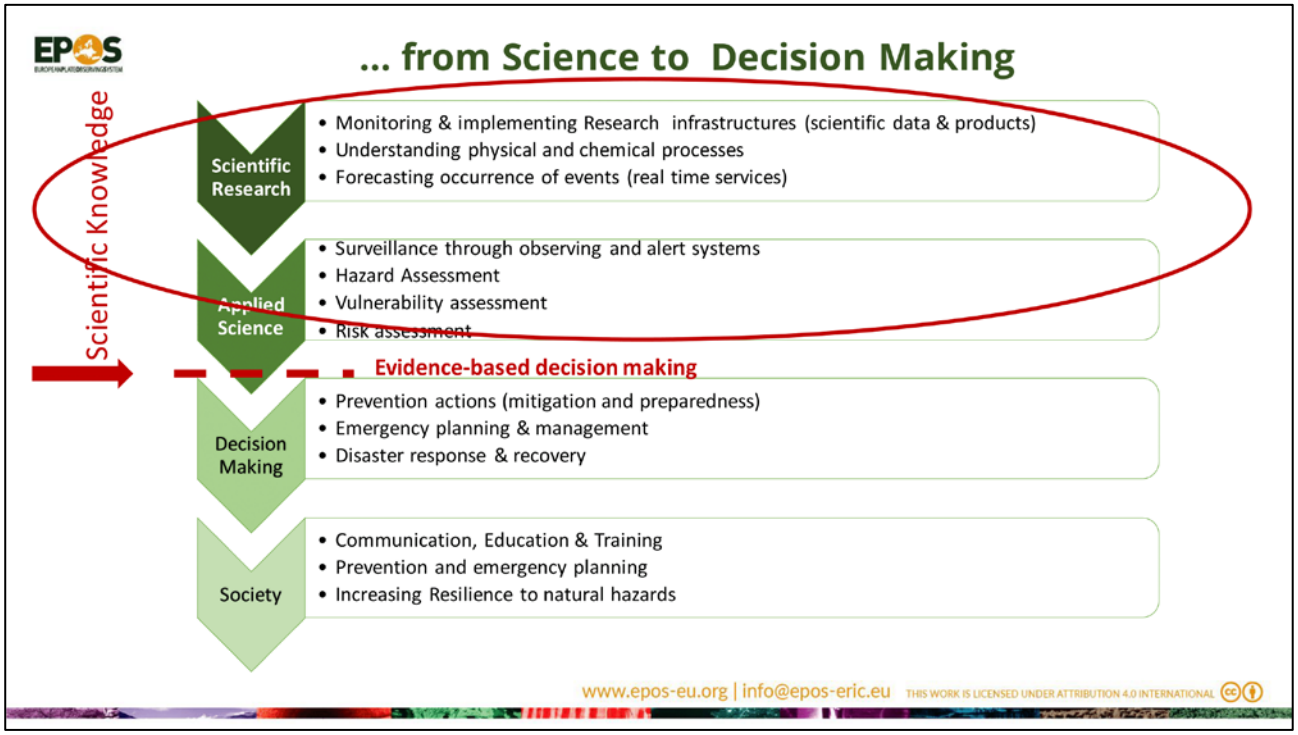
- **Massimo Cocco** (scientist). Massimo Cocco informed that he could make suggestions about criticalities to improve this nexus (EPOS-Implementation Phase project coordinator; https://www.epos-eu.org/).

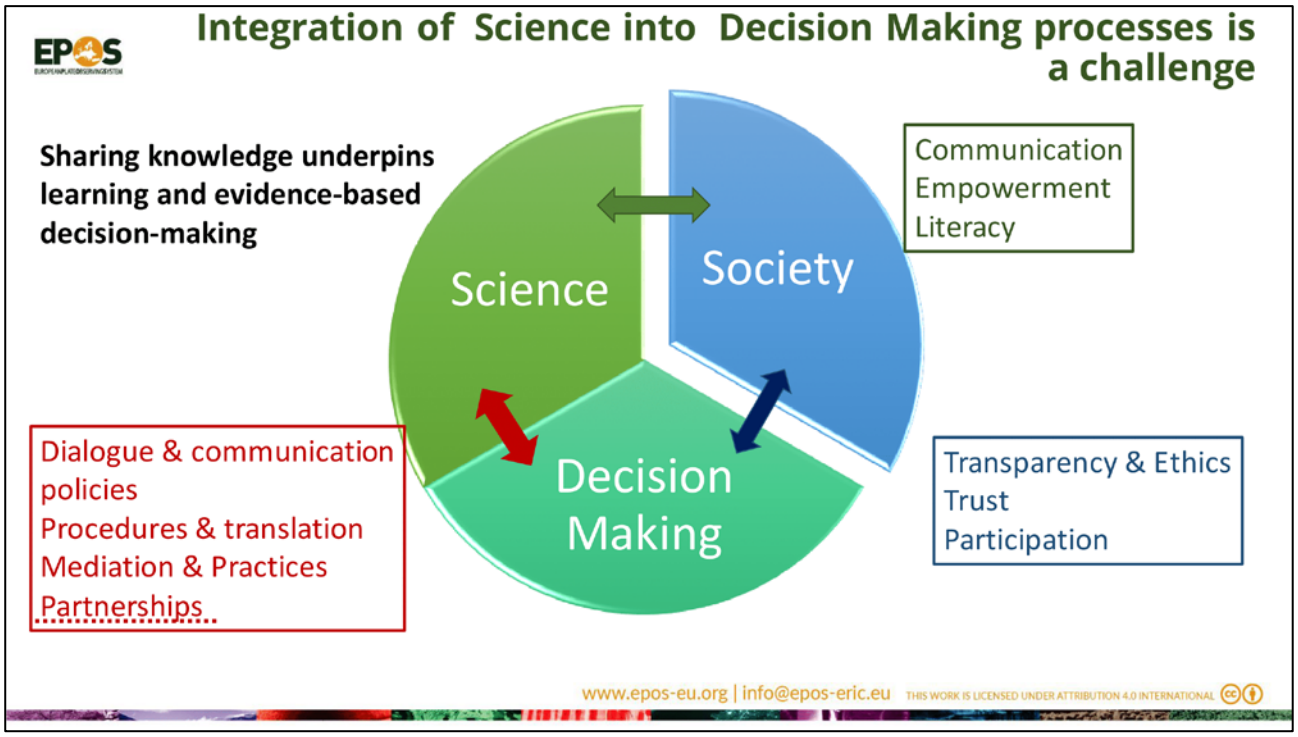
  Short CV:
  His research interests are focused on the physics of earthquakes and faults. More specifically, his work deals with earthquake dynamics and fault interaction, seismicity patterns and fault frictional properties. He is interested in both theoretical studies and observational research. He has interests in all aspects of the mechanics of earthquake and faulting from observations of natural faults through

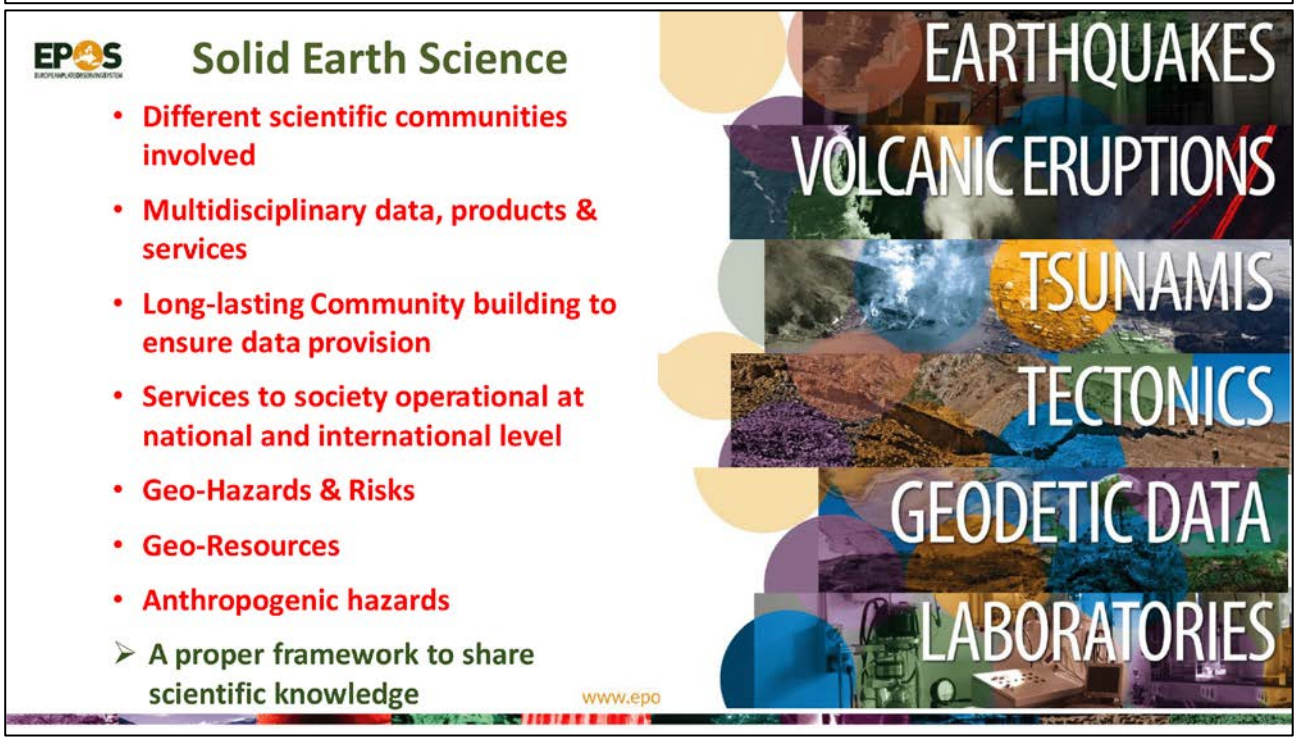
geophysical and geological measurements to experimental faults at the laboratory scale. His expertise also covers the management of seismic networks and monitoring research infrastructures. He has coordinated the Preparatory Phase and is presently coordinating the Implementation Phase of the European Project named EPOS: European Plate Observing System. Its mission is the long-term integration of research infrastructures for solid Earth Science (www.epos-eu.org).

Recording and presentation printout:
https://youtu.be/5-irsIqyMRE






Integration of Science into Decision Making processes is a challenge
Sharing knowledge underpins learning and evidence-based decision-making
Science
Society
Decision Making
Communication
Empowerment
Literacy
Dialogue & communication policies
Procedures & translation
Mediation & Practices
Partnerships
Transparency & Ethics
Trust
Participation
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Solid Earth Science
Different scientific communities involved
Multidisciplinary data, products & services
Long-lasting Community building to ensure data provision
Services to society operational at national and international level
Geo-Hazards & Risks
Geo-Resources
Anthropogenic hazards
A proper framework to share scientific knowledge
www.epo
EARTHQUAKES
VOLCANIC ERUPTIONS
TSUNAMIS
TECTONICS
GEODETIC DATA
LABORATORIES

Role of Research Infrastructures

- provide **virtual access** to data and **physical access** to facilities
- strengthen **data management** and **interoperability** through e-science innovation
- allow **communication** with different stakeholders
- foster **Open Science**, **Communication** to Society and a **safe exploitation** of geo-resources

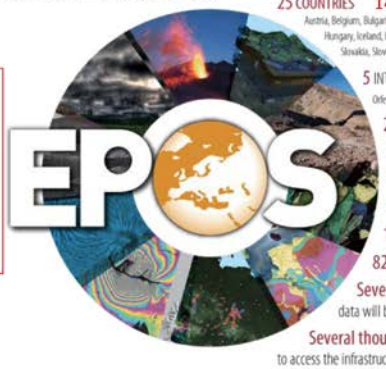


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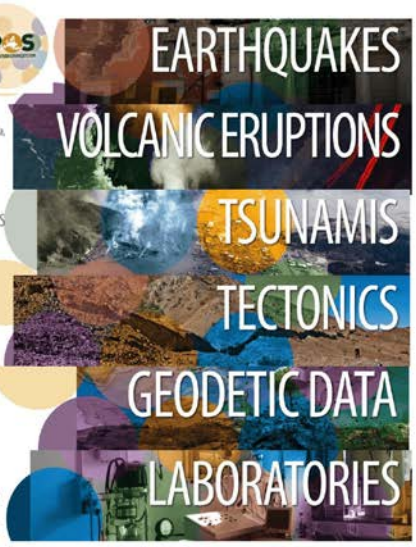
EPOS a distributed RI for Solid Earth Science

To ensure sustainable and universal use and re-use of multidisciplinary solid Earth science data and products fostering state-of-the-art research and innovation

Keywords:
- Distributed
- Federated
- Integration
- Sustainable
- Long-term access

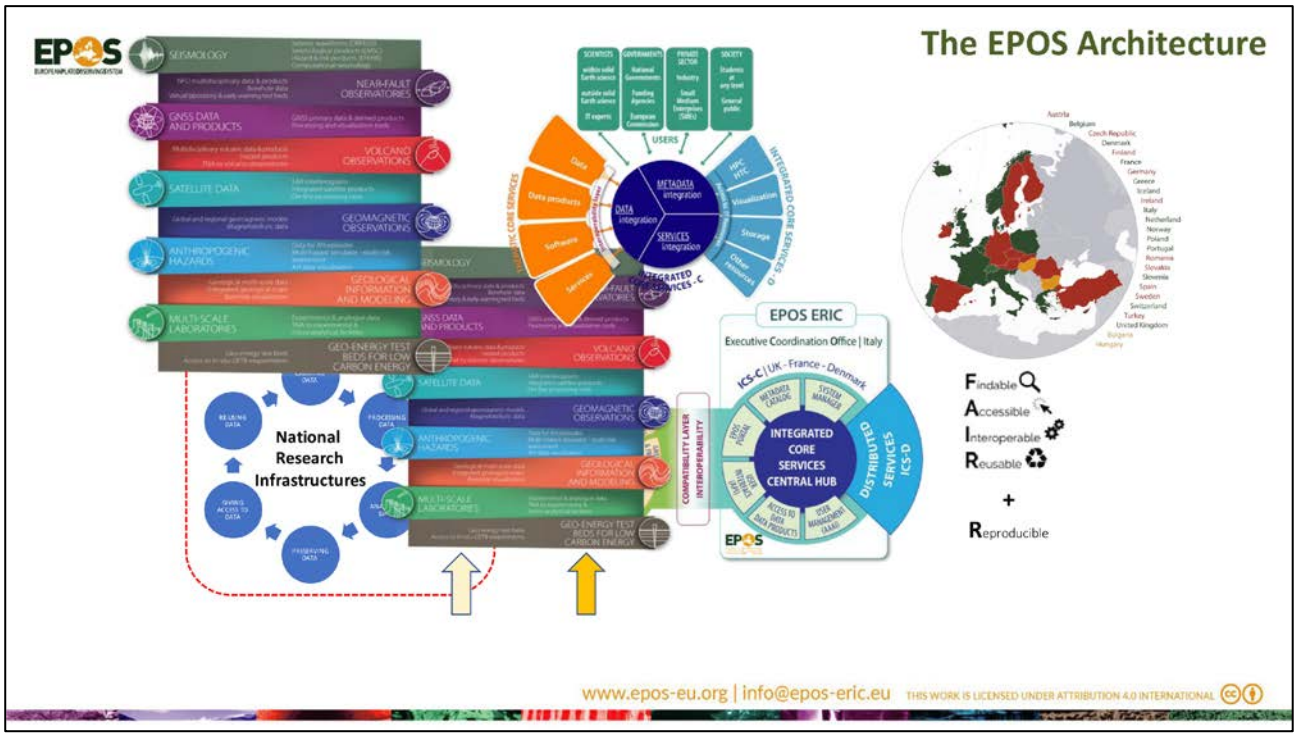


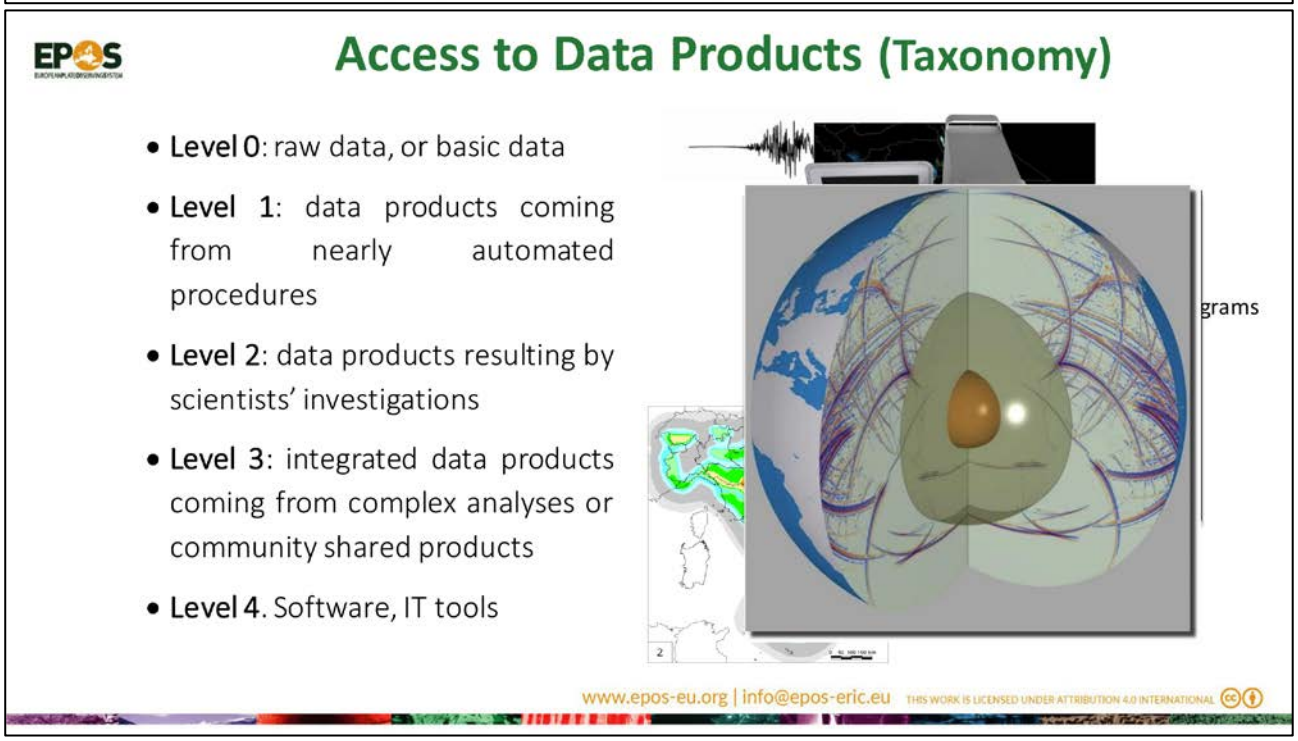
25 COUNTRIES 140 research organizations
Austria, Belgium, Bulgaria, Czech Republic, Denmark, Finland, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, The Netherlands, Norway, Poland, Portugal, Romania, Slovakia, Slovenia, Spain, Sweden, Switzerland, Turkey, United Kingdom
5 INTERNATIONAL ORGANIZATIONS
Orfeus, EMSC, EUREF, INTERMAGNET, EuroGeoSurveys
256 NATIONAL RESEARCH INFRASTRUCTURES
4939 SEISMIC STATIONS
2272 GPS RECEIVERS
464 TB SEISMIC DATA
118 LABORATORIES
828 INSTRUMENTS
Several PetaBytes of solid Earth Science data will be available
Several thousands of users expected to access the infrastructure



To establish a sustainable and long-term access to solid Earth science data and services integrating diverse European Research Infrastructures under a common federated framework

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The EPOS Architecture
SEISMOLOGY
NEAR-FAULT OBSERVATORIES
GNSS DATA AND PRODUCTS
VOLCANO OBSERVATIONS
SATELLITE DATA
GEOMAGNETIC OBSERVATIONS
ANTHROPOGENIC HAZARDS
GEOLOGICAL INFORMATION AND MODELING
MULTI-SCALE LABORATORIES
GEO-ENERGY TEST BEDS FOR LOW CARBON ENERGY
USERS
METADATA integration
DATA integration
SERVICES integration
INTEGRATED CORE SERVICES
Data
Data products
Software
Services
National Research Infrastructures
EPOS ERIC
Executive Coordination Office | Italy
ICS-C | UK - France - Denmark
INTEGRATED CORE SERVICES CENTRAL HUB
DISTRIBUTED SERVICES ICS-D
COMPATIBILITY LAYER INTEROPERABILITY
Findable
Accessible
Interoperable
Reusable
+
Reproducible
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Access to Data Products (Taxonomy)
Level 0: raw data, or basic data
Level 1: data products coming from nearly automated procedures
Level 2: data products resulting by scientists' investigations
Level 3: integrated data products coming from complex analyses or community shared products
Level 4. Software, IT tools
grams
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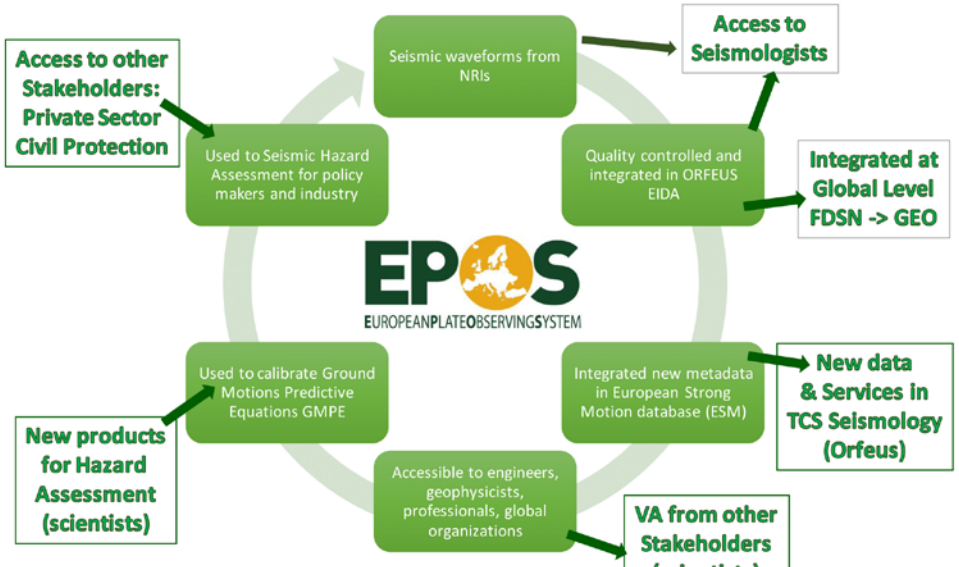
Access to Data Products (Taxonomy)

• **Level 0**: raw data, or basic data	→ Scientists, Students
• **Level 1**: data products coming from nearly automated procedures	→ Scientists, Students, society, Key stakeholders
• **Level 2**: data products resulting by scientists' investigations	→ Scientists, Students, society, Key stakeholders, DRM
• **Level 3**: integrated data products coming from complex analyses or community shared products	→ Scientists, Students, key Stakeholders, DRM, DRR
• **Level 4**. Software, IT tools	→ Scientists, Students, users

DRM – Disaster Risk Management
DRR – Disaster Risk Reduction

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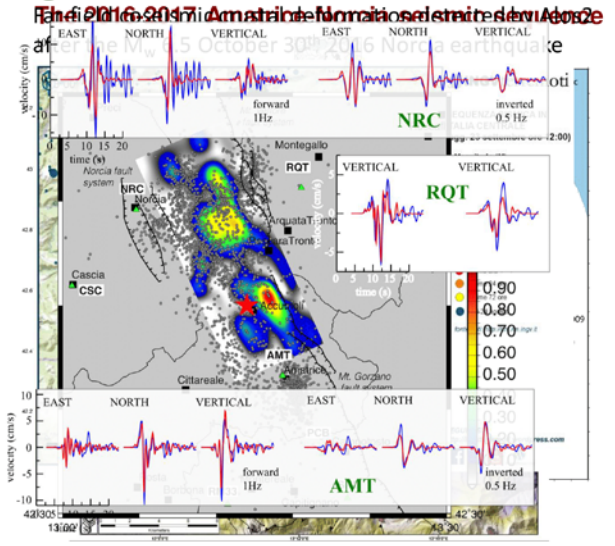
From data to products: an example from seismology



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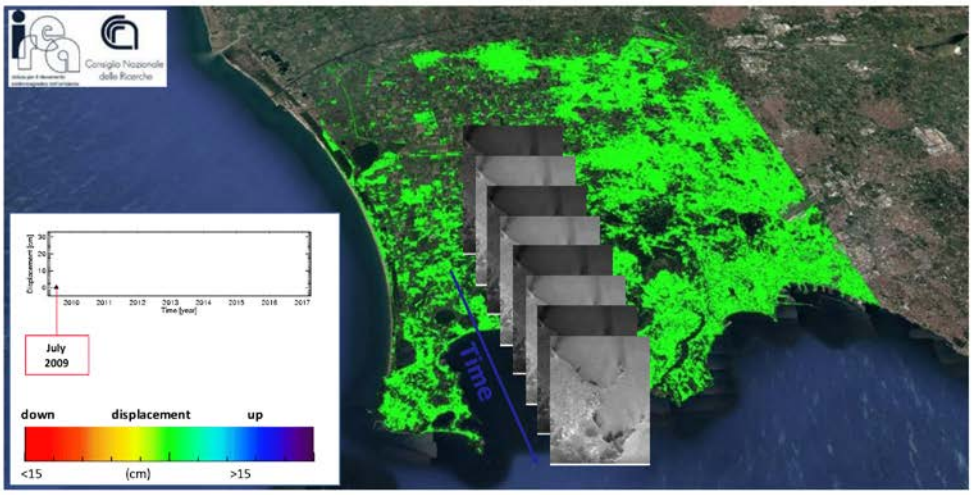
Multidisciplinary data & expert reports during emergencies

- Access to real time data is essential to manage the emergency
- Sharing near-real time scientific products is vital to provide expert reports to decision makers
- Capacity to constrain earthquake source models within 48 -72 hours after the main shock (Amatrice 2016) by integrating multidisciplinary data
- Services to process big data



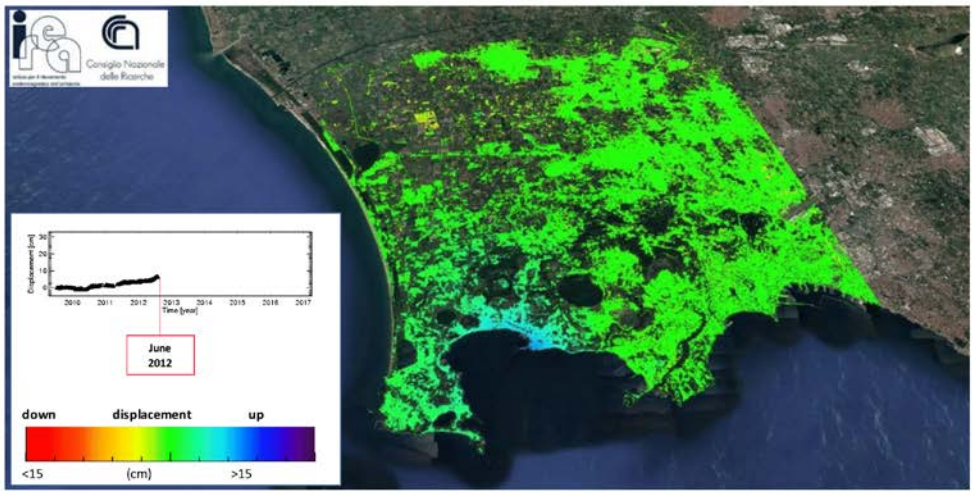
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Near-Real time services and scientific products: Campi Flegrei deformations monitoring: COSMO-SkyMed analysis (2009-2016)



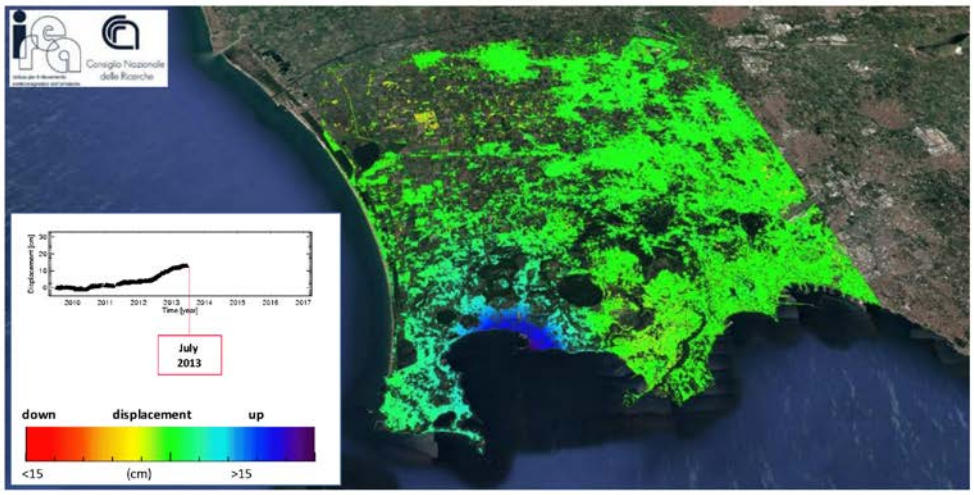
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Near-Real time services and scientific products: Campi Flegrei deformations monitoring: COSMO-SkyMed analysis (2009-2016)

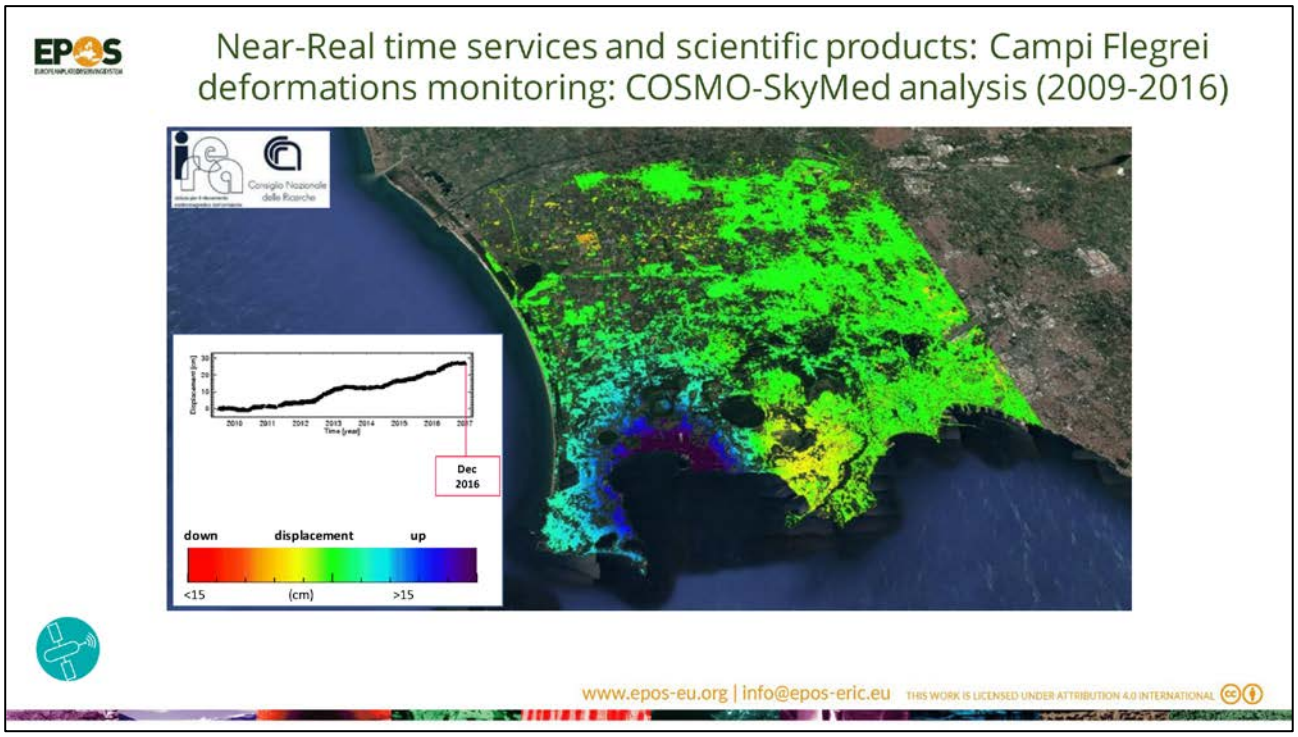


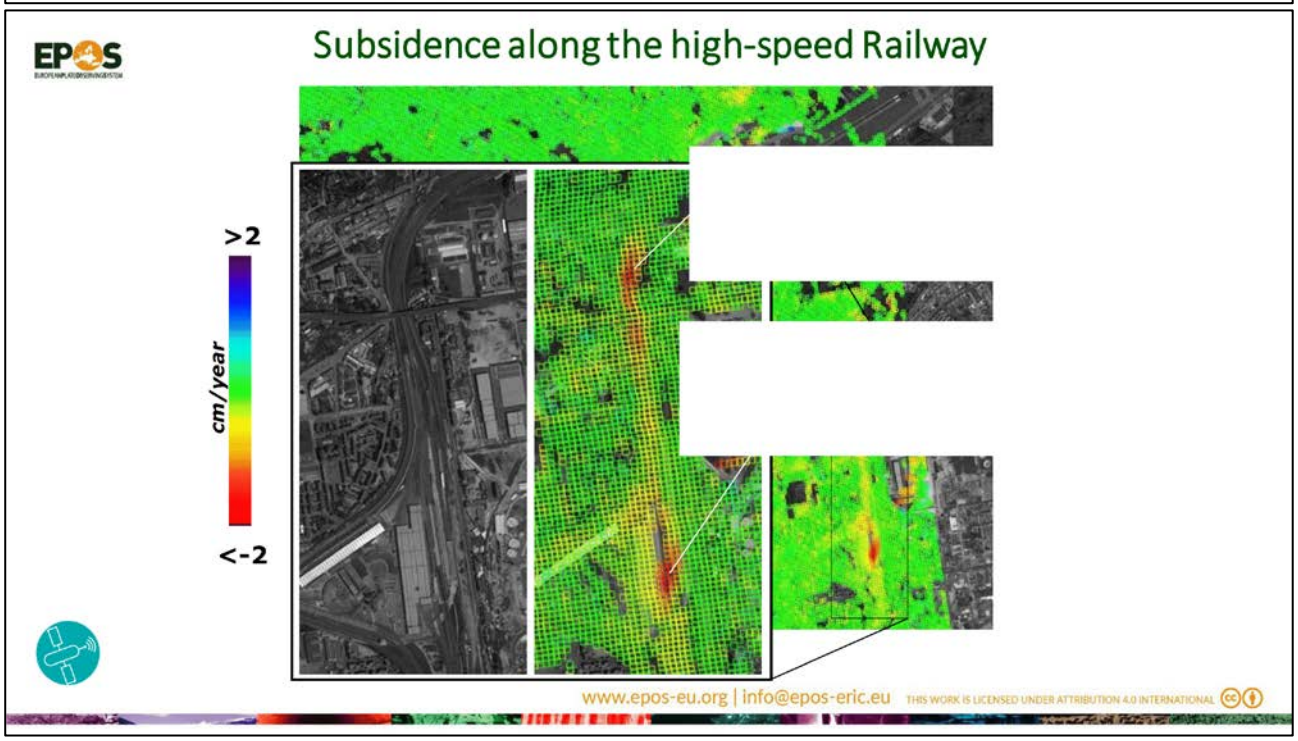
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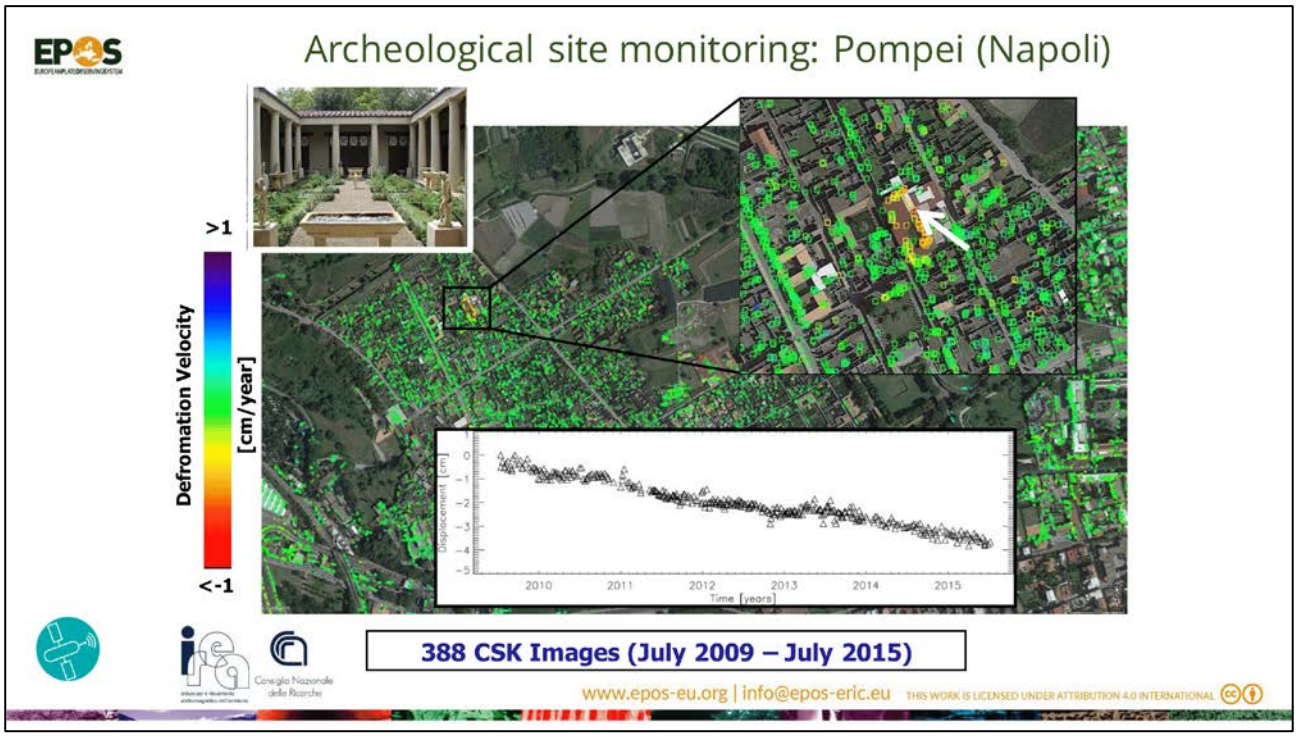
Near-Real time services and scientific products: Campi Flegrei deformations monitoring: COSMO-SkyMed analysis (2009-2016)

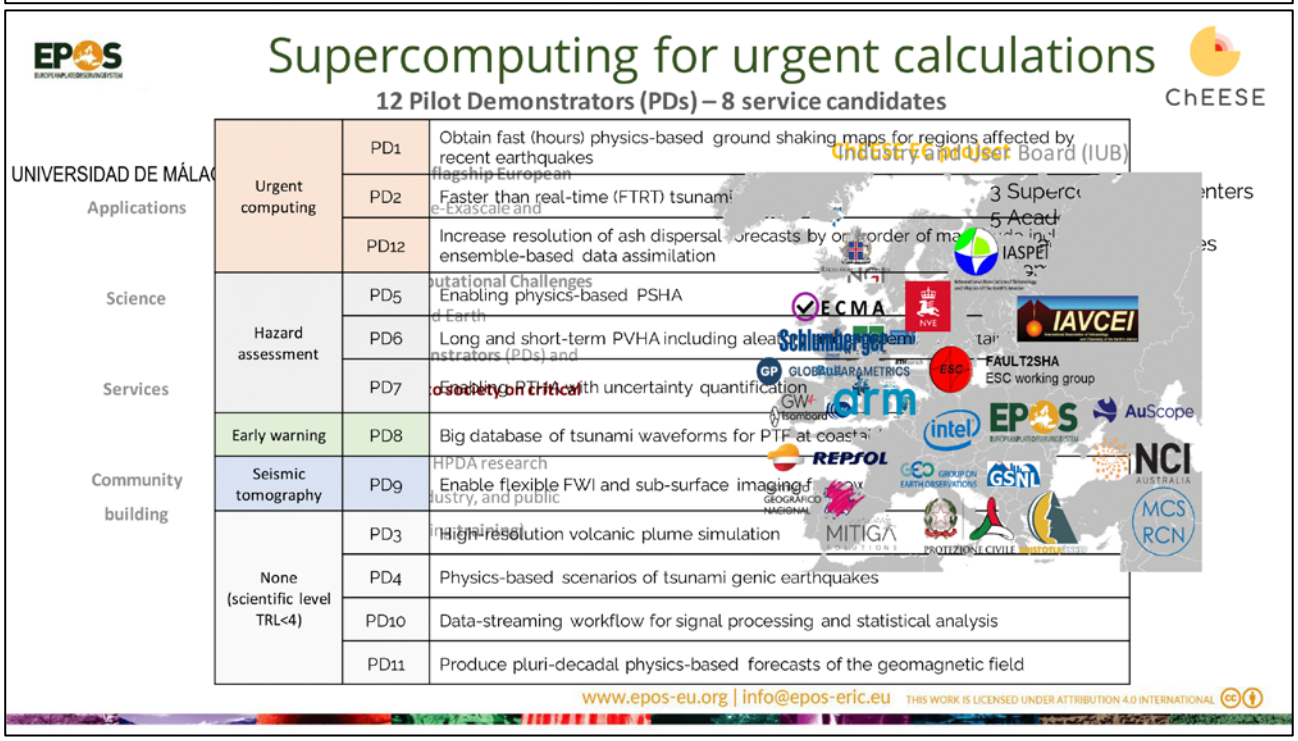


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Near-Real time services and scientific products: Campi Flegrei deformations monitoring: COSMO-SkyMed analysis (2009-2016)
Consiglio Nazionale delle Ricerche
Dec 2016
down
displacement
up
<15
(cm)
>15
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Subsidence along the high-speed Railway
>2
cm/year
<-2
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Archeological site monitoring: Pompei (Napoli)
>1
Defromation Velocity
[cm/year]
<-1
Displacement [cm]
Time [years]
2010
2011
2012
2013
2014
2015
388 CSK Images (July 2009 – July 2015)
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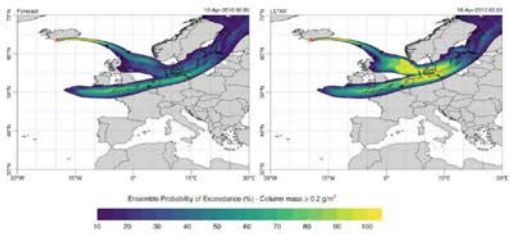

Supercomputing for urgent calculations
ChEESE
12 Pilot Demonstrators (PDs) – 8 service candidates
UNIVERSIDAD DE MÁLAG
Applications
Science
Services
Community building
Urgent computing
PD1
Obtain fast (hours) physics-based ground shaking maps for regions affected by recent earthquakes
PD2
Faster than real-time (FTRT) tsunam
PD12
Increase resolution of ash dispersal forecasts by or order of ma
ensemble-based data assimilation
Hazard assessment
PD5
Enabling physics-based PSHA
PD6
Long and short-term PVHA including alea
PD7
Enabling PTHA with uncertainty quantification
Early warning
PD8
Big database of tsunami waveforms for PTF at coast
Seismic tomography
PD9
Enable flexible FWI and sub-surface imaging f
None (scientific level TRL<4)
PD3
High-resolution volcanic plume simulation
PD4
Physics-based scenarios of tsunami genic earthquakes
PD10
Data-streaming workflow for signal processing and statistical analysis
PD11
Produce pluri-decadal physics-based forecasts of the geomagnetic field
IAVCEI
FAULT2SHA
ESC working group
AuScope
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High-resolution volcanic ash dispersal forecast

ChEESE

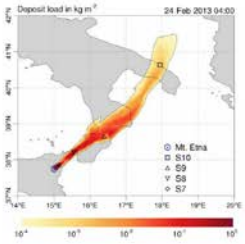
Volcanic ash cloud forecasts are performed shortly before or during an eruption in order to predict expected fallout rates in the next hours/days and/or to prevent aircraft encounters with volcanic clouds.

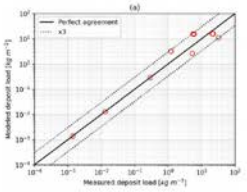
These forecasts constitute the main decision tool for flight cancellations and airplane re-routings avoiding contaminated airspace areas.











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Near-Fault Observatories: imaging the anatomy of active faults

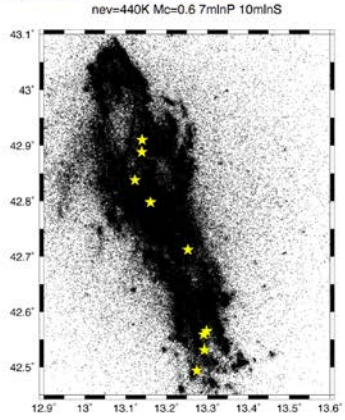
EPOS NFO

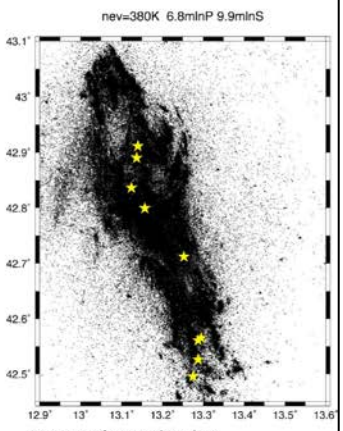
Artificial Intelligence for Earthquake Monitoring

Recent advances in computer science have important potential in seismological applications.

High-quality seismometers, massive data storage and computing power make the volume of available data virtually unlimited.

Entering in the era of ARTIFICIAL INTELLIGENCE, allows to navigate these high-dimensional datasets to gain insights into the physics of earthquakes and faults.





Courtesy of Lauro Chiaraluce

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Contribution to prevention actions: Inundation maps for Coastal Planning (including evacuation)

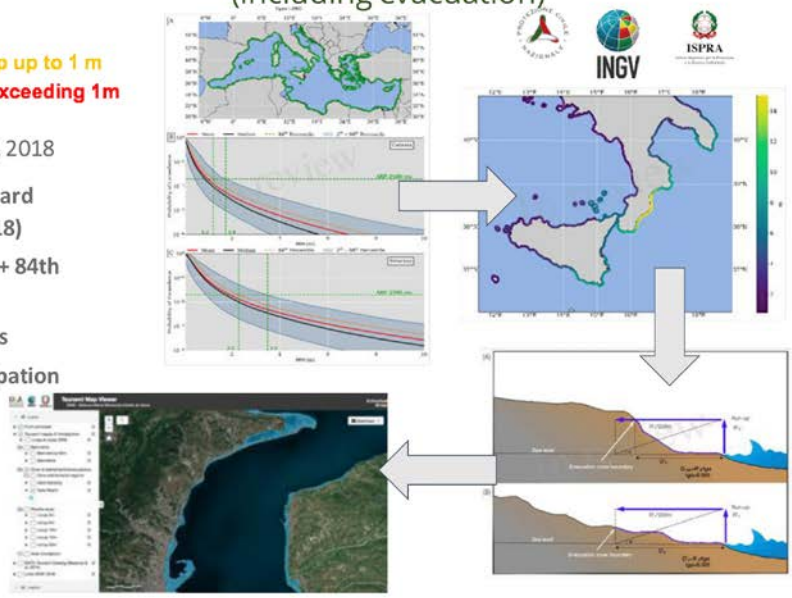
Alert Levels

Advisory: run-up up to 1 m

Watch: run-up exceeding 1m

DirPCSiAM; DPC, 2018

- Regional Hazard (NEAMTHM18)
- 2500 yr ARP + 84th percentile
- Safety factors
- Coastal dissipation



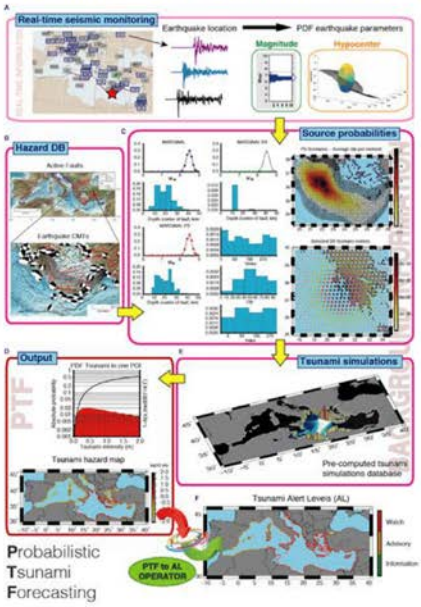
CENTRO ALLERTA TSUNAMI
ISTITUTO NAZIONALE DI GEOFISICA E VULCANOLOGIA

www.epos-eu.org | info@epos-eric.eu THIS WORK IS LICENSED UNDER ATTRIBUTION 4.0 INTERNATIONAL

Real time and Hazard data for Tsunami Forecasting

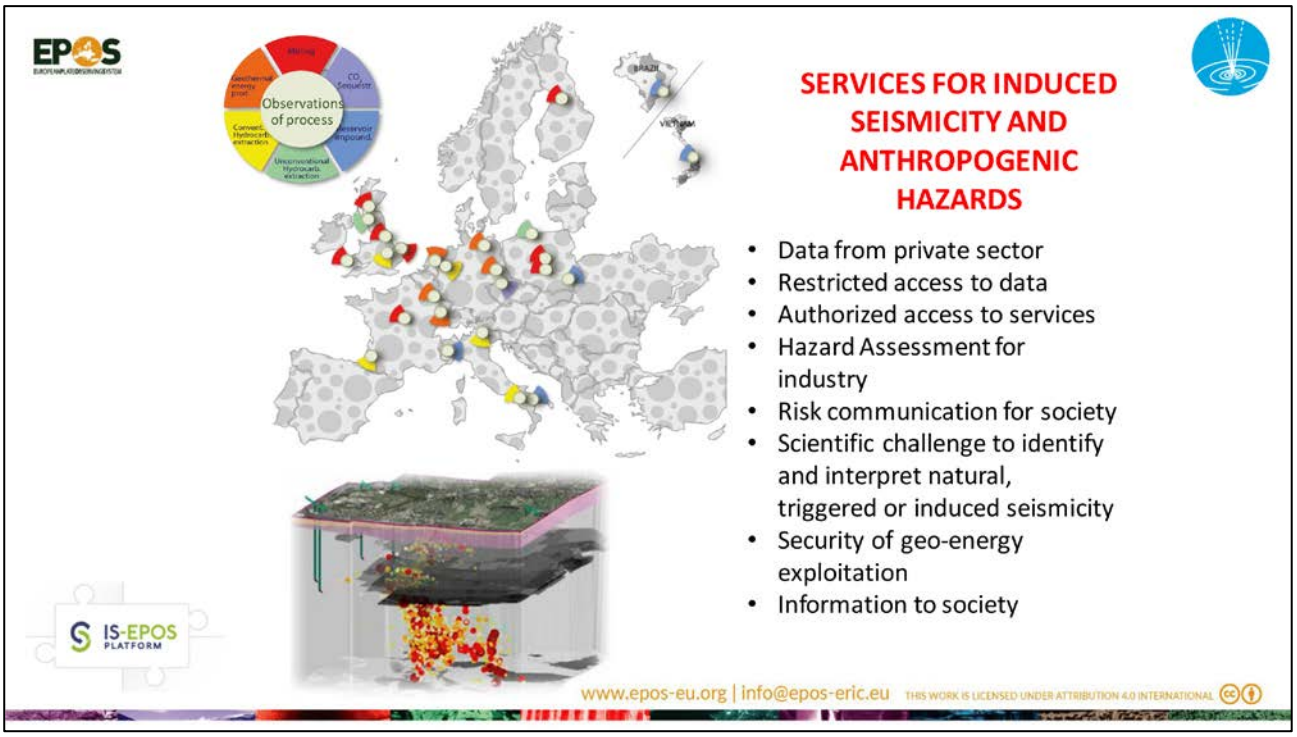
Earthquake **parameters in real time** (Magnitude and Location) are combined with **fault and tectonic knowledge** (focal mechanism likelihood) to constrain **rapid tsunami forecast with uncertainties**

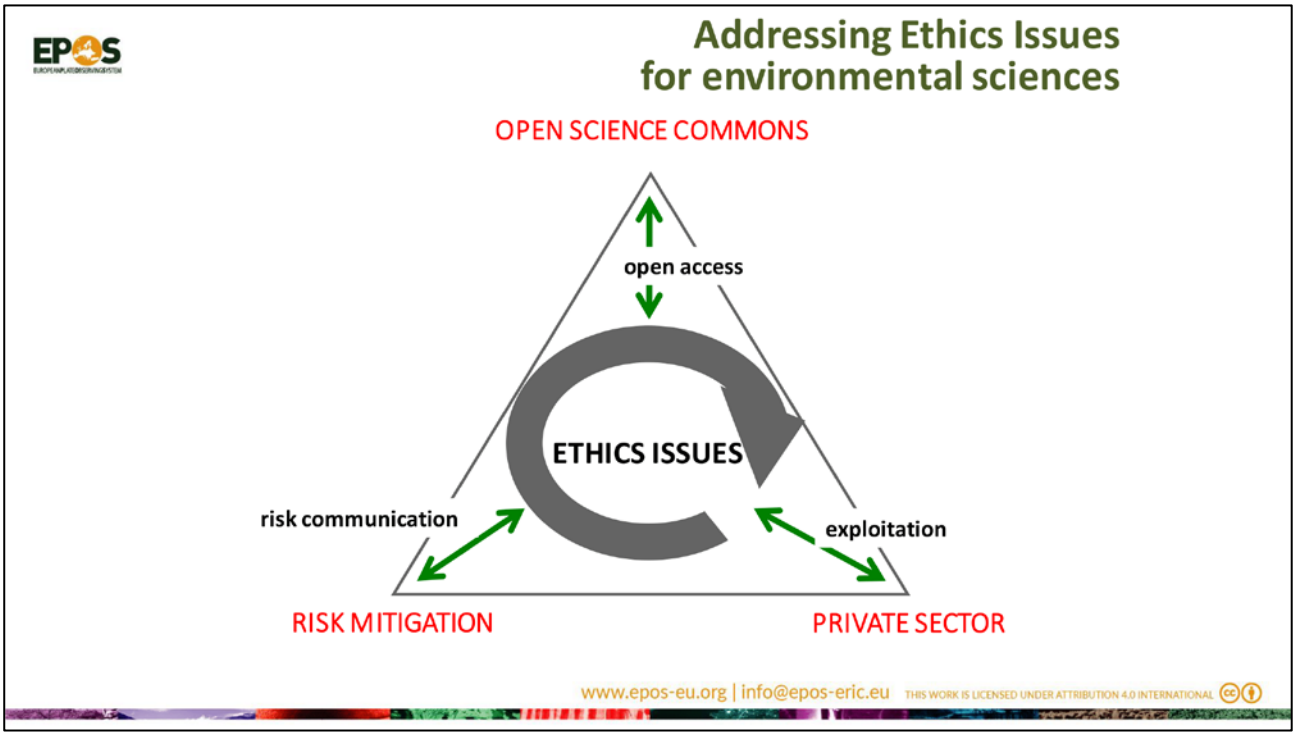
The probability at the site is converted into **alert level** according to the chosen level of **conservatism by the decision maker**

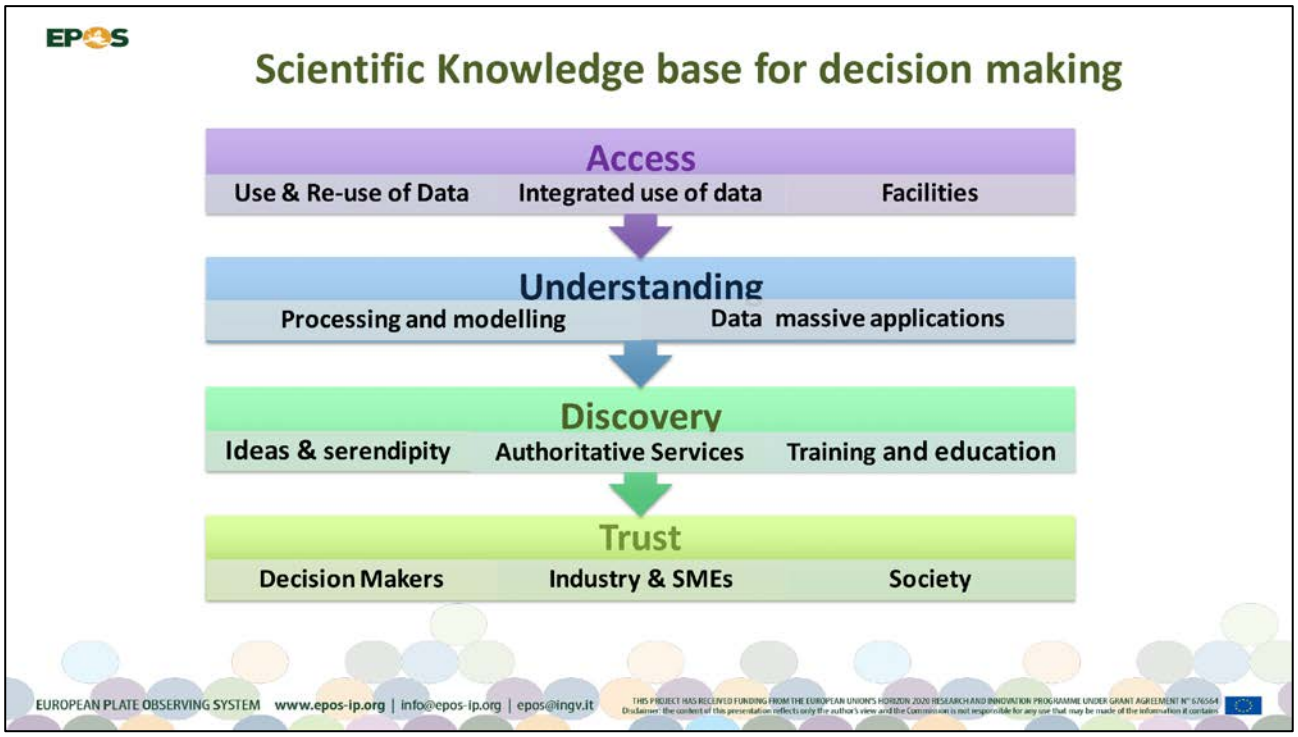


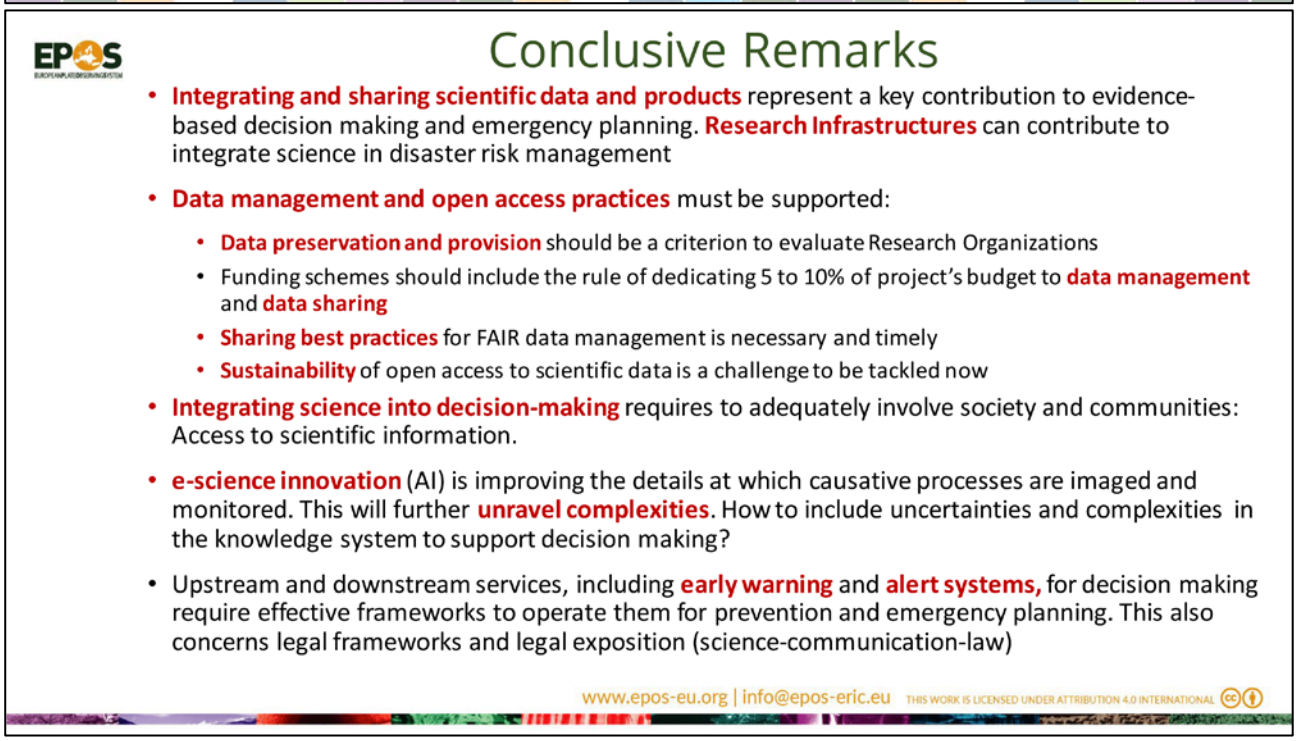
CENTRO ALLERTA TSUNAMI
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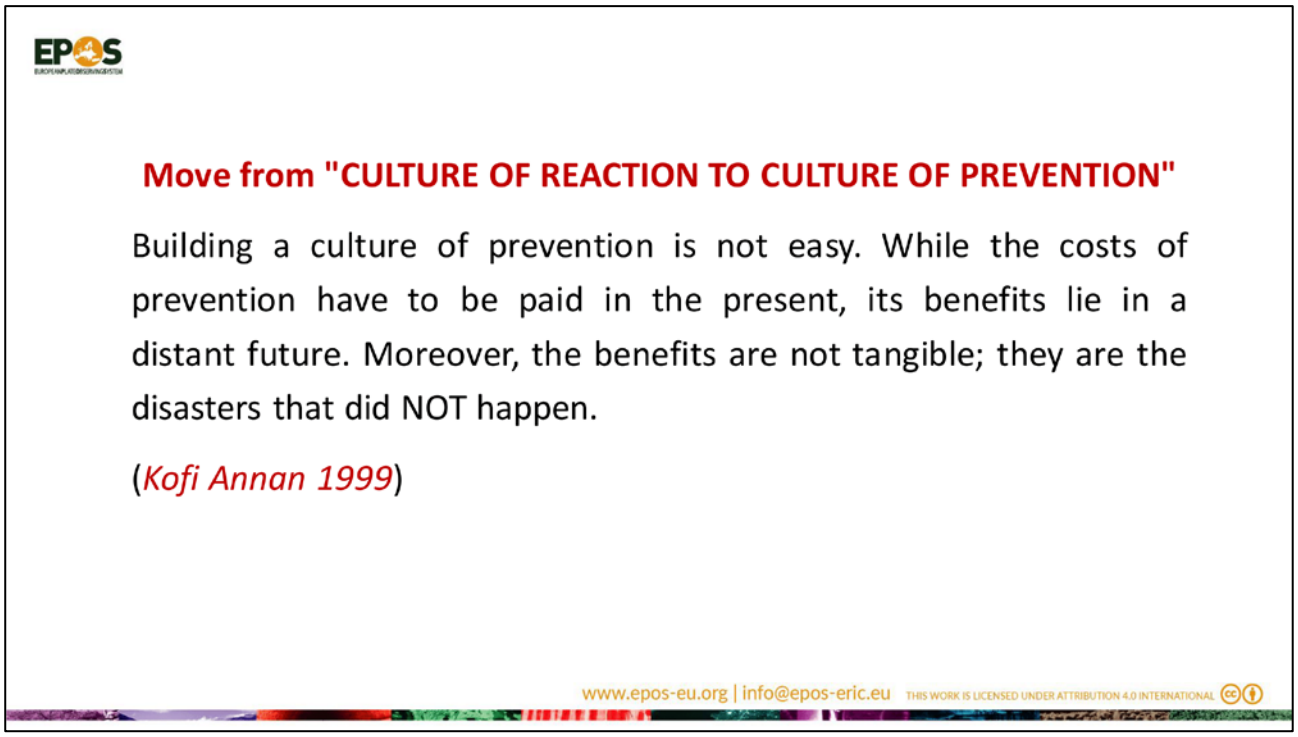
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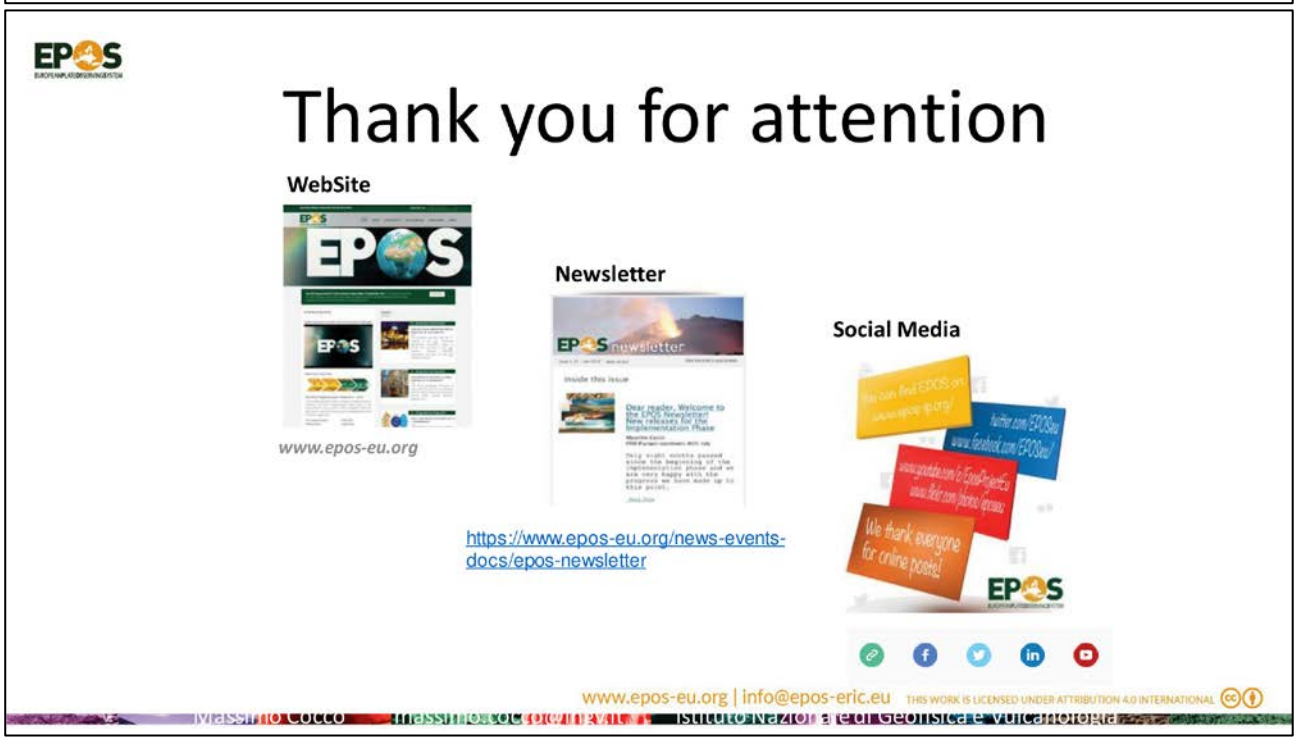

Observations of process
SERVICES FOR INDUCED SEISMICITY AND ANTHROPOGENIC HAZARDS
• Data from private sector
• Restricted access to data
• Authorized access to services
• Hazard Assessment for industry
• Risk communication for society
• Scientific challenge to identify and interpret natural, triggered or induced seismicity
• Security of geo-energy exploitation
• Information to society
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Addressing Ethics Issues for environmental sciences
OPEN SCIENCE COMMONS
open access
ETHICS ISSUES
risk communication
exploitation
RISK MITIGATION
PRIVATE SECTOR
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Scientific Knowledge base for decision making
Access
Use & Re-use of Data
Integrated use of data
Facilities
Understanding
Processing and modelling
Data massive applications
Discovery
Ideas & serendipity
Authoritative Services
Training and education
Trust
Decision Makers
Industry & SMEs
Society
EUROPEAN PLATE OBSERVING SYSTEM
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Conclusive Remarks
Integrating and sharing scientific data and products represent a key contribution to evidence-based decision making and emergency planning. Research Infrastructures can contribute to integrate science in disaster risk management
Data management and open access practices must be supported:
Data preservation and provision should be a criterion to evaluate Research Organizations
Funding schemes should include the rule of dedicating 5 to 10% of project's budget to data management and data sharing
Sharing best practices for FAIR data management is necessary and timely
Sustainability of open access to scientific data is a challenge to be tackled now
Integrating science into decision-making requires to adequately involve society and communities: Access to scientific information.
e-science innovation (AI) is improving the details at which causative processes are imaged and monitored. This will further unravel complexities. How to include uncertainties and complexities in the knowledge system to support decision making?
Upstream and downstream services, including early warning and alert systems, for decision making require effective frameworks to operate them for prevention and emergency planning. This also concerns legal frameworks and legal exposition (science-communication-law)
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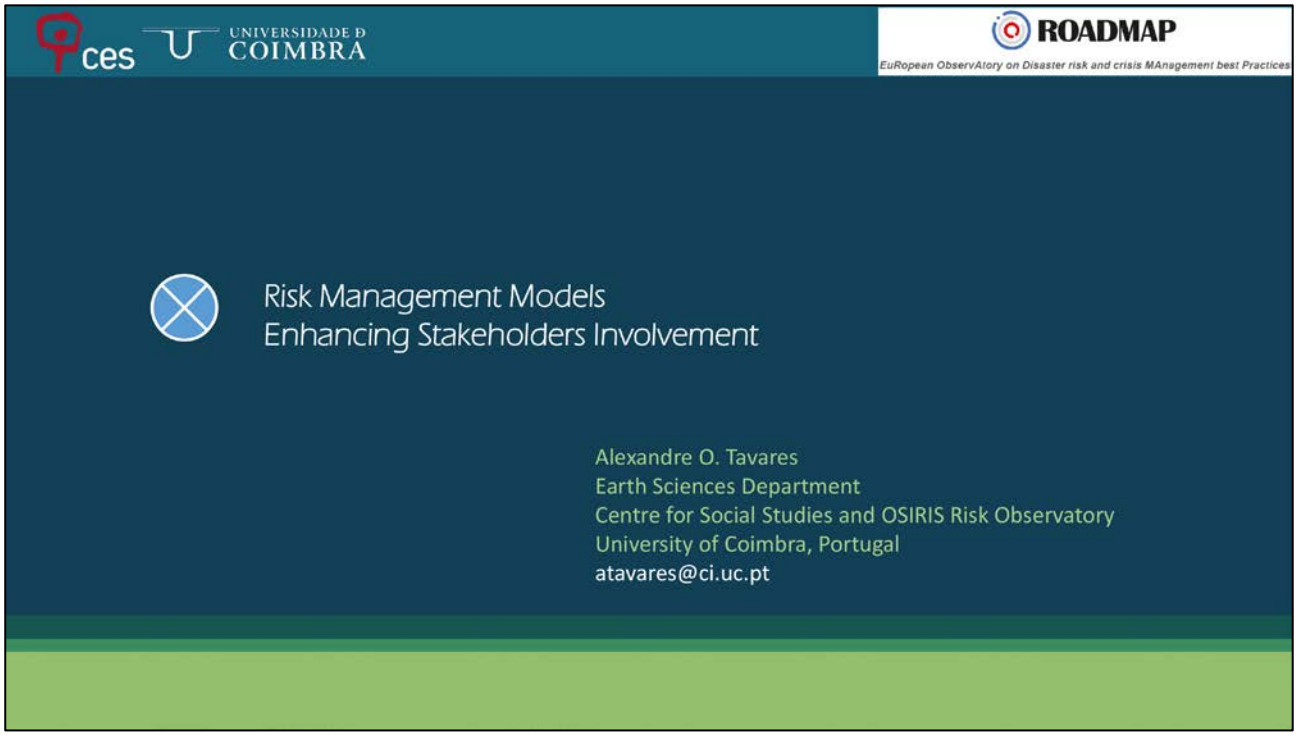


- **Alexandre Tavares** (scientist). Alexandre Tavares identified this nexus as a main possible outcome of the project (Professor in risk analysis and multi risk problems).

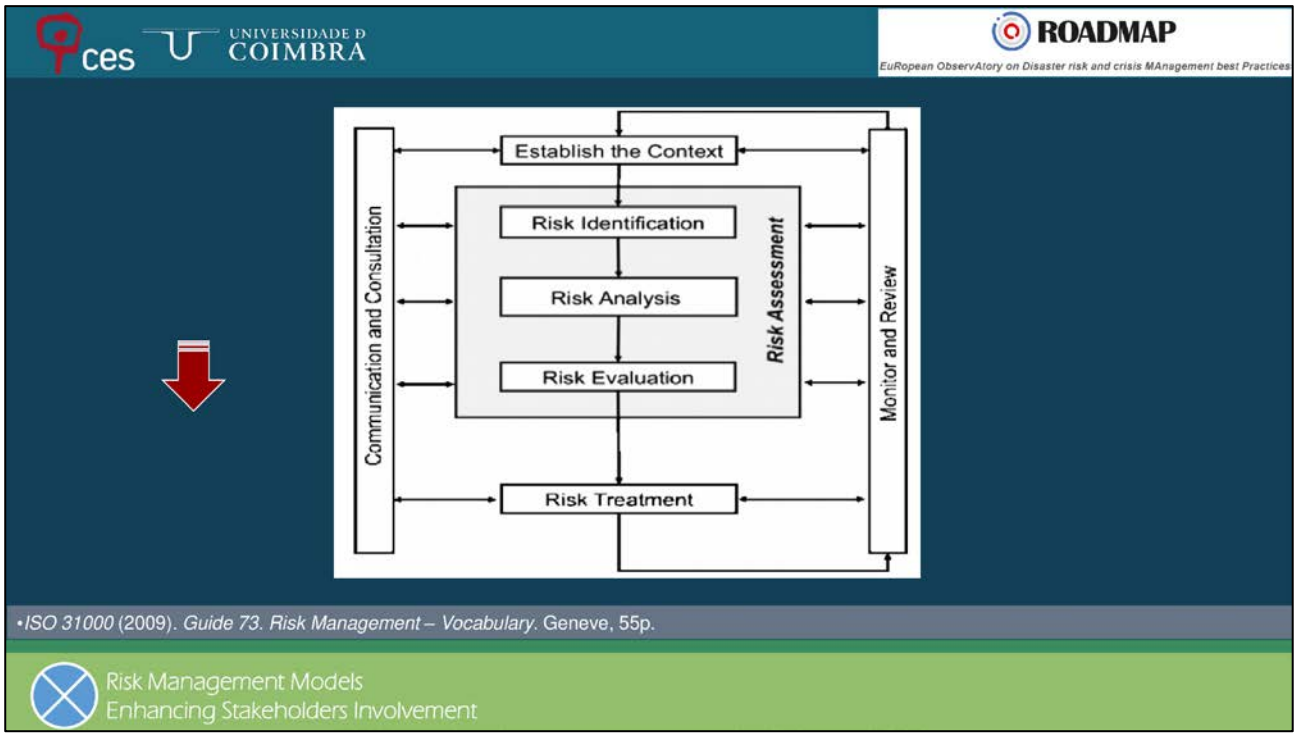
  Short CV:
  Alexandre Oliveira Tavares holds a PhD. in Geological Engineering from Coimbra University, in the specialization of Environmental Geology and Spatial Planning. He is an associate professor, with aggregation, in the School of Sciences and Technology. He is a researcher at the Centre for Social Studies, where he has been working in Risk Analysis and Management, Landscape Evolution and Land Use Planning, with focus on susceptibility mapping, natural resources management and public

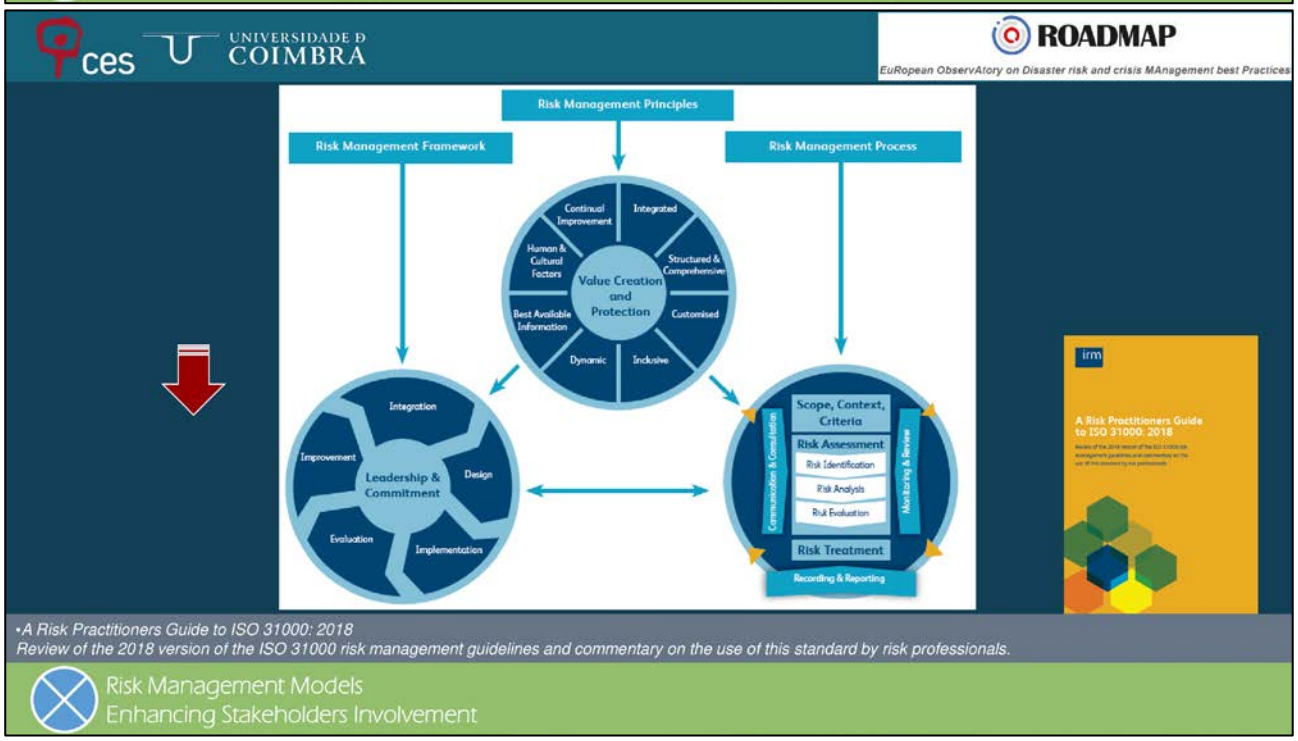
policies. He is a researcher of the Observatory of Risk (OSIRIS) of the Centre for Social Studies. Professor in the Geosciences master course and in the interfaculty Social Dynamics, Natural and Technological Risks course. Teacher in the PhD interuniversity course in Territory, Risk and Public Policies. Former Head of the Earth Sciences Deparment of the FCTUC. Member of the Scientific Panel of the National Strategy for Adapting to Climate Change ENAAC 2020. Member of the National Platform for Disaster Reduction. Currently CEO of the public company Águas do Centro Litoral.

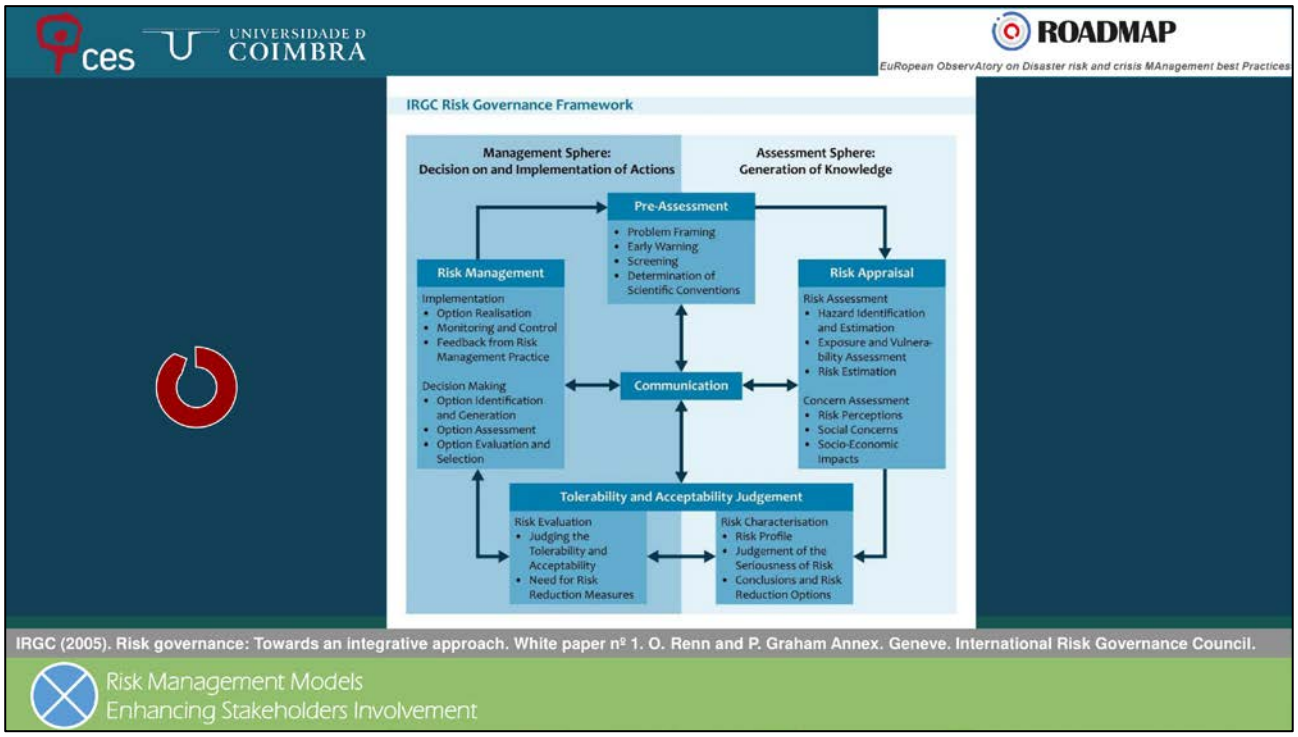
Recording and presentation printout:
https://youtu.be/qOqqSyMx6Lc

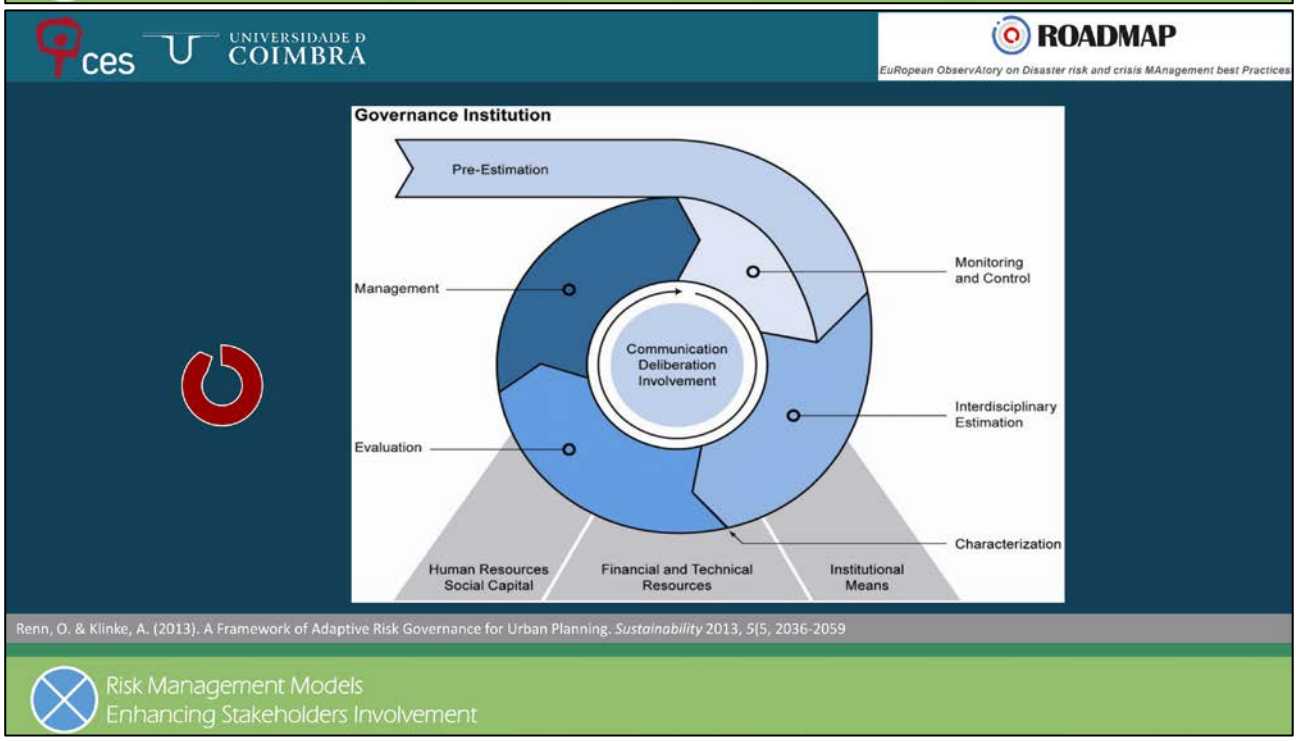


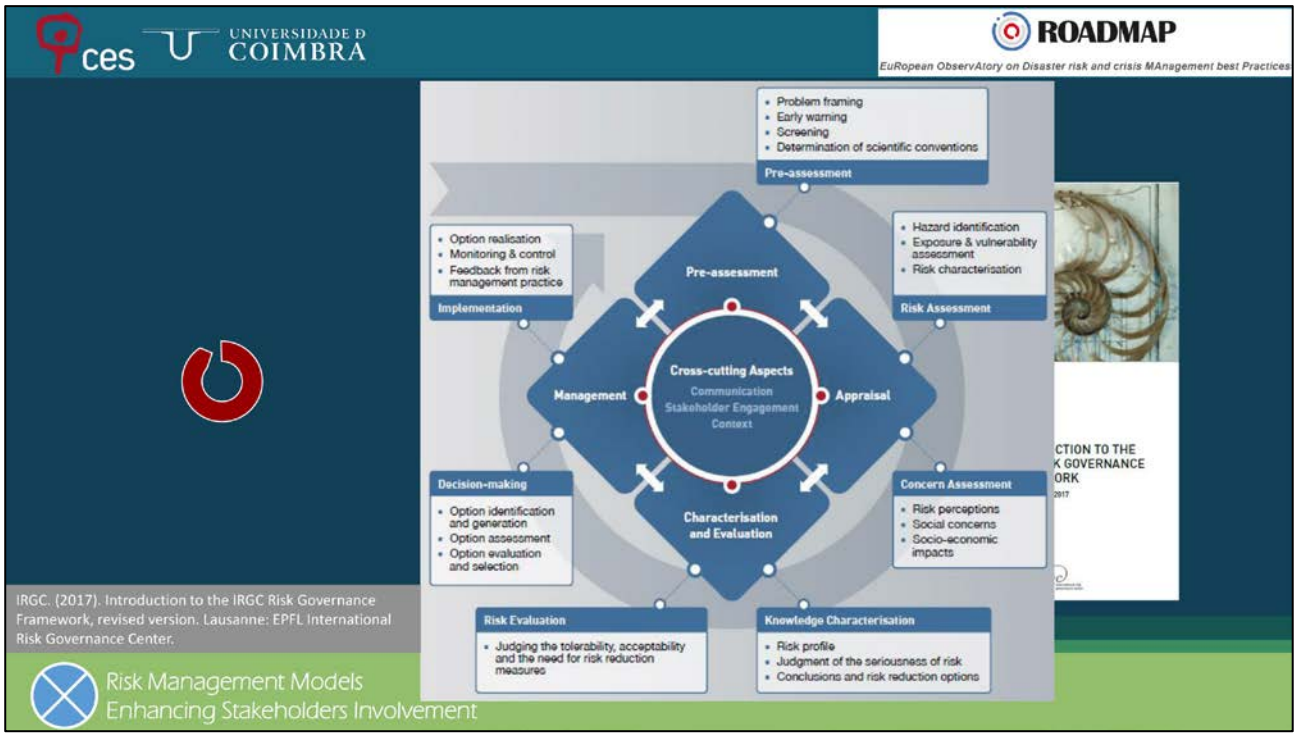


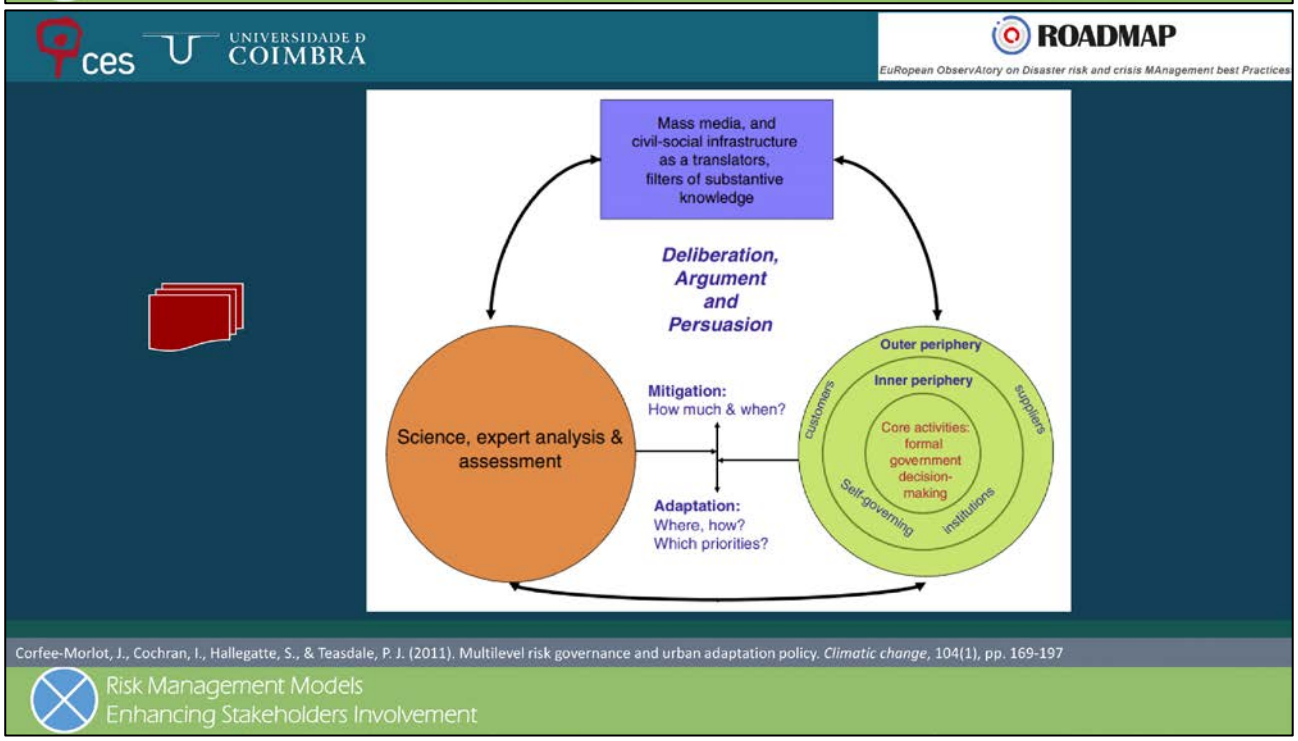

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EuROpean ObservAtory on Disaster risk and crisis MAnagement best Practices
Establish the Context
Risk Identification
Risk Analysis
Risk Evaluation
Risk Treatment
Risk Assessment
Communication and Consultation
Monitor and Review
•ISO 31000 (2009). Guide 73. Risk Management – Vocabulary. Geneve, 55p.
Risk Management Models
Enhancing Stakeholders Involvement

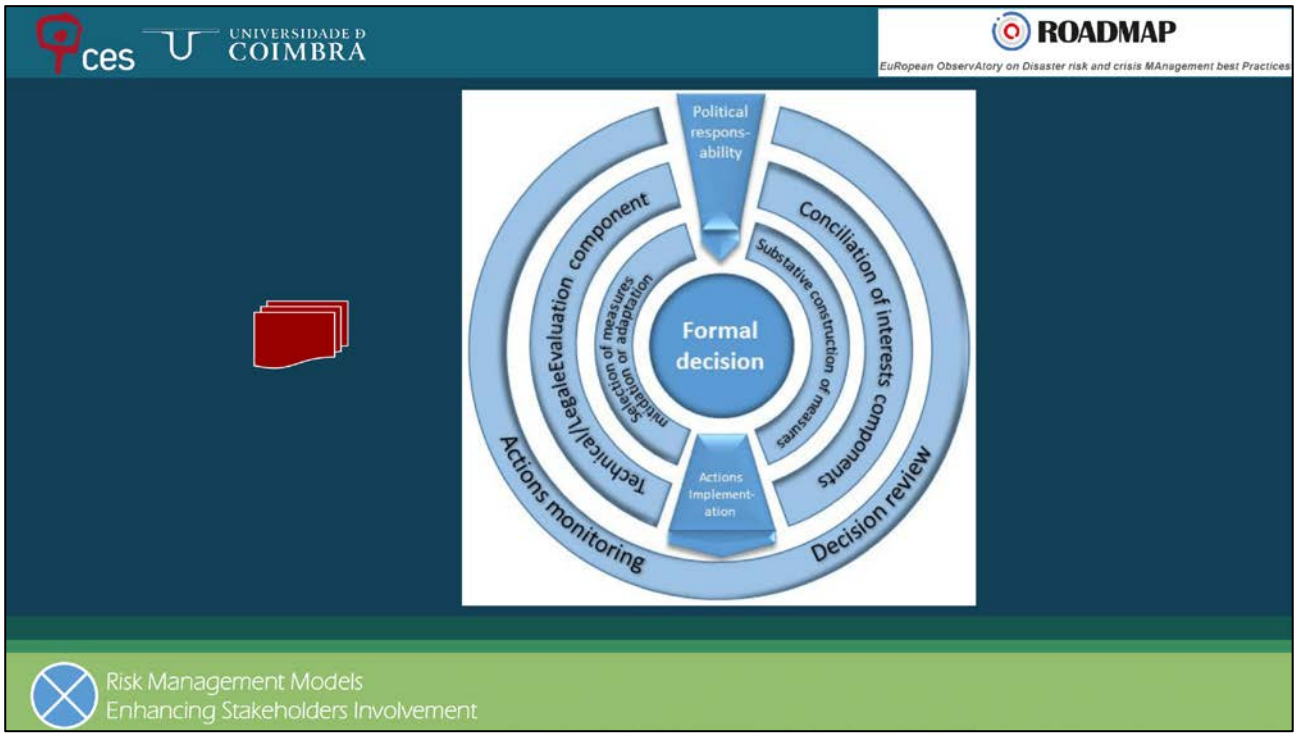

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ROADMAP
EuROpean ObservAtory on Disaster risk and crisis MAnagement best Practices
Risk Management Principles
Risk Management Framework
Risk Management Process
Value Creation and Protection
Integrated
Structured & Comprehensive
Customised
Inclusive
Dynamic
Best Available Information
Human & Cultural Factors
Continual Improvement
Leadership & Commitment
Integration
Design
Implementation
Evaluation
Improvement
Scope, Context, Criteria
Risk Assessment
Risk Identification
Risk Analysis
Risk Evaluation
Risk Treatment
Recording & Reporting
Communication & Consultation
Monitoring & Review
irm
A Risk Practitioners Guide to ISO 31000: 2018
•A Risk Practitioners Guide to ISO 31000: 2018
Review of the 2018 version of the ISO 31000 risk management guidelines and commentary on the use of this standard by risk professionals.
Risk Management Models
Enhancing Stakeholders Involvement

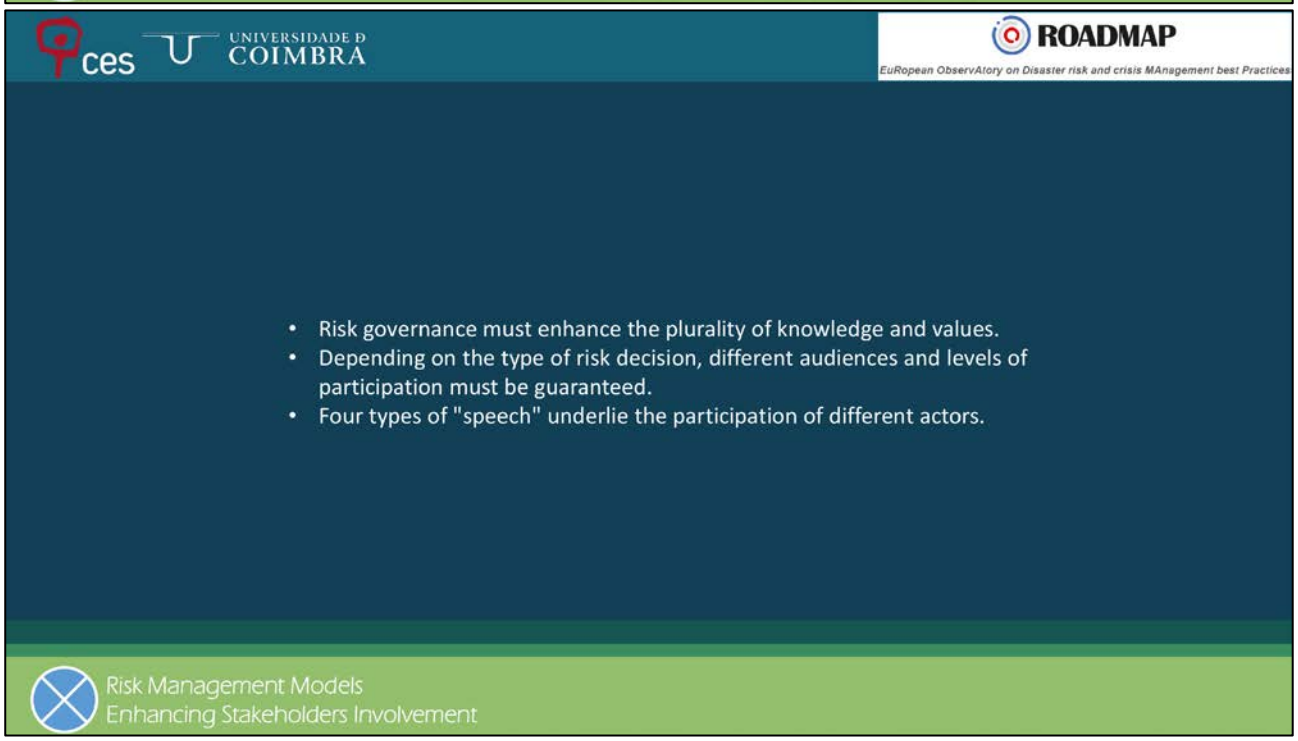

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IRGC Risk Governance Framework
Management Sphere: Decision on and Implementation of Actions
Assessment Sphere: Generation of Knowledge
Pre-Assessment
Problem Framing
Early Warning
Screening
Determination of Scientific Conventions
Risk Management
Implementation
Option Realisation
Monitoring and Control
Feedback from Risk Management Practice
Decision Making
Option Identification and Generation
Option Assessment
Option Evaluation and Selection
Risk Appraisal
Risk Assessment
Hazard Identification and Estimation
Exposure and Vulnerability Assessment
Risk Estimation
Concern Assessment
Risk Perceptions
Social Concerns
Socio-Economic Impacts
Communication
Tolerability and Acceptability Judgement
Risk Evaluation
Judging the Tolerability and Acceptability
Need for Risk Reduction Measures
Risk Characterisation
Risk Profile
Judgement of the Seriousness of Risk
Conclusions and Risk Reduction Options
IRGC (2005). Risk governance: Towards an integrative approach. White paper nº 1. O. Renn and P. Graham Annex. Geneve. International Risk Governance Council.
Risk Management Models
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Governance Institution
Pre-Estimation
Management
Monitoring and Control
Communication Deliberation Involvement
Interdisciplinary Estimation
Evaluation
Characterization
Human Resources Social Capital
Financial and Technical Resources
Institutional Means
Renn, O. & Klinke, A. (2013). A Framework of Adaptive Risk Governance for Urban Planning. Sustainability 2013, 5(5, 2036-2059
Risk Management Models
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EuROpean ObservAtory on Disaster risk and crisis MAnagement best Practices
Problem framing
Early warning
Screening
Determination of scientific conventions
Pre-assessment
Option realisation
Monitoring & control
Feedback from risk management practice
Implementation
Hazard identification
Exposure & vulnerability assessment
Risk characterisation
Risk Assessment
Pre-assessment
Management
Cross-cutting Aspects
Communication
Stakeholder Engagement
Context
Appraisal
Decision-making
Option identification and generation
Option assessment
Option evaluation and selection
Characterisation and Evaluation
Concern Assessment
Risk perceptions
Social concerns
Socio-economic impacts
Risk Evaluation
Judging the tolerability, acceptability and the need for risk reduction measures
Knowledge Characterisation
Risk profile
Judgment of the seriousness of risk
Conclusions and risk reduction options
IRGC. (2017). Introduction to the IRGC Risk Governance Framework, revised version. Lausanne: EPFL International Risk Governance Center.
Risk Management Models
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Mass media, and civil-social infrastructure as a translators, filters of substantive knowledge
Deliberation, Argument and Persuasion
Science, expert analysis & assessment
Mitigation: How much & when?
Adaptation: Where, how? Which priorities?
Outer periphery
Inner periphery
Core activities: formal government decision-making
customers
suppliers
Self-governing
institutions
Corfee-Morlot, J., Cochran, I., Hallegatte, S., & Teasdale, P. J. (2011). Multilevel risk governance and urban adaptation policy. Climatic change, 104(1), pp. 169-197
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Political respons-ability
Conciliation of interests components
Substative construction of measures
Formal decision
Selection of measures of adaptation
Technical/Legale Evaluation component
Actions Implement-ation
Actions monitoring
Decision review
Risk Management Models
Enhancing Stakeholders Involvement


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• Risk governance must enhance the plurality of knowledge and values.
• Depending on the type of risk decision, different audiences and levels of participation must be guaranteed.
• Four types of "speech" underlie the participation of different actors.
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Box 16: IRGC Stakeholder Engagement Resource Guide

In order to provide further guidance to practitioners and academics, for developing and implementing science-based stakeholder involvement in research, policy, strategies and practices, in 2013, IRGC produced an annotated resource guide for stakeholder engagement. The guide reviews existing manuals, providing background information on the various perspectives. It emphasises the importance of determining the main objective and the expected outcome or contributions that engaging with stakeholders aim to achieve, before choosing the type of method that will be used to involve stakeholders. stakeholder.irgc.org.

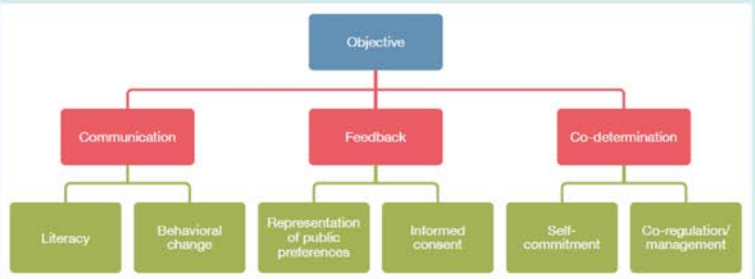


Figure 6: Objectives of engaging stakeholders.

Risk Management Models
Enhancing Stakeholders Involvement

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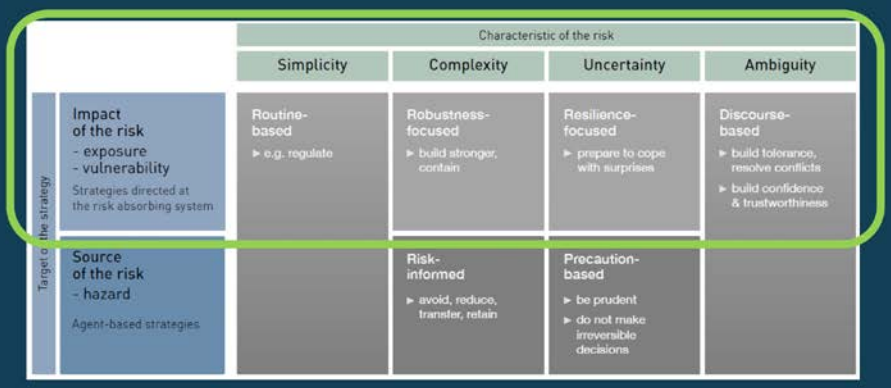
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EuRopean ObservAtory on Disaster risk and crisis MAnagement best Practices

Simple risk refers to processes where the benefits came from instrumental and regulatory application.

Complex risk refers to difficulties in identifying and quantifying causal links between a multitude of potential causal agents and specific observed effects.

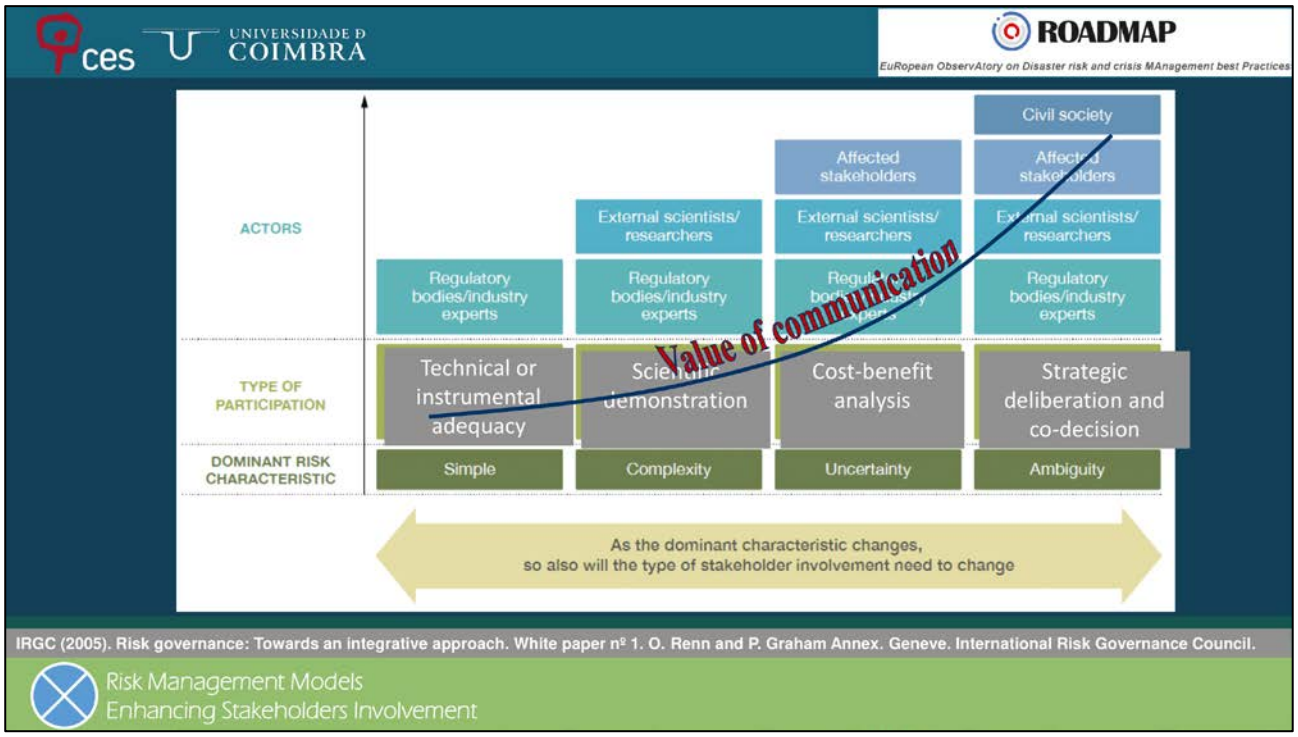
Uncertain risk refers to a lack of clarity or quality of the scientific or technical data to solve the problem or establish mitigation measures.

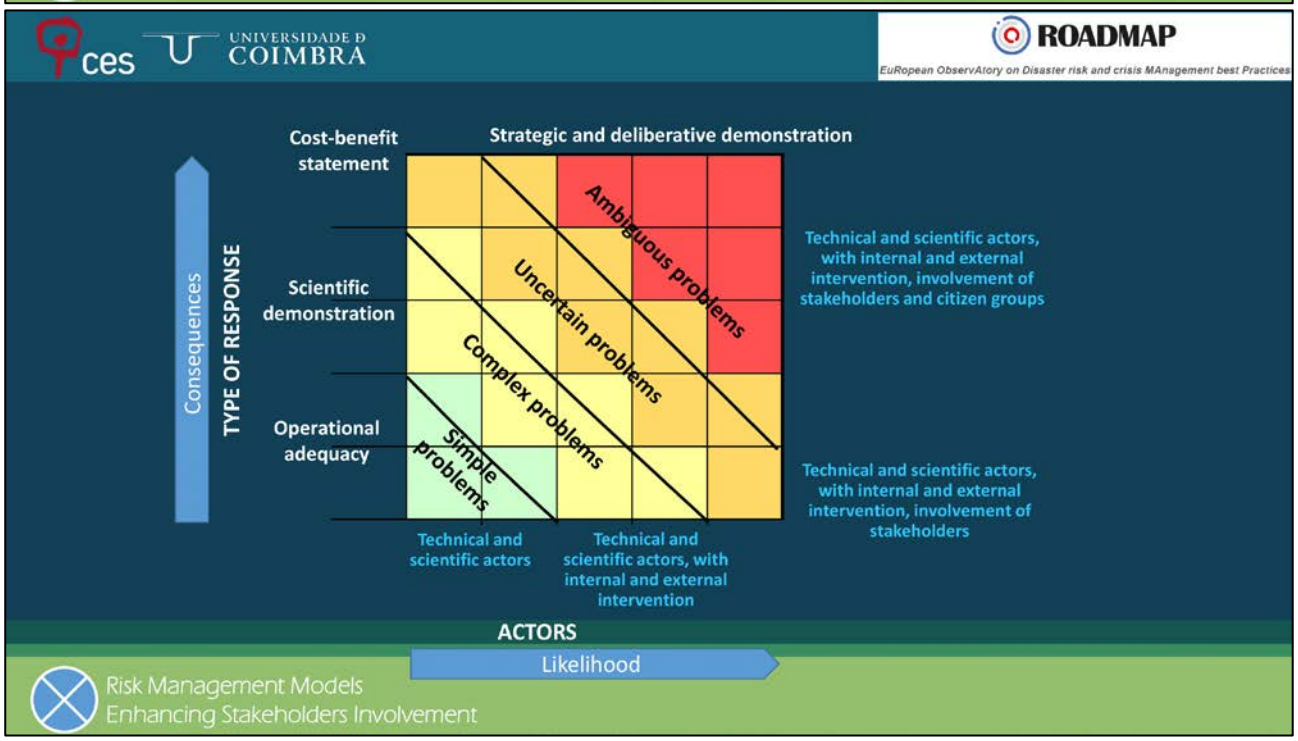
Ambiguous risk results from divergent or contested perspectives on the justification, severity or wider meanings associated with a given threat.

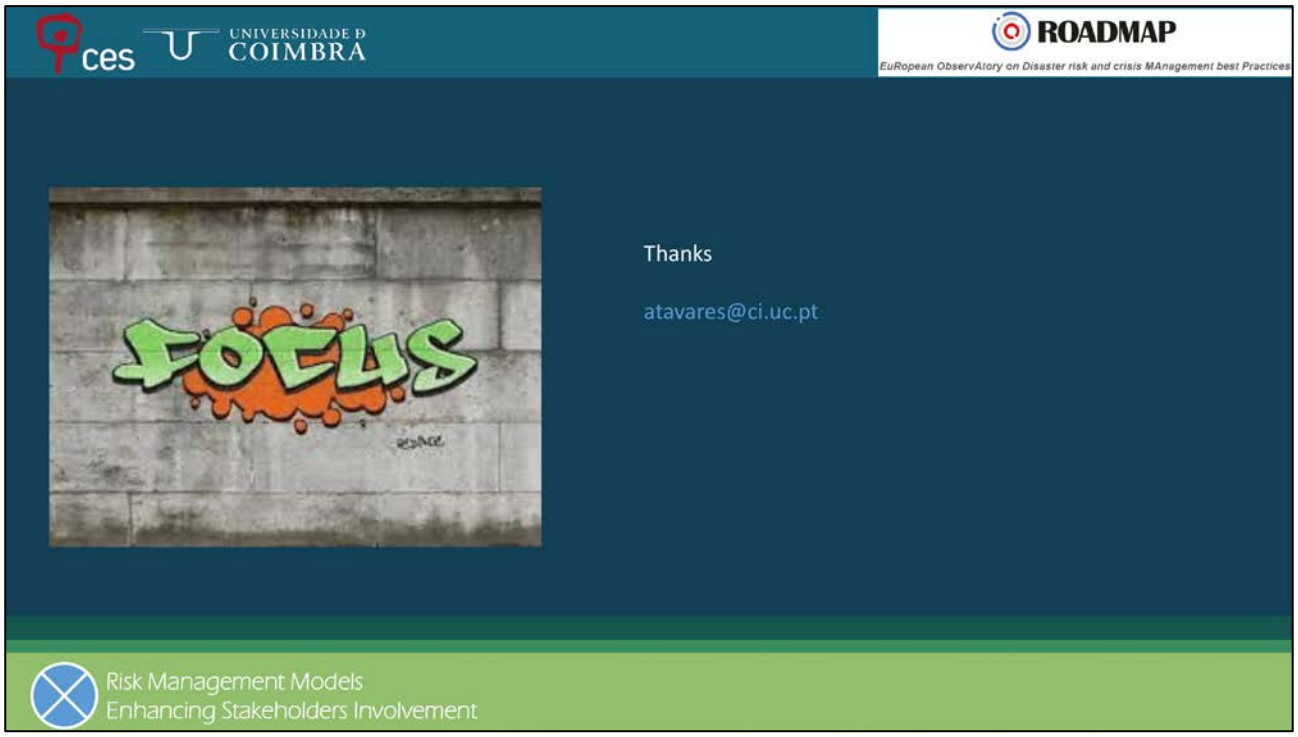


IRGC (2005). Risk governance: Towards an integrative approach. White paper nº 1. O. Renn and P. Graham Annex. Geneve. International Risk Governance Council.

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ACTORS
TYPE OF PARTICIPATION
DOMINANT RISK CHARACTERISTIC
Civil society
Affected stakeholders
External scientists/ researchers
Regulatory bodies/industry experts
Value of communication
Technical or instrumental adequacy
Scientific demonstration
Cost-benefit analysis
Strategic deliberation and co-decision
Simple
Complexity
Uncertainty
Ambiguity
As the dominant characteristic changes, so also will the type of stakeholder involvement need to change
IRGC (2005). Risk governance: Towards an integrative approach. White paper nº 1. O. Renn and P. Graham Annex. Geneve. International Risk Governance Council.
Risk Management Models Enhancing Stakeholders Involvement


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EuRopean ObservAtory on Disaster risk and crisis MAnagement best Practices
Cost-benefit statement
Strategic and deliberative demonstration
Scientific demonstration
Operational adequacy
Consequences
TYPE OF RESPONSE
Ambiguous problems
Uncertain problems
Complex problems
Simple problems
Technical and scientific actors, with internal and external intervention, involvement of stakeholders and citizen groups
Technical and scientific actors, with internal and external intervention, involvement of stakeholders
Technical and scientific actors
Technical and scientific actors, with internal and external intervention
ACTORS
Likelihood
Risk Management Models Enhancing Stakeholders Involvement



- **Flavia Riccardo** (scientist/decision maker). She gave good input, namely concerning the current pandemic situation (Italian National Institute of Health, Rome, Italy).

  Short CV:
  Experienced researcher in the infectious disease epidemiology unit with a demonstrated history of working in the field of epidemiology. Skilled in Epidemiology, Lecturing, and Prevention. Strong research professional with a Doctor of Philosophy (PhD) focused in Infectious Diseases from University "La Sapienza" Rome.

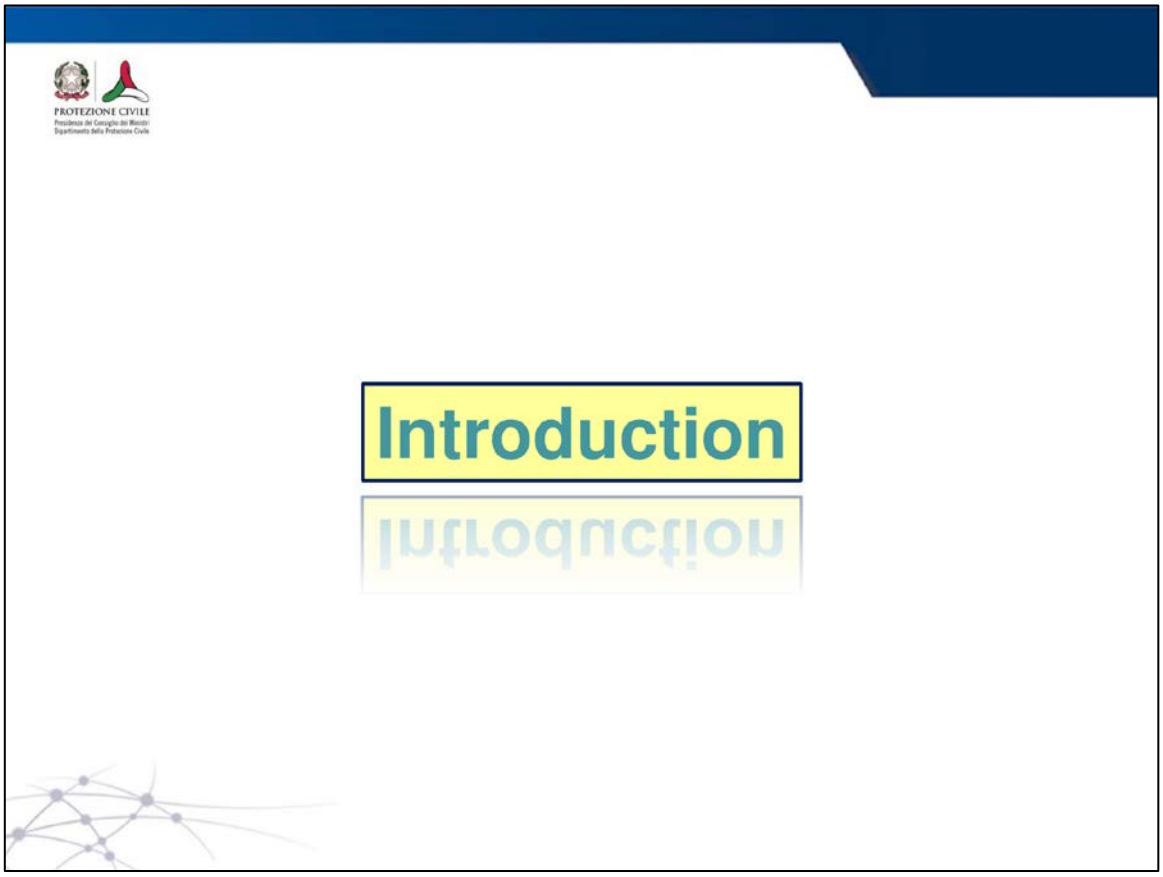
  Recording:
  https://youtu.be/VWXcRV5MOm0

- **Daniela Di Bucci** (decision-maker), member of ROADMAP consortium, which have worked and published on the relationship between scientists and decision-makers on civil protection issues.

  Short CV:
  Daniela Di Bucci - Ph.D., geologist with expertise in geohazards, working in the Scientific Advisory Unit of the Italian Civil Protection Department, on: scientific relationships and agreements with research institutes and academia; Major Risks Commission activities; definition of strategies with high scientific content for Disaster Risk Reduction at national and international level; draft of regulations with relevant technical-scientific content. Author of more than 100 peer reviewed scientific publications (H-i: 22 on Scopus, 25 on Google Scholar).

  Recording and presentation printout:
  https://youtu.be/QD25H0yqQoE


ROADMAP
1st Webinar
The Nexus between Scientists and
Decision Makers in Disaster Risk Management
25 June 2021
Building an effective collaboration between civil protection decision-makers and scientists for DRR: the Italian experience
Daniela Di Bucci, Mauro Dolce
Scientific Advisory Unit
PROTEZIONE CIVILE
Presidenza del Consiglio dei Ministri
Dipartimento della Protezione Civile
GA n° 101017776 - ROADMAP - UCPM-2020-KN-AG - Project co-funded by the European Union Civil Protection


PROTEZIONE CIVILE
Introduction

Introduction

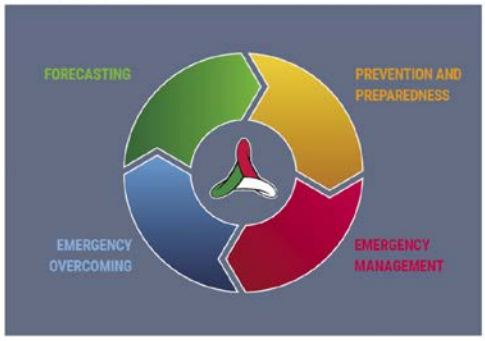
DRR related to civil protection risks is based on two fundamental pillars:

- **technical decision-makers**
- **scientists**

Above them:

- **political decision-makers** → represent the political willingness / support DRR activities according to the electoral mandate.

Technical decision-makers → manage the entire risk cycle.
The scientific community → provides data, products, models, scientific information and advice as a qualified support for sound decision-making.



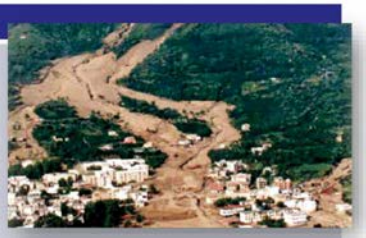
Importance and role → reciprocally acknowledged.
But how to implement the interplay between them to achieve effective DRR is another matter.

Examples of relationship science – decision-making in civil protection

- Many EU Countries: committees and expert groups appointed by the national civil protection authorities.
- Countries also outside EU: advisory councils, advisory committees, national academies and chief scientific advisors. Role also played by the National Platforms for DRR.
- United States: formal agreement for cooperation and coordination between FEMA and USGS.
- New Zealand: relationship openly acknowledged (e.g., Guide to the National Civil Defence Emergency Management Plan).
- Spain: collaboration behind the writing of governmental documents, as with Spain's National Civil Protection Strategy.
- Chile → also support for the training of civil protection operators (e.g., Civil Protection Academy created by ONEMI).

Risks of civil protection in Italy (Legislative Decree 1/2018, art. 16)

Body in charge	Risk
Types of risks for which the Italian civil protection system takes action.	seismic volcanic from tsunamis hydraulic hydrogeological from adverse weather phenomena from water deficit forest fires
Types of risks for which the responsible bodies are identified by specific laws. However, the action of the civil protection system can also be carried out for these ones.	chemical nuclear radiological technological industrial transport environmental health uncontrolled re-entry of objects and space debris





The civil protection system in Italy

The Italian **National Civil Protection Service** (NCPS) is:

- multilevel, with responsibilities in a wide range of fields of the risk cycle;
- coordinated by the Civil Protection Department;
- currently ruled by the Civil Protection Code (L.D. 1/2018).



Subjects that make up the system →



Components: State, Regions and Autonomous Provinces, local Authorities;

Operational Structures: i.e., Firefighters, Volunteers, etc.;

Contributing Subjects: professional orders, public and private companies, etc. Citizens too may contribute to the civil protection.

The scientific community is mentioned among the Operational Structures.



PROTEZIONE CIVILE

Science-Civil Protection relationship in Italy

PROTEZIONE CIVILE

A relationship issued by law

Collaboration dating back to 1976 (aftermath of Friuli eq.)

Formal relationship in the **Law 225/1992**:

- scientific bodies and research institutions included among the operational structures of the NCPS;
- Major Risks Commission established for the first time.

Current **Civil Protection Code (L.D. 1/2018)**:

- several articles dedicated to the scientific community;
- recognition of the important role the scientific community plays in civil protection activities;
- need to better regulate this role → question of responsibilities increasingly emerging, over the years and at both international and national level.

Role played by the law → not only formal:

- it shapes practically the collaboration between scientists and CP decision-makers.



PROTEZIONE CIVILE

Activities of the scientific community in the NCPS

a) routine and operational activities [...] which include, inter alia, monitoring and surveillance of events, development of databases and any other activity useful for emergency management and risk forecast and prevention which provides products of immediate use;

b) experimental activities preparatory to the activities referred to in point a), as well as the production of scientific contributions and the synthesis of existing research useful to this end;

c) targeted research preparatory to the development of products useful for risk management [...] and the study of the related scenarios;

d) collaboration in the preparation of technical regulations of interest.

PROTEZIONE CIVILE

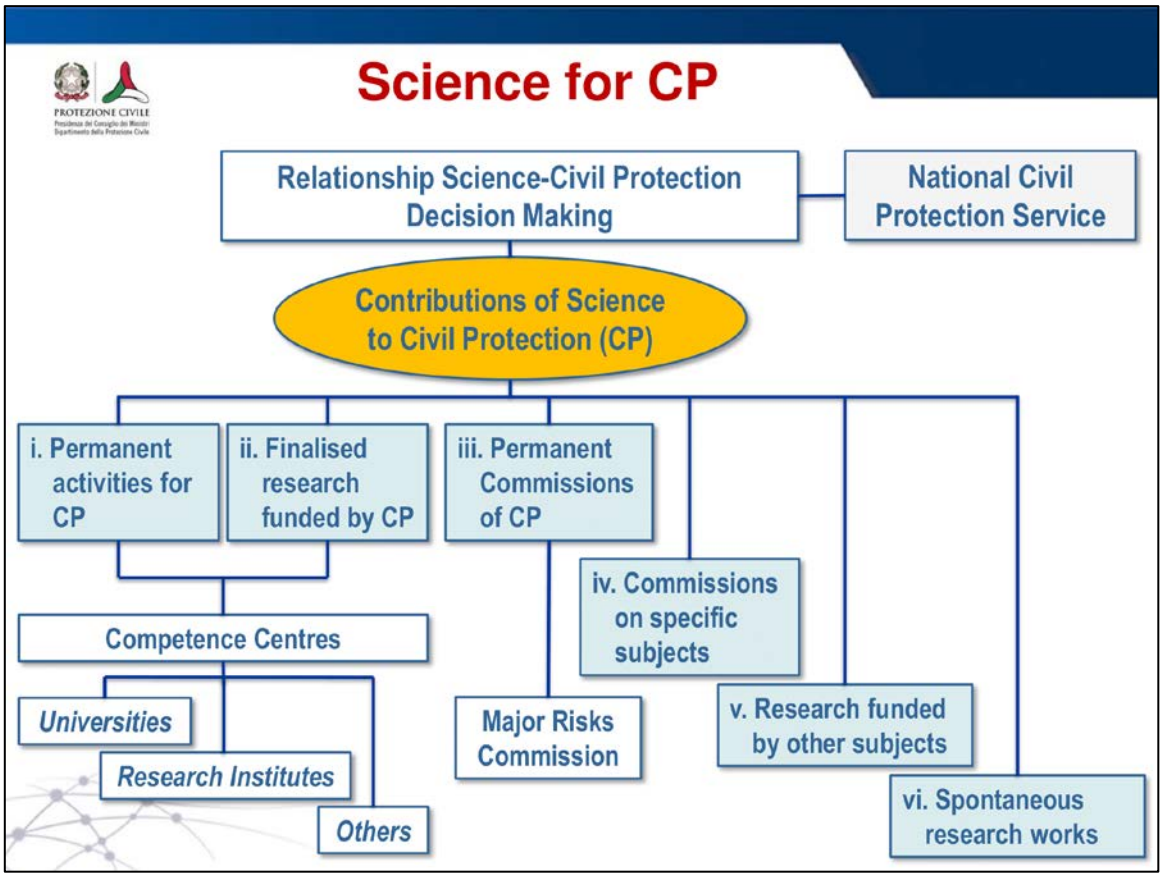
Competence Centres

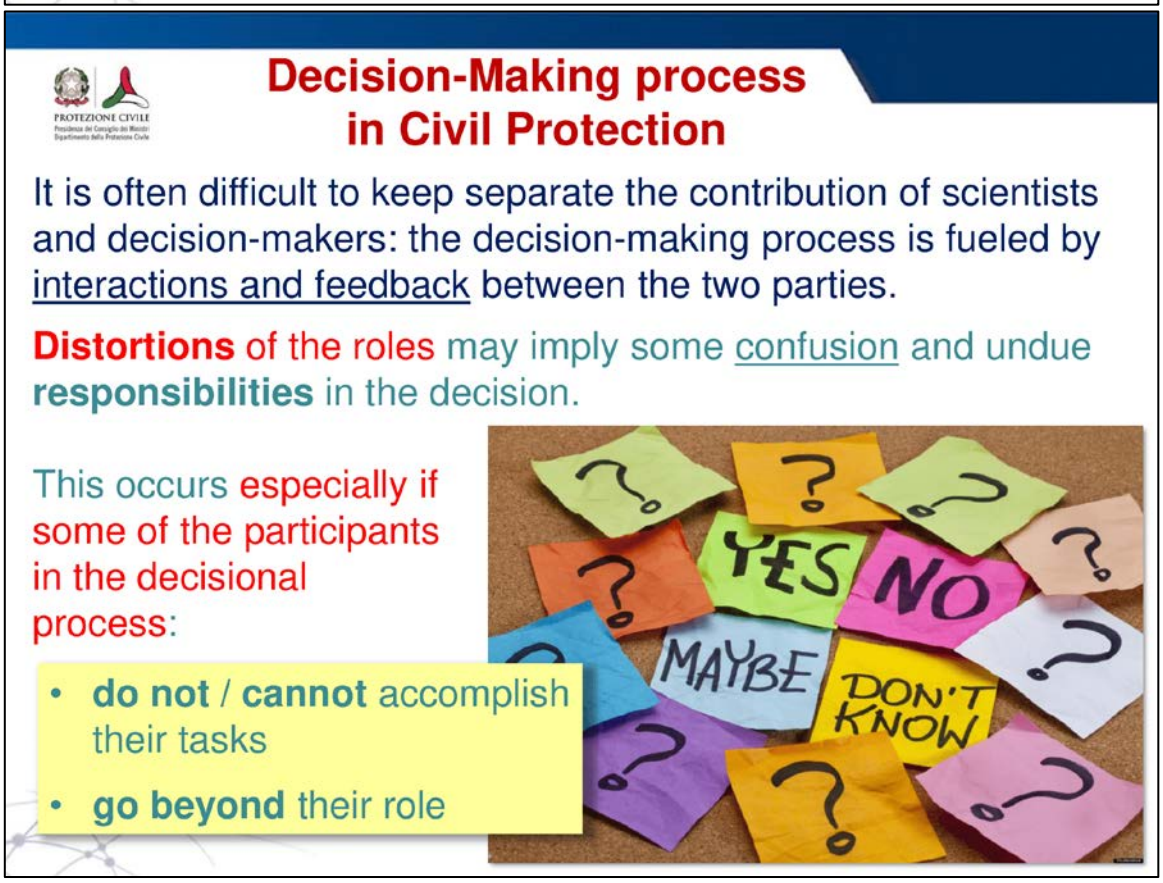
Since 2004, the Competence Centres are "those entities that provide services, information, data, processing and technical-scientific contributions in specific fields".



According to the Code, "research bodies and institutes, consortia and university structures that own and make available knowledge and provide products resulting from research and innovation activities, which can be integrated in civil protection activities, can be identified as Competence Centres".

Emphasis is placed on the possibility of establishing **networks** of Competence Centres for the development of specific topics on integrated themes and in a multi-risk perspective (e.g., CI3R).


PROTEZIONE CIVILE
Science for CP
Relationship Science-Civil Protection Decision Making
National Civil Protection Service
Contributions of Science to Civil Protection (CP)
i. Permanent activities for CP
ii. Finalised research funded by CP
iii. Permanent Commissions of CP
iv. Commissions on specific subjects
v. Research funded by other subjects
vi. Spontaneous research works
Competence Centres
Universities
Research Institutes
Others
Major Risks Commission


PROTEZIONE CIVILE
Decision-Making process in Civil Protection
It is often difficult to keep separate the contribution of scientists and decision-makers: the decision-making process is fueled by interactions and feedback between the two parties.
Distortions of the roles may imply some confusion and undue responsibilities in the decision.
This occurs especially if some of the participants in the decisional process:
• do not / cannot accomplish their tasks
• go beyond their role
YES
NO
MAYBE
DON'T KNOW

PROTEZIONE CIVILE

Including hybrid experts in a PA

Hybrid experts → civil servants who:



- have a solid expertise in both research and public administration;
- can understand and use the language of the two fields;
- see their expertise recognised by both the scientific and the decision-making communities;
- are called upon to play an interface role, being able to link the demands, expectations and (often short) timescales of decision-makers and the data, information, uncertainties and (longer) timescales of scientists.

PROTEZIONE CIVILE

Including hybrid experts in a PA

In the Italian civil protection, there is a long tradition of hybrid experts who facilitate the interaction between decision-makers (political and technical) and national and international scientific institutions for the definition of civil protection policies and decisions.



Hybrid experts in the ICPD

Last three decades

Governmental level	Full Professor (with scientific expertise) serving as Minister or Undersecretary for the Coordination of Civil Protection
	Full Professor (with scientific expertise) serving as Head of the ICPD
	Full Professor (with scientific expertise) serving as Deputy Head of the ICPD
	Full Professor (with scientific expertise) serving as Director General of the ICPD
	Research Manager (with scientific expertise) serving as Director General of the ICPD
	Civil Protection Department Civil Servant (with scientific expertise) representing the ICPD in the relationships with Competence Centres
Major Risks Commission	High level Decision-Maker (with Public Administration expertise) serving as Deputy Head of the Major Risks Commission
Technical scientific committees	High level Decision-Maker (with technical and public administration expertise) serving as Coordinator of a Technical Scientific Committee
International level	Civil Protection Department Directors and Civil Servants (with scientific expertise) representing the ICPD in the relationships with EU (working groups, etc.)
	Civil Protection Department Directors and Civil Servants (with scientific expertise) representing the ICPD in the relationships with International bodies, such as UN, WMO, etc. (working groups, etc.)
	Civil Protection Department Directors and Civil Servants (with scientific expertise) representing the ICPD in EU research projects (Horizon 2020, etc.)
	Civil Protection Department Directors and Civil Servants (with scientific expertise) managing research units in EU projects

Hybrid experts in a PA

PROS	CONS
✓ effective orientation of the activities of research institutions towards topics of civil protection interest and full exploitation of the best scientific advances.	✓ a certain amount of interference in scientific matters by a non-scientific PA is possible, albeit without undermining the independence of scientific advice; → a PA might give up the interface action carried out by hybrid experts to keep scientific advice and decision-making (i.e., responsibilities) separate.

✓ **Solution sometimes adopted** → to delegate the interface role to specially established scientific committees. But:

- scientists in these committees do not usually have civil protection skills;
- the PA loses its role of guidance and coordination.

PROTEZIONE CIVILE

A broader perspective

PROTEZIONE CIVILE

A broader perspective

DECISION 1313/2013/EU, art. 13, provided that "*The Commission shall, within the Union Mechanism […], set up and manage a training network open to training centres for civil protection and emergency management personnel as well as other relevant actors and institutions on prevention of, preparedness for and response to disasters. […]*".

DECISION (EU) 420/2019 introduced the Union Civil Protection Knowledge Network, which is "*a **network** of relevant civil protection and disaster management actors and institutions, **including centres of excellence, universities and researchers** […], together with the Commission*".

REGULATION (EU) 2021/836 further strengthens KN.

Europe is making huge efforts to build this Knowledge Network, involving all the different stakeholders.



A broader perspective

How can MSs face the challenge of contributing to the KN balancing their needs with those of a common civil protection house? And **what is the Italian civil protection doing about this**?

Some examples

ROADMAP

1 - **ROADMAP**: an attempt to establish a mixed community of scientists and risk management experts and to make a European 'Doctrine on disaster risk and crisis management', also leveraging on the cooperation occurring within the above said mixed community.

2 - Building a **high-profile academic course** to train professionals with skills in disaster risk reduction and management, and civil protection. To do this, ICPD is working with the Conference of Italian University Rectors on how to promote civil protection disciplines and degree courses into Italian university curricula.

3 – Integrating STEM (Science, Technology, Engineering and Mathematics) disciplines and social sciences, in particular **behavioural sciences**, to communicate properly on civil protection matter with the lay people and be correctly understood.

Discussion

Discussion

Applicability of the current model in Italy in the coming years

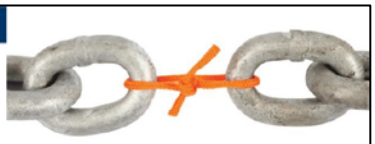
Strength

Full and daily involvement of the scientific community in every phase of disaster risk management, side by side with civil protection decision-makers, helped by the hinge role played by hybrid experts.





Discussion



Applicability of the current model in Italy in the coming years

Weaknesses

1) Increasing complexity of risk management and its multi-hazard risk dimension, including Na-Tech and cascading effects → need of specific skills developed before an emergency occurs.

2) The very nature of civil protection coordination in Italy, which is in the Prime Minister's hands (through ICDP) → as far as the scientific aspects are concerned, coordination has often developed according to a top-down approach. This approach could be improved with a greater use of the bottom-up approach, including local knowledge in DRR, and making decisions shared with / accepted by the population.

→ Fundamental role played by volunteers' organizations.

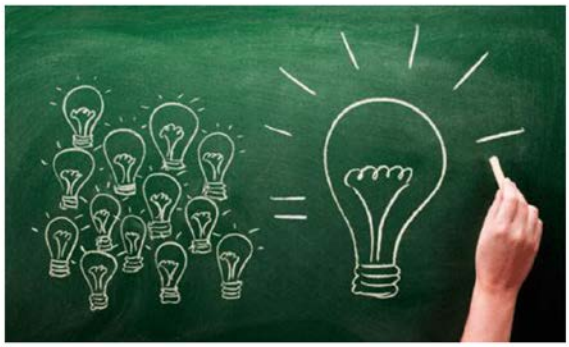
Discussion

Applicability of the Italian model abroad

Every Country has its own uniqueness in the field of civil protection (specific institutional organization and regulatory framework, socio-cultural environment, risks to be managed):

→ **no civil protection model valid for all Countries**

→ some ideas and solutions adopted in Italy possible **good input** for other Countries / European / International bodies working on DRR



Discussion

Good practices

1. **Scientific participation** and the contribution of the scientific community to the civil protection system and activities **regulated by law** → roles and responsibilities clear.
2. Scientific community **formally part** of the civil protection system.
3. **Cross-fertilization** between STEM (Science, Technology, Engineering and Mathematics) disciplines and social sciences, in particular behavioural sciences.
4. Presence of **hybrid experts** in the civil protection system.



Discussion



Solutions for potential pitfalls

1. **The way scientists are selected**. Few individual scientific advisors could provide civil protection with specific points of view potentially different from those of other high-profile scientists.

Two-folded adopted solution:

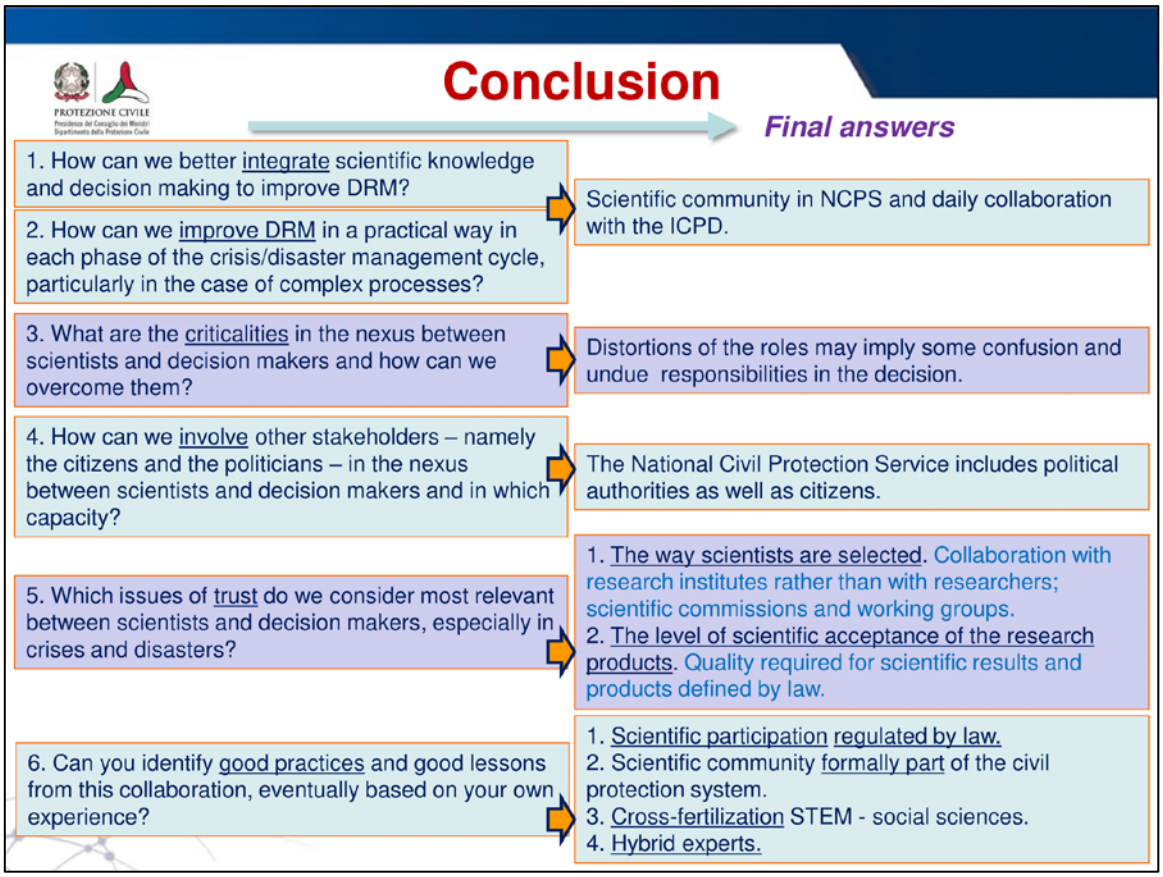
- day-by-day collaboration with research institutes (i.e., Competence Centres) rather than with individual researchers;
- establishment of permanent or ad hoc scientific commissions and working groups.
  - → i.e., a plurality of experts working together, providing a shared view of the problem at hand from the outset.

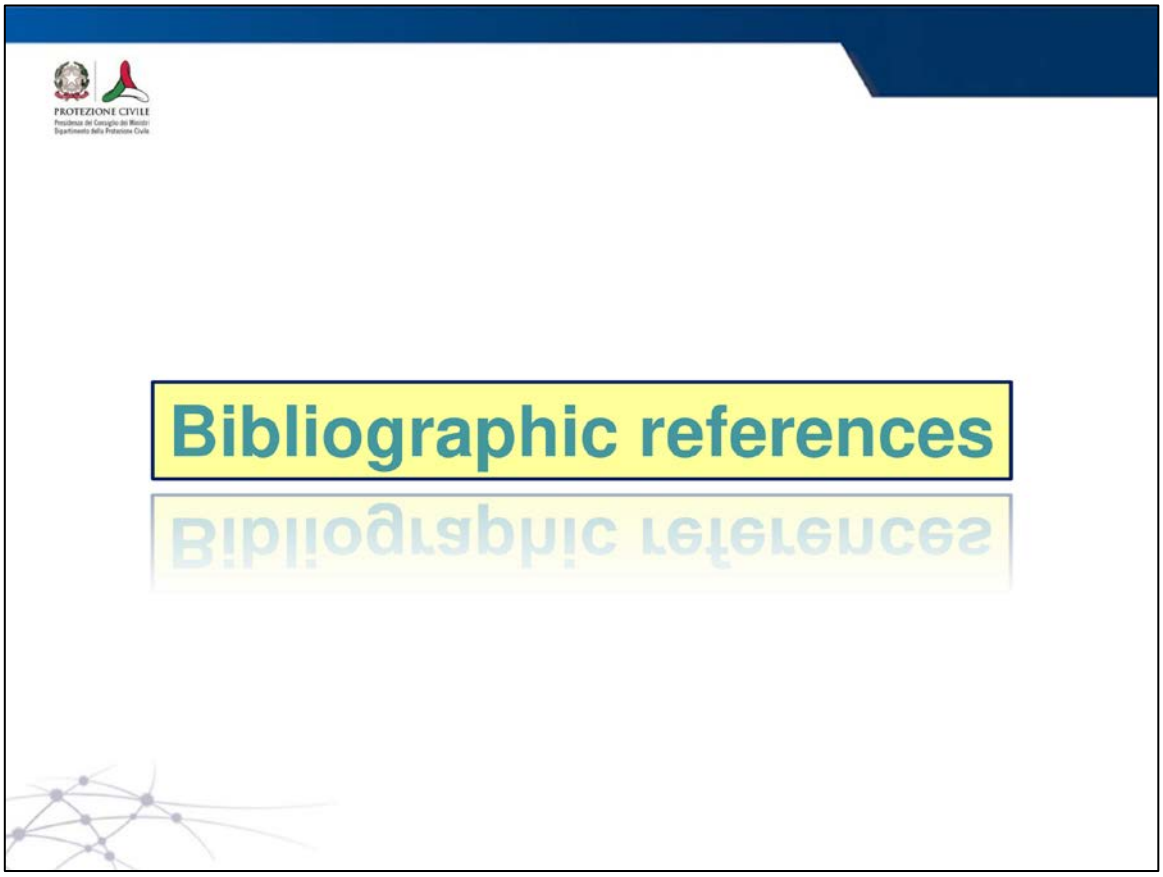
2. **The level of scientific acceptance of the research products** on which civil protection relies to make decisions.

Solution:

- the Civil Protection Code indicates the quality required for scientific results and products for civil protection use.

Conclusion


PROTEZIONE CIVILE
Conclusion
Final answers
1. How can we better integrate scientific knowledge and decision making to improve DRM?
2. How can we improve DRM in a practical way in each phase of the crisis/disaster management cycle, particularly in the case of complex processes?
Scientific community in NCPS and daily collaboration with the ICPD.
3. What are the criticalities in the nexus between scientists and decision makers and how can we overcome them?
Distortions of the roles may imply some confusion and undue responsibilities in the decision.
4. How can we involve other stakeholders – namely the citizens and the politicians – in the nexus between scientists and decision makers and in which capacity?
The National Civil Protection Service includes political authorities as well as citizens.
5. Which issues of trust do we consider most relevant between scientists and decision makers, especially in crises and disasters?
1. The way scientists are selected. Collaboration with research institutes rather than with researchers; scientific commissions and working groups.
2. The level of scientific acceptance of the research products. Quality required for scientific results and products defined by law.
6. Can you identify good practices and good lessons from this collaboration, eventually based on your own experience?
1. Scientific participation regulated by law.
2. Scientific community formally part of the civil protection system.
3. Cross-fertilization STEM - social sciences.
4. Hybrid experts.


PROTEZIONE CIVILE
Bibliographic references

References

A/RES/70/1 (2015) - Transforming our world: the 2030 Agenda for Sustainable Development. Resolution adopted by the General Assembly on 25 September 2015. https://www.un.org/ga/search/view_doc.asp?symbol=A/RES/70/1&Lang=E

Ackoff R. (1989) - From Data to Wisdom. Journal of Applied Systems Analysis, 16, 3–9.

Aitsi-Selmi A., Blanchard K., Murray V. (2016) - Ensuring science is useful, usable and used in global disaster risk reduction and sustainable development: a view through the Sendai framework lens. PALGRAVE COMMUNICATIONS | 2:16016 | DOI:10.1057/palcomms.2016.16

Albris K., Cedervall Lauta K., Raju E. (2020) - Disaster Knowledge Gaps: Exploring the Interface Between Science and Policy for Disaster Risk Reduction in Europe. Int J Disaster Risk Sci, 11, 1–12. www.ijdrs.com, https://doi.org/10.1007/s13753-020-00250-5

Amaratunga D., Malalgoda C., Haigh R., Panda A., Rahayu H. (2018) - Sound Practices of Disaster Risk Reduction at Local Level. Procedia Engineering, 212, 1163–1170.

Antoncecchi I., Ciccone F., Dialuce G., Grandi S., Terlizzese F., Di Bucci D., Dolce M., Argnani A., Mercorella A., Pellegrini C., Rovere M., Armigliato A., Pagnoni, G., Paparo M.A., Tinti, S., Zaniboni F., Basili R., Cavallaro D., Coltelli M., Firetto Carlino M., Lipparini L., Lorito S., Maesano F.E., Romano F., Scarfì L., Tiberti M.M., Volpe M., Fedorik J., Toscani G., Borzi B., Faravelli M., Bozzoni F., Pascale V., Quaroni D., Germagnoli F., Belliazzi S., Del Zoppo M., Di Ludovico M., Lignola G.P., Prota A. (2020) - Progetto SPOT - Sismicità Potenzialmente innescabile Offshore e Tsunami. Report integrato di fine progetto. 44 p. DOI: 10.5281/zenodo.3732887 - ISBN: 9788894366945

Basili R., Brizuela B., Herrero A., Iqbal S., Lorito S., Maesano F.E., Murphy S., Perfetti P., Romano F., Scala A., Selva J., Taroni M., Tiberti M.M., Thio H.K., Tonini R., Volpe M., Glimsdal S., Harbitz C.B., Løvholt F., Baptista M.A., Carrilho F., Matias L.M., Omira R., Babeyko A., Hoechner A., Gürbüz M., Pekcan O., Yalçıner A., Canals M., Lastras G., Agalos A., Papadopoulos G., Triantafyllou I., Benchekroun S., Agrebi Jaouadi H., Ben Abdallah S., Bouallegue A., Hamdi H., Oueslati F., Amato A., Armigliato A., Behrens J., Davies G., Di Bucci D., Dolce M., Geist E., Gonzalez Vida J.M., González M., Macías Sánchez J., Meletti C., Ozer Sozdinler C., Pagani M., Parsons T., Polet J., Power W., Sørensen M., Zaytsev A. (2020) - The making of the NEAM Tsunami Hazard Model 2018 (NEAMTHM18). Frontiers in Earth Science. Section Geohazards and Georisks. Research Topic: From Tsunami Science to Hazard and Risk Assessment: Methods and Models. doi: 10.3389/feart.2020.616594

Camassi R., Nostro C., Bernardini F., Crescimbene M., Ercolani E., La Longa F., Meletti C., Pessina V., Pignone M. (2014) - Le attività informative dell'INGV in emergenza sismica: motivazioni e ipotesi di sviluppo futuro. Proceedings GNGTS National Meeting. http://www3.cgs.trieste.it/gngts/files/2014/S23/Riassunti/Camassi.pdf

Cramer L., Thornton P., Dinesh D., Jat M.L., Khatri Chhetri A., Laderach P., Martinez Barón D., Ouedraogo M., Partey S., Totin E., Vasileiou I., Veeger M. (2018) - Lessons on bridging the science-policy divide for climate change action in developing countries. CCAFS Working Paper no. 250. Wageningen, the Netherlands: CGIAR Research Program on Climate Change, Agriculture and Food Security (CCAFS). Available online at: www.ccafs.cgiar.org

DECISION 1313/2013/EU - Decision No 1313/2013/EU of the European Parliament and of the Council of 17 December 2013 on a Union Civil Protection Mechanism. https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=celex%3A32013D1313

DECISION (EU) 2019/420 - Decision (Eu) 2019/420 of the European Parliament and of the Council of 13 March 2019 amending Decision No 1313/2013/EU on a Union Civil Protection Mechanism. https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX%3A32019D0420

De Groeve T., Casajus Valles A. (2015) - Science Policy Interfaces in Disaster Risk Management in the EU. Mapping the support provided . 47 pp. JRC97968, EUR 27520 EN, ISBN 978-92-79-52740-1, ISSN 1831-9424, doi:10.2788/023384, LB-NA-27520-EN-N

DG-R&I (2019) - Directorate-General for Research and Innovation, Group of Chief Scientific Advisors (European Commission): Scientific opinion - Scientific Advice to European Policy in a Complex World. Luxembourg: Publications Office of the European Union, 2019. ISBN: 978-92-76-12557-0; doi:10.2777/80320; Catalogue number: KI-02-19-872-EN-N. 84 pp.

Di Bucci D., Dolce M. (2019) – La scienza nel processo decisionale di protezione civile per la gestione dei rischi. In: Amato A., Flora G., Valbonesi C. (Eds.), Scienza, diritto e processo penale nell'era del rischio. Chapter X, 201-218. G. Giappichelli Editore, Torino. ISBN: 9788892129580

Di Bucci D., Dolce M., Savadori L. (2019) - Deciding (or not) on the acceptable level of seismic risk: first behavioral considerations on the L'Aquila trial. BGTA, An International Journal of Earth Sciences, 60 (2), 337-358. Doi: DOI 10.4430/bgta0247

Di Bucci D., Savadori L. (2018) - Defining the acceptable level of risk for civil protection purposes: a behavioral perspective on the decision process. Natural Hazards, 90 (1), 293-324. Doi: https://doi.org/10.1007/s11069-017-3046-5

Dolce M., Di Bucci D. (2014) - Risk management: roles and responsibilities in the decision-making process. In: Peppoloni S., Wyss M. (Eds.), Geoethics: Ethical Challenges and Case Studies in Earth Science. Section IV: Communication with the Public, Officials and the Media. Chapter 18, 211-221. Elsevier. Publication Date: November 18, 2014 | ISBN-10: 0127999353 | ISBN-13: 978-0127999357 | Edition: 1

Dolce M., Di Bucci D. (2015) – Civil Protection Achievements and Critical Issues in Seismology and Earthquake Engineering Research. In: Ansal A. (Ed.), Perspectives on European Earthquake Engineering and Seismology, Volume 2. Springer series "Geotechnical, Geological and Earthquake Engineering", 39, Chapter 2. 21-58. doi: 10.1007/978-3-319-16964-4_2

Dolce M., Garro G., Griner F., Sicoli R., Speranza E., Bocchi F., Borzi B., Di Meo A., Faravelli M., Savadori L., Sillari G., Dolce A. (2019) - Più sai e meno rischi: SICURO+, per sensibilizzare i cittadini sul tema del Rischio Sismico. Proceedings XVIII Italian National Conference on Earthquake Engineering - ANIDIS "l'Ingegneria Sismica in Italia", Ascoli Piceno, 15-19 Settembre 2019, SG03- 26-38.

References

Dolce M. & Di Bucci D. (under review) - Building an effective collaboration between civil protection decision-makers and scientists for DRR: the Italian experience. Contributing paper to the Global Assessment Report on Disaster Risk Reduction 2022.

DECISION 1313/2013/EU - Decision No 1313/2013/EU of the European Parliament and of the Council of 17 December 2013 on a Union Civil Protection Mechanism. https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=celex%3A32013D1313

DECISION (EU) 2019/420 - Decision (Eu) 2019/420 of the European Parliament and of the Council of 13 March 2019 amending Decision No 1313/2013/EU on a Union Civil Protection Mechanism. https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX%3A32019D0420

Dolce M., Miozzo A., Di Bucci D., Alessandrini L., Bastia S., Bertuccioli P., Bilotta D., Ciolli S., De Siervo G., Fabi D., Madeo L., Panunzi E., Silvestri V. (2020) - La protezione civile in Italia. Testo istituzionale di riferimento per i docenti scolastici. Dipartimento della Protezione Civile-Presidenza del Consiglio dei Ministri. Edition 1: July 2020, 236 pp.

Dolce M., Prota A., Borzi B., da Porto F., Lagomarsino S., Magenes G., Moroni C., Penna A., Polese M., Speranza E., Verderame G.M., Zuccaro G. (2020) - Seismic risk assessment of residential buildings in Italy. Bulletin of Earthquake Engineering, S.I.: Seismic Risk Assessment in Italy. https://doi.org/10.1007/s10518-020-01009-5

Donovan A., Oppenheimer C. (2016) - Resilient science: The civic epistemology of disaster risk reduction. Science and Public Policy, 43 (3), 363–374. doi: 10.1093/scipol/scv039

DPCM 27/02/2004 - Direttiva del Presidente del Consiglio dei Ministri del 27 febbraio 2004, recante «Indirizzi operativi per la gestione organizzativa e funzionale del sistema di allertamento nazionale e regionale per il rischio idrogeologico ed idraulico ai fini di protezione civile». (Gazzetta Ufficiale, Serie Generale n. 59 del 11-03-2004 - Suppl. Ordinario n. 39). http://www.gazzettaufficiale.it/eli/id/2004/03/11/04A02391/sg

European Commission (2015) - Strengthening Evidence Based Policy Making through Scientific Advice. Reviewing existing practice and setting up a European Science Advice Mechanism. Research and Innovation, 28 pp. https://vdocument.in/strengthening-evidence-based-policy-making-strengthening-evidence-based-policy.html

FEMA-USGS (2016) - Memorandum of Understanding between the Federal Emergency Management Agency of the Department of Homeland Security and the U.S. Geological Survey of the Department of the Interior. 16 pp. https://www.usgs.gov/about/organization/science-support/mou/mou-between-usgs-and-fema

Gaillard J.C., Mercer J. (2012) - From knowledge to action: Bridging gaps in disaster risk reduction. Progress in Human Geography, 37 (1), 93–114. doi: 10.1177/0309132512446717

GFDRR (2016) - The making of a riskier future: How our decisions are shaping future disaster risk. © 2016 Global Facility for Disaster Reduction and Recovery, 143 pp. https://www.gfdrr.org/en/publication/making-riskier-future-how-our-decisions-are-shaping-future-disaster-risk

HFA (2005) - Hyogo Framework for Action 2005-2015: Building the Resilience of Nations and Communities to Disasters. Extract from the final report of the World Conference on Disaster Reduction (A/CONF.206/6). UN-ISDR, 22 pp. https://www.unisdr.org/2005/wcdr/intergover/official-doc/L-docs/Hyogo-framework-for-action-english.pdf

Hiwasaki L., Luna E., Syamsidik, Shawd R. (2014) – Process for integrating local and indigenous knowledge with science forhydro-meteorological disaster risk reduction and climate change adaptation in coastal and small island communities. International Journal of Disaster Risk Reduction, 10, 15-27. http://dx.doi.org/10.1016/j.ijdrr.2014.07.007

ICPD (2018) - National Risk Assessment 2018. Overview of the potential major disasters in Italy. Italian Civil Protection Department. Updated December 2018. http://www.protezionecivile.gov.it/documents/20182/823803/Documento+sulla+Valutazione+nazionale+dei+rischi/57f337fd-a421-4cb0-b04c-234b61997a2f

Ismail-Zadeh A.T., S.L. Cutter, K. Takeuchi, D. Paton (2017) - Forging a paradigm shift in disaster science. Nat. Hazards, 86, 969–988. doi: 10.1007/s11069-016-2726-x

Jordan T., Chen Y., Gasparini P., Madariaga R., Main I., Marzocchi W., Papadopoulos G., Sobolev G., Yamaoka K., Zschau J. (2011) - Operational earthquake forecasting. State of knowledge and guidelines for utilization. Annals of Geophysics, 54 (4). doi: 10.4401/ag-5350

Kahneman D. (2011) - Thinking, fast and slow. Macmillan, Basingstoke, 499 pp. ISBN 978-1-4299-6935-2

Law 225/1992 - Istituzione del Servizio Nazionale della Protezione Civile [Establishment of the National Civil Protection Service]. https://www.gazzettaufficiale.it/eli/id/1992/03/17/092G0253/sg

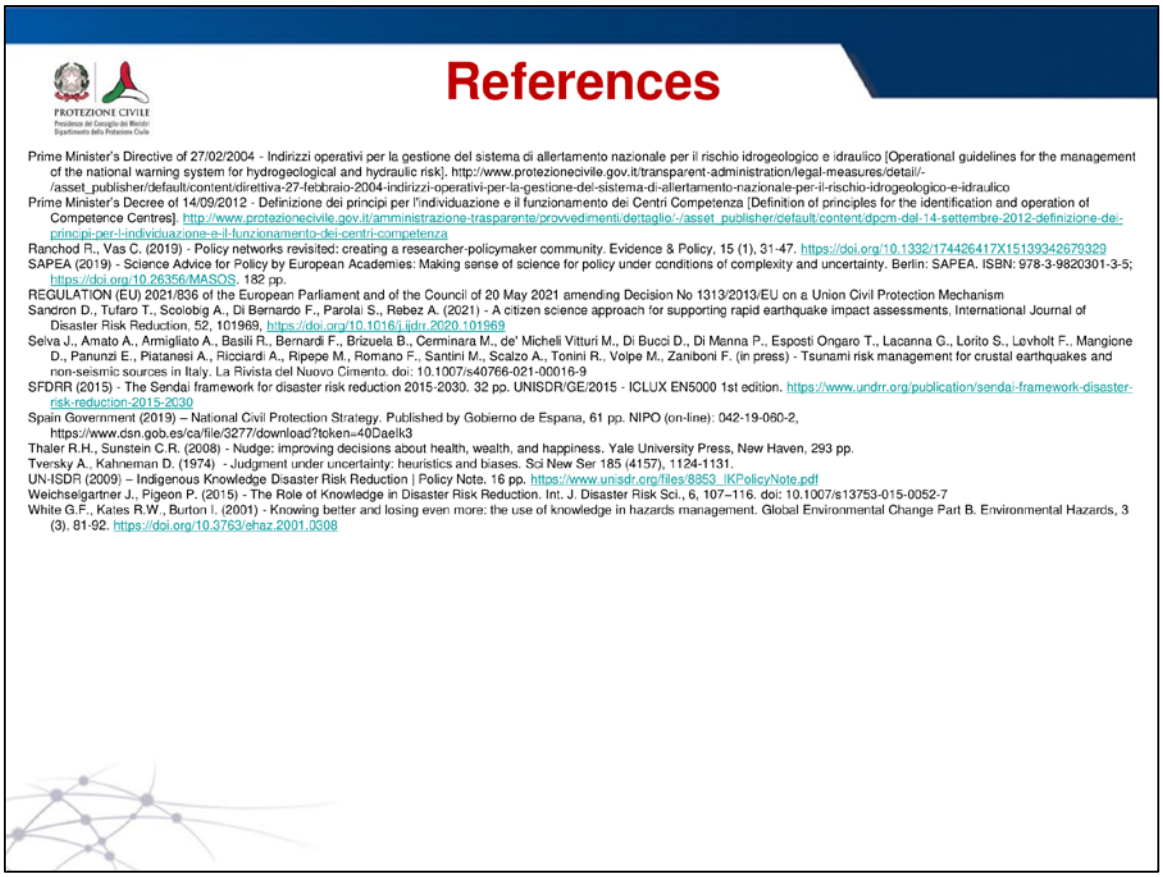
Legislative Decree 1/2018 – Codice della Protezione Civile [Civil Protection Code]. https://www.gazzettaufficiale.it/atto/serie_generale/caricaDettaglioAtto/originario?atto.dataPubblicazioneGazzetta=2018-01-22&atto.codiceRedazionale=18G00011&elenco30giorni=true

Mercer J., Kelman I., Taranis L., Suchet-Pearson S. (2009) - Framework for integrating indigenous and scientific knowledge for disaster risk reduction. Disasters, 34 (1), 214–239. doi: 10.1111/j.1467 7717.2009.01126

New Zealand Government (2015) – The Guide to the National Civil Defense Emergency Management Plan 2015. Published by the Department of the Prime Minister and Cabinet, updated in 2020. 321 pp., ISBN 0-478-25470-0. https://www.civildefence.govt.nz/assets/guide-to-the-national-cdem-plan/Guide-to-the-National-CDEM-Plan-2015.pdf

NTC (2018) - DECRETO 17 gennaio 2018. Aggiornamento delle «Norme tecniche per le costruzioni». 372 pp. https://www.gazzettaufficiale.it/eli/gu/2018/02/20/42/so/8/sg/pdf

OECD (2015) - Scientific Advice for Policy Making: The Role and Responsibility of Expert Bodies and Individual Scientists. OECD Science, Technology and Industry Policy Papers, No. 21, OECD Publishing, Paris. http://dx.doi.org/10.1787/5js33l1jcpwb-en



PROTEZIONE CIVILE

References

Prime Minister's Directive of 27/02/2004 - Indirizzi operativi per la gestione del sistema di allertamento nazionale per il rischio idrogeologico e idraulico [Operational guidelines for the management of the national warning system for hydrogeological and hydraulic risk]. http://www.protezionecivile.gov.it/transparent-administration/legal-measures/detail/-/asset_publisher/default/content/direttiva-27-febbraio-2004-indirizzi-operativi-per-la-gestione-del-sistema-di-allertamento-nazionale-per-il-rischio-idrogeologico-e-idraulico

Prime Minister's Decree of 14/09/2012 - Definizione dei principi per l'individuazione e il funzionamento dei Centri Competenza [Definition of principles for the identification and operation of Competence Centres]. http://www.protezionecivile.gov.it/amministrazione-trasparente/provvedimenti/dettaglio/-/asset_publisher/default/content/dpcm-del-14-settembre-2012-definizione-dei-principi-per-l-individuazione-e-il-funzionamento-dei-centri-competenza

Ranchod R., Vas C. (2019) - Policy networks revisited: creating a researcher-policymaker community. Evidence & Policy, 15 (1), 31-47. https://doi.org/10.1332/174426417X15139342679329

SAPEA (2019) - Science Advice for Policy by European Academies: Making sense of science for policy under conditions of complexity and uncertainty. Berlin: SAPEA. ISBN: 978-3-9820301-3-5; https://doi.org/10.26356/MASOS. 182 pp.

REGULATION (EU) 2021/836 of the European Parliament and of the Council of 20 May 2021 amending Decision No 1313/2013/EU on a Union Civil Protection Mechanism

Sandron D., Tufaro T., Scolobig A., Di Bernardo F., Parolai S., Rebez A. (2021) - A citizen science approach for supporting rapid earthquake impact assessments. International Journal of Disaster Risk Reduction, 52, 101969, https://doi.org/10.1016/j.ijdrr.2020.101969

Selva J., Amato A., Armigliato A., Basili R., Bernardi F., Brizuela B., Cerminara M., de' Micheli Vitturi M., Di Bucci D., Di Manna P., Esposti Ongaro T., Lacanna G., Lorito S., Løvholt F., Mangione D., Panunzi E., Piatanesi A., Ricciardi A., Ripepe M., Romano F., Santini M., Scalzo A., Tonini R., Volpe M., Zaniboni F. (in press) - Tsunami risk management for crustal earthquakes and non-seismic sources in Italy. La Rivista del Nuovo Cimento. doi: 10.1007/s40766-021-00016-9

SFDRR (2015) - The Sendai framework for disaster risk reduction 2015-2030. 32 pp. UNISDR/GE/2015 - ICLUX EN5000 1st edition. https://www.undrr.org/publication/sendai-framework-disaster-risk-reduction-2015-2030

Spain Government (2019) – National Civil Protection Strategy. Published by Gobierno de Espana, 61 pp. NIPO (on-line): 042-19-060-2, https://www.dsn.gob.es/ca/file/3277/download?token=40Daelk3

Thaler R.H., Sunstein C.R. (2008) - Nudge: improving decisions about health, wealth, and happiness. Yale University Press, New Haven, 293 pp.

Tversky A., Kahneman D. (1974) - Judgment under uncertainty: heuristics and biases. Sci New Ser 185 (4157), 1124-1131.

UN-ISDR (2009) – Indigenous Knowledge Disaster Risk Reduction | Policy Note. 16 pp. https://www.unisdr.org/files/8853_IKPolicyNote.pdf

Weichselgartner J., Pigeon P. (2015) - The Role of Knowledge in Disaster Risk Reduction. Int. J. Disaster Risk Sci., 6, 107–116. doi: 10.1007/s13753-015-0052-7

White G.F., Kates R.W., Burton I. (2001) - Knowing better and losing even more: the use of knowledge in hazards management. Global Environmental Change Part B. Environmental Hazards, 3 (3), 81-92. https://doi.org/10.3763/ehaz.2001.0308

6. Webinar length

ROADMAP Consortium agreed on 2 hours and 30 minutes, allowing Speakers to have up to 15/20 minutes to present, then Q&A after each presentation using the Q&A box.

7. Promotion and organisation

ADAI organized this webinar using the ZOOM platform, supporting up to 500 participants and performing a direct broadcast to the You Tube channel. The Q&A box was used to raise the questions, to avoid oral interventions that can great confusion and difficult management.

Registration was done through a specific form from ZOOM, to have access to the webinar and resulting in a participant list. Two invitations were sent: "SAVE THE DATE" plus reminder having more information on the webinar.

8. Attendance

The total number of the attendees was 213 plus more than 145 views on YouTube (https://www.youtube.com/watch?v=PIidmLIwstw&ab_channel=CEIF-ADAI).

2nd ROADMAP webinar - 6th December, 2021 at 10-12:30 CET

available here: https://roadmap.ci3r.it/publications/ and
https://www.youtube.com/watch?v=1dMQQxv82HE

1. Title:

"Communication Challenges in Disaster Risk Management and Crisis Management"

2. Content:

The second ROADMAP Webinar was dedicated to the complex task of risk and crisis communication during critical events.

3. Goal:

Experienced Speakers on working on risk and crisis communication were invited to give their views and insights in this area. To better frame the presentations and the discussion during the webinar, the Speakers were asked to address, if possible some of the bullet points mentioned below:

- Good and bad practices of communication in disaster risk management (DRM) and crisis management (CM);
- Identification of communication challenges/limits/problems in DRM and CM scenarios;
- In terms of political, socioeconomic, legal and technological issues/elements;
- DRM communication in the early phases of disaster;
- Legal and political issues in DRM communication. (included in the 2nd point);
- Identification of:
  - Professional actors (policy makers, decision makers, civil protection officers etc.);
  - Main actors and recipients (the public, citizens, target groups etc.);
  - Mechanisms of communication (social media/ role of IoT technology);
  - Processes (coordination/warnings/ local involvement and community empowerment/communication in a transnational crisis/public mobilisation etc);
- Strategies, good practices or prevalent practices in communication that can be identified in complex socio-economic context-driven aspects of disaster risk management and crisis management?
- Lessons learned on good practices:
  - How the future of risk communication practices may look like;
  - Future challenges (maybe related to the UN SDGs);
  - How the rapid development of technology, interconnectedness, the tendency of communities to cluster and so on can influence communication strategies in DRM and CM;

4. Target audience:

We agreed that the audience should be scientists and decision makers involved in crisis management and disaster risk management. We used our own networks to promote the webinar, inviting the AG members to use their networks to further promote the webinar as well.

5. Speakers and presentations:

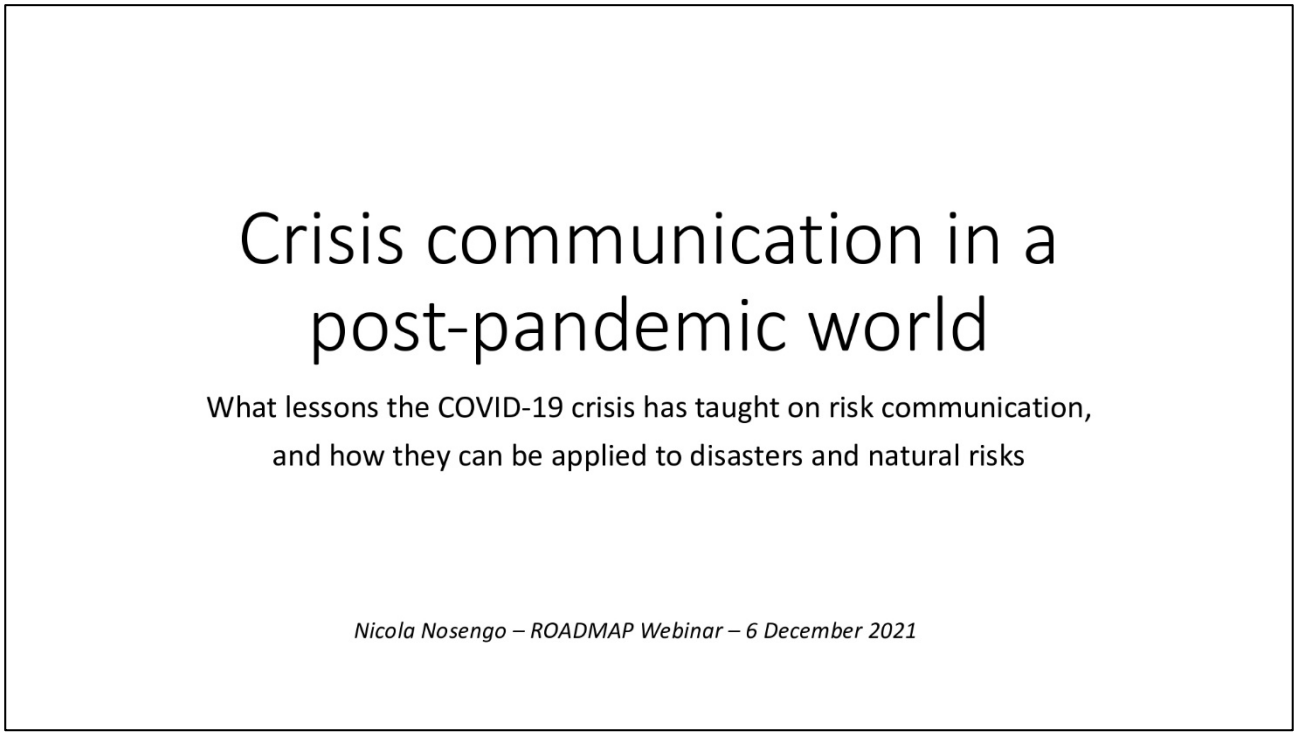
We agreed to keep the structure of the first ROADMAP webinar, having four speakers (ROADMAP project Coordinator and tree experts), which were mainly selected because of their great interest and work in this area.

- **Nicola Nosengo** (Science writer and scientific communicator).

Short CV:

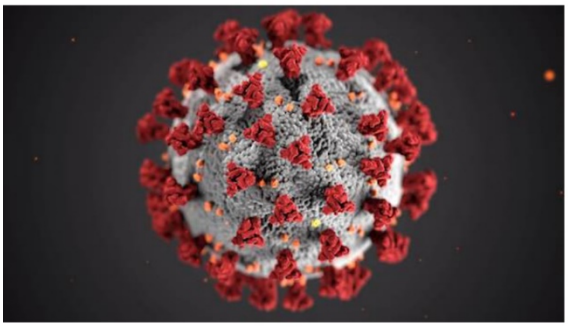
Nicola Nosengo is a science writer and scientific communicator with over 20 years of experience at the national and international level. He has a degree in Communication from the University of Siena and a master in Science Communication from the International School of Advanced Studies (ISAS) in Trieste. In Italy he has contributed, among others, to L'Espresso, La Stampa, Focus, Le Scienze, Mente e Cervello, Il Tascabile, covering technology, physics, space science, robotics and AI, neuroscience. He has been covering Italian science for Nature for many years, and his stories have appeared in The Economist. In addition to his journalistic work, he has worked as a communicator for the Italian Space Agency, the Italian Institute for Astrophysics, and for the Swiss Federal Institute of Technology in Lausanne (EPFL). He wrote three books for the general public and has worked with RAI (Italy's public broadcasting company) for projects and programmes on science and technology. He currently edits Nature Italy, a recently launched digital magazine, part of Springer Nature, focussing on Italian research.

Recording and presentation printout:
https://youtu.be/8lNlLp45yf0



Covid-19: a perfect storm for risk communication

- Global risk vs national policies
- Unpredictably long crisis
- Huge scientific uncertainty
- Geopolitical implications
- Conflict between risks (from the disease, and from the measures against it)



Notable risk features of Covid-19 vs other risks

Controllability/voluntariness
Increased perceived controllability can result in a more optimistic view of risk impacts.



Conversely, risks perceived as less controllable increase risk perceptions
COVID-19 is characterised […] a
s an uncontrollable
risk to the individual.
However […] higher perceived controllability was linked with more negative risk perceptions and greater individual action on COVID-19.



George W. Warren & Ragnar Lofstedt (2021): Risk communication and COVID-19 in Europe: lessons for future public health crises, Journal of Risk Research, DOI: 10.1080/13669877.2021.1947874

Catastrophic potential

People fear multiple-fatality risks



More than a series of smaller events



COVID-19 is both objectively a catastrophic risk, and is perceived as a risk with catastrophic potential in a psychometric study by Gerhold (2020) in Germany.

Observability and immediacy:
People worry less about visible hazards. Conversely, non-observable risks garner higher levels of worry. COVID-19 is not observable and can transmit asymptomatically between subjects who may not know they are infected. Delayed risk effects can also increase perceptions. The full impact of COVID-19 may take some time to be realised and symptom onset is not immediate

Knowledge levels and novelty:
Greater public knowledge of a risk can attenuate perceptions, and people tend to worry less about risks that are known to science. Low public knowledge can lead to greater reliance on trusted actors such as experts and scientists to inform decision-making. Although coronaviruses are not new, the COVID-19 strain is novel. Public knowledge at the beginning of the pandemic was low, with high scientific uncertainty

An "Infodemic" on top of a pandemic

The term ''infodemic,' intended to mean an ''epidemic of information,'' was introduced by Rothkopf (2003) to define the amplification effect of the news about severe acute respiratory syndrome (SARS) due to information technologies.

A more recent definition of ''infodemic'' emphasized the element of misinformation spreading rapidly through social media platforms and other outlets (Zarocostas, 2020).

''Infodemic'' was recently redefined as ''an overabundance of information— some accurate and some not— that occurs during an epidemic'' (Tangcharoensathien et al., 2020).

Brian et al, Infodemics: A new challenge for public health. Cell 184, December 9, 2021

What is risk communication?

WHO: Risk communication refers to the real-time **exchange** of information, advice and opinions **between** experts or officials and people who face a threat (hazard) to their survival, health or economic or social well-being. Its ultimate purpose is that **everyone at risk is able to take informed decisions** to mitigate the effects of the threat (hazard) such as a disease outbreak and take protective and preventive action

The first choice: whose voice

Who communicates to the public is important in ensuring public message acceptance, retention, and action

UK:
public press briefings with (prime) minister
And 1-2 experts.



Switzerland:
communication focused on two figures: Alain Berset (Health Minister) and Daniel Koch



Germany:
Angela Merkel filled double role (politician with a scientific background).
Decisions informed by the Robert Koch Institute (RKI)



US: evident disconnect between politics and scientific advice



George W. Warren & Ragnar Lofstedt (2021): Risk communication and COVID-19 in Europe: lessons for future public health crises, Journal of Risk Research, DOI: 10.1080/13669877.2021.1947874

Italy: diversity of voices and roles sometimes resulted in confusion





Experts: from honeymoon to divorce

The early phase of COVID-19 turned some experts into rock-stars.
Although scientist popularity can promote trust and support for restriction measures, trust can easily be destroyed. Public opinion can shift quickly, with severe effects on willingness to comply with pandemic-related restrictions.





The importance of leading by example

We are 'all in this together'





Since the Dominic Cummings and Niall Ferguson scandals, public compliance to COVID-19 restrictions has decreased alongside confidence in the government to adequately manage the pandemic.

Inconsistency undermines messages

Perceived inconsistency may undermine a message, leading to confusion and public uncertainty about the real impact of risks such as COVID-19.
The UK is a particularly bad offender on policy and communication inconsistency, with COVID-19 rules estimated to have changed over 60 times between March 2020 and January 2021 (Syal 2021; Warren, Lofstedt, and Wardman 2021).
Despite Independent SAGE (2020, 1) advocating for a 'communications reset' in November, these government communication inconsistencies have continued into 2021.



Italy, as the first country hit hard by the pandemic, was particularly inconsistent in the early phases

Institutional chaos and contradictions: The Astra-Zeneca mess

Cite this as: *BMJ* 2021;373:n883
http://dx.doi.org/10.1136/bmj.n883
Published: 01 April 2021

Covid-19: EMA defends AstraZeneca vaccine as Germany and Canada halt rollouts





company over its failure to meet agreed deliveries hardly helped.

Worries about the vaccine intensified earlier this month when Austria and Italy reported severe reactions and withdrew certain batches. Denmark and other member states followed suit as did Norway, despite the EMA insisting that the benefits of continued use outweighed the risks. Last weekend France, Italy and Germany were still vouching for its safety.

However, the following day, the Paul Ehrlich Institute, Germany's vaccines agency, informed ministers that six young to middle-aged women had suffered a particular type of severe haemorrhage in a vessel that drains blood from the brain. One patient in Munich was reported to have blood clots "from head to toe".

The institute said the AstraZeneca jab should be withdrawn pending further analysis. Berlin changed position and halted its use, leaving its allies little choice but to follow suit — or face being seen as playing down the risks. "If we swept it all under the rug, and reports of blood clots after vaccination started to leak out, then this would damage trust even more than this temporary suspension might do," says a French official.

Italian prime minister Mario Draghi consulted with Merkel and Macron. The three leaders and Pedro Sánchez, their Spanish counterpart, co-ordinated their announcement, creating the impression they were not acting on their own scientific assessment but at Berlin's behest — or to cover themselves if a problem with the vaccine was identified.

"We had agreed to wait for the opinion from the EMA but Berlin moved first under internal pressure," a French minister told Le Monde. "The worry was there, and the about-face in Germany meant we could not wait."

On Thursday, the European regulator, after reviewing evidence, said the vaccine was "safe and effective". It could not find a causal link, but could not rule one out definitively either. France, Germany, Italy and Spain reversed course and said AstraZeneca jabs would soon resume but Norway, Sweden and Denmark maintained the suspension.

German health minister Jens Spahn said the EMA's reassessment of the vaccine's safety "confirmed our approach" and that it would have been "irresponsible" to continue jabs. But his political rivals and medical experts said even a short suspension will have cost far more lives — from delayed inoculations and lower vaccine take-up — than caused by a rare form of blood clotting.

Katrin Göring-Eckardt, leader of the Greens in the German parliament, says it was "unfathomable" how Spahn had reached his decision to suspend use of the vaccine. "It has led to confusion and uncertainty," she says.

Adds Karl Lauterbach, the Social Democratic party's health expert: "The damage incurred by suspending vaccinations, even if only for a short time, is greater than the damage that would arise if this rare complication occurs."

Some see Germany's knee-jerk response as a further example of Europe's excessively cautious approach to vaccine science during the pandemic

Message clarity

Public uncertainty, which could lead to errors in judgment or refusal to adopt new COVID-19 measures (Finset et al. 2020), especially when interventions are recommended rather than mandatory and therefore rely on individual decision making (Fischhoff 2005).





Communicating uncertainty

It is tacitly assumed by many scientists and policy makers that communicating uncertainty may have negative consequences, for example that it signifies incompetence, eroding trust, encouraging panic and fear.

But certainty proven wrong is surely worse. Examples: Face masks were discouraged in the very early phase, and then recommended. The opposite happened for disinfecting surfaces or even groceries. Virus variants are now a constant source of uncertainty.

Predictions on ICU occupancy in CH presented as facts backfired



Life & Aging

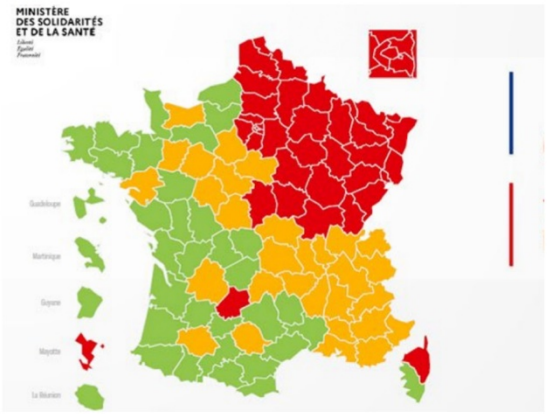
Intensive care beds could run out in a week, study predicts

▲ A nurse at the University Hospital of Geneva explains how an intensive care bed works Keystone

Switzerland will run out of intensive care beds on April 2 owing to the progression of the coronavirus pandemic, according to a study by the Swiss Federal Institute of

Visual formats can summarize complex indicators

France was one of the first nations early on in the pandemic to use a traffic light heat map to display geographical variations in COVID-19 risk. Visualising the local risk level on a map based on three main indicators allowed the public to easily understand their local area's rating in terms of safety and the NPI rationale.



Coronavirus: France gets 'green, yellow and red zones' to help guide lockdown easing

Measures could be lifted as soon as 11 May

Choose the right framing

1. Fear and guilt



'Can you look them in the eyes and tell them you're helping by staying at home?'

UK January 2021

2. Humour



3. Solidarity



Avoiding an us versus them mindset is important as it can lead to counterproductive actions

A communications approach that promotes solidarity is recommended by researchers from many academic disciplines

Public trust is key

Much of the COVID-19 communication and risk management strategy in the five nations discussed has not fostered public trust, decreasing public confidence especially from autumn 2020 (Warren, Lofstedt, and Wardman 2021). Growing mistrust in politics has also led to an increase in COVID-19 conspiracy theory belief (Cevipof 2021).

UK public trust in government has always been relatively low. Even in **April 2020,** although 95% of respondents agreed that the government should have power to enforce restrictions, only 52% believed the government was effective in managing the pandemic and **42% trusted that the government 'always or mostly' told the truth on COVID-19**. By late November, public distrust in the government's ability to control the pandemic reached 57% (Allington et al.2020).

The **French** public has displayed high levels of government distrust since the start of the pandemic. In **April 2020, only 35% of French respondents trusted the national government.** A February 2021 study for Le Figaro and France Info showed 39% public trust and 60% distrust in the government's ability to manage the COVID-19 health crisis (Odoxa 2021).

German public likelihood to trust the government reached its highest level in 5 years in July/ August 2020, at 61% 'rather trusting' (Statista 2020). Since, happiness with the federal government approach has waned, reaching its lowest level yet in **February 2021**, where only **42% of respondents** were either very happy or happy, and 22% being not at all happy (Infratest dimap 2021).

Public trust in the **Swedish** government has greatly reduced following the first wave, where 64% trusted the government's approach to the COVID-19 pandemic, and 75% trust in the PHA at the end of March 2020 (Sjöström 2021). By late **January**, this had consistently decreased, to **30% and 50%** respectively (Sjöström 2021).

In **Switzerland**, public trust in the Federal Council has also dramatically declined. After starting strongly, with 61% of respondents from all language regions either self-declaring high or very high trust in the Federal council in March 2020, this has plummeted to **32% in January 2021** (Bosshard et al. 2021).

New Zealand's Prime Minister May Be the Most Effective Leader on the Planet

Jacinda Ardern's leadership style, focused on empathy, isn't just resonating with her people; it's putting the country on track for success against the coronavirus.

By Uri Friedman



Simon Schluter / Fairfax / Headpress / Redux

APRIL 19, 2020 SHARE

People feel that Ardern "doesn't preach at them; she's standing with them," Helen Clark, New Zealand's prime minister from 1999 to 2008, told me. "They may even think, *Well, I don't quite understand why [the government] did that, but I know she's got our back.* There's a high level of trust and confidence in her because of that empathy."

One of Ardern's innovations has been frequent Facebook Live chats that manage to be both informal and informative. During a session conducted in late March, just as New Zealand prepared to go on lockdown, she appeared in a well-worn sweatshirt at her home (she had just put her toddler daughter to bed, she explained) to offer guidance "as we all prepare to hunker down."

Even as New Zealand battles Covid, trust in government bucks global trend

With a nationwide lockdown and some of the world's strictest restrictions, Jacinda Ardern is counting on her people's goodwill again



New Zealand prime minister Jacinda Ardern and her director general of health, Ashley Bloomfield, have used Covid communications to mobilise the people. Photograph: Getty Images

In New Zealand, According to Pew, 75% of people there believed their society was more unified in 2020 than pre-Covid – the second-highest in the world, beaten only by Singapore. Researchers measuring New Zealand's trust pre- and post-lockdown found the lockdown group reported higher trust in science, politicians and police, and higher levels of patriotism.

Lessons (re-)learned:

GIANCARLO STURLONI SCIENZA 27.03.2020

Quali sono gli errori da evitare quando si comunica lo stato di emergenza a un paese

Per evitare il panico da Covid-19, e per non scivolare in false rassicurazioni, serve una guida credibile, che offra ai cittadini messaggi coerenti e capaci di infondere coraggio. Alcune regole che governo e istituzioni dovrebbero tenere presente

Do not downplay risk
Reassuring (no worse than flu, only dangerous for elderly, no risk if you have no co-morbidities, more recovered than victims yesterday!) means a part of the population will stop taking the threat seriously. If you lower risk perception today it will be very difficult to raise it again in one month.

Give people courage
Instead of downplaying, explain what is being done to face the threat, what they can do. Lead, show the way, encourage.

Panic is a false problem
Panic reactions are very rare. It only happens when people see no escape from a very imminent risk. If authorities/agencies can lead and build trust, worrying about people "panicking" is a false problem, and should not be an excuse for hiding information.

Be sober and respectful
Treat the public as adults who can contribute to managing the emergency, not as children who must only do what they're told

Occupy the information stage and be consistent

Institutions should speak, as much as possible, with one voice. This does not mean censoring experts, but

- Select people who must be the face and voice of the institution
- Be proactive so as to make them more visible and familiar than others
- Coordinate key messages and tones
- Plan communication for different scenarios, rehearse them

Tailor Your Risk Message to the Audience and Their Perception of the Topic

- The perception of information is highly dependent on the cultural background and fundamental belief systems of the audience.
- An understanding of the different foundational belief systems and values held by audiences around the world is critical in developing an appropriate science communication strategy.
- Include social sciences, humanities and communication expertise into risk management
- Investigate the sociology and psychology of your communities BEFORE crisis

Acknowledge and normalize uncertainty

Scientists may be tempted to shy away from uncertainty, fearful of how their audience may respond.

An alternative view is that transparency about uncertainties might build trust in the authorities and in science.

The Covid crisis has shown that hiding uncertainty is disastrous.

Say “we don’t know” more often, describe what is known and what is not, remind that information is constantly re-evaluated.

Recommendations for risk communicators in future emergencies:

- Ensure communication is consistent over time, and U-turns are avoided if possible;
- Keep instructions clear and actionable to ensure public compliance and to avert disengagement;
- Embody leading by example to promote solidarity and to avoid trust-destroying incidents;
- Avoid the use of fear- and guilt-based frames in communications campaigns, especially after the initial phase of a crisis;
- Move away from orthodox top-down communication approaches, towards bottom-up tailored risk communication that accounts for public values, perceptions and situation;
- Pre-test communications campaigns beforehand and evaluate them afterwards to increase
effectiveness and avoid potential unexpected outcomes.
- Risk communication should be *informed* by experts, but *led* by elected officials
- **Be transparent about uncertainty: acknowledge it, describe it, show the process for reducing it**

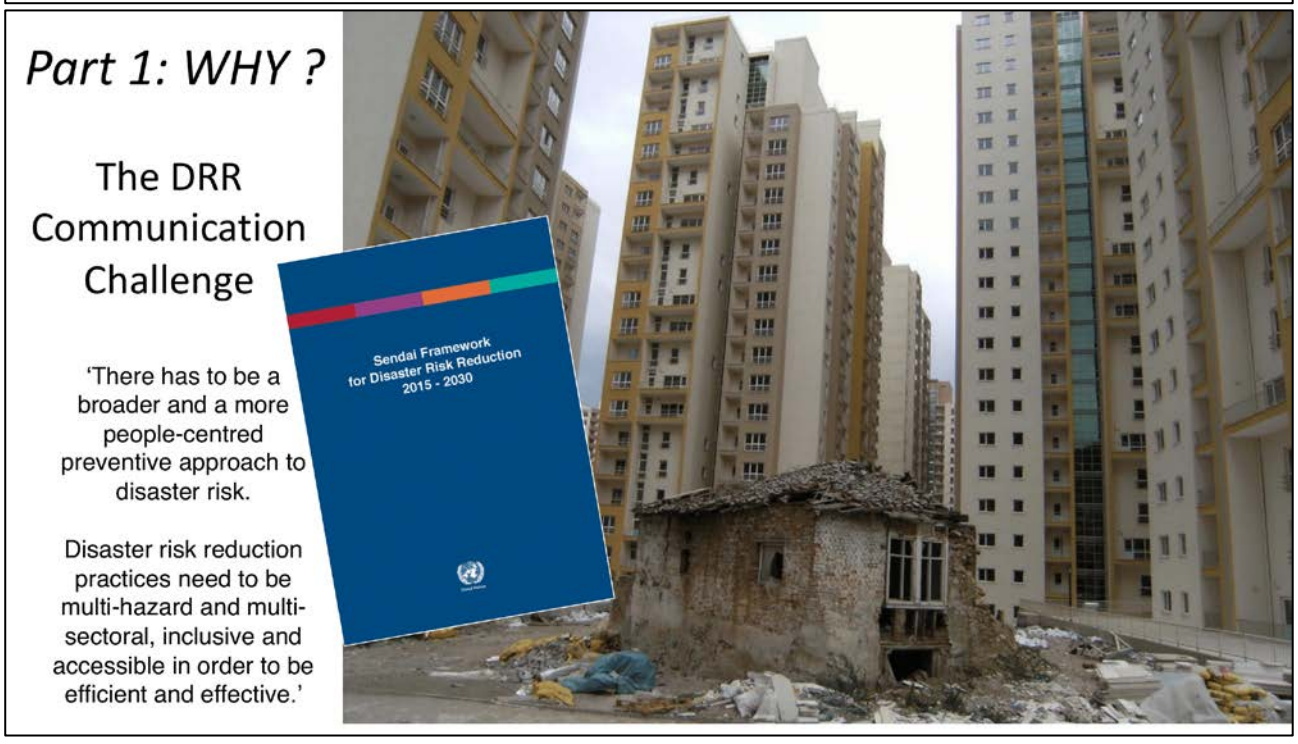
- **Iain Stewart** (University of Plymouth).

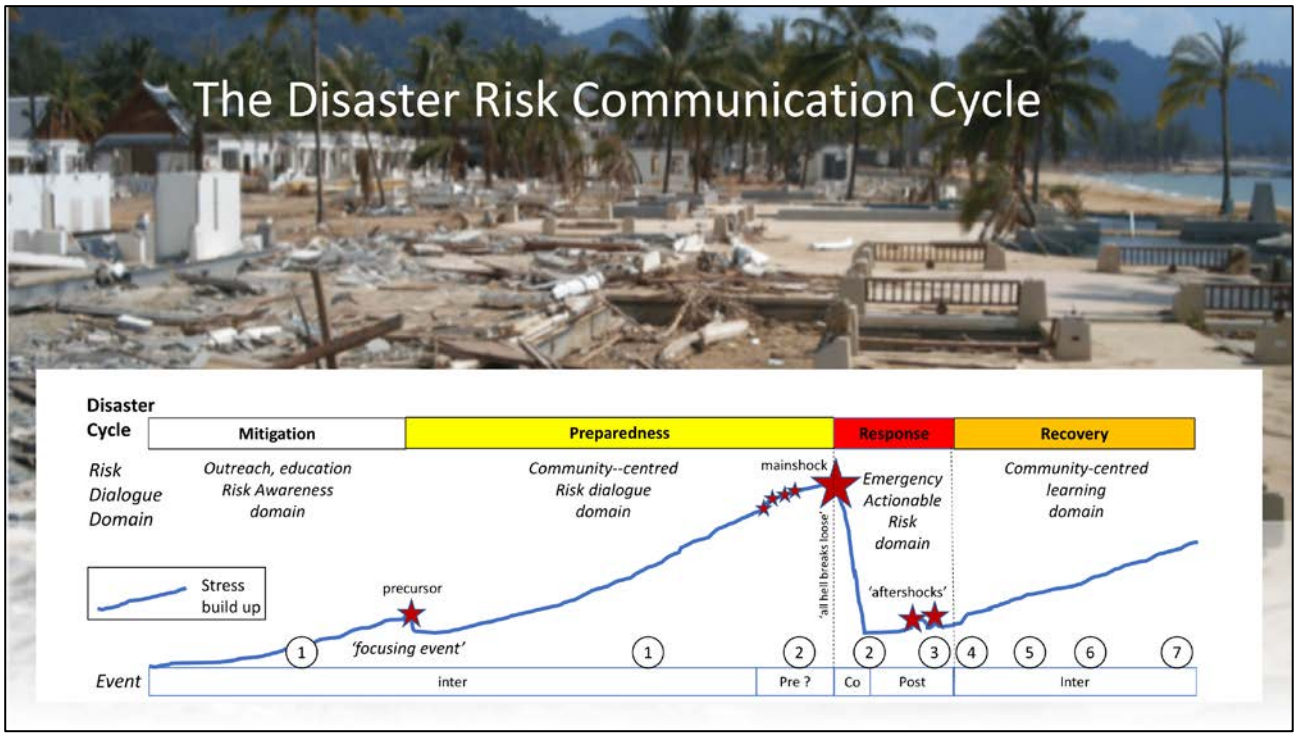
Short CV:

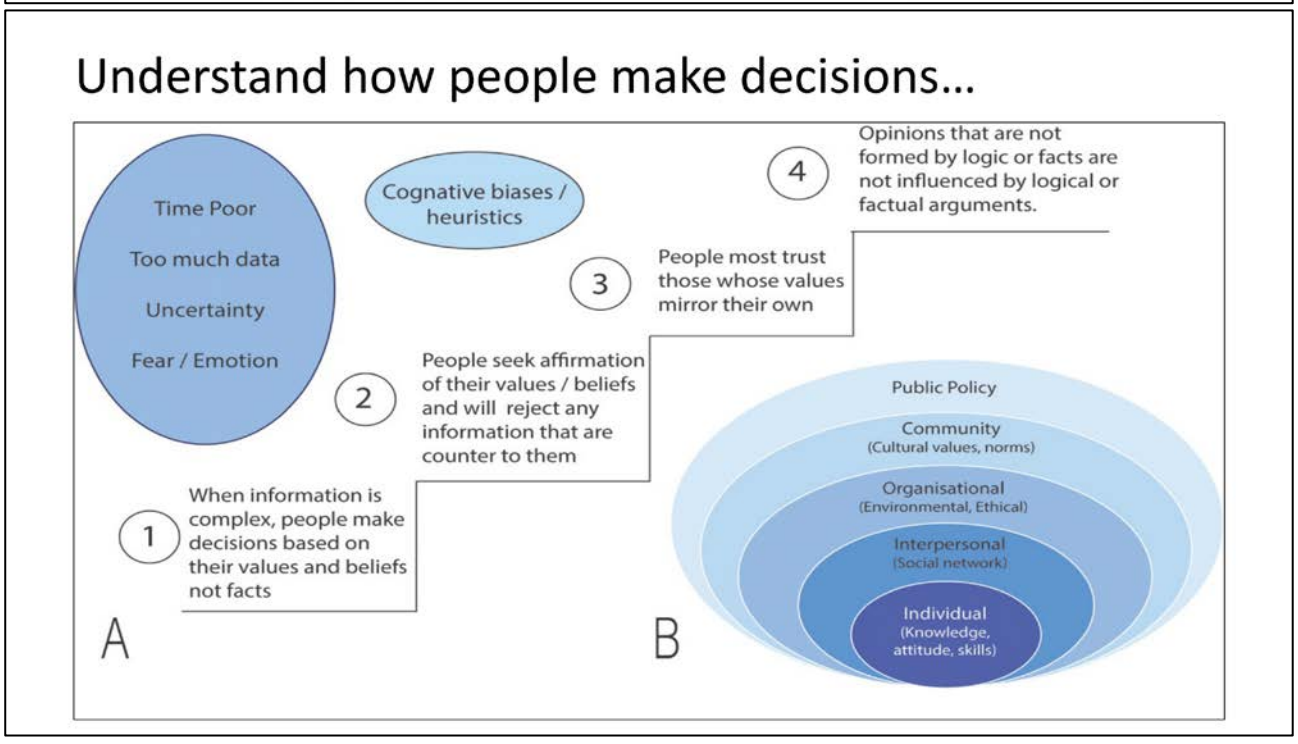
Iain Stewart is the El Hassan bin Talal Research Chair in Sustainability at the Royal Scientific Society of Jordan, Visiting Professor in Environmental Studies at Ashoka University, India, and Professor of Geoscience Communication at the University of Plymouth. The founding director of the University of Plymouth's 'Sustainable Earth Institute', Iain's long-standing research interests are in natural hazards, sustainable geoscience, and earth science communication. His geo-communication work has built on a 15 year partnership with BBC television presenting geoscience programmes (notably 'Earth: The Power of the Planet', 'Earth: The Climate Wars', 'How Earth Made Us', 'How To Grow A Planet', 'The Rise of the Continents' and 'Planet Oil) and recently was academic advisor on the BBC's acclaimed landmark series 'Severn Worlds, One Planet'. Awarded an MBE for his services to geography and geology education, he is President of the Royal Scottish Geographical Society, has been Communications Lead for the 'Tomorrow's Cities' urban disaster risk consortium, and is a co-author of the UNDRR Global Assessment Report chapter C3 on Advancing Risk Communication.

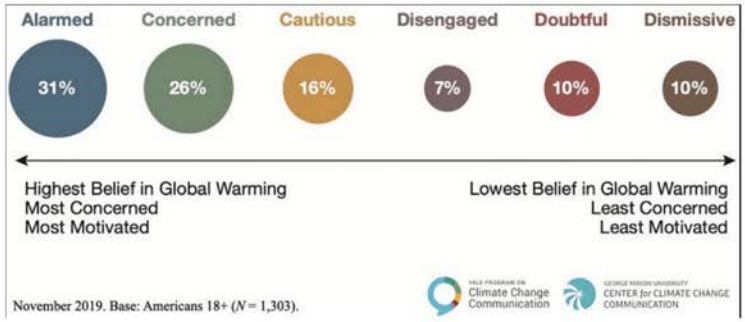
Recording and presentation printout:
https://youtu.be/oOcMsf-9TpQ


Tomorrow's CITIES
Advancing Disaster Risk Communications
towards a people-centred approach
الجَمعيّة العِلميّة المَلكيّة
Royal Scientific Society
Professor Iain Stewart,
El Hassan Research Chair in Sustainability, Royal Scientific Society, Amman, JORDAN


Part 1: WHY ?
The DRR Communication Challenge
'There has to be a broader and a more people-centred preventive approach to disaster risk.
Disaster risk reduction practices need to be multi-hazard and multi-sectoral, inclusive and accessible in order to be efficient and effective.'
Sendai Framework for Disaster Risk Reduction 2015 - 2030


The Disaster Risk Communication Cycle
Disaster Cycle
Mitigation
Preparedness
Response
Recovery
Risk Dialogue Domain
Outreach, education Risk Awareness domain
Community--centred Risk dialogue domain
mainshock
Emergency Actionable Risk domain
Community-centred learning domain
'all hell breaks loose'
Stress build up
precursor
'focusing event'
'aftershocks'
Event
inter
Pre ?
Co
Post
Inter


Understand how people make decisions...
Time Poor
Too much data
Uncertainty
Fear / Emotion
Cognative biases / heuristics
1
When information is complex, people make decisions based on their values and beliefs not facts
2
People seek affirmation of their values / beliefs and will reject any information that are counter to them
3
People most trust those whose values mirror their own
4
Opinions that are not formed by logic or facts are not influenced by logical or factual arguments.
A
B
Public Policy
Community
(Cultural values, norms)
Organisational
(Environmental, Ethical)
Interpersonal
(Social network)
Individual
(Knowledge, attitude, skills)



Know your Audience

People and their environments are complex.

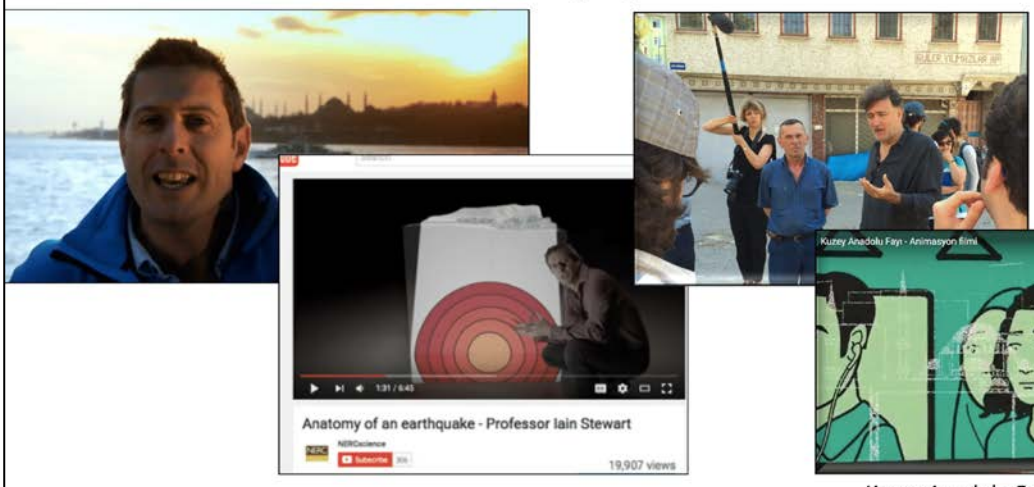
So, to have impact, invest in understanding them





Have a long-term purpose to:

reach >> engage >> motivate



Communication is a process, not a product

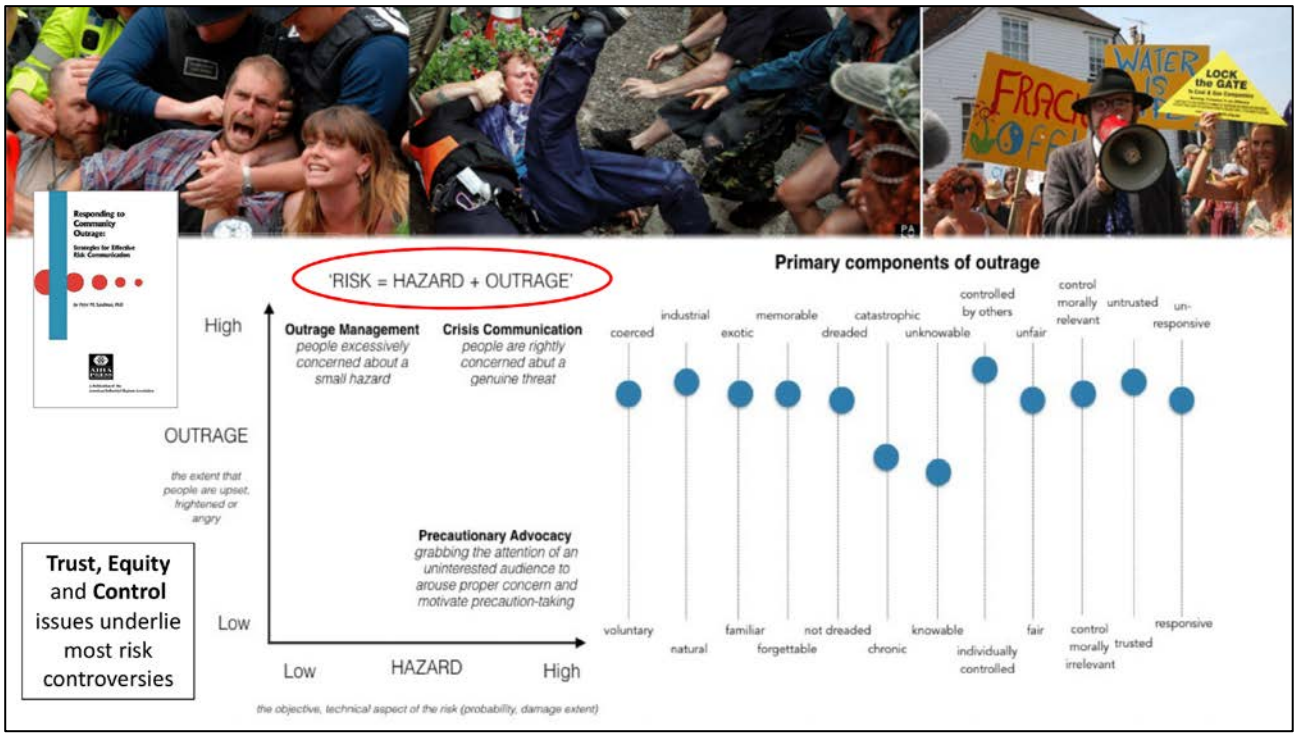
Kuzey Anadolu Fayı - Animasyon filmi

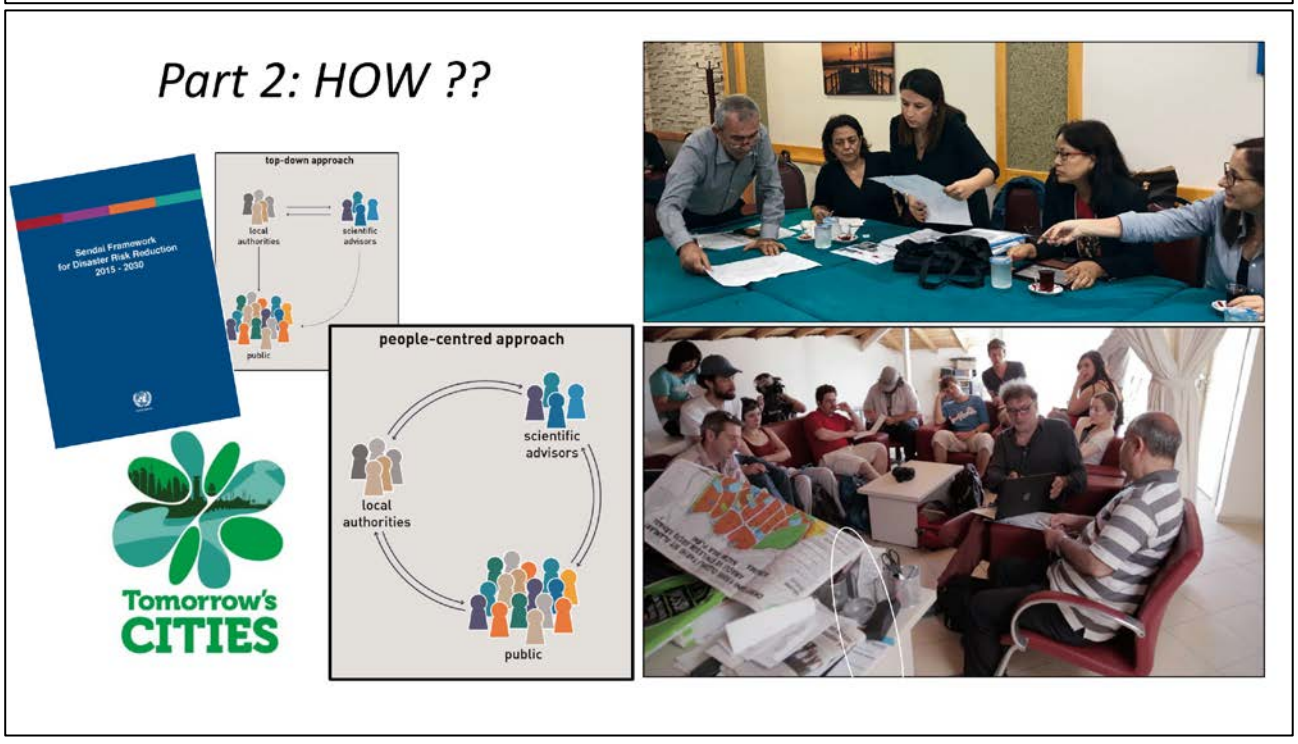


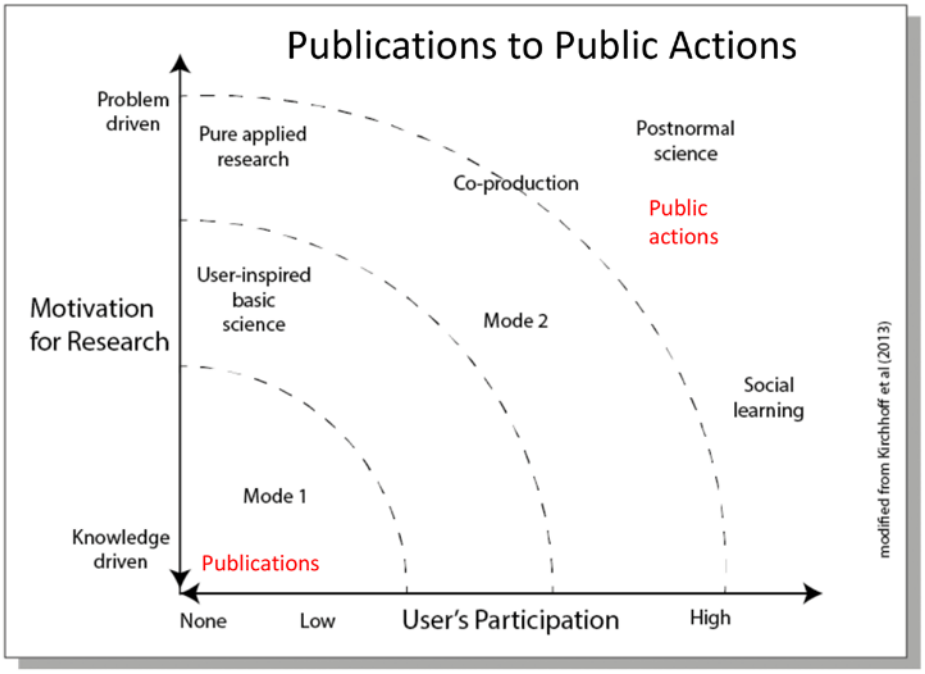


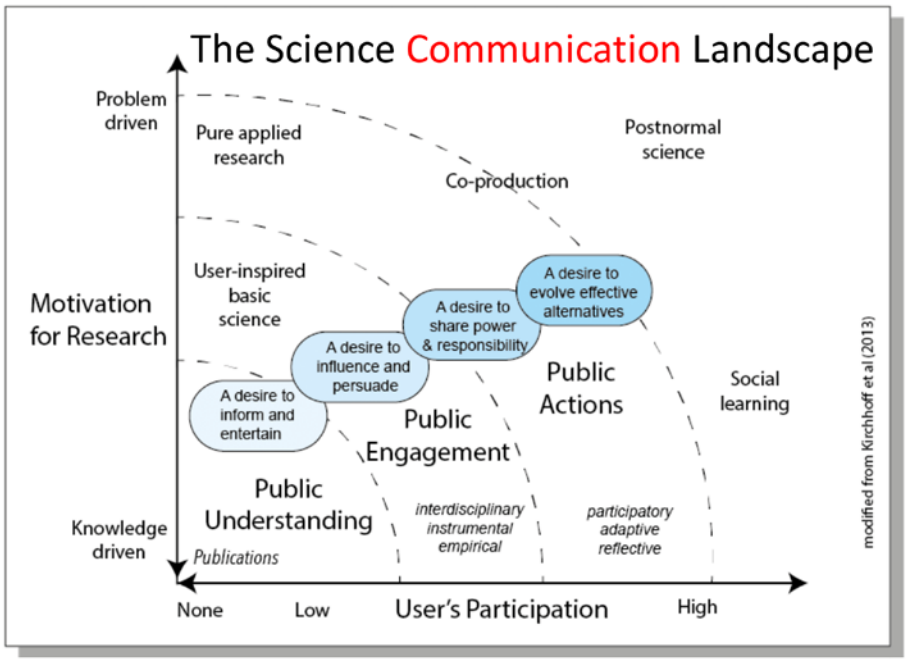
If you're not actively providing information through trusted sources, someone else will – and you may not like what they're saying.

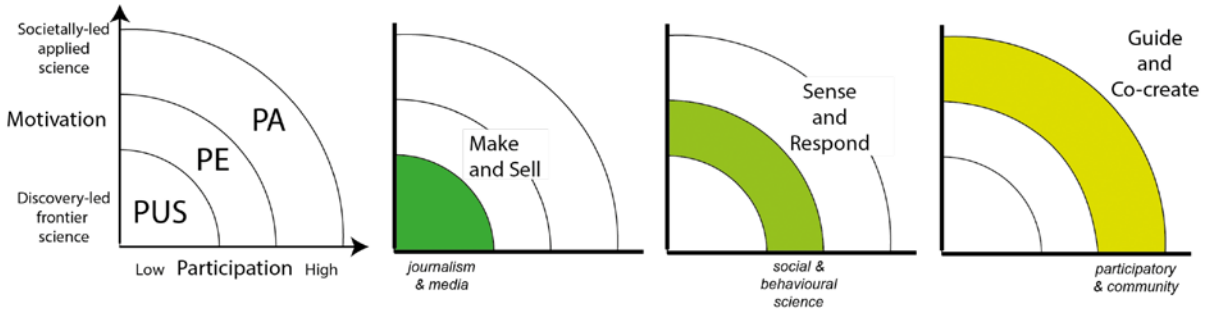
Start having Risk Conversations


'RISK = HAZARD + OUTRAGE'
High
Low
OUTRAGE
the extent that people are upset, frightened or angry
Outrage Management
people excessively concerned about a small hazard
Crisis Communication
people are rightly concerned abut a genuine threat
Precautionary Advocacy
grabbing the attention of an uninterested audience to arouse proper concern and motivate precaution-taking
Trust, Equity and Control issues underlie most risk controversies
Low
HAZARD
High
the objective, technical aspect of the risk (probability, damage extent)
Primary components of outrage
coerced
industrial
exotic
memorable
dreaded
catastrophic
unknowable
controlled by others
unfair
control morally relevant
untrusted
un-responsive
voluntary
natural
familiar
forgettable
not dreaded
chronic
knowable
individually controlled
fair
control morally irrelevant
trusted
responsive

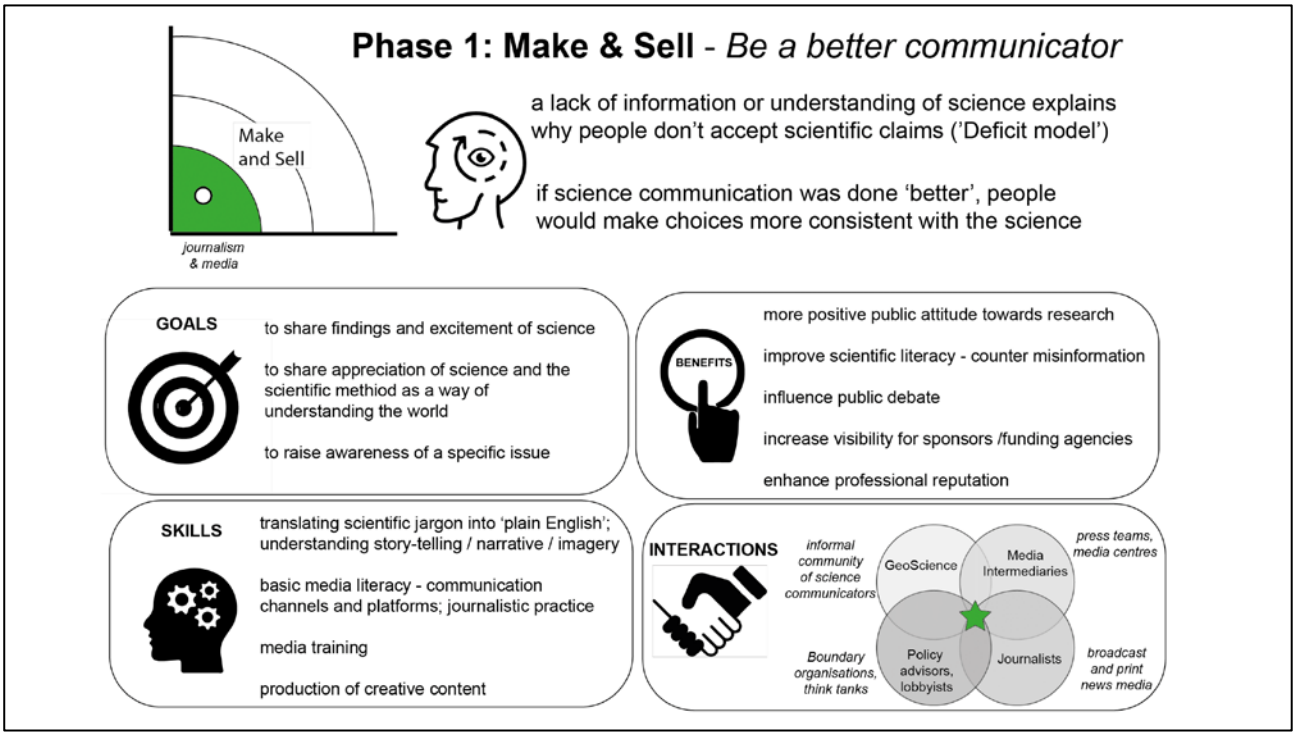

Part 2: HOW ??
Sendai Framework for Disaster Risk Reduction 2015 - 2030
top-down approach
local authorities
scientific advisors
public
people-centred approach
scientific advisors
local authorities
public
Tomorrow's CITIES

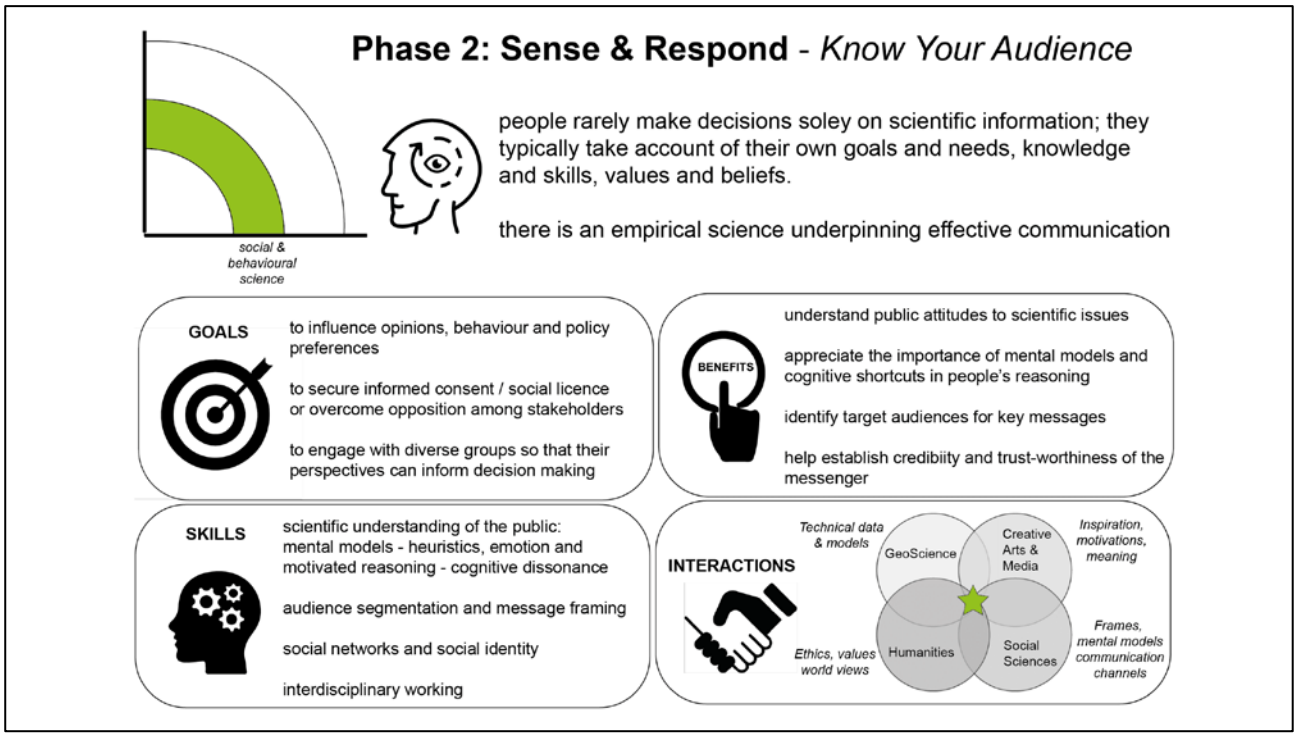

Publications to Public Actions
Problem driven
Pure applied research
Co-production
Postnormal science
Public actions
User-inspired basic science
Mode 2
Motivation for Research
Social learning
Mode 1
Knowledge driven
Publications
None
Low
User's Participation
High
modified from Kirchhoff et al (2013)

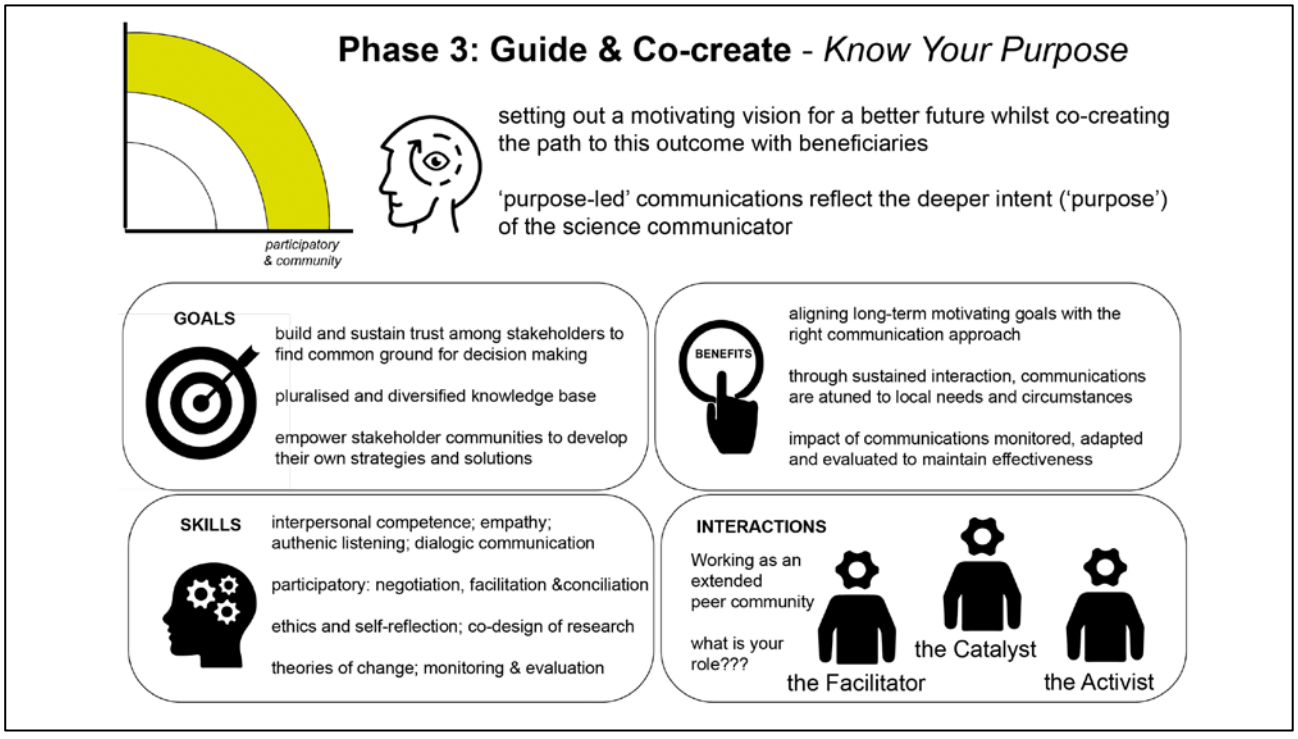

The Science Communication Landscape
Problem driven
Pure applied research
Co-production
Postnormal science
User-inspired basic science
A desire to evolve effective alternatives
A desire to share power & responsibility
A desire to influence and persuade
A desire to inform and entertain
Motivation for Research
Public Actions
Social learning
Public Engagement
Public Understanding
interdisciplinary instrumental empirical
participatory adaptive reflective
Knowledge driven
Publications
None
Low
User's Participation
High
modified from Kirchhoff et al (2013)

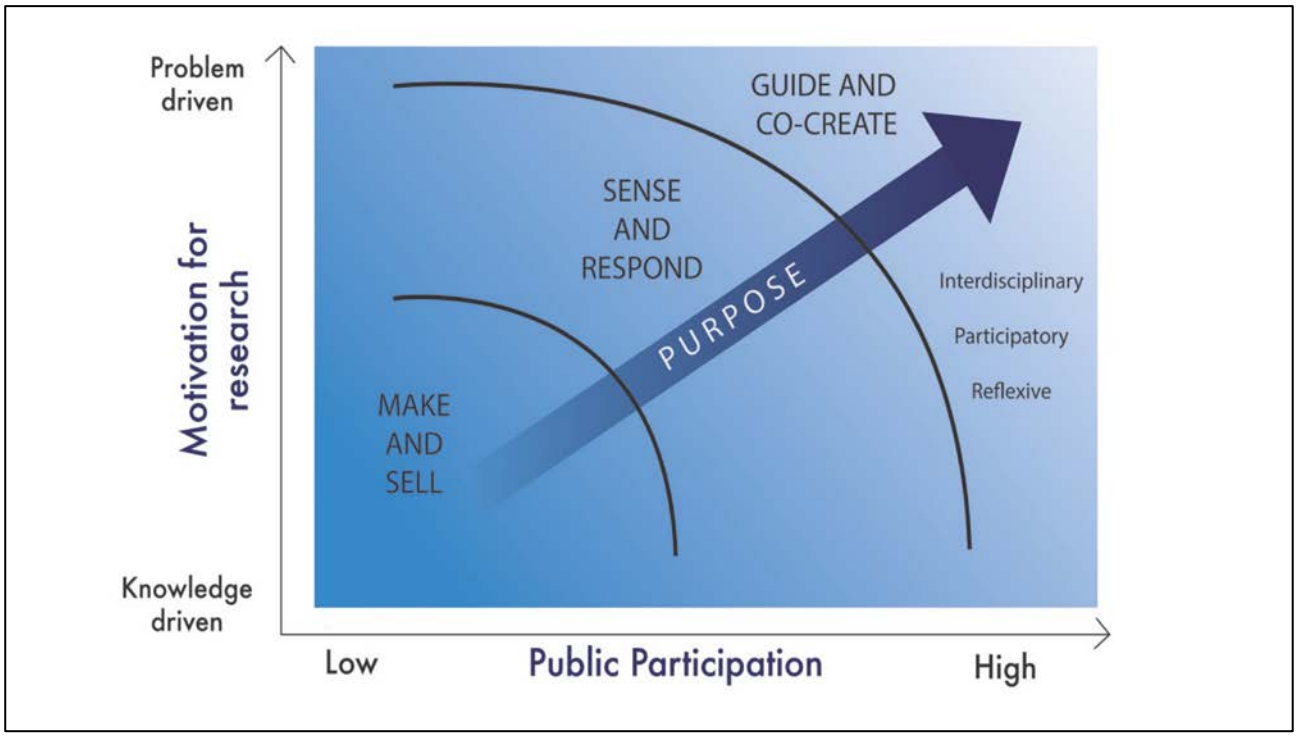


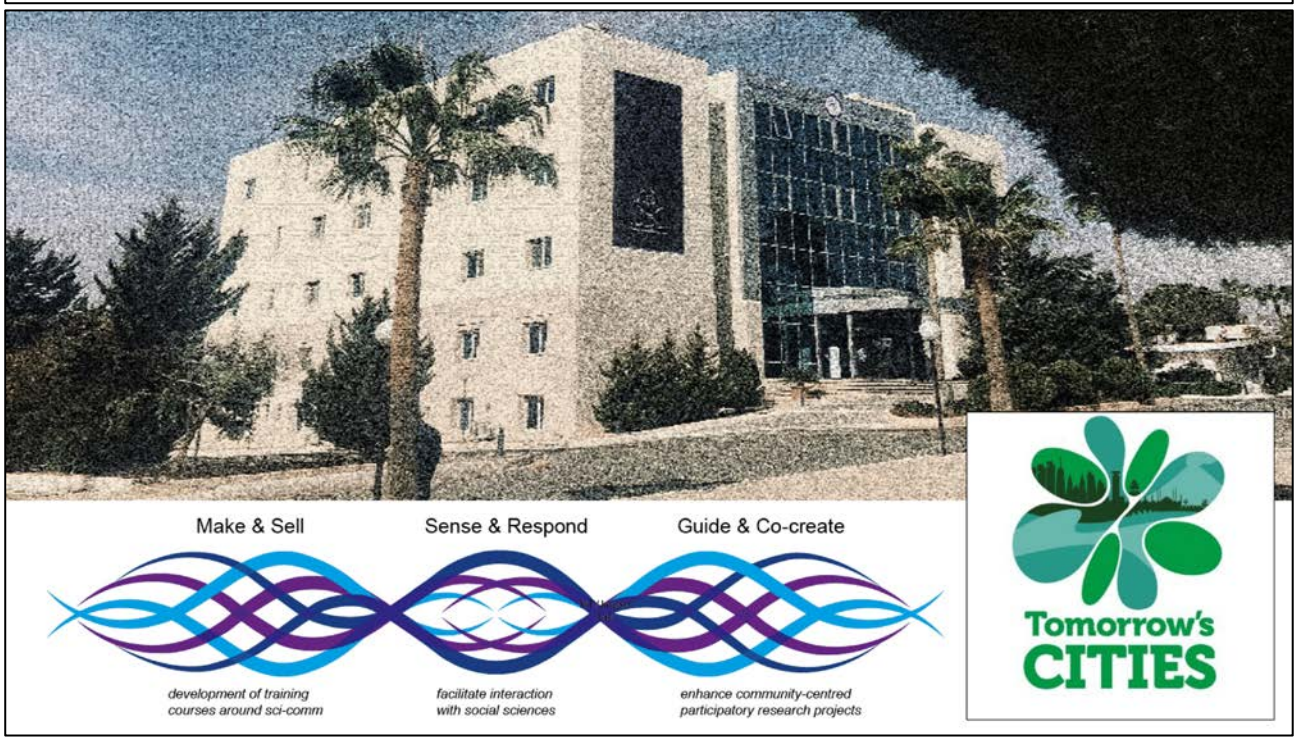
Stewart, I.S. and Hurth, V., 2021. Selling Planet Earth: re-purposing geoscience communications. *Geological Society, London, Special Publications*, *508*(1), pp.265-283.




Phase 2: Sense & Respond - Know Your Audience
social & behavioural science
people rarely make decisions soley on scientific information; they typically take account of their own goals and needs, knowledge and skills, values and beliefs.
there is an empirical science underpinning effective communication
GOALS
to influence opinions, behaviour and policy preferences
to secure informed consent / social licence or overcome opposition among stakeholders
to engage with diverse groups so that their perspectives can inform decision making
BENEFITS
understand public attitudes to scientific issues
appreciate the importance of mental models and cognitive shortcuts in people's reasoning
identify target audiences for key messages
help establish credibiity and trust-worthiness of the messenger
SKILLS
scientific understanding of the public: mental models - heuristics, emotion and motivated reasoning - cognitive dissonance
audience segmentation and message framing
social networks and social identity
interdisciplinary working
INTERACTIONS
Technical data & models
GeoScience
Creative Arts & Media
Inspiration, motivations, meaning
Ethics, values world views
Humanities
Social Sciences
Frames, mental models communication channels


Phase 3: Guide & Co-create - Know Your Purpose
participatory & community
setting out a motivating vision for a better future whilst co-creating the path to this outcome with beneficiaries
'purpose-led' communications reflect the deeper intent ('purpose') of the science communicator
GOALS
build and sustain trust among stakeholders to find common ground for decision making
pluralised and diversified knowledge base
empower stakeholder communities to develop their own strategies and solutions
BENEFITS
aligning long-term motivating goals with the right communication approach
through sustained interaction, communications are atuned to local needs and circumstances
impact of communications monitored, adapted and evaluated to maintain effectiveness
SKILLS
interpersonal competence; empathy; authenic listening; dialogic communication
participatory: negotiation, facilitation &conciliation
ethics and self-reflection; co-design of research
theories of change; monitoring & evaluation
INTERACTIONS
Working as an extended peer community
what is your role???
the Facilitator
the Catalyst
the Activist





- **Lucia Herrera** (Centre for Integrated Emergency Management CIEM at the University of Agder in Norway).

Short CV:

Lucia is a PhD candidate in Information Systems affiliated to the Centre for Integrated Emergency Management CIEM at the University of Agder in Norway. Apart from academia, Lucia counts with professional experience in digital communications, crisis management, and process improvement in international, private, and public organizations. She holds an MSc. In Engineering

Management with a concentration in crisis, emergency and risk management from The George Washington University, and a BA in Government and International Relations from Universidad Externado de Colombia. Her research interests include crisis, disaster and risk management, support technologies and processes for agile crisis management, logistics, and process improvement. Her dissertation is exploring organizational practices in using social media as a source of information to support crisis management strategies.

Recording and presentation printout:
https://youtu.be/M1zSyRi3vGg



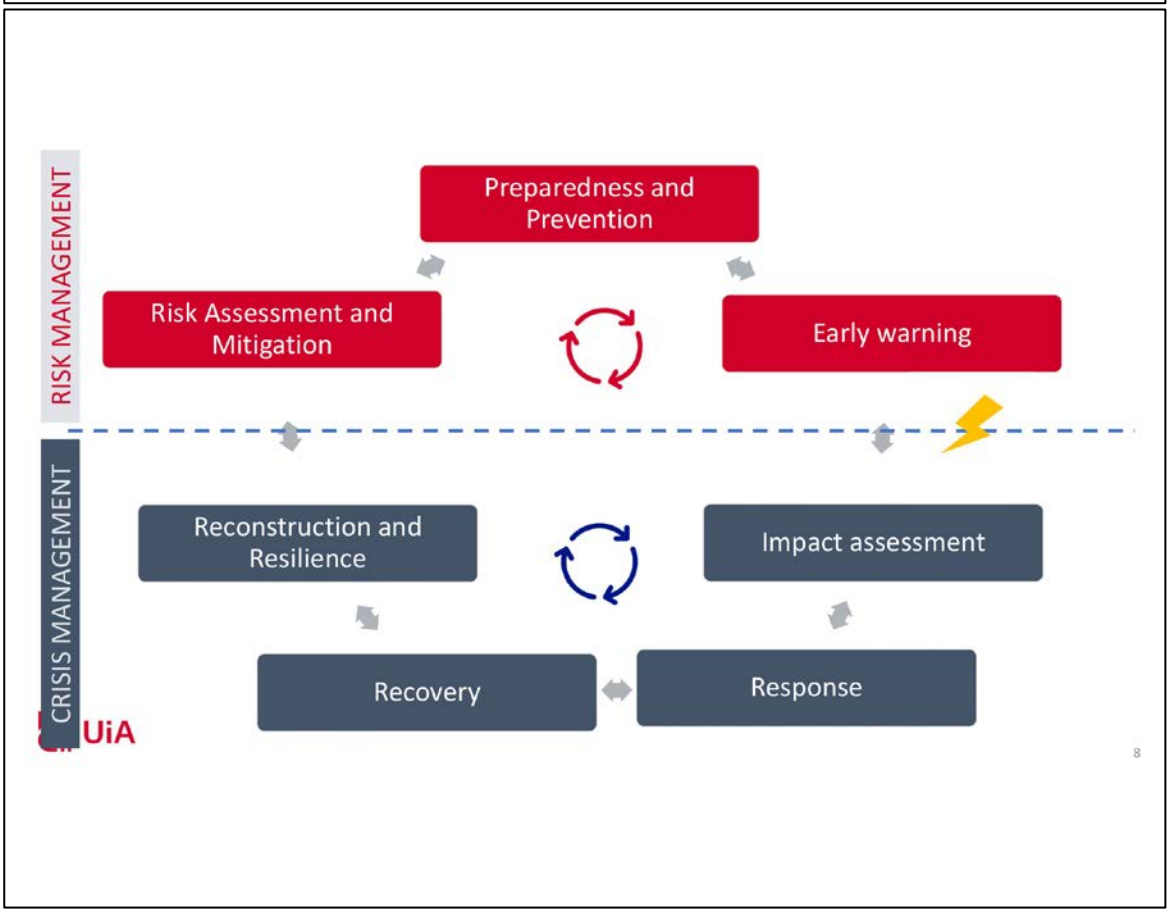

RISK
CRISIS

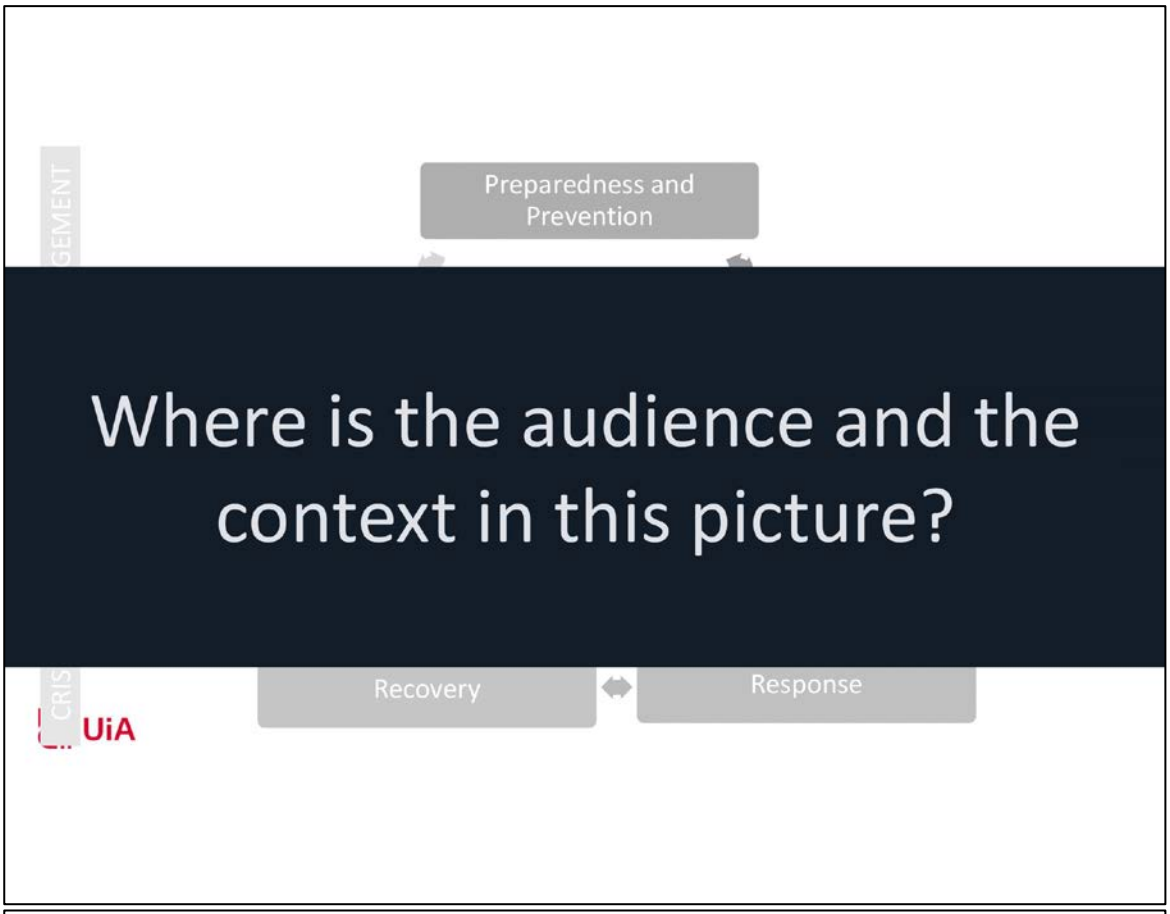

RISK
CRISIS
MANAGEMENT
&
COMMUNICATIONS

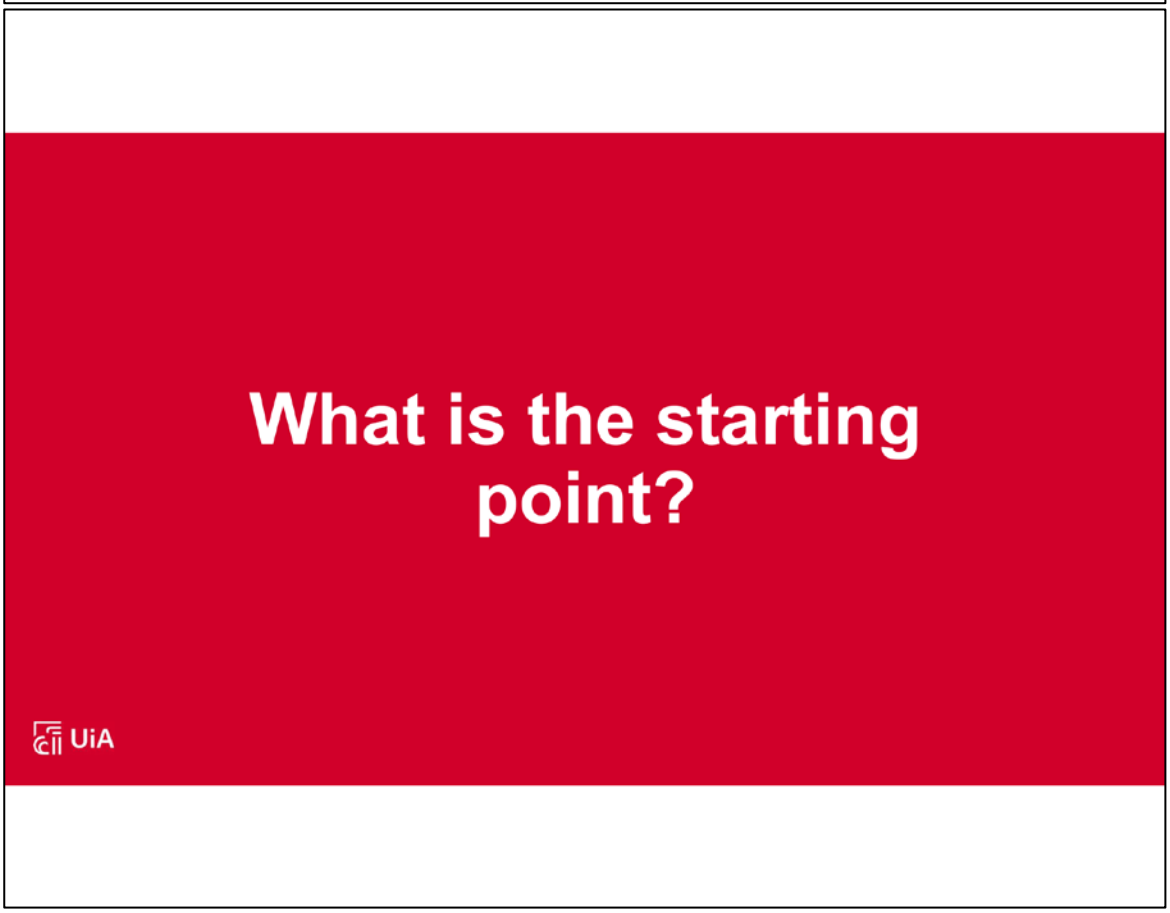

RISK
MANAGEMENT
Identifying, assessing, and mitigating potential harm.

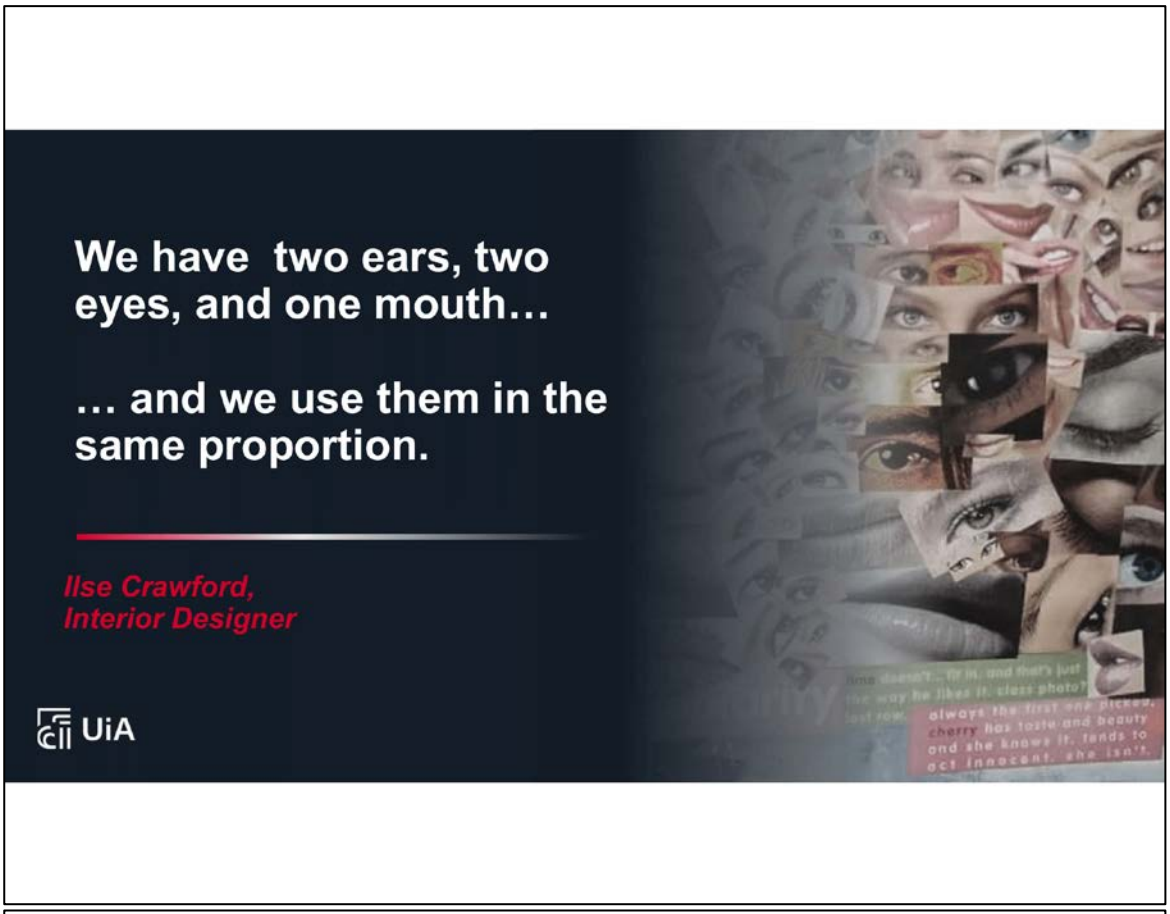

CRISIS
MANAGEMENT
Responding, managing, recovering from an unforeseen event.


RISK
CRISIS
COMMUNICATIONS
What might go wrong
What effectively goes wrong

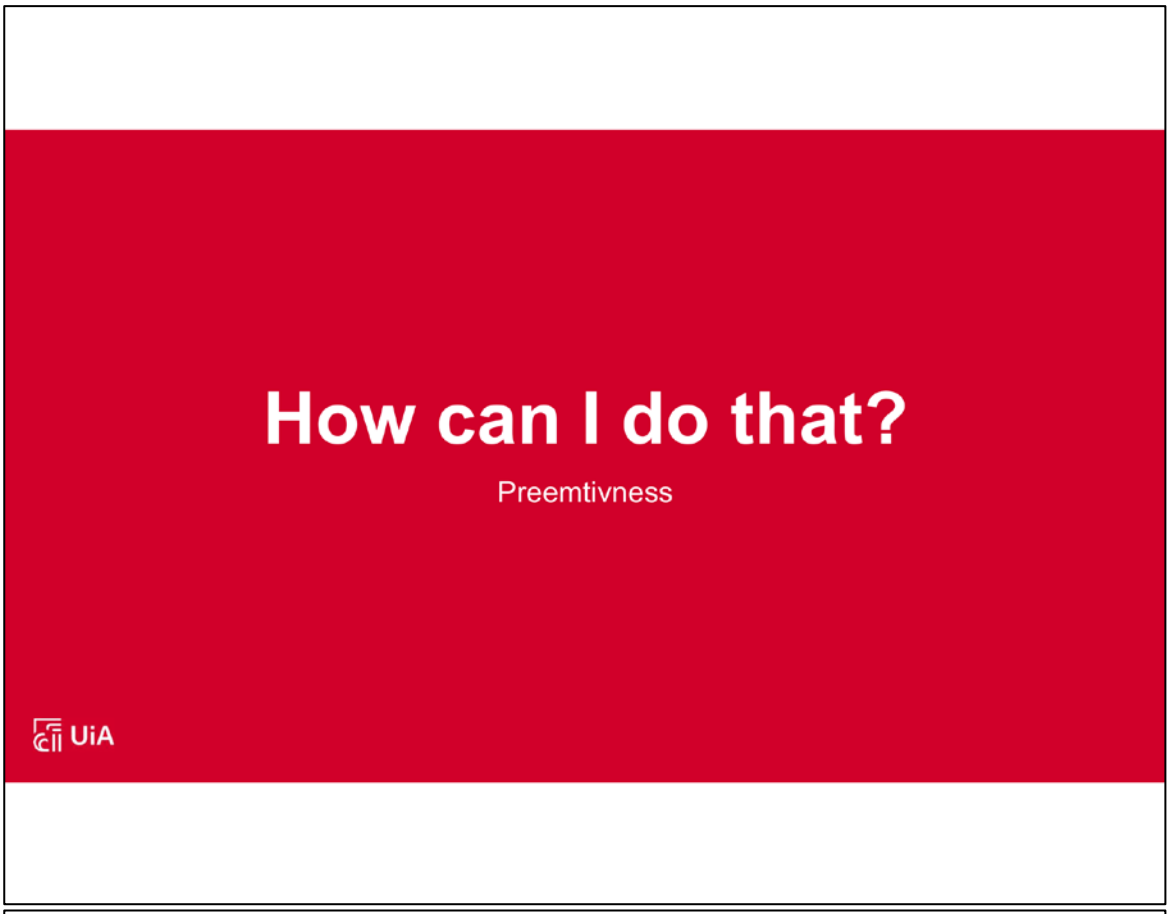

RISK MANAGEMENT
CRISIS MANAGEMENT
Preparedness and Prevention
Risk Assessment and Mitigation
Early warning
Reconstruction and Resilience
Impact assessment
Recovery
Response
UiA
8

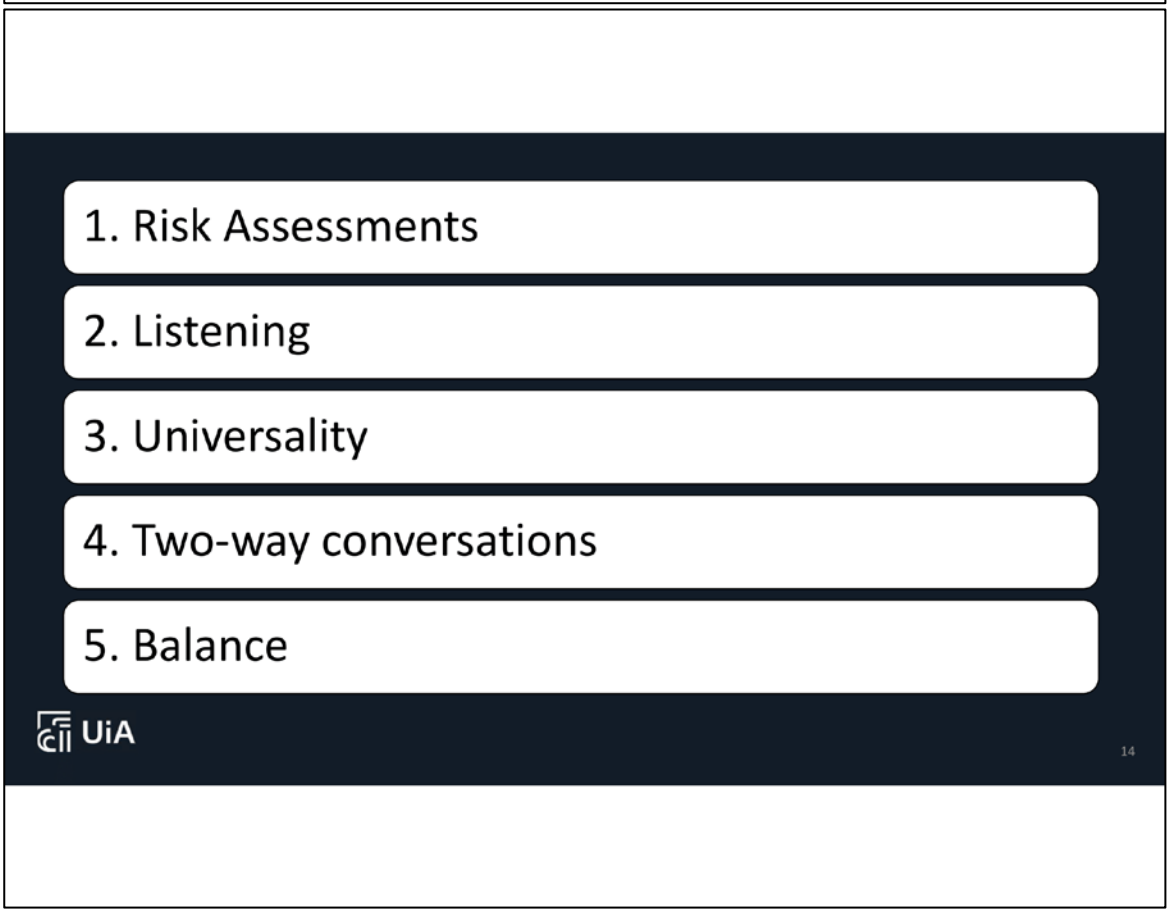

Preparedness and Prevention
Where is the audience and the context in this picture?
Recovery
Response
UiA


What is the starting point?
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We have two ears, two eyes, and one mouth…
… and we use them in the same proportion.
Ilse Crawford,
Interior Designer
UiA


Listening, observing, understanding… acting
UiA


How can I do that?
Preemtivness
UiA


1. Risk Assessments
2. Listening
3. Universality
4. Two-way conversations
5. Balance
UiA
14

1. Risk Assessments

- Powerful tool – source of knowledge.
- Recurrent.
- Risk acceptance.
- Easier at a local level than at a national level.

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Likelihood vs. Consequences

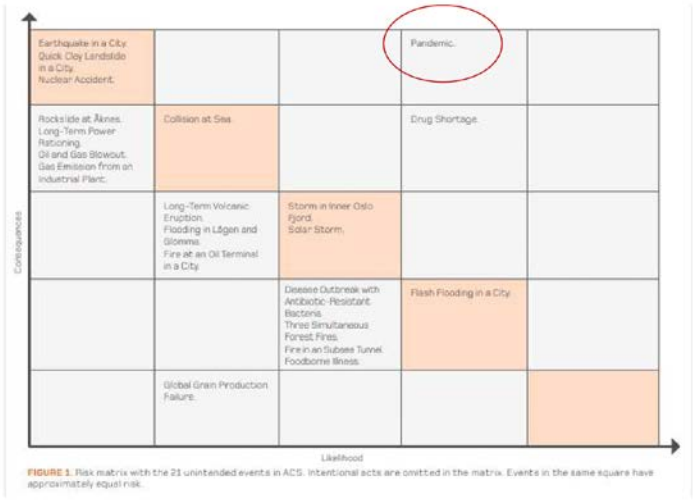
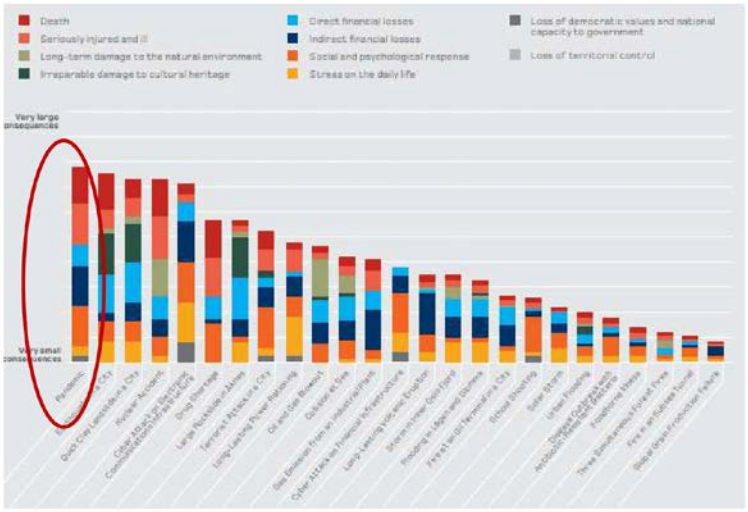


FIGURE 1. Risk matrix with the 21 unintended events in ACS. Intentional acts are omitted in the matrix. Events in the same square have approximately equal risk.

Source: Analyses of crisis scenarios 2019
https://www.dsb.no/rapporter-og-evalueringer/analyses-of-crisis-scenarios-2019/

Overall impact per scenario

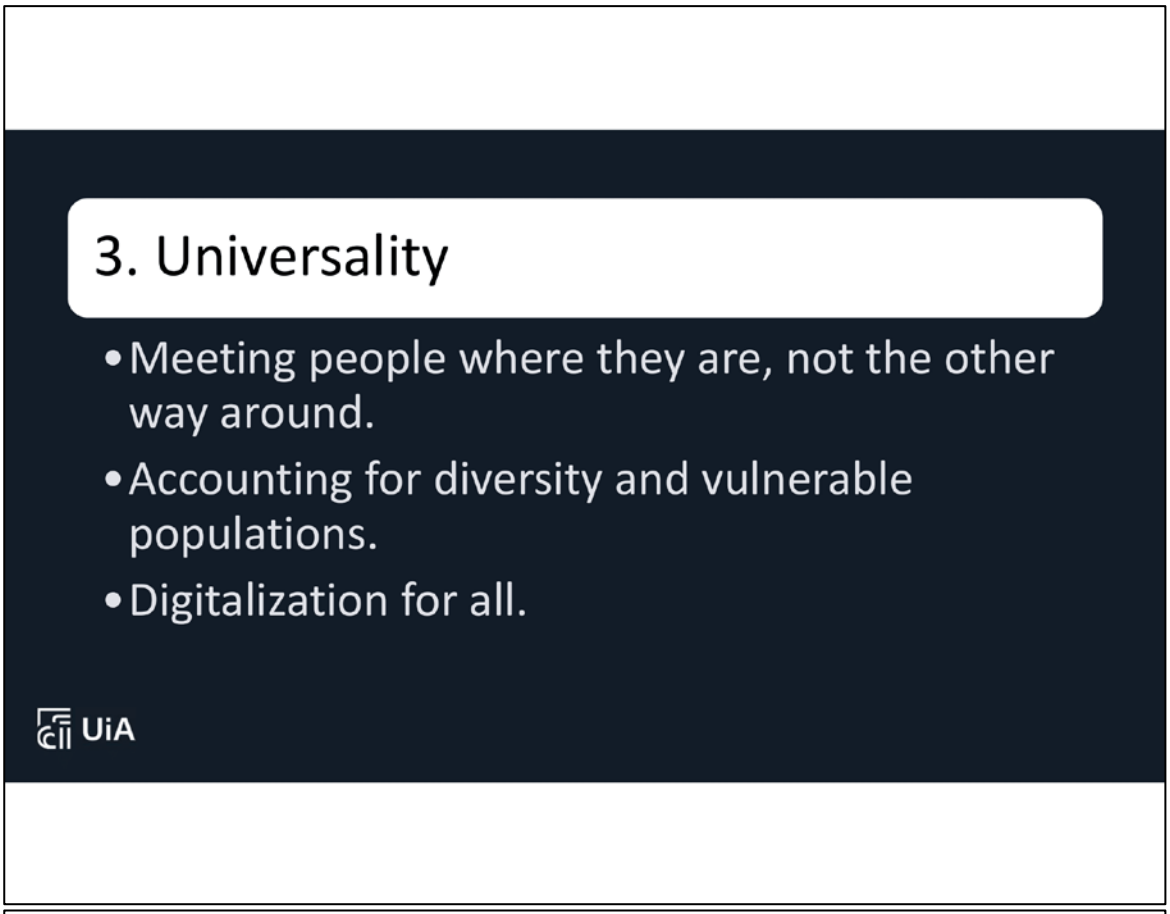


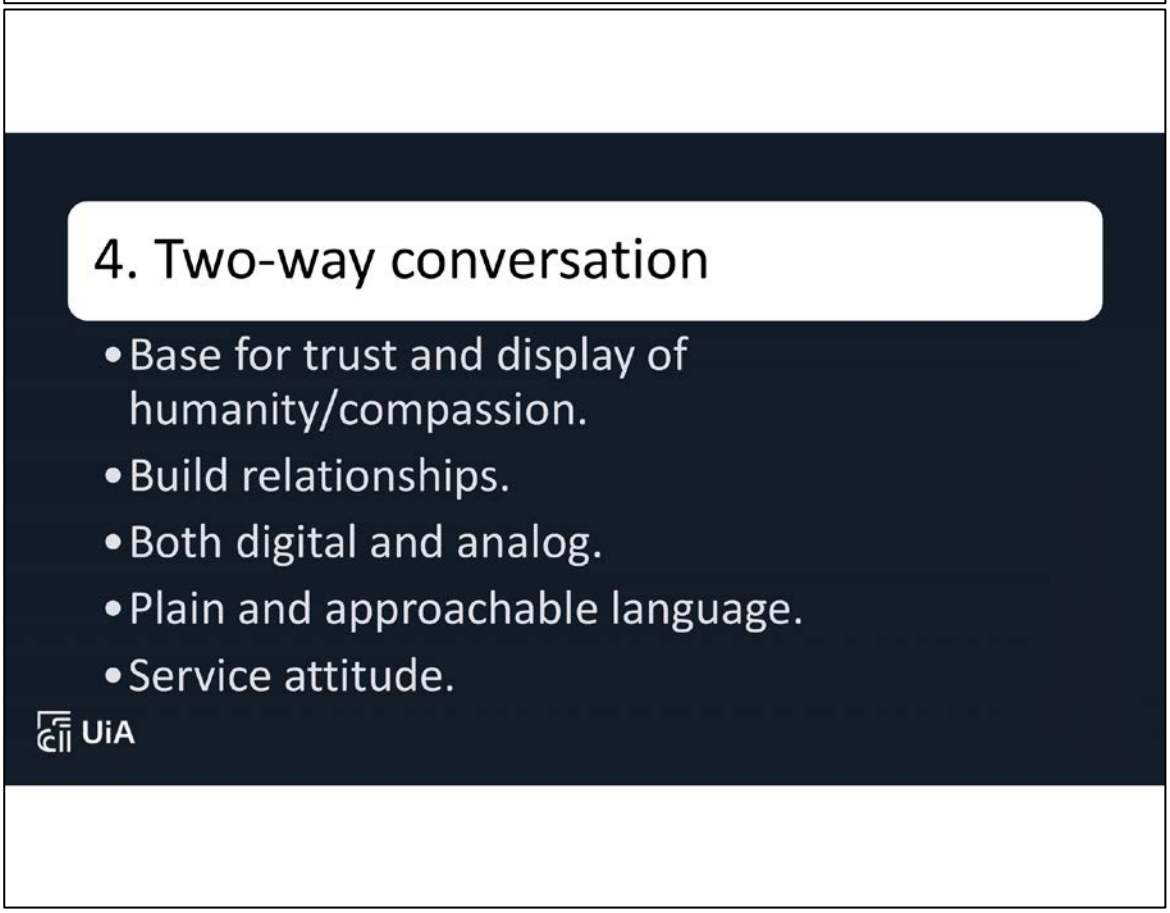
Source: Analyses of crisis scenarios 2019
https://www.dsb.no/rapporter-og-evalueringer/analyses-of-crisis-scenarios-2019/

2. Listening

- Social media listening – great source of information.
- Community outreach.
- Townhalls.

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3. Universality
• Meeting people where they are, not the other way around.
• Accounting for diversity and vulnerable populations.
• Digitalization for all.
UiA


4. Two-way conversation
• Base for trust and display of humanity/compassion.
• Build relationships.
• Both digital and analog.
• Plain and approachable language.
• Service attitude.
UiA

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ZFPOKX

ZONE FORECAST PRODUCT
NATIONAL WEATHER SERVICE NEW YORK NY
312 PM EDT MON APR 11 2016

NYZ072-120815-
NEW YORK (MANHATTAN)-
312 PM EDT MON APR 11 2016

.TONIGHT...MOSTLY CLOUDY. A CHANCE OF SHOWERS..
MIDNIGHT. LOWS IN THE LOWER 50S. SOUTH WINDS 1
OF RAIN 50 PERCENT.
.TUESDAY...SHOWERS...MAINLY IN THE MORNING. HI
50S. SOUTHWEST WINDS 15 TO 20 MPH...BECOMING N
10 MPH IN THE AFTERNOON. CHANCE OF RAIN NEAR 1
.TUESDAY NIGHT...PARTLY CLOUDY. LOWS AROUND 40.
AROUND 10 MPH.
.WEDNESDAY...SUNNY. HIGHS IN THE MID 50S. NORT
10 MPH.
.WEDNESDAY NIGHT...PARTLY CLOUDY. LOWS IN THE
WINDS 5 TO 10 MPH.
.THURSDAY...MOSTLY SUNNY. HIGHS IN THE UPPER 5
.THURSDAY NIGHT...PARTLY CLOUDY. LOWS IN THE L
.FRIDAY...MOSTLY SUNNY. HIGHS IN THE UPPER 50S.
.FRIDAY NIGHT...PARTLY CLOUDY. LOWS IN THE MID
.SATURDAY...MOSTLY SUNNY. HIGHS IN THE LOWER 6
.SATURDAY NIGHT...PARTLY CLOUDY. LOWS IN THE U
.SUNDAY...MOSTLY SUNNY. HIGHS IN THE UPPER 60S.
.SUNDAY NIGHT...MOSTLY CLEAR. LOWS IN THE LOWE
.MONDAY...SUNNY. HIGHS IN THE UPPER 60S.

$$
```

Source: US National Weather Service www.weather.gov

Stop shouting the weather!

April 11, 2016 — LISTEN UP! BEGINNING ON MAY 11, NOAA'S NATIONAL WEATHER SERVICE FORECASTS WILL STOP YELLING AT YOU.



NOAA's National Weather Service is no longer using all caps for forecast products. (NOAA)

21

Winter Storm Watch

```
URGENT - WINTER WEATHER MESSAGE
National Weather Service Duluth MN
321 PM CST Fri Dec 3 2021

WIZ001>004-040930-
/O.CON.KDLH.WS.A.0005.211205T0600Z-211206T1200Z/
Douglas-Bayfield-Ashland-Iron-
Including the cities of Superior, Washburn, Bayfield, Ashland,
and Hurley
321 PM CST Fri Dec 3 2021

...WINTER STORM WATCH REMAINS IN EFFECT FROM LATE SATURDAY NIGHT
THROUGH LATE SUNDAY NIGHT...

* WHAT...Heavy snow possible. Total snow accumulations of 5 to 9
  inches possible. Winds could gust as high as 30 mph.

* WHERE...Iron, Douglas, Bayfield and Ashland Counties. This
  includes the Tribal Lands of the Red Cliff Band and the Bad
  River Reservation.

* WHEN...From late Saturday night through late Sunday night.

* IMPACTS...Travel could be very difficult.


PRECAUTIONARY/PREPAREDNESS ACTIONS...

Monitor the latest forecasts for updates on this situation.

&&

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For more information from the National Weather Service visit
http://weather.gov/Duluth

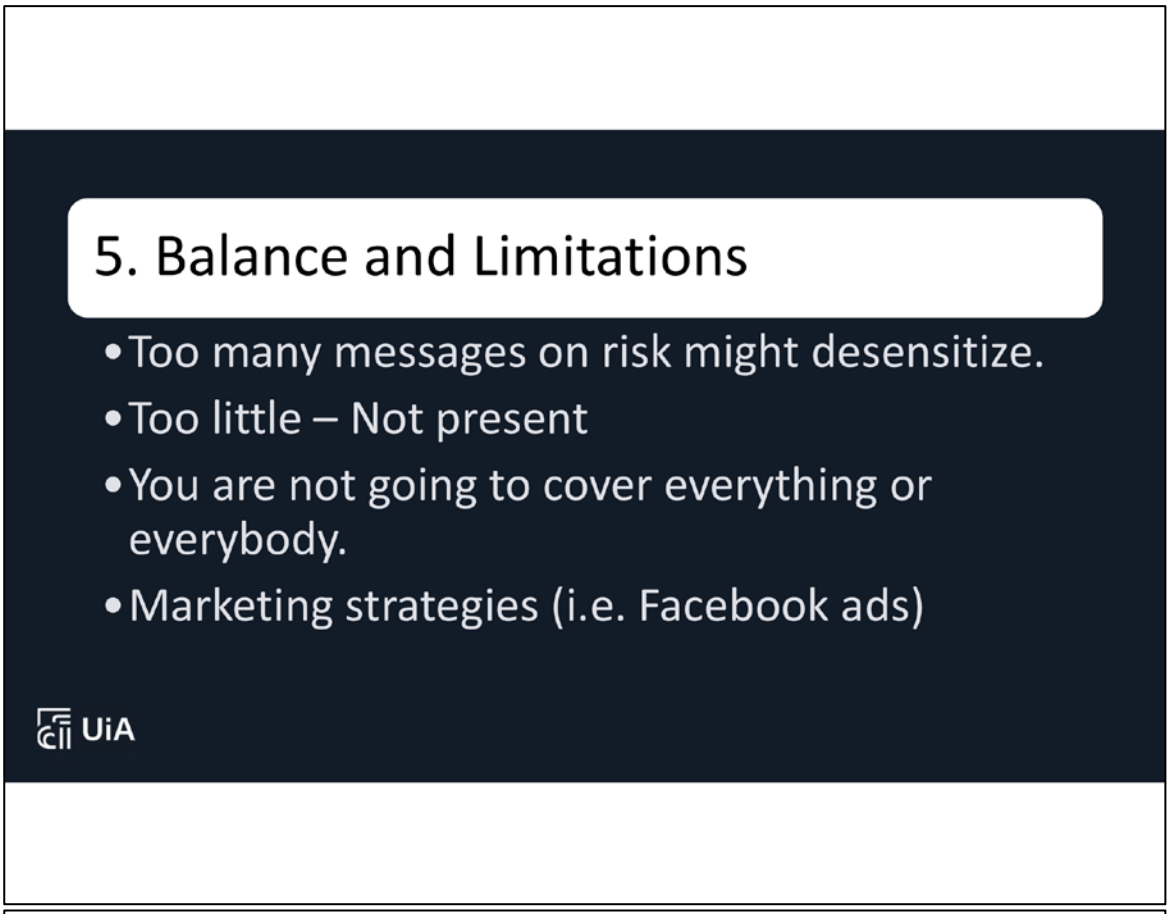
URGENT - WINTER WEATHER MESSAGE
National Weather Service Duluth MN
321 PM CST Fri Dec 3 2021
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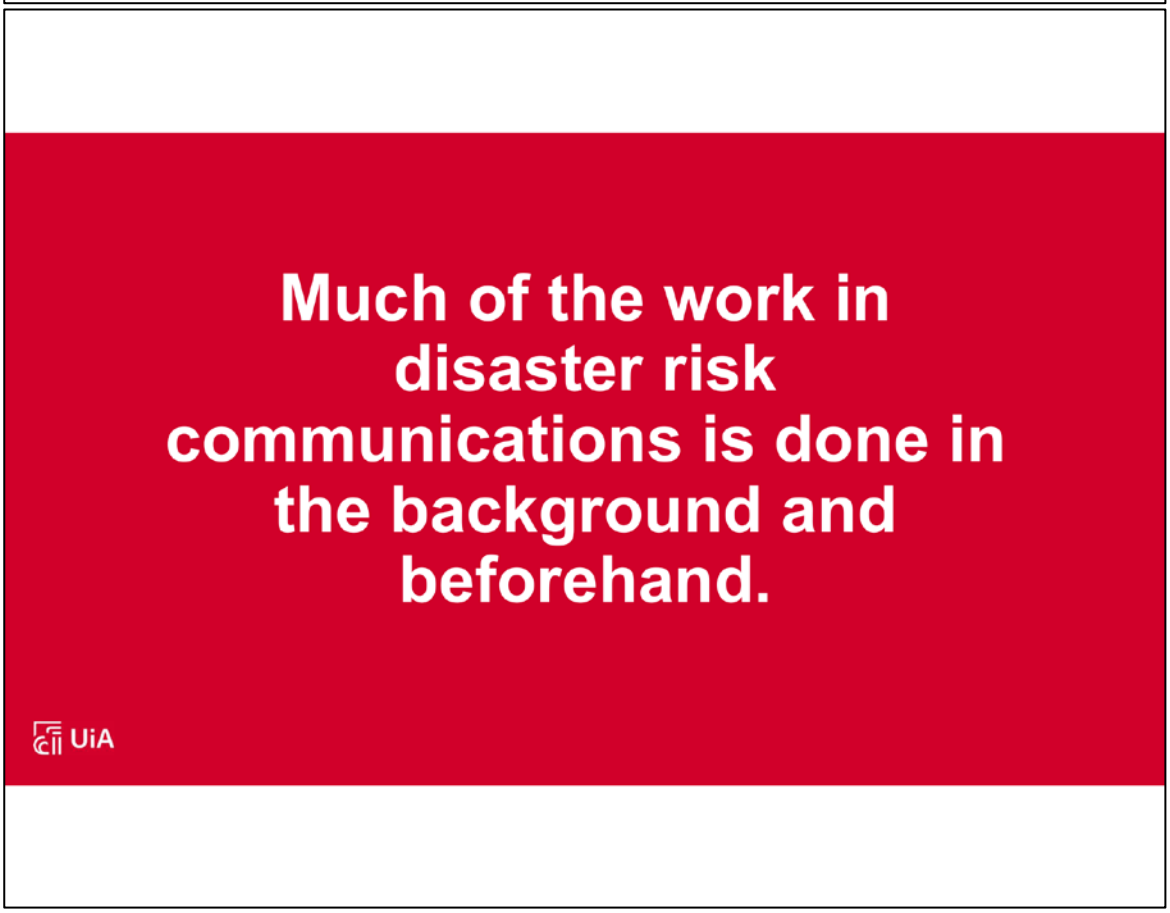
Source: US National Weather Service www.weather.gov

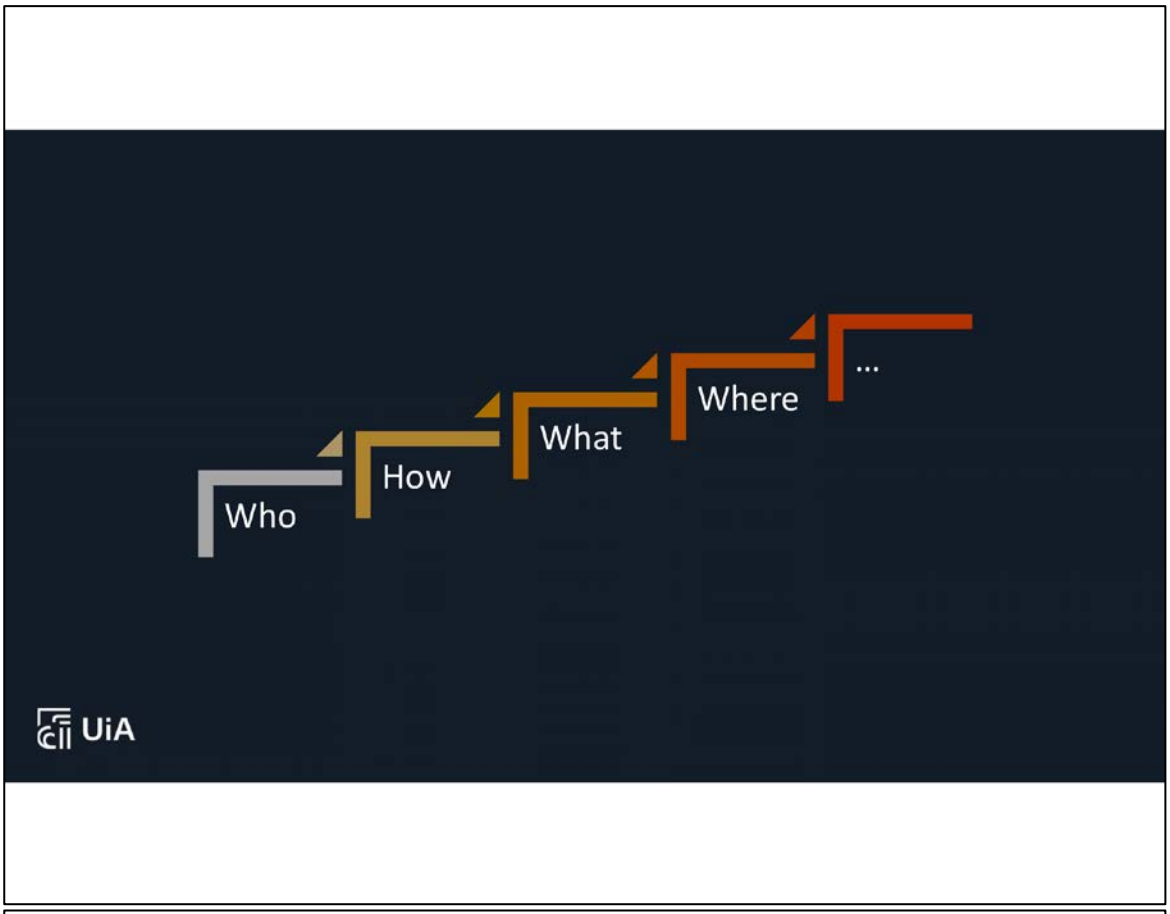
Stop shouting the weather!

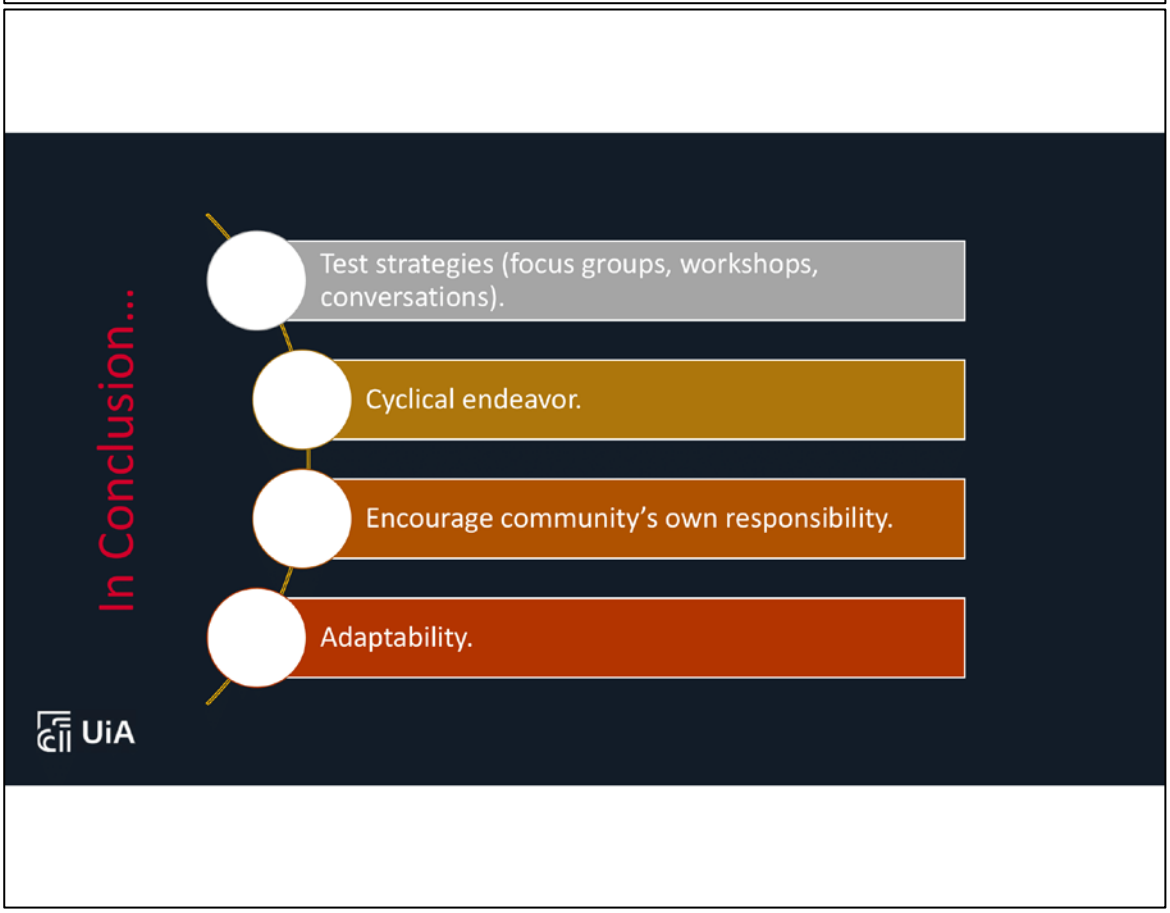


22


5. Balance and Limitations
• Too many messages on risk might desensitize.
• Too little – Not present
• You are not going to cover everything or everybody.
• Marketing strategies (i.e. Facebook ads)
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Much of the work in disaster risk communications is done in the background and beforehand.
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Who
How
What
Where
...
UiA


In Conclusion...
Test strategies (focus groups, workshops, conversations).
Cyclical endeavor.
Encourage community's own responsibility.
Adaptability.
UiA



UiA Universitetet i Agder

6. Webinar length

ROADMAP Consortium agreed on 2 hours and 30 minutes, allowing Speakers to have up to 35 minutes to present as well as a brief Q&A session after each presentation. Webinar started with a short presentation of the project to promote it.

7. Promotion and organisation

ADAI organized the second webinar using the ZOOM platform, supporting up to 500 participants and performing a direct broadcast to the You Tube channel. The Q&A box was used to receive the questions from the audience.
Registration was done through a specific form from ZOOM, to allow the access to the webinar and resulting in a participant list. Two invitations were sent by email: "SAVE THE DATE" plus reminder having more information on the webinar.

8. Attendance

The total number of the attendees was 183 plus more than 206 views on YouTube (https://www.youtube.com/watch?v=1dMQQxv82HE).

3rd ROADMAP webinar – 19th of May, 2022 at 10.00CET

available here: https://roadmap.ci3r.it/publications/ and https://www.youtube.com/user/ceif2011

1. Title:

"Challenges and opportunities for the future of research and practice in disaster risk management"

2. Content:

In the framework of the ROADMAP project, we have been working for one year and a half to find, examine and propose good practices in Disaster Risk Management in a multirisk environment. Indeed, through the work done in the ROADMAP project, we promote the use of real-life multi-hazard risk scenarios to retrieve good practices with the objective to enhance DRM when it faces multi-hazard risks.

The third ROADMAP webinar was dedicated to topics that include the main issues addressed by ROADMAP: good practices, (real life) scenarios based approach, multi-hazard risk approach. In addition, other EU projects from the same call and related to these topics were invited to participate as well.

In this third and last ROADMAP webinar, we aim at discussing relevant ROADMAP findings related to the use of good practices in multi-hazard risk scenarios and we invite projects funded in the same call as ROADMAP to discuss with us which challenges and opportunities DRM encounters in such a complex context.

3. Goal:

The main goal of this webinar was to share ROADMAP findings. At the same time, we invited speakers from other projects under the same call as ROADMAP to share their findings within the topic of the webinar. In sum, the rationale was the identification of gaps and possible synergies looking at the future.

4. Target audience:

Same as the previous webinars, namely involving decision makers as well as scientific and general community. We took advantage of the ROADMAP project channels, which were already quite robust, ie., the mailing list in place as well as partner's and AG networks. The invited projects, under the same call as ROADMAP, were also involved in the dissemination of this webinar.

5. Speakers and presentations:

We agreed to have 5 Speakers, 2 from ROADMAP project as well as 3 Speakers from other EU projects from the same call presenters/speakers.

- **From ROADMAP project:**
  - ROADMAP project: Bulletins and Thematic Papers
    - **Giulia Fagà** - scientist from ROADMAP consortium - EUCENTRE
    - **Claudia Morsut** - scientist from ROADMAP consortium - University of Stavanger

Recording and presentation printout:
https://youtu.be/oOcMsf-9TpQ

ROADMAP

euROpean observAtory on Disaster risk and crisis MAnagement best Practices

ROADMAP project
Bulletins and Thematic Papers

Giulia Fagà – EUCENTRE Italy
Claudia Morsut – UiS Norway

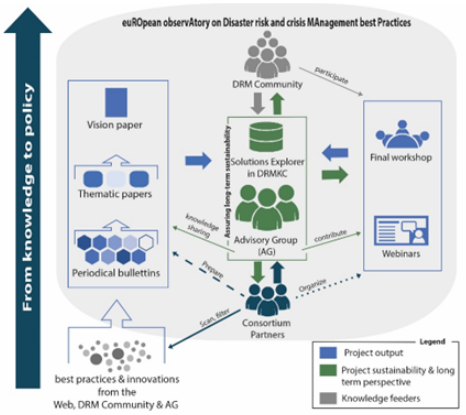
ROADMAP 3rd webinar

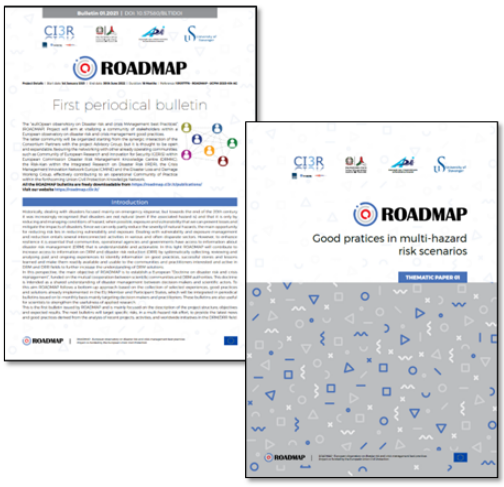
May 19th, 2022

Co-funded by the European Union Civil Protection

Bulletins and Thematic Papers

ROADMAP objectives:
Collect, analyse and review of good practices, recommendations, and lessons in prevention, preparedness and response in the DRM field.

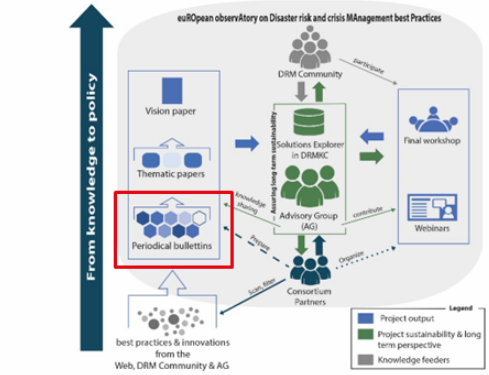




ROADMAP project: Bulletins and Thematic Papers

Bulletins Goals

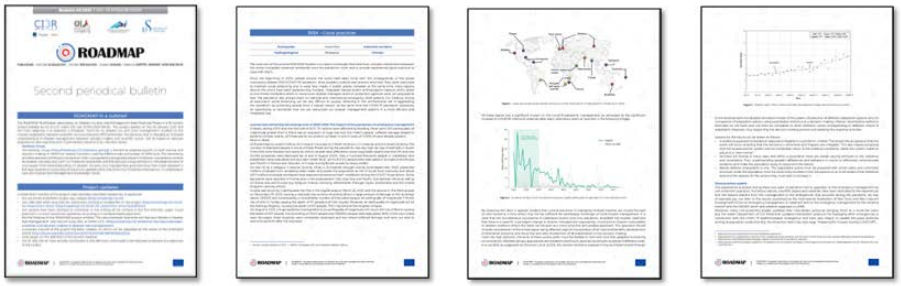
The bulletins are the result of the constant scanning of good practices in DRM, news & innovations performed on the web, also based on suggestions/supporting material from the Advisory Group.





ROADMAP project: Bulletins and Thematic Papers

Bulletins Structure



- Brief documents (few pages)
- Bimonthly publication
- To Decision Makers
- Multi-risk perspective



ROADMAP project: Bulletins and Thematic Papers

Bulletins Topics

The topics of the bulletins:

- 1st bulletin: Learn about the ROADMAP Project and its next steps
- 2nd bulletin: The impact of the pandemics on emergency management
- 3rd bulletin: Forest fires emergency management
- 4th bulletin: Management of the floods and landslides risk
- 5th bulletin: Management of volcanic eruptions and the associated risks
- 6th bulletin: Management of climate change and food supply
- 7th bulletin: Management of Industrial accident and environmental pollution
- 8th bulletin: ROADMAP project results

ROADMAP project: Bulletins and Thematic Papers

Bulletins data selection



- Scientific papers
- Scientific reports
- CP protocols
- Humanitarian networks
- Governative websites

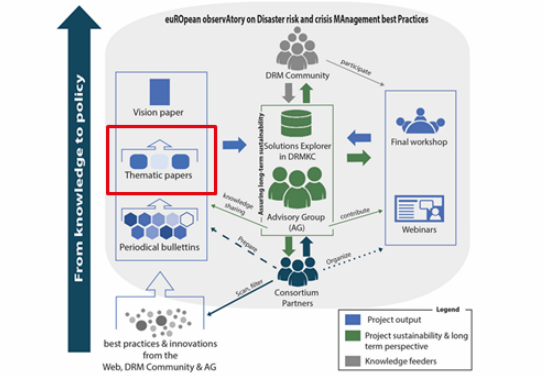
- Tools
- Websites
- Research projects

- Best practices
- Lessons learnt
- Recommendations
- Guidelines

ROADMAP project: Bulletins and Thematic Papers

Thematic Papers Goals

The thematic papers are the result of a selection of relevant topics in the DRM field to provide a critical review of good practices existing in the EU countries (and also outside the EU). The work has been supported by the ROADMAP Advisory Group.

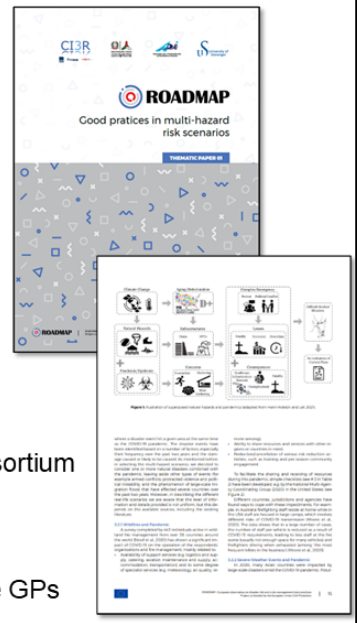




ROADMAP project: Bulletins and Thematic Papers

Thematic Papers Structure

- Stand-alone documents (30 pages, excluded references)
- Three publications
- Target audience: decision makers, scientific community, risk and crisis mangers
- Multi-risk perspective, scenario-based approach
- Experts hired to write, with the support of the consortium and the Advisory Group
- Sendai Framework as the guideline to categorise the GPs



ROADMAP project: Bulletins and Thematic Papers

Thematic Papers Topics

Three thematic papers based on three selected topics:

Thematic Paper 1: Good practices in Multi-Hazard Risk Scenarios

Thematic Paper 2: Good practices in Risk and Crisis Communication

Thematic Paper 3: Good practices in Building Back Better and Leaving No One Behind

ROADMAP project: Bulletins and Thematic Papers

Thematic Papers data selection



- Scientific papers
- Scientific reports
- Research projects
- EU website
- National governments' websites

→ Sendai Framework → Good practices

ROADMAP project: Bulletins and Thematic Papers

Issues

- **GPs or lessons learnt or reccomandations?**
  What is what ...
- **Terminology**
  No common DRM vocabulary
- **How to organize the material**
  Heterogeneous information sources need to be joined together
- **Lack of ex-post reports**
  Few agencies in the field provide this information
- **How to reach audience**
  Local disaster managers often are not reached by these publications
- **How to share the material**
  Are referenced documents really accessible?
- **Science - policy divide**
  Thematic Papers for both audiences



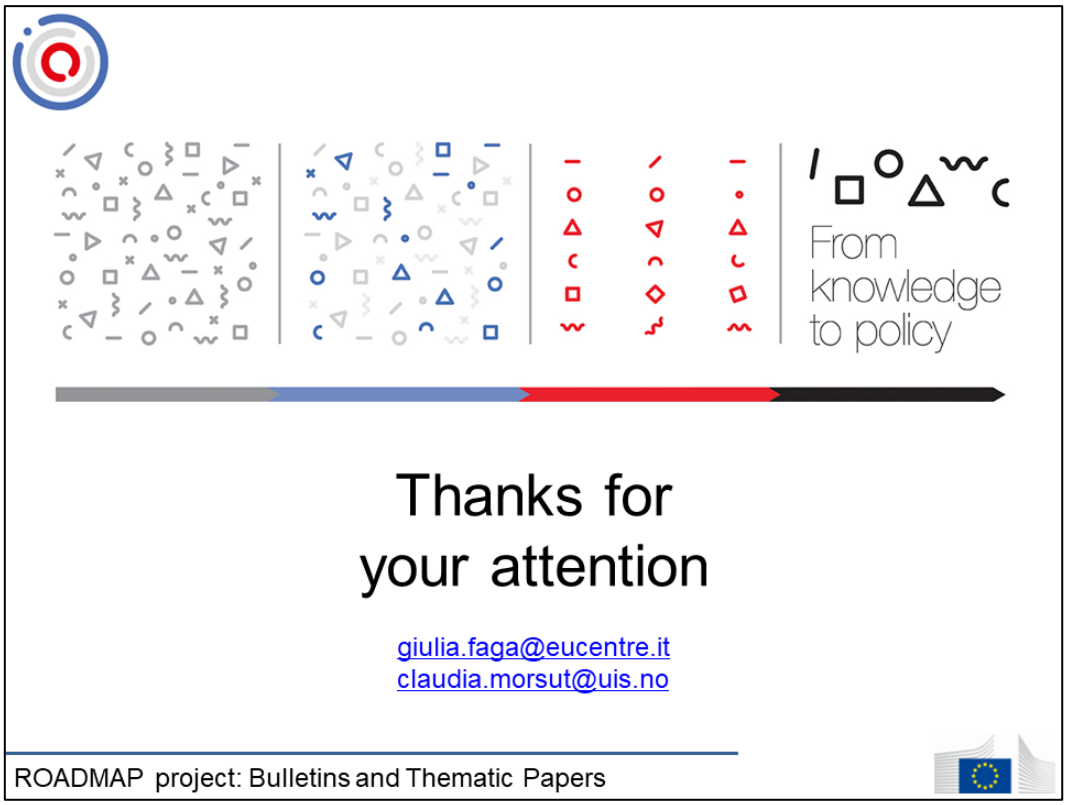
ROADMAP project: Bulletins and Thematic Papers

Future developments

- Define the difference between lessons learned and GP
- Define a common terminology
- Create a single "point of access" to share information on the collected materials
- Reach the audience(s) by translating the products into multiple languages
- Better involvement of decision makers in research



ROADMAP project: Bulletins and Thematic Papers



- **Nicola Rebora** - scientist from ROADMAP consortium - CIMA Research Foundation

Recording and presentation printout:
https://youtu.be/oOcMsf-9TpQ

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ROADMAP

euROpean observAtory on Disaster risk and crisis MAnagement best Practices

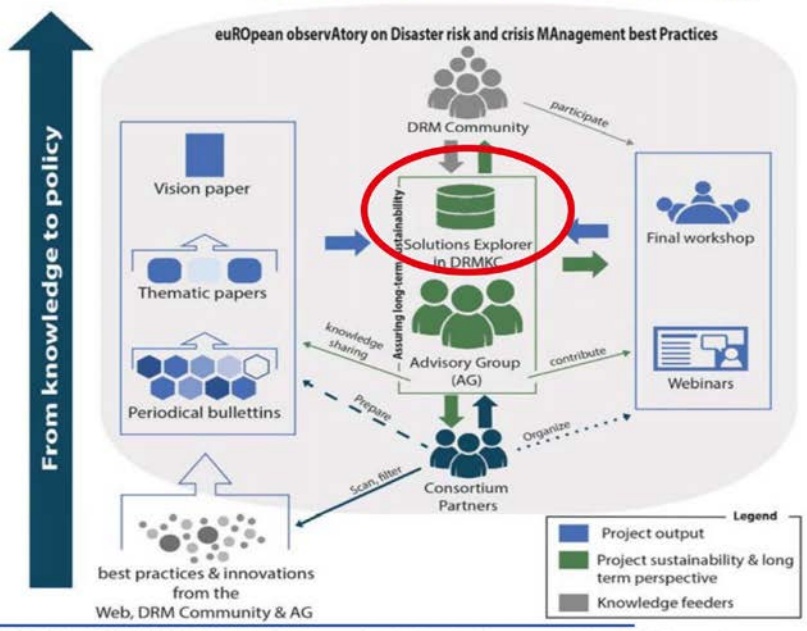
Solutions explorer

Nicola Rebora (CI3R-CIMA)
nicola.rebora@cimafoundation.org

CI3R – Italian Center for Research on Risk Reduction
CIMA – CIMA Research Foundation

The ROADMAP Methodology

CI3R



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CI3R

Solutions Explorer

What is the Solutions Explorer?

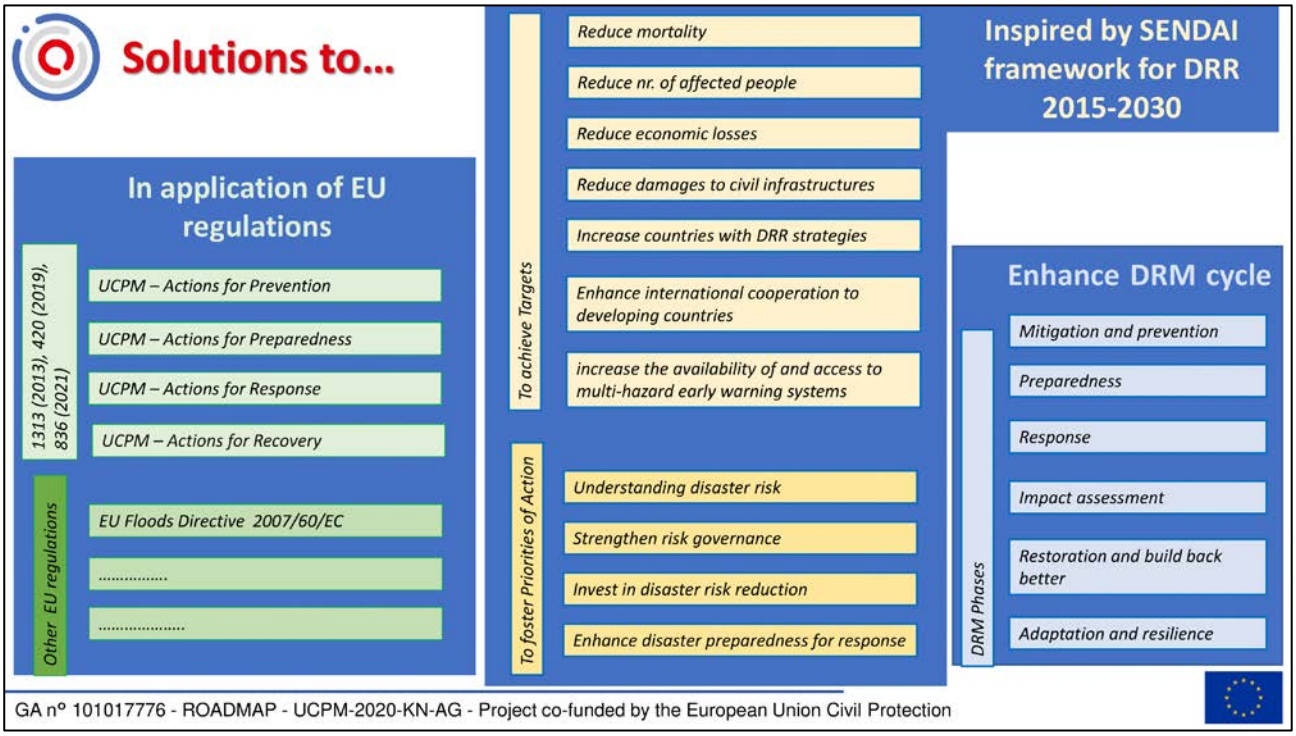
An open-source Web platform that will be available to project partners and stakeholders (JRC), EC (DG-ECHO) and eventually opened to the general public at the end of the project.

What are its main features?

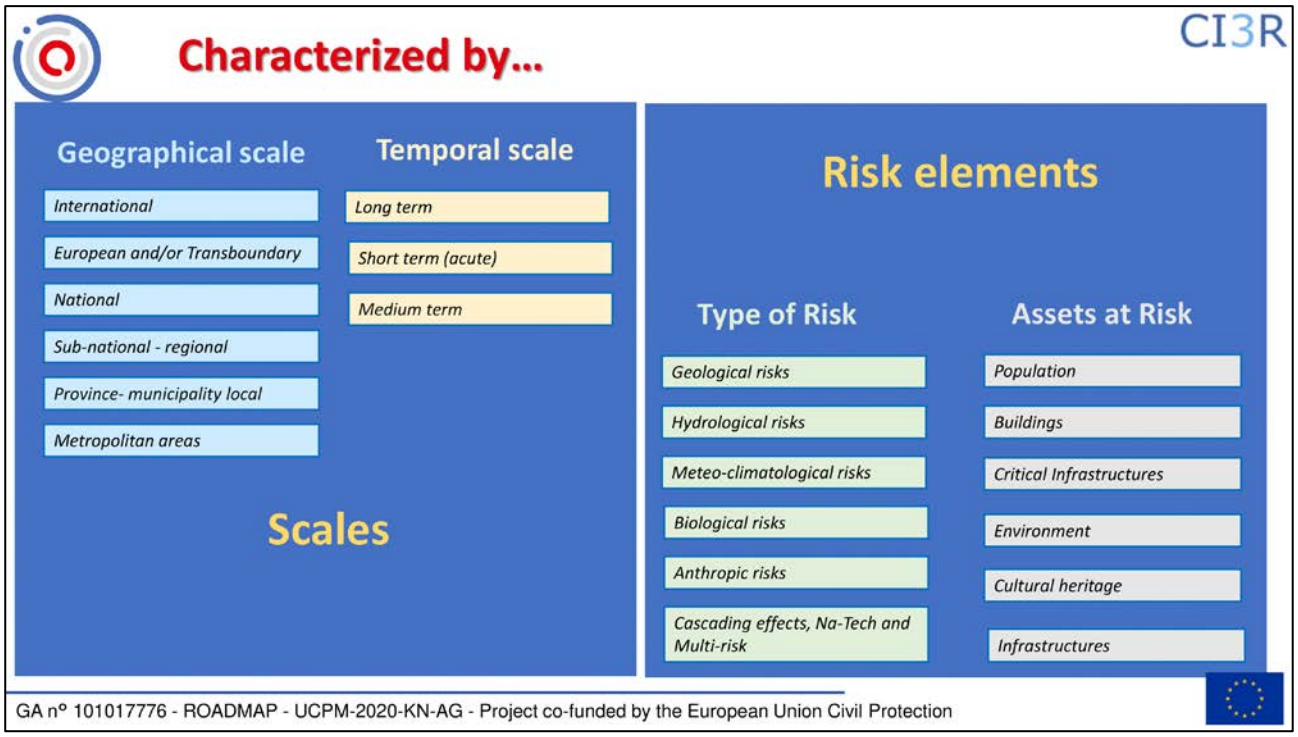
The new platform will host good practices in DRM available at different governance levels (local, regional, national and international) supporting the activities of ROADMAP (e.g., vision paper, thematic papers, bulletins).

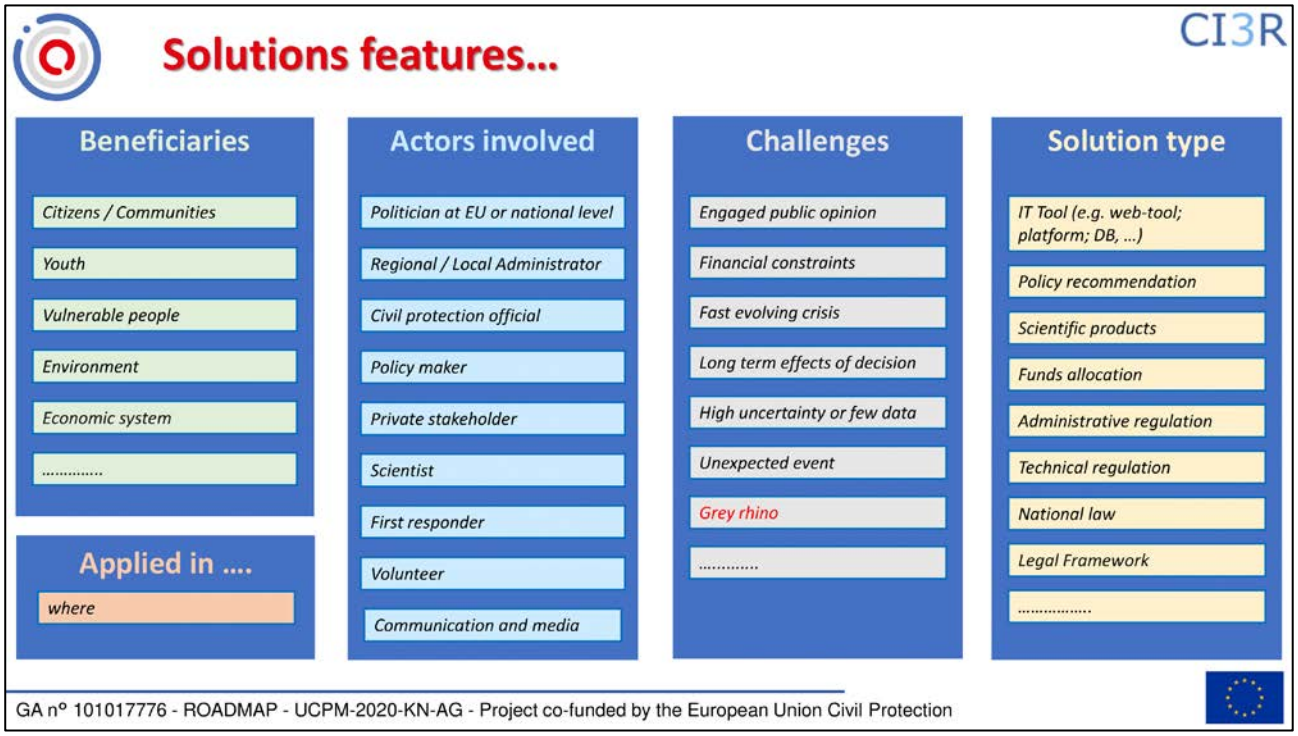
Beyond that, it will be a database interoperable with the DRMKC resources (e.g., Gaps Explorer), with easy access to basic data and experiences in the field of DRM starting from National Risk Assessment available.

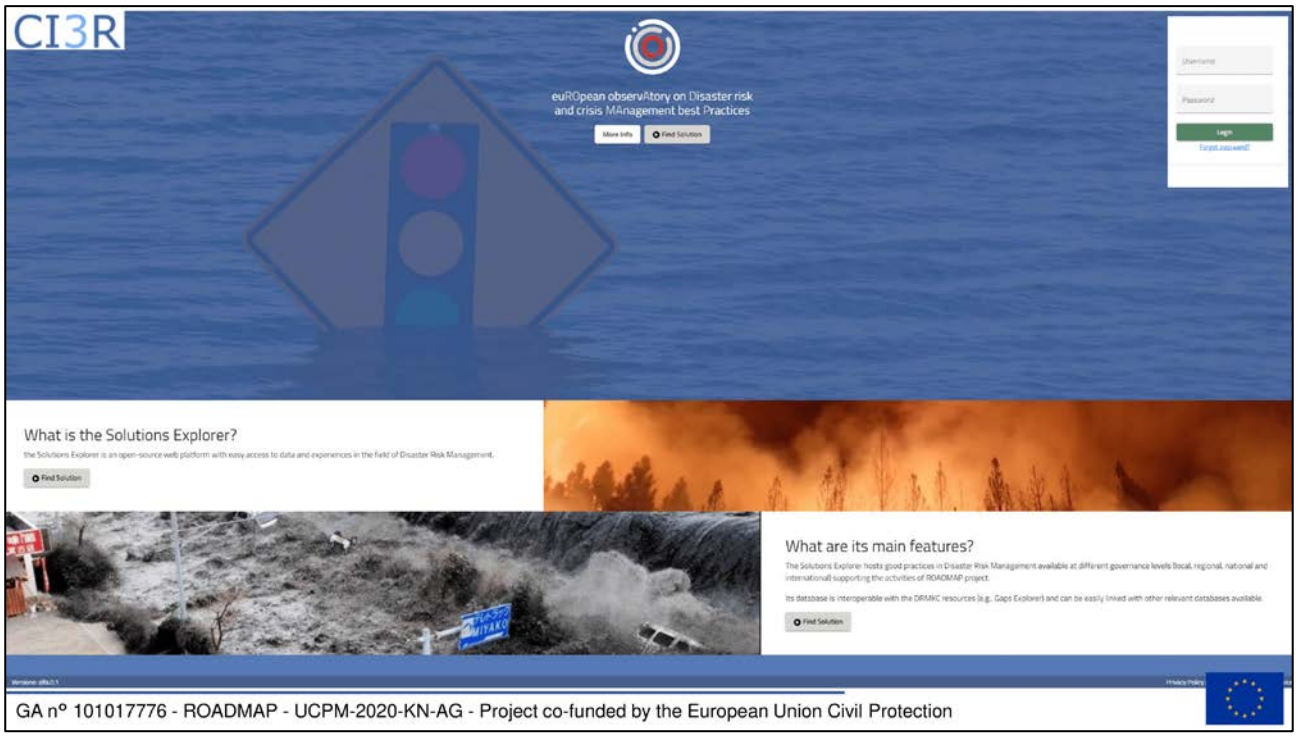
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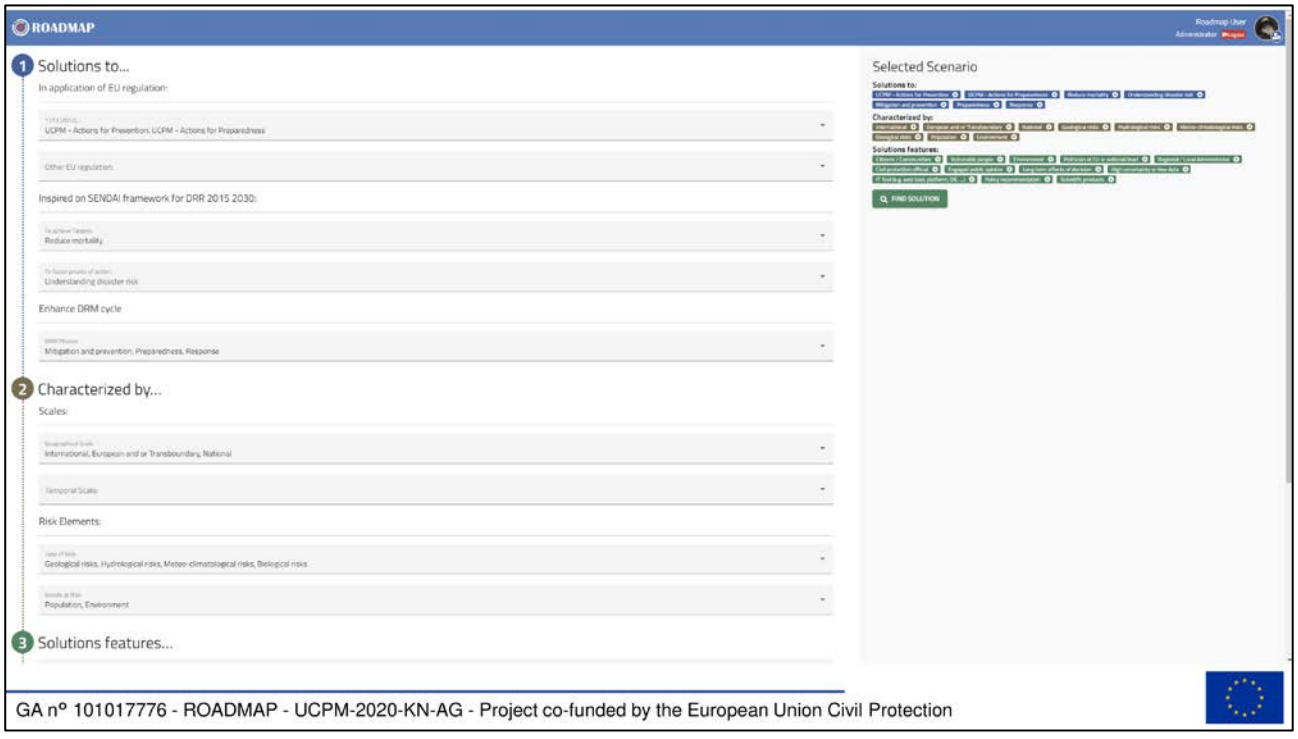


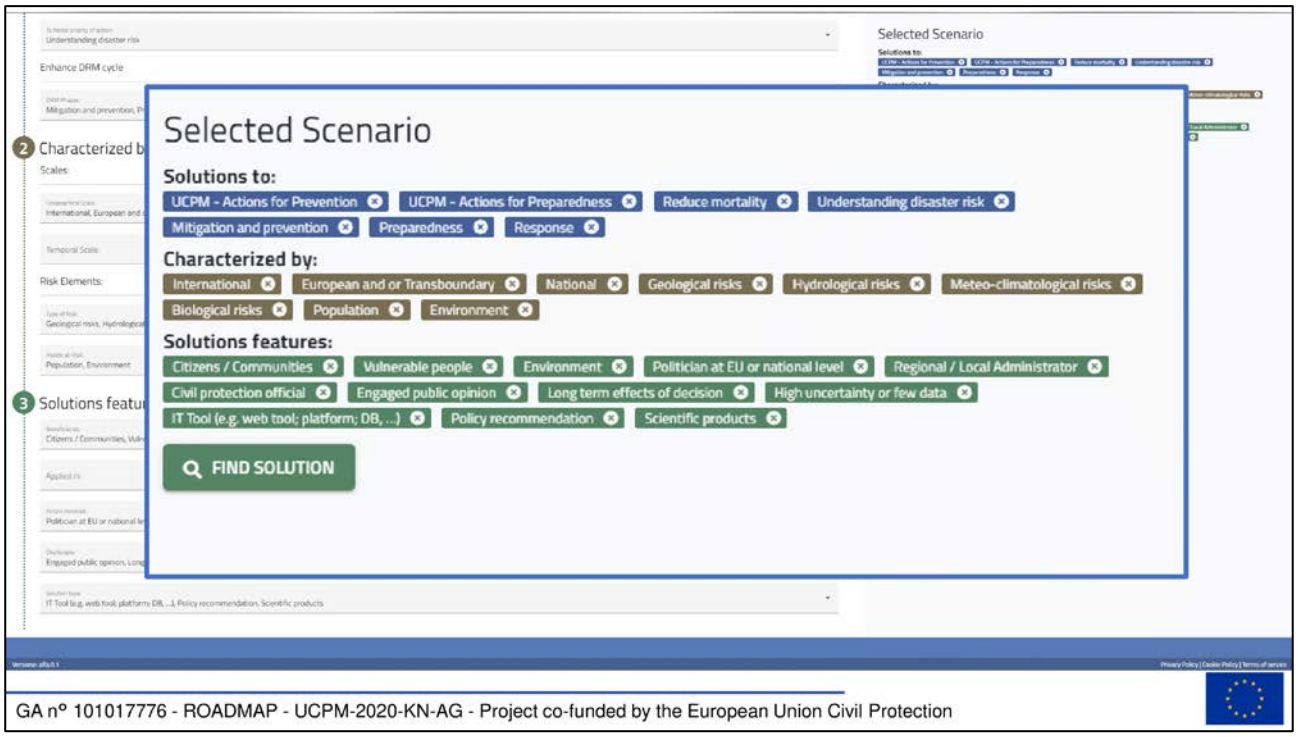
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CI3R
Characterized by…
Geographical scale
International
European and/or Transboundary
National
Sub-national - regional
Province- municipality local
Metropolitan areas
Temporal scale
Long term
Short term (acute)
Medium term
Scales
Risk elements
Type of Risk
Geological risks
Hydrological risks
Meteo-climatological risks
Biological risks
Anthropic risks
Cascading effects, Na-Tech and Multi-risk
Assets at Risk
Population
Buildings
Critical Infrastructures
Environment
Cultural heritage
Infrastructures
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CI3R
Solutions features…
Beneficiaries
Citizens / Communities
Youth
Vulnerable people
Environment
Economic system
.....
Applied in ....
where
Actors involved
Politician at EU or national level
Regional / Local Administrator
Civil protection official
Policy maker
Private stakeholder
Scientist
First responder
Volunteer
Communication and media
Challenges
Engaged public opinion
Financial constraints
Fast evolving crisis
Long term effects of decision
High uncertainty or few data
Unexpected event
Grey rhino
.....
Solution type
IT Tool (e.g. web-tool; platform; DB, ...)
Policy recommendation
Scientific products
Funds allocation
Administrative regulation
Technical regulation
National law
Legal Framework
.....
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CI3R
euROpean observAtory on Disaster risk and crisis MAnagement best Practices
What is the Solutions Explorer?
What are its main features?
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ROADMAP
1 Solutions to...
In application of EU regulation:
UCPM – Actions for Prevention, UCPM – Actions for Preparedness
Inspired on SENDAI framework for DRR 2015 2030:
Reduce mortality
Understanding disaster risk
Enhance DRM cycle
Mitigation and prevention, Preparedness, Response
2 Characterized by...
Scales:
International, European and or Transboundary, National
Risk Elements:
Geological risks, Hydrological risks, Meteo-climatological risks, Biological risks
Population, Environment
3 Solutions features...
Selected Scenario
FIND SOLUTION
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ROADMAP

BACK TO RESULT



Support for civil protection planning with the involvement of citizens

Description: The aim of this activity is to achieve the adoption, at all levels, of civil protection planning also defined with the involvement of citizens. This activity is based on the Memorandum of Understanding signed by the Italian Civil Protection Department (www.protezionecivile.gov.it/en/) and th e N ational Associations of Italian Municipalities (www.anci.it) .The activity aims at defining an organic and widespread training activity for both technical and administrative components of t he Local Authorities whichrepresent the first public civil protection authority on the territory.

Actions:

Source:

Italian Civil Protection Code D.LGS. 1/2018--[link] LINKS to specific EXAMPLES

Type Of Risk: Multi-risk; Geological risks; Weather induced risks
DRM Phase: Prevention and Preparedness
Sendai target(s): Reduce affected people; reduce mortality
Sendai priority(ies: Strengthen Disaster Risk Governance
Solution type: Administrative regulation; policies recommendations
Temporal scale: Mid-term; Long Term
Geographical scale: National; Local
Assets at Risk: Population
Challenges: Engaged public opinion
Actors involved: Decision Makers - Scientists - Policy Makers Local communities and citizens
Beneficiaries: Citizens and local municipalities
Applied in: Italy

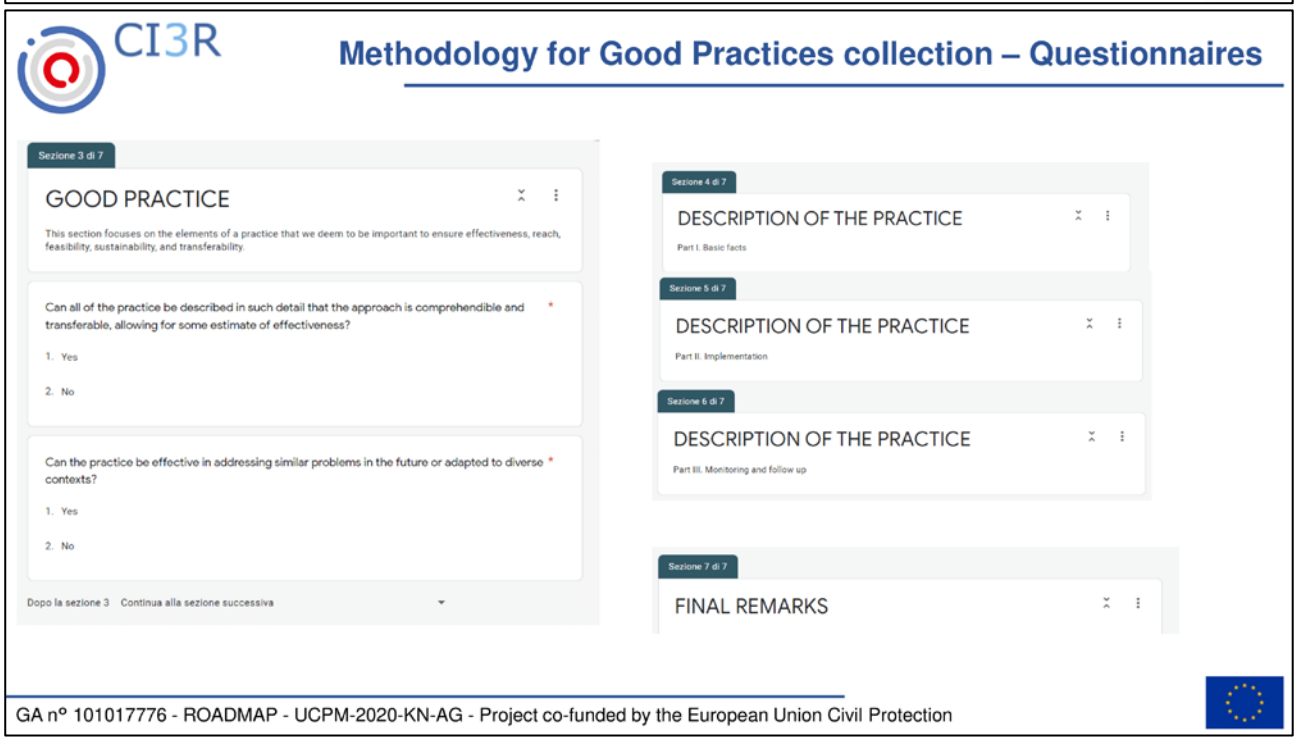
CI3R

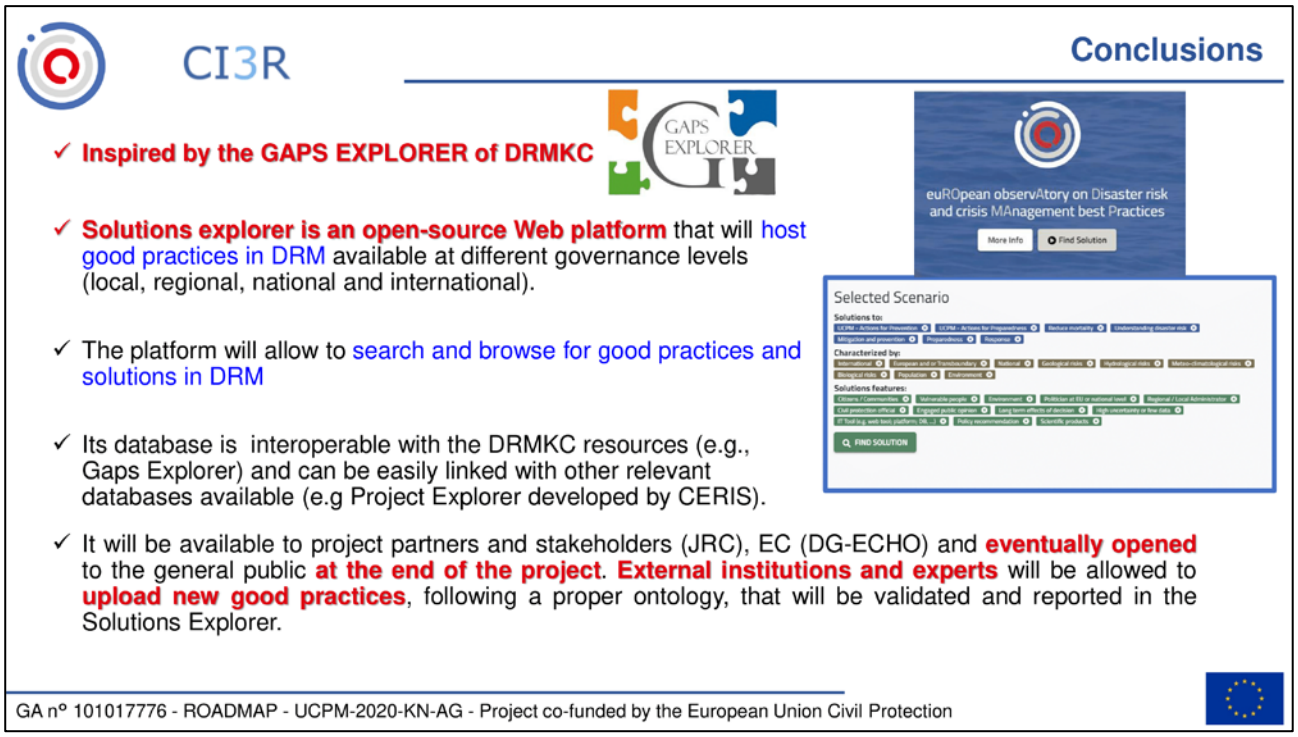
Methodology for Good Practices collection

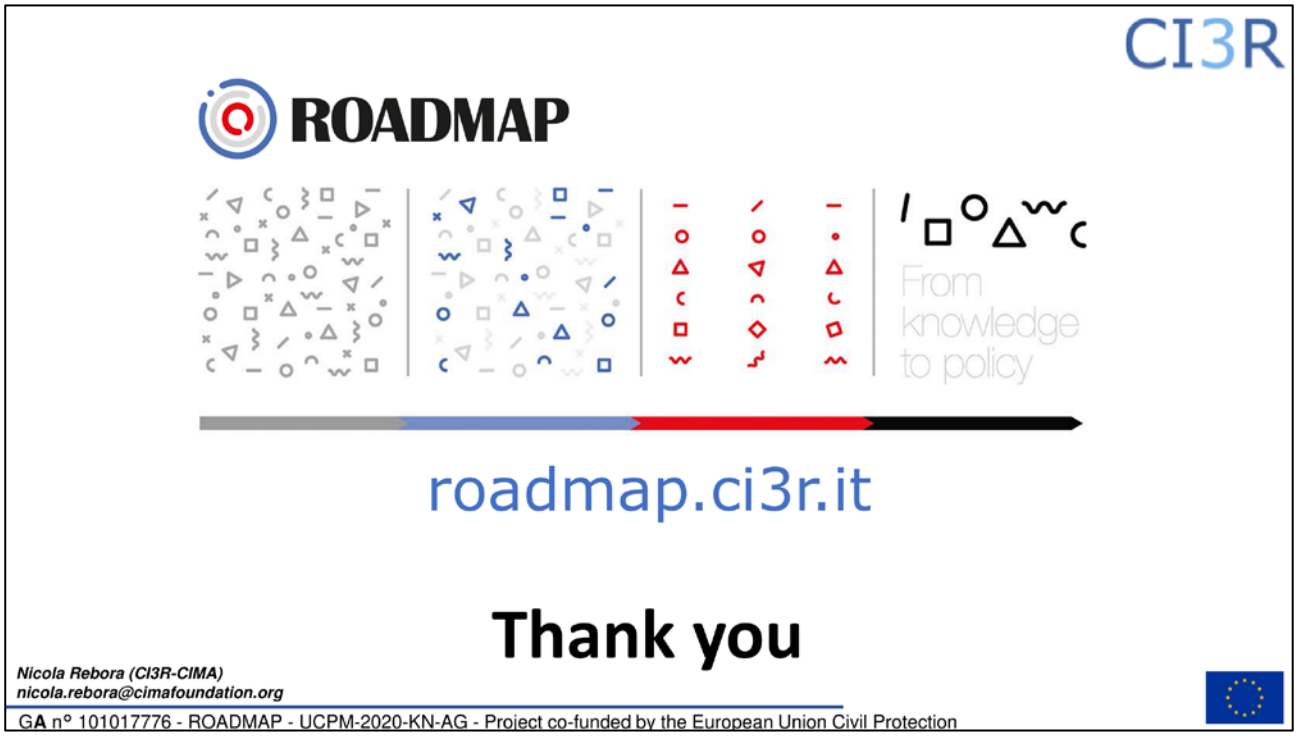
Questionnaires

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CI3R
Methodology for Good Practices collection – Questionnaires
ROADMAP
Sezione 1 di 7
GOOD PRACTICES IN DISASTER RISK MANAGEMENT
The following questions have been designed to acquire information on projects, experiences, stories, and practices centered on multi-hazard and/or multi-risk scenarios, as part of the European Project ROADMAP (website: https://roadmap.ci3r.it/) (European observatory on disaster risk and crisis management best practices) co-funded by the European Union Civil Protection. We aim to collect good practices in DRM at different governance levels and making them readily available and usable to communities and practitioners into a fit-for purpose "Solution Explorer".
Building on your expertise, we are kindly asking you to complete the questionnaire with the requested information. Feel free to send more than one example per country/organization. If you took part, at any stage, in disaster risk assessment and management, we would be grateful to learn from your experience.
Your contribution may help us to better understand what elements facilitate the ideation and implementation of successful practices.
Sezione 2 di 7
PROFILE OF RESPONDENT
This section collects personal and professional information on respondents. The personal data we collect are limited to information regarding your experience and expertise in disaster risk management, as well as contact information, such as name, work address or email address, which may allow us to conduct follow up activities. The provision of data is voluntary. Any collected data will be used only for reseach purpose and will not be trasmitted to third parties.
Name(s) Surname(s) *
Testo risposta breve
Title
Testo risposta breve
Professional category *
Please select the option that best describes yoUr professional category
DRR professional (civil protection, civil defense, first responders, etc)
Governmental official (i.e., governmental authorities/agencies, policy maker, etc)
Academic (scholar and/or researcher, etc)
Humanitarian (red cross, NGOs, etc)
Altro...
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Methodology for Good Practices collection – Questionnaires
Sezione 3 di 7
GOOD PRACTICE
This section focuses on the elements of a practice that we deem to be important to ensure effectiveness, reach, feasibility, sustainability, and transferability.
Can all of the practice be described in such detail that the approach is comprehendible and transferable, allowing for some estimate of effectiveness? *
1. Yes
2. No
Can the practice be effective in addressing similar problems in the future or adapted to diverse contexts? *
1. Yes
2. No
Dopo la sezione 3 Continua alla sezione successiva
Sezione 4 di 7
DESCRIPTION OF THE PRACTICE
Part I. Basic facts
Sezione 5 di 7
DESCRIPTION OF THE PRACTICE
Part II. Implementation
Sezione 6 di 7
DESCRIPTION OF THE PRACTICE
Part III. Monitoring and follow up
Sezione 7 di 7
FINAL REMARKS
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- **From CRISPRO project:**
  - An open tool for planning and assessment of risks
    - **Galya Terzieva** – Coordinator of CRISPRO project - International Security and Emergency Management Institute

Recording and presentation printout:
https://youtu.be/oOcMsf-9TpQ

CRISPRO: Security and Protection through Knowledge Synergies.
No: 101017877
UCPM-2020-KN-AG – Networking Partnerships

SECURITY AND PROTECTION THROUGH KNOWLEDGE SYNERGIES

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An open tool for planning and assessment of risks

UCPM-2020-KN-AG – NETWORKING PARTNERSHIPS

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WHAT IS THE PURPOSE OF THE ASSESSMENT TOOL

- TO TO STRESS ON THE INTERDEPENDENCY OF MODERN THREATS/RISKS;
- TO FOCUS ON THE NEED FOR ECONOMIC EFFICIENCY;
- TO PROMOTE ADJUSTMENTS TO CHANGING NATURE OF COMMUNICATION.
- TO EXAMINE THE CHALLENGES IN THE CONTEXT OF COMMUNITY RESPONSE PRACTICES AND HIGH-IMPACT EVENTS DRIVING SYSTEM ADAPTATIONS;
- TO LINK THE SYSTEM ADAPTATIONS WITH POLITICAL AND ECONOMIC PROVISIONS
- TO DETERMINE CHANGES IN STRUCTURAL AND NON-STRUCTURAL PREVENTION MEASURES.

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TRADITIONAL, MODERN AND SYNERGISTIC DISASTERS

TRADITIONAL

Geophysical and Meteorological: -Typhoons/Hurricanes
-Flooding/storm surge -Earthquakes
-Tsunamis -Landslides -Volcanoes -Heat/Cold Waves
Human Induced:
-Fires
-HIV/AIDS
-Vector Borne Diseases (dengue, influenza, Malaria, West Nile and Lassa Fevers)
-Hepatitis
-Cholera
-Diphtheria
-Transportation
-Toxic spills
-Dam breaks

MODERN

-Climate Change
- Interruption of supply in urban and rural areas
- Drought

-Trans-boundary pollution (air/water)
-Terrorism (Chemical, Biological, Nuclear and Radiological)
-Waste disposal
-Avian Influenza/SARS
-Ebola, COVID 19
-Severe Acute Respiratory Syndrome
-Mad Cow Disease
- Technological: from the use of new chemicals and materials
-Cascading Infrastructure failures

SYNERGETIC/COMBINED DISASTERS/EMERGENCIES from multi-hazards

Risk overlap (Traditional + Modern)

Risk Compounding (Traditional + modern + interactions)

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WHY IS IT IMPORTANT TO VALORISE AND CAPITALISE?

- THE NATURE- AND CLIMATE CHANGE-RELATED HAZARDS HAVE A WIDESPREAD IMPACT ON THE CRITICAL INFRASTRUCTURE DUE TO THE GROWING INTERDEPENDENCY OF SOCIETIES.
- THE PERSONNEL IS NOT ADEQUATELY EQUIPPED OR PREPARED TO EFFECTIVELY RESPOND IN SUCH CRISES, WHICH REQUIRE AN ABRUPT RESPONSE AND MULTI-SECTORAL CONTROL MEASURES.
- AD-HOC ARRANGEMENTS ARE COMMONLY ADOPTED, RESULTING IN OPERATIONAL PROBLEMS.
- AN AD-HOC LEADERSHIP CAN CREATE CONFUSION AT THE OPERATIONAL LEVEL SINCE IT DUPLICATES THE EXISTING NATIONAL SYSTEM, RESULTING IN A CHAOTIC SITUATION AND UNCERTAINTY REGARDING RESPONSIBILITIES.

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SECURITY VS SOCIAL VALUES

- SOCIAL IMPORTANCE
  - CRITICAL INFRASTRUCTURE,
  - DISRUPTION CAUSED BY PANDEMICS,
  - DAMAGES FROM NATURAL DISASTERS,
  - SCARCITY OF FOOD, WATER AND MIGRATION DUE TO DROUGHT,
  - EPIDEMICS IN COMBINATION WITH PUBLIC DISORDER
  - SMARTENING OF THE SYSTEMS,
  - LANDSLIDES LINKED TO PUBLIC INFRASTRUCTURE,
  - TOURISM AFFECTED BY EARTHQUAKES.

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KEY CATEGORIES OF THE ASSESSMENT TOOL

- TYPE OF THREAT/HAZARD/RISK
- TYPE OF ACTION (PREVENTION, PREPAREDNESS, REACTION AND RECOVERY)
- TYPE OF ACTIVITY (STRATEGIC PLANNING, AWARENESS, COMMUNITY ACTIVITIES, INTERVENTION, TRAINING, ANALYSIS, PLANNING, POLICY DEVELOPMENT)
- TYPE OF GROUPS (VULNERABLE GROUPS, GENERAL POPULATION, PROFESSIONAL ACTORS, ETC.)

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PART I
WHAT DISASTER TO EXPERT IN THE COMMUNITY AND REGION? CATEGORISATION OF HAZARDS

Natural phenomenon
Disruption of supply
Chemical incident
Transport incident
Technical failure
Human, animal or plant deceases
Public disorder
Cyber attack/hacks/fishing

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PART I
SUBCATEGORIES OF THREATS

Subcategories
Earthquake
Landslide(land degradational)
Volcano
Flash flood
River floods
Coastal floods
Avalanche
Exreme tempreture
Strong wind
Drought
Wildfire
Air pollution
Human diseases
Plant diseases
Animal diseases
CBRN
Construction failure
Technological failure
Data-related failure
Transport accidents
Civil disturbance
Economic

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PART II. DRIVERS

REASONS/MEGATRENDS:

- CHANGES IN CLIMATE, LAND USE AND SOCIO-ECONOMIC EVOLUTION SINCE THE 20TH CENTURY.
- GLOBAL DEVELOPMENTS BRING NEW CHALLENGES
- INCREASED URBANISATION
- RAPID DEVELOPMENT AND CONSTRUCTION, LAND-USE PLANNING
- DECREASE OF AGRICULTURE LAND
- DEFORESTATION
- MASS TOURISM AND BIOTOPES
- SMARTENING OF ENGINEERING NETWORKS
- NEW TECHNOLOGIES AND URBAN COMMUNICATION INFRASTRUCTURE

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TYPE OF AGENTS

- NATURAL PHENOMENON AGENT
- SOCIAL BEHAVIOUR AGENT(HEALTH, MOBILITY)
- SMARTENING OF SOCIETAL SYSTEMS
- CBRN AGENT
- CYBER AGENT
- ESPIONAGE AND ORGANISATIONAL INTELLIGENCE

DRIVERS AND MULTIPLIERS ADVANCING THE DISASTERS

- *SMARTENING OF THE SYSTEMS IS CONSIDERED THE MOST VULNERABLE ELEMENT IN RESPONDING TO DISASTERS.*
- *NEW TECHNOLOGIES AUGMENT THE IMPACT, EXPOSURE AND, MULTIPLICATION, AND CAUSE NON-LINEAR EFFECTS*
- *LACK OF RELIABLE INFORMATION AND LACK OF STRUCTURED DATA INFLUENCES THE PACE OF DISASTER SPREADING AND DISORDER IN URBAN AREAS*
- *SOME RESPONDENTS ALSO PROPOSE TO EXPLORE HOW THE LACK OF ECONOMIC, FINANCIAL AND COMMUNITY RESOURCES ARE ASSIGNED TO THE VULNERABILITY OF ADVERSE EVENTS*

PART III. MULTI-HAZARDS

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WHY MULTI-HAZARDS' RISKS

- THE RISKS AND MODERN SOCIETIES - REDUCED SECURITY
- CROSS-SECTORAL COOPERATION GLOBAL TRENDS CONCERNING CLIMATE CHANGES, MOBILISATION, CONFLICTS, FORCED MIGRATION, AND TRANSFERRABLE FORMS OF VIOLATION OR COMMUNICABLE DISEASES ARE ALSO LINKED TO SOCIAL MEDIA AND CITIZENS' MOBILISATION/AWARENESS.
- INTERRUPTION OF SUPPLY OF GOODS AND SERVICES, MEDICINES, HEALTH AND SOCIAL CARE SERVICES
- CONSIDERATION OF **MULTIPLE HAZARDS** AND **MULTIPLE FACILITIES IN EMERGENCY**
- CASCADING EVENTS (E.G. DOMINO ACCIDENTS) AND CONSEQUENCES WITH CASCADING IMPACTS (E.G. VIA BUSINESS INTERRUPTION)
- A MULTI-HAZARD AND MULTI-VULNERABILITY RISK ASSESSMENT INVOLVING COMPLEX CHAIN(S) OF SCENARIOS
- PUTTING ON THE FIRST PLACE VULNERABILITY OF PEOPLE - SOCIAL AND ECONOMIC LIFE

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PART IV
VULNERABILITY

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CATALOGUE OF VULNERABILITIES (PHYSICAL, ECONOMIC, NATURAL, SOCIAL AND FINANCIAL VULNERABILITY

- **THE PHYSICAL VULNERABILITY OF AN AREA ALSO DEPENDS ON ITS GEOGRAPHIC PROXIMITY TO** THE SOURCE AND ORIGIN OF THE DISASTERS E.G. IF AN AREA LIES NEAR THE COAST LINES, FAULT LINES, UNSTABLE HILLS ETC. IT MAKES THE AREA MORE VULNERABLE TO DISASTERS AS COMPARED TO AN AREA THAT IS FAR AWAY FROM THE ORIGIN OF THE DISASTER. PHYSICAL VULNERABILITY INCLUDES THE DIFFICULTY IN ACCESS TO WATER RESOURCES, MEANS OF COMMUNICATIONS, HOSPITALS, POLICE STATIONS, FIRE BRIGADES, ROADS, BRIDGES AND EXITS OF A BUILDING OR/AN AREA, IN CASE OF DISASTERS. FURTHERMORE, THE LACK OF PROPER PLANNING AND IMPLEMENTATION IN CONSTRUCTION OF RESIDENTIAL AND COMMERCIAL BUILDINGS RESULTS IN BUILDINGS THAT ARE WEAKER AND VULNERABLE IN EARTHQUAKES, FLOODS, LANDSLIDES AND OTHER HAZARDS.
- **SOCIAL VULNERABILITY**
  - WEAK *FAMILY STRUCTURES*, *LACK OF LEADERSHIP* FOR DECISION MAKING AND CONFLICT RESOLUTION, *UNEQUAL PARTICIPATION* IN DECISION MAKING, *WEAK OR NO COMMUNITY ORGANIZATIONS*, AND THE ONE IN WHICH PEOPLE ARE *DISCRIMINATED* ON RACIAL, ETHNIC, LINGUISTIC OR RELIGIOUS BASIS. OTHER SOCIAL FACTORS SUCH AS *CULTURE*, *TRADITION*, *RELIGION*, *LOCAL NORMS AND VALUES*, *ECONOMIC STANDARD*, AND *POLITICAL ACCOUNTABILITY* ALSO PLAY A VITAL ROLE DETERMINING THE SOCIAL VULNERABILITY OF A COMMUNITY
  - RESPECT THE VULNERABILITIES OF THE POOREST PEOPLE IN DEVELOPING COUNTRIES OWING TO A LACK OF INFORMATION AND RESOURCES WITH WHICH TO TAKE THE APPROPRIATE MEASURES. WITHIN THIS GROUP, CHILDREN, WOMEN AND THE ELDERLY ARE CONSIDERED TO BE THE MOST VULNERABLE. TO REDUCE SOCIAL VULNERABILITY, ALL OF THE ABOVE FACTORS MUST BE ADDRESSED BUT THIS REQUIRES KNOWLEDGE AND UNDERSTANDING OF THE LOCAL CONDITIONS, WHICH CAN – IN MOST CASES – ONLY BE PROVIDED BY LOCAL ACTORS.
- **ATTITUDINAL VULNERABILITY**
  - A COMMUNITY WHICH HAS NEGATIVE ATTITUDE TOWARDS CHANGE AND LACKS INITIATIVE IN LIFE RESULTANTLY BECOME MORE AND MORE DEPENDENT ON EXTERNAL SUPPORT. THEY CANNOT ACT INDEPENDENTLY. THEIR SOURCES OF LIVELIHOOD DO NOT HAVE VARIETY, LACKS ENTREPRENEURSHIP AND DO NOT POSSESS THE CONCEPT OF COLLECTIVISM. THIS BRINGS ABOUT DISUNITY AND INDIVIDUALISM IN THE SOCIETY. THUS, THEY BECOME VICTIMS OF CONFLICTS, HOPELESSNESS AND PESSIMISM WHICH REDUCES THEIR CAPACITY OF COPING WITH A DISASTER.

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VULNERABILITY CATEGORIES

- IN THIS PART THE USER WILL SELECT ATTRIBUTES TO EACH CATEGORY INFORMATION ABOUT THE VULNERABILITY OF SUPPLIES, PEOPLE, AREAS, OBJECTS AND STRATEGIC, CRITICAL AND SOFT INFRASTRUCTURE (ACCORDING TO THE SURVEY – COMMUNITY, HEALTH, SOCIAL, FINANCIAL
  - SYSTEM VULNERABILITY SUPPLY AND SERVICE VULNERABILITY (10 SUBCATEGORIES X 1 POINT EACH), 10 POINTS MAX
  - PHYSICAL VULNERABILITY - AFFECTED CRITICAL, STRATEGIC AND SOFT TARGETS (10 SUBCATEGORIES X 1 POINT EACH), 10 POINTS MAX
  - COMMUNITY VULNERABILITY (10 SUBCATEGORIES X 1 POINT EACH), 10 POINTS MAX)
  - HEALTH VULNERABILITY (10 SUBCATEGORIES X 1 POINT EACH), 10 POINTS MAX)
  - SOCIAL (AFFECTED GROUPS OF THE POPULATION) (10 SUBCATEGORIES X 1 POINT EACH), 10 POINTS MAX)
  - ENVIRONMENTAL VULNERABILITY (10 SUBCATEGORIES X 1 POINT EACH), 10 POINTS MAX)
  - FINANCIAL VULNERABILITY(10 SUBCATEGORIES X 1 POINT EACH), 10 POINTS MAX)

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ATTRIBUTES OF HEALTH VULNERABILITY

- HEALTH IS A CRITICAL ISSUE.
- SOUNDNESS OF PEOPLE IS ALREADY A HIDDEN THREAT FOR THEMSELVES AND THE NEAREST COMMUNITY AND/OR FAMILY.
- MOREOVER, HEALTHY BEHAVIOURAL LIVING IS ALREADY A SYNONYM OF RESPONSIBLE LIVING.
- YET, PERSONAL HEALTH RISKS IN TERMS OF DISASTER CONSIDERABLY AFFECT
  - THE ELDERLY PERSONS AND THOSE WITH A PHYSICAL DISABILITY (53%),
  - THE RETIRED LIVING ALONE AND PEOPLE WITH DEVELOPMENTAL PROBLEMS (47%)
  - AND PEOPLE LIVING IN HOSPITALS OR SOCIAL CENTRES (39%)

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ATTRIBUTES OF COMMUNITY LIFE VULNERABILITY

- SOCIAL AND HEALTH CARE SERVICES
- THE EDUCATIONAL SECTOR 42%,
- CULTURAL, TRADITIONS' RESTRICTIONS AND COMMUNITY HABITS (27%)
- SOCIAL CONTACT RESTRICTIONS AND AFFECTED HABITS ARE CONSIDERED MORE IMPORTANT THAN FAMILY CONNECTION
- THE SOCIETIES ARE MORE SENSITIVE TO THE EXPRESSIONS AND FORMS OF COLLECTIVE RESPONSIVENESS.

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ATTRIBUTES OF SOCIAL VULNERABILITY

- MOST AFFECTED ARE POOR AND SOCIALLY EXCLUDED GROUPS(MIGRANTS, ALONE MOTHERS, JOBLESS PERSONS, ETC.) FOR HAVING INSUFFICIENT AND STABLE SOURCES TO FACE THE DISASTERS(71%),
- THE ELDER PEOPLE LIVING IN REMOTE REGIONS DUE TO ACCESS ISOLATION AND LACK OF ACCESS TO FOOD, WATER AND UTILITY SERVICES.
- IN GENERAL, CHILDREN ARE CONSIDERED MOST AFFECTED AS THEY ARE DEPENDENT ON THE CARE OF OTHER PEOPLE WHO MIGHT BE INJURED, VICTIMS, OR EXCLUDED FROM BASIC NEEDS (39%).

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ATTRIBUTES OF FINANCIAL VULNERABILITY

- FINANCIAL VULNERABILITY IS CONSIDERED A NEGATIVE IMPACT FROM THE DISRUPTION CAUSED BY MEANS AND SOURCES SUCH AS INCOMES, ECONOMIC SECTOR, BANKRUPTCY, INSOLVENCY.
- DISASTERS MIGHT INCREASE THE DEPENDENCE ON UNEMPLOYMENT BENEFITS AND HUMANITARIAN AID (73%)
- INCREASED POVERTY AND REDUCED INCOME-GENERATION ACTIVITIES (ESPECIALLY IN AGRICULTURE) (50%).
- MORE PERSONAL BANKRUPTCY DUE TO DECREASED INCOMES AND THE INABILITY OF REGULAR INCOMES (45%).
- INSOLVENCY OF THE SME IS ALSO POINTED AS SOURCE OF PERSONAL FINANCIAL VULNERABILITY, WHICH EXPRESSES THE CONNECTIVITY BETWEEN WORKPLACE AND EMPLOYEES; ANY DISASTER CAUSING DAMAGES TO SMALL BUSINESSES LEADS TO INDIRECT NEGATIVE EFFECTS ON THE WORKERS AND THEIR FAMILIES.

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DOMINANTING EFFECTIVE RESPONSE

- EMERGENCY RESPONSE SYSTEM (30 OUT OF 38 RESPONDENTS)
- PREPAREDNESS OF THE PUBLIC (60%)
- STRATEGIC COORDINATION (50%)
- TECHNOLOGICAL EQUIPMENT AND RESCUE MATERIAL (26%).

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PART V
CAPACITY

CAPACITY CATEGORIES

- IN THIS PART THE USER WILL SELECT SOURCES, CAPACITIES, RECOVERY AND INTERVENTION MEASURES, TOOLS, EQUIPMENT, TECHNOLOGIES AND CAPACITY AVAILABLE TO BE USED IN THE COURSE OF ONGOING DISASTER.
- SCORE CAPACITY PER EACH OF THE DRM PHASES – PREPAREDNESS, PREVENTION, REACTION, RECOVERY MAX 40 POINTS +
  - ACTORS (10 SUBCATEGORIES X 1 POINT EACH), 10 POINTS MAX
  - ASSETS (10 SUBCATEGORIES X 1 POINT EACH), 10 POINTS MAX
  - POLICIES (10 SUBCATEGORIES X 1 POINT EACH), 10 POINTS MAX
  - KNOWLEDGE - (10 SUBCATEGORIES X 1 POINT EACH), 10 POINTS MAX
    - EXERCISES, TRAINING, PROFESSIONAL EDUCATION, PUBLIC AWARENESS

MULTI-HAZARD SCENARIOS

- HEALTH THREATS AND NATURAL DISASTERS
- NATURAL DISASTERS AND CRITICAL INFRASTRUCTURE
- SOCIAL DISORDER (MASS EVACUATION) AND BIOLOGICAL THREATS
- THE NATURAL EVENT CAUSING BIOLOGICAL AND HEALTH EMERGENCY
- TECHNOLOGICAL HAZARD CAUSING BIOLOGICAL THREAT AND SOCIAL/ECONOMIC DISORDER
- PUBLIC DISORDER(TERRORISM, EXTREMISM ACTIONS) AMID A PANDEMIC SITUATION
- HYBRID THREAT ON CRITICAL/FINANCIAL, DATA AND PHYSICAL INFRASTRUCTURE AMID NATURAL DISASTERS

RISK SCALING

SCALE RISK. THE RISK SEVERITY CLASSIFICATION IS EXPRESSED IN GRADES A TO D ACCORDING TO THE FOLLOWING MEANINGS:

- A - IT IS AN **EXTREMELY SERIOUS** RISK IMMEDIATELY ENDANGERING THE SECURITY OF THE SYSTEM, PERFORMANCE OF KEY PROCESSES, FURTHER OPERATION OF THE SYSTEM IS CONDITIONED BY THE ADOPTION OF IMMEDIATE SECURITY MEASURES TO MITIGATE THE RISK,
- B - **SERIOUS RISK**, NOT ACCEPTABLE, FURTHER SECURITY MEASURES TO MITIGATE IT SHOULD BE TAKEN, BUT THE PERFORMANCE OF KEY PROCESSES OF THE ORGANISATION AND THE OPERATION OF THE SYSTEM ARE NOT ACUTELY ENDANGERED BY IT,
- **C - THE RISK IS ACCEPTABLE** BUT MUST BE MONITORED ON AN ONGOING BASIS; IN SOME CASES, A PRECAUTIONARY MEASURE MAY BE PROPOSED FOR THIS RISK,
- **D - THE RISK IS ACCEPTABLE; NO FURTHER ACTION IS REQUIRED.**

MITIGATION AND PLANNING

- **MITIGATION AND PLANNING**
- CATEGORIES

HOW WILL IT WORK?

- THE USER WILL SELECT ATTRIBUTES TO FORM THE CASCADING LISTS TO EACH SUBCATEGORY IN THE FIRST THREE THEMATIC CATEGORIES. THE SELECTION OF INDEXES WILL FORM THE REPOSITORY OF THE SCENARIO.
- IN THE FINAL SECTION, THE USER WILL SELECT FROM INTRODUCED/MAPPED SCENARIOS. ALSO, THE USER WILL BE ABLE TO ADD HIS/HER SCENARIO DESCRIPTION, AND THE SYSTEM WILL ADD IT AUTOMATICALLY TO THE LIST OF PREFORMATTED SCENARIOS. IT WILL BE FUNCTIONING AS A SELF-LEARNING PLATFORM.
- THE FINAL 4 SUBCATEGORIES PROVIDE A LIST OF MEASURES, ETC., AS PREFORMATTED ONES. THE USER CAN SELECT FROM THE PREFORMATTED MEASURES AND ADD HIS/HER PROVISION PROPOSAL.
- DURING TABLETOP EXERCISES, WE WILL CONSULT THE MEASURES WITH THE MENTORS. THE SYSTEM SHALL PROVIDE PREFORMATTED MEASURES TO SCENARIOS BASED ON THE NATURE OF THE EXTRAORDINARY EVENT/DISASTER.

SCENARIO

- **HAZARDS** ARE DEFINED AS A DANGEROUS PHENOMENON, SUBSTANCE, HUMAN ACTIVITY OR CONDITION THAT MAY CAUSE LOSS OF LIFE, INJURY OR OTHER HEALTH IMPACTS, PROPERTY DAMAGE, LOSS OF LIVELIHOODS AND SERVICES, SOCIAL AND ECONOMIC DISRUPTION, OR ENVIRONMENTAL DAMAGE.
- **DRIVERS** ARE PROCESSES OR CONDITIONS, OFTEN DEVELOPMENT-RELATED, THAT INFLUENCE THE LEVEL OF DISASTER RISK BY INCREASING EXPOSURE AND VULNERABILITY OR REDUCING CAPACITY.
- **IMPACT** REFERS TO AFFECTED ECONOMIC, SOCIAL AND COMMUNITY ACTIVITIES, HABITS, FUNCTIONALITIES AND PERFORMANCE.
- **EXPOSURE** (POSSIBILITY OF BEING EXPOSED TO VULNERABILITY) REFERS TO PEOPLE, PROPERTY, SYSTEMS, OR OTHER ELEMENTS PRESENT IN HAZARD ZONES THAT ARE THEREBY SUBJECT TO POTENTIAL LOSSES.

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SCENARIO

- **VULNERABILITY** (THE LIKELIHOOD THAT THE ASSET WILL BE DAMAGED) REFERS TO THE CHARACTERISTICS AND CIRCUMSTANCES OF A COMMUNITY, SYSTEM OR ASSET THAT MAKE IT SUSCEPTIBLE TO THE DAMAGING EFFECTS OF A HAZARD.
- **CAPACITIES OF STAKEHOLDERS (19-24 ABOVE TABLES) – TECHNOLOGY, HUMAN RESOURCES, EQUIPMENT, MATERIAL, RESCUE STAFF, COORDINATION, PROCESSES, STAKEHOLDERS**
- **LEADERSHIP CRISIS COMMUNICATION** FOCUSES ON EMERGENCY MANAGERS AS PIVOTAL TO UNDERSTANDING CRISIS COMMUNICATION STRATEGIES.

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MITIGATION AND PLANNING MEASURES

- MITIGATION AND PLANNING MEASURES ARE:
  - MITIGATION OF NATURAL HAZARDS: DATA COLLECTION AND ANALYSIS, VULNERABILITY REDUCTION
  - PREPARATION FOR NATURAL DISASTERS: PREDICTION, EMERGENCY PREPAREDNESS (INCLUDING MONITORING, ALERT, EVACUATION), EDUCATION AND TRAINING
  - MITIGATION MECHANISMS ARE MOST COST-EFFECTIVE IN REDUCING LOSS OF LIFE AND PROPERTY AND MOST COMPATIBLE WITH THE DEVELOPMENT PLANNING PROCESS. THE DATA COLLECTION EFFORT REFERS TO THE HAZARDS THEMSELVES, VULNERABILITY, AND RISK.



- **From ARTION project:**
  - AI in Emergency Response
    - **Panayiotis Kolios** – scientist on behalf of ARTION consortium - KIOS Research and Innovation Center of Excellence, University of Cyprus

Recording:
https://youtu.be/oOcMsf-9TpQ

- **From RESISTANT project:**
  - RESISTANT project: Training and Knowledge Sharing Platform For First Responders and Educational Tools for students' and citizens' awareness and preparedness against Natural and Manmade Disasters and Risks
    - **Kalliopi Kravari** (scientist on behalf of RESISTANT consortium - International Hellenic University)

Recording and presentation printout:
https://youtu.be/oOcMsf-9TpQ

Funded by
European Union
Civil Protection

EUROPEAN COMMISSION
Directorate-General for European Civil Protection and Humanitarian Aid Operations
(ECHO) Disaster Preparedness and Prevention Knowledge Network and Evidence-Based Policy
B.03 – Knowledge Network and Evidence-Based Policy

RESISTANT

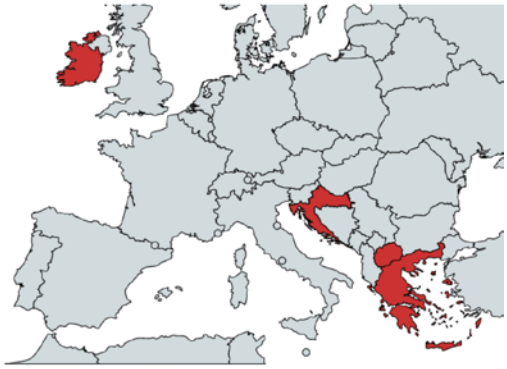
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Project RESISTANT

"Training and Knowledge Sharing Platform For First Responders and Educational Tools for students' and citizens' awareness and preparedness against **Natural** and **Manmade** Disasters and Risks"

Seven partners
Four countries
(Croatia, Greece, Ireland, North Macedonia)

Collaboration with **experienced first responders**



- **Budget**: 299.058,58 €
- **Duration**: 18 months (1/1/2021-30/6/2022)

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RESISTANT
Crisis Training Platform

Partners

Bring important skills, experience and expertise in the key areas of first responders operations, training and communications

Collaboration with **experienced first responders** ensure quality, efficiency and overall operational functionality of the project's output and its impact.

Co-ordinator

INTERNATIONAL HELLENIC UNIVERSITY

DIETHNES PANEPISTIMIO ELLADOS – INTERNATIONAL HELLENIC UNIVERSITY (IHU), Greece

https://www.ihu.gr/



Partners

ENOSI PTYCHIOYCHON AXIOMATIKON YPAXIOMATIKON PYROSVESTIR OY SOMATEIO – ASSOCIATION OF OFFICERS AND SUB-OFFICERS WITH UNIVERSITY DEGREES OF HELLENIC FIRE CORPS (EPAYPS), Greece

http://www.epayps.gr/

konnektable TECHNOLOGIES

KONNEKT-ABLE TECHNOLOGIES LIMITED, Greek Branch (KT GR), Ireland

http://www.konnektable.net

UNIVERSITY GOCE DELCEV-STRIP, MILITARY ACADEMY GENERAL MIHAILO APOSTOLSKI-SKOPJIE, ASSOCIATE MEMBER (MAGMA), North Macedonia

http://www.ma.edu.mk/



Partners

HRVATSKA UDRUGA KRIZNOG MENADZMENTA UDRUGA ZA PROMICANJE I RAZVOJ UPRAVLJANJA KRIZAMA I PRUZANJA POMOCI UKATASTROFAMA – CROATIAN CRISIS MANAGEMENT ASSOCIATION (CCMA), Croatia

http://hukm.hr/

OMADA DIASOSIS EVOIAS – EVIA RESCUE TEAM (S.A.R. 312), Greece

https://www.sar312.gr

OMADA DIASOSIS DELTA – RESCUE TEAM DELTA (RTD), Greece

https://www.facebook.com/Rescue-Team-DELTA

INTERNATIONAL HELLENIC UNIVERSITY konnektable TECHNOLOGIES

- Build the first **European Crisis Training Platform**

Overall Objective

- state-of-the-art knowledge in safety
- tools for characterisation of hazards and associated risks

Educational training

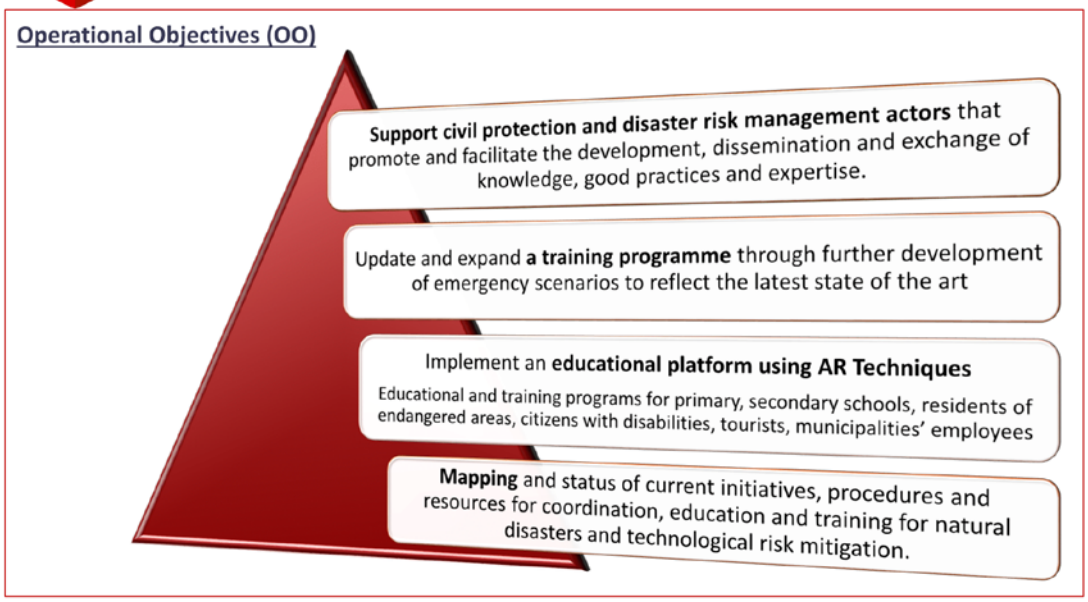
- on mock-up real scale transport

Operational training

- reproducing the entire accident scenarios, intervention strategies and tactics, including the whole chain of command and communications between all members of the first responders team, facility managers, and public (e.g. volunteer fire fighters, school children, citizens with disabilities).

VR-AR training

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Strategic Objectives (SO)

1: **Support new and consolidate existing partnerships** in civil protection and disaster risk management that **enhance cooperation and synergies** in prevention, preparedness and response.

2: Establish **a European network of trainers for first and second responders**, supported by stakeholders from EU and beyond, to share best practices and facilitate dissemination of knowledge and experience generated within the **RESISTANT** project and relevant follow-up projects from EU to national level.

3: **Educate and train tomorrow's responder trainers** through established and regularly updated comprehensive educational, operational and virtual reality training.

4: **Establish strong links between first responders' activities from different countries and constituencies and research and educational projects**; Valuing the responders' experience and their feedback to **enrich and harmonise harm criteria, models for hazards and risk assessmen**t, expand communications to other stakeholders, including but not limited to legislators, technology experts, insurance companies, citizens and students to raise awareness and increase preparedness.

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Expected Outcomes

•The implementation of **a Trans-European Network of trainers for first and second responders.**

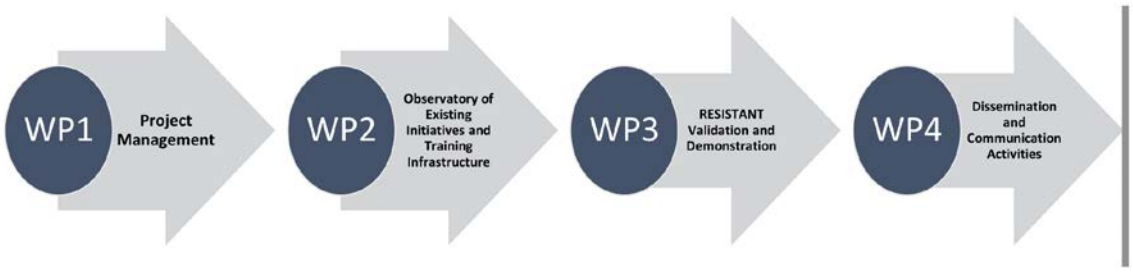
•Design and implementation of **innovative training programs for natural disaster and technological risks prevention and mitigation especially focusing on cross-border events** that will be implemented in Virtual Control Room (VCR) with an integrated state of the art emergency management system.

•Implementation and deployment of a **dual-purpose platform** which will incorporate **the training programs for natural disaster and technological risks prevention and mitigation** along with **a series of educational and awareness programs enhanced with AR techniques for students', citizens' and tourists' preparedness.**

•**Mapping of current activities in Croatia, Greece and North Macedonia in the areas of disaster management and of disasters' education and training**. A comprehensive report with data derived from the mapping training exercises will allow decision and policy makers to evaluate the current state, challenges and opportunities for collaborative disaster management across Europe. Results and the mapping itself will serve as a basis for collaboration, knowledge sharing/exchanging and training among the network member countries.

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RESISTANT Crisis Training Platform



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WP2: Observatory of Existing Initiatives and Training Infrastructure

- To analyze European and National research projects regarding their technical innovations, their tactical and operational recommendations and their potential. The former procedure aims to develop new guidelines and operational actions, with the help of a list of 10 key indicators which will correspond to Natural Disasters and they are dominant in the already analyzed European and National Research projects.

- To summarize what went wrong in the field of Natural Disasters Management by scrutinize the above projects and to present lessons learned and lessons not learned.

- To set up the educational and training infrastructure that IHU and Konnektable Technologies will use during the under WP3 use cases implementation phase.



D2.1 First Report on RESISTANT's Observatory

A first desk research was implemented by the RESISTANT partners in order to undertake an inventory of national research projects of participating countries and European research projects that have impact on operations in case of natural disasters.

The projects that were studied are among the **most up-to-date** in the field as they have either been implemented in the last two - three years or they are still running.

The RESISTANT Consortium partners searched multiple sources for research and innovation projects from the last 5 years and selected a number of **20 projects**.
At the same time a research was implemented by the RESISTANT partners in order to identify current tools for emergency management (e.g Data Mining and Analysis tools for Natural Disaster Management) and training infrastructures for first responders.




Observatory
GeoTwinn
Strengthening research in the Croatian Geological Survey: Geoscience-Twinning to develop state-of-the-art subsurface modelling capability and scientific impact
DARE net
A Practitioner Network to Strengthen Flood Resilience in the Danube Region
iREACT
Platform to integrate emergency management data coming from multiple sources, including that provided by citizens through social media and crowdsourcing
Public FLOOD Emergency and Awareness SERVice
COMRADES
open-source, community resilience platform to help communities reconnect, respond to, and recover from crisis situations
FIRE-IN
European Fire and Rescue Innovation Network
STAIR4SECURITY
Platform on the security sector in the Disaster Resilience and Chemical Biological Radiological Nuclear and Explosive sectors
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Observatory
SA-IN-EU
Situational Awareness Innovation Network EUrope
SAYSO
Standardisation of situational awareness systems to strengthen operations in civil protection
Climate -fit.city
Translate available scientific urban climate data into relevant information for public and private end-users operating in cities across a range of different sectors.
driver+
Test-bed for the assessment of crisis management innovations through trials, Portfolio of Solutions to showcase and exchange information on existing products and online platform for shared understanding of crisis management
IN-PREP
IT training platform, Training modules that test coordination between agencies and their plans and a Crisis Management handbook which is cross organisational
HEIMDALL
Multi-Hazard Cooperative Management Tool for Data Exchange, Response Planning and Scenario Building
MEDSEA
The Mediterranean & Black Sea Security Practitioners' Network
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Observatory
INACHUS
Technological and Methodological Solutions for Integrated Wide Area Situation Awareness and Survivor Localisation to Support Search and Rescue Teams
ResiStand
Identify new ways to improve the crisis management and disaster resilience capabilities of the European Union and individual Member States through standardisation
ANYWHERE
Enhancing emergency management and response to extreme weather and climate events
ZONeSEC
EU framework for the security of Widezones
Copernicus
Europe's eyes on Earth
Evolution of Emergency Copernicus services
BEAWARE
Enhancing decision support and management services in extreme weather climate events
STORM
Safeguarding Cultural Heritage through Technical and Organisational Resources Management
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Observatory
Lessons learned
Need for Technologies that will allow the collection and processing of information for a valid and early prediction of a natural phenomenon, in order to warn and inform citizens and stakeholders (first responders, policy makers etc.) who will be called to deal with the phenomenon.
Dealing with natural disasters will be done only through the prism of cooperation between the countries, the competent services and the citizens themselves.
Most of the aforementioned research programs and tools propose the use of collected information to a collaborative crisis management.
All efforts made or proposed in these projects are targeted at four (4) main actions..
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Observatory

Lessons learned

The first action refers to the **cooperation-training**

(in GeoTwinn, FIRE-IN, In-prep, DAREnet, STAIR4SECURITY, MEDEA, beAWARE etc.)

Directions, methods, exchange of knowledge, experiences, technologies, innovations, etc. between universities, organizations, and services are analyzed and developed.

The effort to deal with natural hazards is no longer a matter of just one service or one country. **Cooperation among countries and their regional services is needed**.

Development of a **communication network** is proposed, in order to make cooperation possible and effective.

The issue of **cooperation-education** extends beyond the boundaries of professionals in the field and concerns both volunteers and ordinary citizens.

Citizens should recognize the signs of impending natural hazards and understand how to act in the first critical moments even to participate as much as possible in dealing with them.

Observatory

Lessons learned

The **second action** refers to the **collection of information**

(in I-REACT, Flood-SERV, COMRADES, In-prep, E2MC etc.)

A key point is the utilization of every possible means for **gathering information** about natural hazards.

A new tool is **social applications**. Through this, every citizen who has a basic knowledge will be able to inform both the competent authorities, for example with photos, live image or GPS coordinates about a natural phenomenon that is evolving.

Other media that are proposed for data collection are satellites, UAVs, and ground-based sensors.

Timely data collection and dispatch to crisis management centers are crucial to the outcome of a natural disaster.

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Observatory

Lessons learned

The **third action** is the development of an **alert system (awareness)**

(in projects such as SAYSO, CLIMATE-FIT.CITY, INPREP INACHUS, E2MC, beAWARE)

This will be achieved by utilizing the two previous actions:

- Social platforms used by citizens to collect and send information, in real time, will inform with notifications or live maps for places / areas at risk.
- The warning system can also be used during the action / mobilization of the first responders in order to have a clear picture of the evolution of the phenomenon around them.



Observatory

Lessons learned

The **fourth action** refers to the development of a **crisis management model** that will utilize all the above
(in DRIVER +, HEIMDALL, ANYWHEE, beAWARE)

Handling the crises faced by modern societies often requires the coordination of **multiple types of stakeholders** from **different countries**.

One of the key requirements to manage crisis is to have access to **Situational Awareness**. Both public and private stakeholders require adequate solutions in organization, procedures and technological capabilities to be able to respond timely and effectively.

There is a need to **develop specific standards** that enable various public and private organizations within Europe, being local, national, European or international to be effectively coordinated ensuring as much as possible a smoothly cooperation before, during and after a disruptive event.

A new proposed technology, for example, is the use of **augmented reality** where AR glasses are used to guide the first responders from the control centre.

Top 10 key indicators in emergency and crisis management

- Crisis Management
- Policy Makers
- Resilience
- Interoperability
- Collaboration
- Coordination
- First Responders
- Cross Border
- Social Media
- Training Programs



Other relevant indicators

- Critical Infrastructure
- Evacuation Rules
- UAV
- Volunteers
- Awareness System
- Preparedness
- Black Out
- Educational Programs
- Innovations



WP3: RESISTANT Validation and Demonstration

To implement and evaluate the overall approach of RESISTANT platforms with the help of a series of tests. These tests will be based on real life scenarios and case studies derived of the 4 following cases:

- Educational and training seminars for students and citizens of endangered areas, aiming to their awareness and preparedness against Natural Disasters and Technological Risks (GR)
- Emergency Management Frameworks (Cross Border Use case, GR- NM)
- Field Training for protection from floods (NK)
- Training for situational awareness and emergency services interoperability in complex environment (CRO)



The above mentioned general objectives will carry out by realizing in the order presented below, the following specific sub- objectives:

- To define the use case scenaria.
- To set up the appropriate pilot environment considering all the special needs of the end users and stakeholders based on the infrastructure of IHU and Konnektable.
- To fully operate and test the RESISTANT solution on these pilot use cases.
- To validate the RESISTANT solution usability by the end – user point of view but from the scientific one, as well.
- To make the capabilities of the RESISTANT platform available to Policy stakeholders, willing to use RESISTANT technologies for saving their lives and properties.



Components of RESISTANT's educational and training infrastructure

RESISTANT's educational and training infrastructure consists of:

I) RESISTANT Training Platform: a dual-purpose platform developed by this project and which incorporates: a) training materials for first responders; b) training materials and videos for civilians.

II) Virtual School infrastructure and technology: Mixed reality which combines elements of both AR and VR and is currently used by IHU to educate pupils of primary schools on how to deal with natural disasters and to protect them from such hazards).

III) A Virtual Control Room (VCR): it is installed in the International Hellenic University and is unique in Greece.

IV) A state-of-the-art emergency management system (COncORDE)

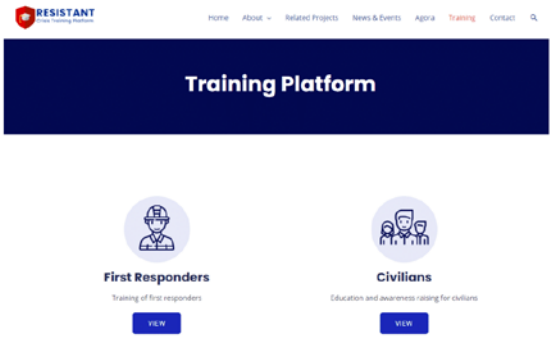
A more detailed description of the components of the **RESISTANT**'s educational and training infrastructure is presented below.

RESISTANT Training Platform

The RESISTANT training platform provides access to teaching materials and videos and will be accessible via the project website at the address: https://www.RESISTANTproject.eu/

The platform feature two sections according to the purpose of use:

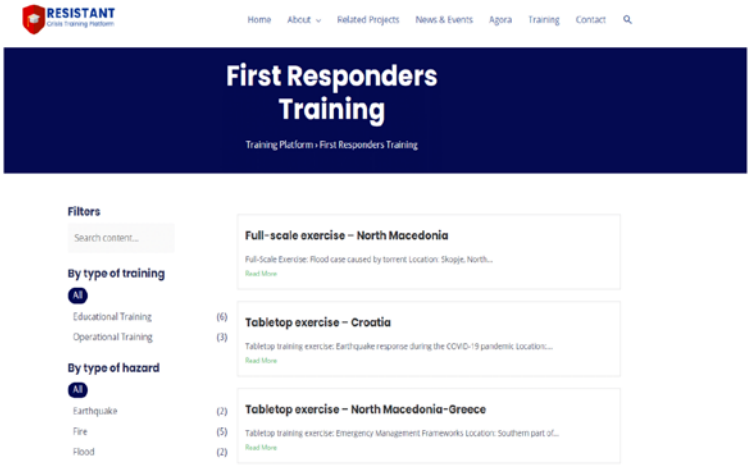
1. Training of first responders
2. Education and awareness-raising for civilians



"Training of first responders" section

Target audience:

1. First responders (police officers, fire brigades, civil protection, public health authorities)
2. Trainers of first responders



"Training of first responders" section

The "**Training of first responders'**" section of the platform consists of the 3 different sub-sections:

1. **Educational Training** – consisting of training materials uploaded by the project partners. Main topics: Forest fire risk assessment, the development process of a civil protection operational forces, Evacuation planning of critical infrastructures in case of an earthquake or a fire for people with disabilities; Evacuation of vulnerable guidelines.

2. **Operational Training** – describing the operational training that will be implemented by the RESISTANT partners during pilot use cases

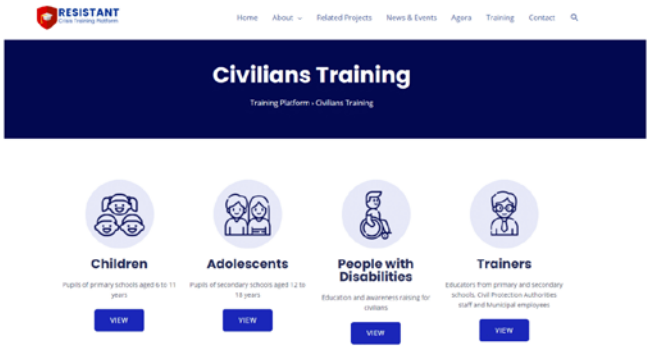
3. **Virtual Reality Training** – describing the virtual reality training that will be implemented by the RESISTANT partners during pilot use cases. This training will reproduce the entire accident scenarios, intervention strategies, and tactics, including the whole chain of command and communications between all members of the first responders' team, facility managers, and public (e.g. volunteer firefighters, school children, citizens with disabilities).

"Educational and awareness programs for civilians" section

Target audience:

a) Civilians (Pupils from primary and secondary schools, Residents of endangered areas, Citizens with disabilities, Tourists)

b) Trainers (Educators from primary and secondary schools, Civil Protection Authorities staff, and Municipal employees)



INTERNATIONAL HELLENIC UNIVERSITY konnektable TECHNOLOGIES

"Educational and awareness programs for civilians" section

- **The training materials for children** (pupils of primary schools aged 6 to 11): The topics of the training materials are related to how to react in case of natural disasters.
- **The training materials for adolescents aged 12 to 18 years**: These are innovative educational material related to the labeling and risk management of groups of children or individuals aged 12 to 18 years from natural or technological disasters.
- **The training materials for adults**: The topics of the training materials are related to how to react in case of natural disasters as well as safety checklists in these cases.
- **The training materials for people with disabilities**: There are videos on how to react in case of natural disasters
- **The training material for trainers**: The topic is on "Disaster risk model for local authorities".

INTERNATIONAL HELLENIC UNIVERSITY konnektable TECHNOLOGIES

Virtual School infrastructure and technology

- Virtual School is a training approach of- IHU, based on the educational framework "Inclusion for All", which aims to educate pupils of primary schools on how to deal with natural disasters and to protect them from such hazards by using Mixed Reality technologies, and training them on the use of three-digit emergency numbers.
- Children, supervised by their Teacher(s), are asked to build a **3D miniature model** of their school and use cutting-edge technologies (Augmented Reality) to train in dealing with natural disasters (earthquake, flood, fire, injury, etc.).
- Virtual School relies on **Augmented Reality** technology to provide a mixed reality experience to the students. In particular, the students create a model of their school through the provided instructions and simple, cheap, and easy-to-find materials, following step-by-step instructions which are provided free to each school.

VIRTUAL SCHOOL
Combining reality ....
with Augmented Reality



INTERNATIONAL HELLENIC UNIVERSITY konnektable TECHNOLOGIES

Virtual School infrastructure and technology

- Virtual School is an innovative educational program for disaster preparedness and response training, utilizing educational frameworks such as gamification, inclusive learning, and problem-based learning.
- It is based on a mixed reality environment where students have to interact with the environment to perform the correct actions in several educational disaster scenarios.
- Virtual School was recently accredited by the Institute of Educational Policy of the Ministry of Education Greece (January 2021)

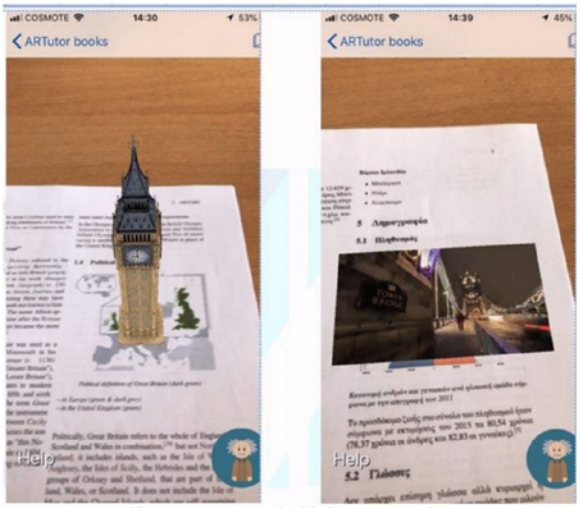




INTERNATIONAL HELLENIC UNIVERSITY konnektable TECHNOLOGIES

Virtual School infrastructure and technology

- Virtual School uses **ARTutor an Augmented Reality Training Platform** developed by the Advanced Educational Technologies and Mobile Applications Lab (AETMA).
- AR Tutor is available free of charge to all teachers and students around the world to help them develop educational materials and improve their learning experiences.
- AR Tutor is a domain-independent platform, focusing on adding digital content, so-called augmentations, to traditional educational books (typically in any PDF) and other texts.
- ARTutor enables each educator to create augmented books easily, without any requirements of programming background.
- In addition, the platform serves the aim of assisting the students' independent study and ultimately improving the understanding of the educational material.



(1) 3D model augmentation (2) Video augmentation

Virtual School infrastructure and technology

To carry out the activities of the program, IHU needs the following materials and infrastructures:

1. **Virtual School electronic educational material.** The educational material is provided by the program and includes a) instructions for building a school model, b) action cards and c) educational scenarios for printing.

2. **Simple materials for the construction of the school model** according to the provided instructions.

3. **A smart mobile device (preferably tablet),** either with Android operating system and ARCore compatible or with the iOS operating system and ARKIT compatible which can utilize augmented reality technology applications

4. **The ARTutor augmented reality application** for viewing the augmentations,

5. **Internet connection** to download the necessary information to the mobile device.

Virtual Control Room (VCR)

The **Virtual Control Room (VCR)** established in International Hellenic University (IHU) is one of the most complete and modern VCR all over Europe.

The VCR of IHU has been funded by the Administrative Region of Eastern Macedonia and Thrace in Northern Greece.

It specializes in the fundamental and advanced training of students and professionals on control room operations and emergency responses during technological or natech accidents.



INTERNATIONAL HELLENIC UNIVERSITY konnektable TECHNOLOGIES

Virtual Control Room (VCR)

Most of the scenarios examined in the VCR **are not hypothetical or fiction products**, but rather the result of **long-term interviews with industry executives, field operators, and control room operators** to reproduce accurately, efficiently, and effectively near-misses, dangerous incidents, and accidents.

This is particularly beneficial to the trainees for getting well acquainted with what-if fact-scenarios of our developed comprehensive database, and coping with difficult circumstances, often more difficult than they were.

To that end, trainees have the opportunity to test and understand their limits in a highly secure environment; and on the other hand, the industrial executives to be informed about the suitability and readiness of their staff.



INTERNATIONAL HELLENIC UNIVERSITY konnektable TECHNOLOGIES

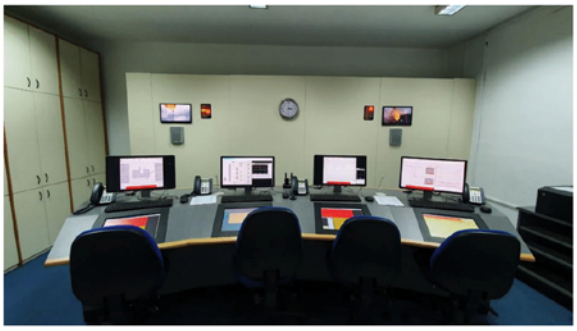
VCR Equipment

The VCR of IHU comprises a pair of rooms that are set up as a Trainer/Trainee system.

a) Trainee Room

The trainee room is an emulated industrial control room environment that allows both training and competency assessment of procedures and emergency response situations, with audio-visual recording and printed monitoring of the operators' performance.

The trainee room of the VCR is equipped with real interfaces (DCS) from crucial infrastructures such as Oil and Gas Industry (onshore and offshore), chemical industry, refinery, and pipeline networks.

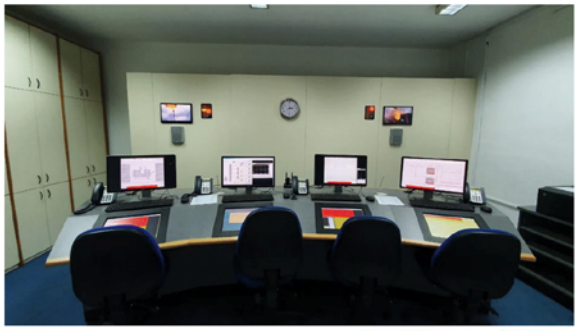


INTERNATIONAL HELLENIC UNIVERSITY konnektable TECHNOLOGIES

VCR Equipment

It consists of the following components:

- 4 console-workstations each equipped with monitors, touch screen displays, keyboard, mouse, telephone, and radio communication.
- 2 wall-mounted 8 buttons illuminated alarm panels with lamp test and audible warning.
- 2 wall-mounted flat-screen TV showing pre-recorded videos associating with complicated scenarios.
- CCTV camera system.
- VOIP telephone system.
- Audio-visual recording system.

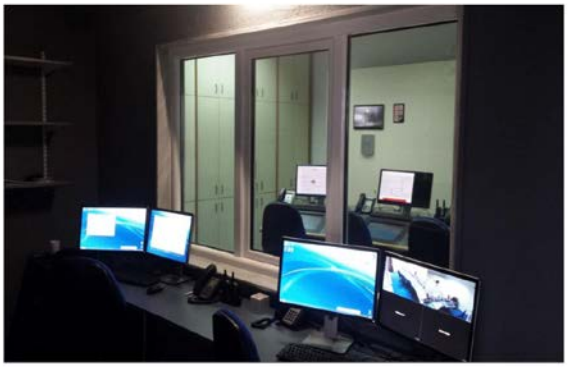


INTERNATIONAL HELLENIC UNIVERSITY konnektable TECHNOLOGIES

VCR Equipment

b) Trainer Room

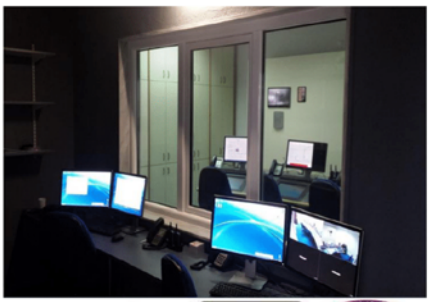
All the control room operators' (trainees) responses are fully monitored from a separate room where the instructors control the training process and assess competence. The Trainer Room views the Trainee Room through a one-way window. The trainers may use the process simulation system to inject faults or to emulate operating sequences.



VCR Equipment

The Trainer Room includes:

- 2 instructor workstations with simulation software, allowing complete "failure mode" exchange.
- CCTV with HDD recording and playback facilities.
- Instructor control of Control Room Alarm Panels.
- VOIP telephone system from the control room operators to the instructors.
- 2 radio sets from each instructor to the trainee room (2 sets).
- 2 LAN printers, one in each room.
- Instructor software for full selection, control, recording, and scenario creation.



VCR Training

IHU organizes training seminars and certification on **Control Room Operations and Emergency Responses (CRO&ER)** in 2 levels (**L1**: Fundamental Level and **L2:** Advanced Level) for industry executives, security forces staff, postgraduates, and undergraduates.



Up to date several industries and programs have been trained and certified in IHU facilities: staff from Oil and Gas Industry, staff from Chemical Industry, postgraduates from MSc in Oil and Gas Technology (IHU), postgraduates from MSc in Analysis and Management of Manmade and Natural Disasters (IHU), Trans Adriatic Pipeline (TAP) Training Program, security forces officers, facility managers and first responders.

INTERNATIONAL HELLENIC UNIVERSITY konnektable TECHNOLOGIES

VCR Training

Objectives

- The main objectives of the training course are to:
- Familiarize trainees with all preliminary steps involved in modeling and simulation.
- Present cubic equation of states for professional use and explain their importance and role in different simulation models.
- Explain in detail industrial process engineering, operations, and protocols used for various physicochemical industrial processes.
- Familiarize trainees with the control room environment.
- Explain all requirements necessary for control room operations.
- Outline common operation problems and describe possible solutions.
- Provide information on emergency responses.

INTERNATIONAL HELLENIC UNIVERSITY konnektable TECHNOLOGIES

VCR Training

Syllabus

The course contents are distinguished into five sections:

- **Introduction in Modelling and Simulations (M&S)**
- **Cubic Equations of States (CEoS)**
- **Control Room Environment**
- **What-If Scenarios**
- **Certification**

The first three sections refer to modeling and simulations, cubic equations of states, and control room environment and they are common for all trainees' categories.
However, section D is tailor-made for the type of industry and end-users.
Section E contains material for the assessment and certification process of the trainees.

VCR Training Simulation Models

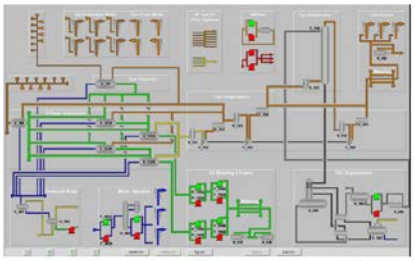
The VCR of IHU owns and runs several industrial simulation models.

The simulation models very closely represent the performance and dynamics of actual systems.
The models have similar response times, and react in similar ways during start-up and shutdown, to typical real industrial plants.
The models are sufficiently accurate to allow competence assessment of the trainees in a wide range of scenarios.

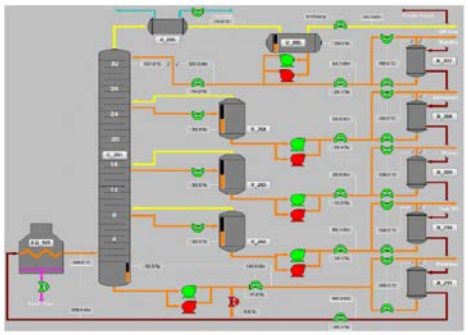
The available training simulation models of the VCR are:

a) **Offshore Oil and Gas Production Platform**
b) **Refinery Plant**
c) **Advanced Chemical Reactor**
d) **LNG Plant**

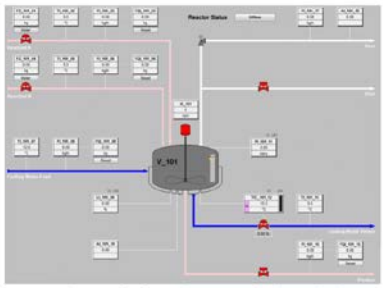
VCR Training Simulation Models



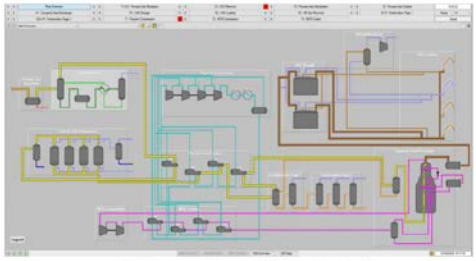
DCS overview of the O&G production platform



DCS overview of the refinery plant



DCS overview of the advanced chemical reactor



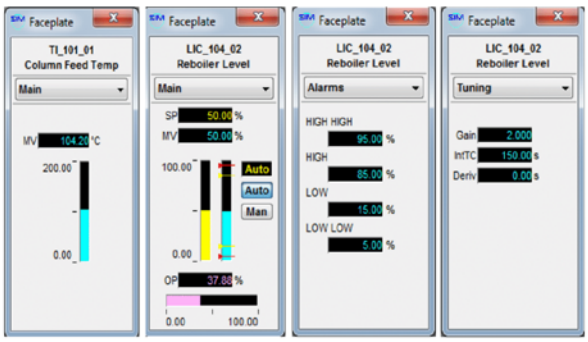
DCS overview of the LNG plant

INTERNATIONAL HELLENIC UNIVERSITY konnektable TECHNOLOGIES

VCR Simulation Environment

Each of the training simulation models incorporates the following features:

- Full thermodynamic calculations with heat and mass balance across the models.
- Complex multi-component flows, with individual pop-up tables of components at useful locations.
- Modern DCS style interface with multiple graphic screens for the larger models.
- DCS style controllers and faceplates.



Several pop-up faceplates associated with industrial devices



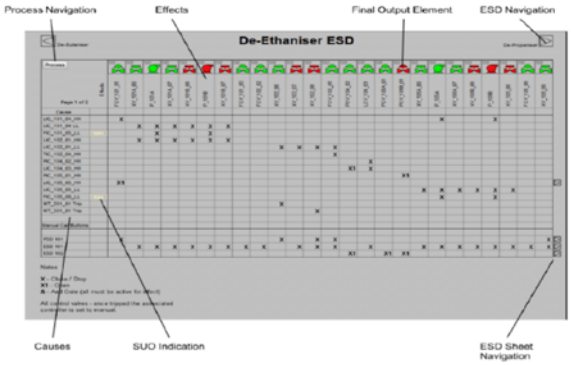
Alarm screen with alarms sorted by priority, status and time

INTERNATIONAL HELLENIC UNIVERSITY konnektable TECHNOLOGIES

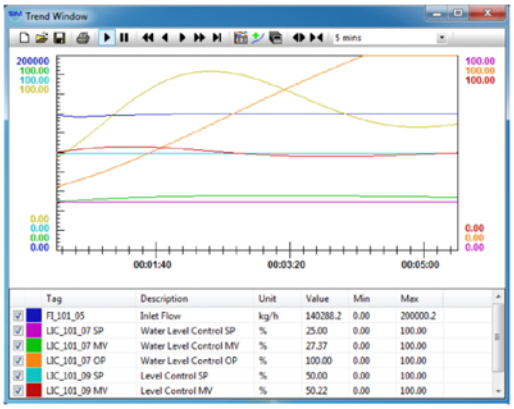
VCR Simulation Environment

Each of the training simulation models incorporates the following features:

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- DCS style controllers and faceplates.



Emergency Shut Down (ESD) Cause and Effect Matrix



Trends display of selected sensors

COncORDE emergency management platform

COncORDE is a state-of-the-art system of a **systems software platform that supports and enhances the existing coordination and decision processes during small or large-scale crises and medical emergencies, at local, regional, and cross-border levels**. By its design, the platform meaningfully connects all Emergency Management Services (EMS) participants in emergency response, which are in generic terms the Public Safety Access Point -PSAPs (112/control rooms), the dispatched EMS responders, the First receiver hospitals and any involved Higher command centers.

COncORDE provides an innovative common information space, which connects all emergency medical responders involved in the operational response to an incident and allows them to effectively exchange information related to their tasks, gain a common operational picture and make informed decisions based on this real-time information. The common information space is created per-incident and allows distributed actors across distributed spaces to coordinate through this information exchange.

COncORDE emergency management platform

The platform consists of several modular components referred to as the COncORDE tools:

1. **Incident management tool**

- ***The incident information tool***

This tool collects and aggregates all the information provided about the incident. The information consists of the initial dispatch information as provided by PSAP to the system, the Situational Reports (SITREPs) as entered by the field commander, and all the related other information that participants have provided about the incident.

- ***The team management tool (Team table)***

This tool aggregates the information about any participant logged into the incident. It combines event logging with the responder tracking tool. A complete overview of the team is enabled, as well as role allocation (manual or via Decision Support System -DSS) and communication (i.e. link to notifications). The tool also links to the hospital management tool, since hospitals are incident participants as well who are represented by the hospital commander at the team table. The hospital information and the patient information link via the DSS to enable referral allocation. One additional feature is the ability to customize the actual content of a menu if it differs across different jurisdictions and health systems.

COncORDE emergency management platform

The platform consists of several modular components referred to as the COncORDE tools:

2. **Hospital management tool**

This tool provides the ability to communicate with hospitals to obtain information on hospital capacity. It aggregates information on all hospitals fitting the search criteria. It allows a hospital summary view of capacity, visualising which hospital has joined the incident, inviting hospitals to join and referring patients (incl. providing patient e-¬form to hospitals). The information entered about type of specialties links to the semantic tool for suggestions of matching referral diagnosis from the patient status information tool to the type of hospital specialty to which the patient should be referred and to the decision support tool for allocation.

COncORDE emergency management platform

The platform consists of several modular components referred to as the COncORDE tools:

3. Patient management tool (Patient status information tool, patient e-form)

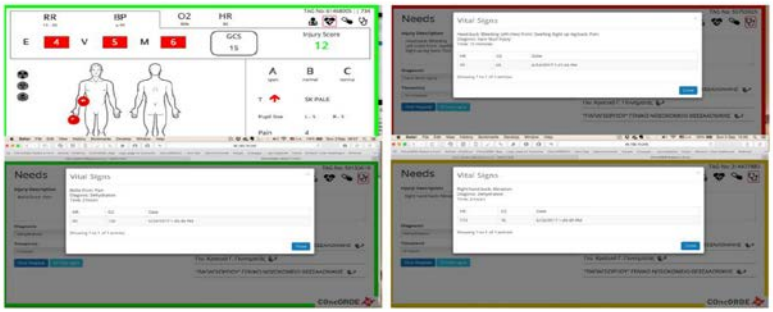
The patient status information tool (patient table and patient screens), Technology Readiness Level (TRL)6, aggregates the entire information gathered on a patient during his emergency management. It starts collecting the information from the moment of the first physical encounter. The patient status information tool collects the following information: triage 1, location, ID, vital signs (from the Rescue application), gender, estimated age, medical assessment, interventions and treatment, and needs for further management. It is the equivalent of an aggregated electronic pre-hospital patient care record (ePCR), which is already implemented at various stages of completeness in some health systems.

Patient Management Tool accessed through a tablet



INTERNATIONAL HELLENIC UNIVERSITY konnektable TECHNOLOGIES

COncORDE emergency management platform



The patient's triage with injuring score

Medical Parameters regarding the situation of the patient



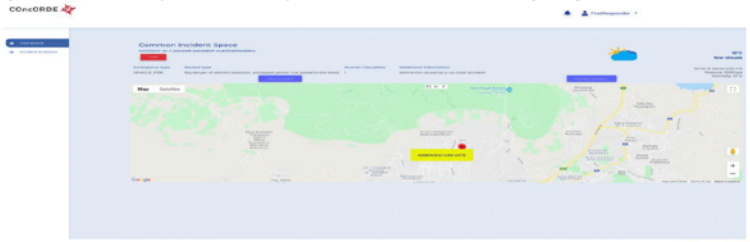
INTERNATIONAL HELLENIC UNIVERSITY konnektable TECHNOLOGIES

COncORDE emergency management platform

The platform consists of several modular components referred to as the COncORDE tools:

4. The ConcORDE interactive map

The COncORDE map (TRL6 reached of TRL9) comprises the second core tool to the entire system. The map integration supports not only the display of geographical maps, but it allows interactive work with the maps in real-time, drawing, messaging, viewing participant and tracked asset location at any one time, viewing the associated information with the located participant/tracked asset, as well as the conversion of the map view to tabular views of all participants and tracked assets. It also allows the integration of third-party service providers, such as weather, traffic, and social network information. It provides "best route" calculations and suggestions and provides input into the decision support services/DSS tool for patient management (hospital allocation, evacuation, and allocation to transport).



COncORDE emergency management platform

The platform consists of several modular components referred to as the COncORDE tools:

5. Tracking tools

5.1 Rescue Light

A lightweight version (TRL6) of the Rescue Application can monitor the user's location (e.g. en-route staff, retrieval runner, transport officer, transporter crew, first receiver, bystander, etc.), seen by others in real-time in the platform's map.

5.2 Collector Application

The COncORDE Collector application (TRL6) is based on the pre--existing TRL9 Collector Application by Esri for tracking. The modification consists of an adaptation to the user management service, allowing users of the COncORDE platform to be tracked automatically from the moment they join an incident. The application links to the user ID in the specific incident, so that the map displays not only the user ID but also the role of the user in real-time. By enabling the tracking, a user can be found on the map, tasks can be assigned and messages can be sent via the map.

COncORDE emergency management platform

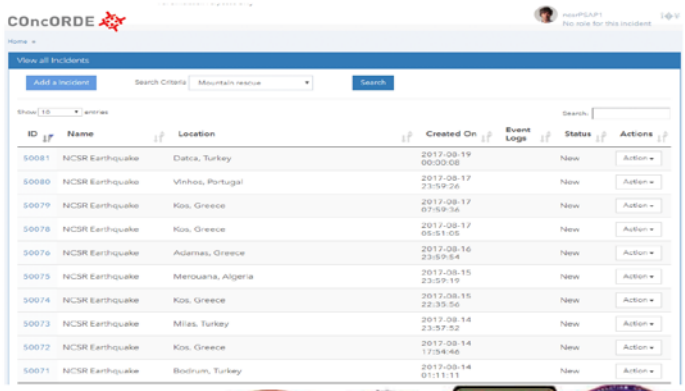
The platform consists of several modular components referred to as the COncORDE tools:

5. DSS tools

The COncORDE DSS tools offer specialized decision support services, the need for which was specified during the requirements analysis. Their function depends on the availability of reliable data gathered from the incident in real-time. As such the DSS tools depend on the correct function of the other/new tools developed in this task.

EMS Prediction Tool

The DSS prediction tool (TRL5) predicts Medical Resources required to be dispatched after an earthquake and flood, using historical data and machine learning techniques to satisfy the demand.



INTERNATIONAL HELLENIC UNIVERSITY konnektable TECHNOLOGIES

First responders' needs concerning their training and the software technologies they use in their work

A questionnaire has been developed and applied among first responders that are participating in the RESISTANT consortium. The scope of the questionnaire was to adjust the training requirements of first responders to the services provided by the COncORDe platform. Collecting the answers of the First Responders helps to optimize and cover the gaps in preparedness, timing, and speed of acting that utilization of the COncORDe platform may overcome during the field operations and could be demonstrated during field exercises.

INTERNATIONAL HELLENIC UNIVERSITY konnektable TECHNOLOGIES

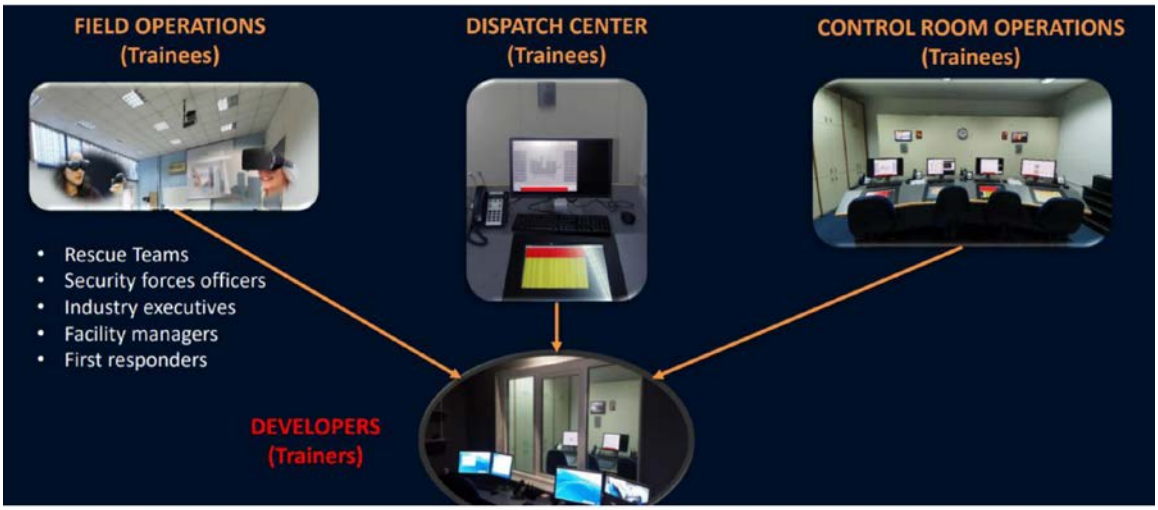
First responders' needs concerning their training and the software technologies they use in their work

Analysis of responses received

1. The training of First Responders must take part in the phase of:
   - **Preparedness** (plans or preparations made to save lives and to help response and rescue operations)
   - **Response** phase (actions are taken to save lives and prevent further property damage in an emergency. Response is putting your preparedness plans into action).
2. Proposals on how to overcome challenges related to victim localization, situation awareness, and risk assessment
3. Limitations of detection, monitoring, and reporting devices
4. Challenges of compatibility of communication systems and structures about information sharing
5. Limitations of detection, monitoring, and reporting devices under various environmental conditions
6. Helpfulness of smart devices and real-time information sharing systems for the maneuverability of a team of first responders
7. The best way to locate and allocate resources
8. Opinions regarding how software technologies would optimize the training process for first responders
9. Situation awareness technologies currently used in operations
10. Training platforms currently used
11. Communication technologies already used

INTERNATIONAL HELLENIC UNIVERSITY konnektable TECHNOLOGIES

Advanced Training with Immersive Technologies



INTERNATIONAL HELLENIC UNIVERSITY konnektable TECHNOLOGIES

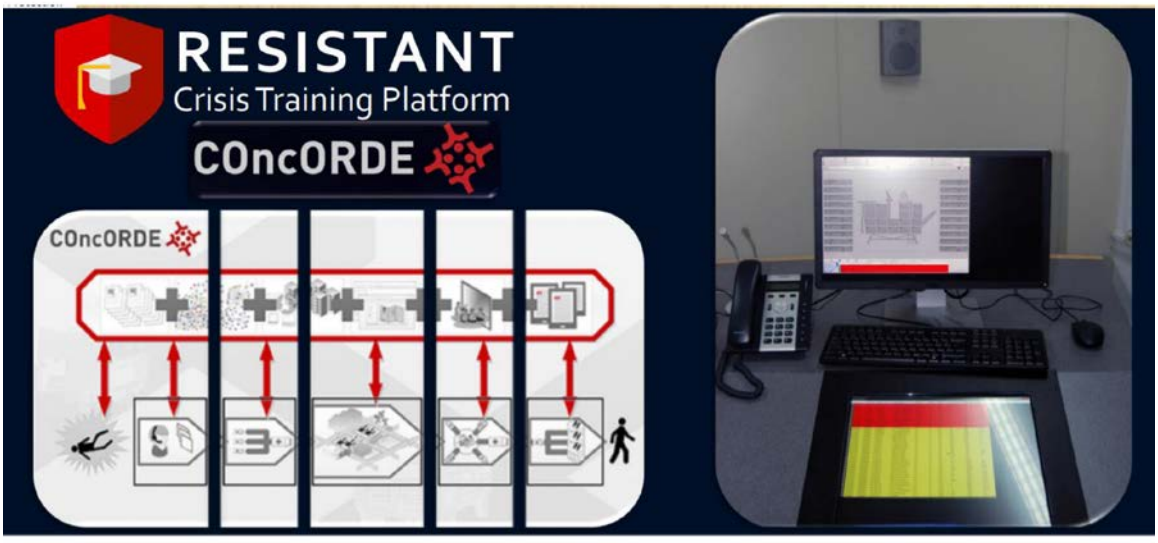
Room A: Control Room Operations



Room B: Field Operations



Room C: Dispatch Center

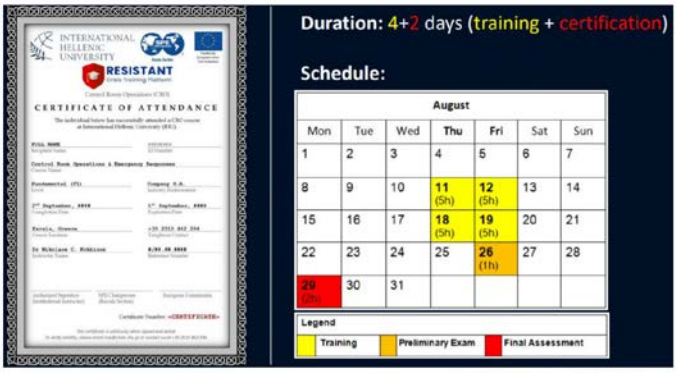


Room D: Trainers - Developers



Virtual Crisis Control Room (Training and Certification)





INTERNATIONAL HELLENIC UNIVERSITY konnektable TECHNOLOGIES

Pilot Use cases and scenarios for education and training

The project Consortium will evaluate the overall approach of RESISTANT with the help of a series of tests that will be based on real life scenarios and case studies and that will be implemented in 4 pilot use cases (UC) aimed at education and training for emergency preparation and disaster response:

- **UC1:** ***Educational and Training Seminars for students and Citizens of endangered areas***
- **UC2:** ***Emergency Management Frameworks (Cross-border Use Case)***
- **UC3:** ***Full-Scale Exercise - Flood case caused by torrent***
- **UC4:** ***Tabletop training exercise - Earthquake response during the COVID-19 pandemic***

INTERNATIONAL HELLENIC UNIVERSITY konnektable TECHNOLOGIES

Pilot Use cases and scenarios for education and training

The aim of UC1: To educate civilians of different ages and to raise their awareness and preparedness against Natural Disasters and Technological Risks. As a preliminary step, two informative and educative seminars (training the trainers) will be held in Skopje and Thessaloniki, where invited participants (primary, secondary educators, Civil Protection Authorities staff and Municipal employees) will have the opportunity to be familiarized and trained with the Virtual school and the other Deliverables, in order to try to apply these activities to their organizations by multiply in the addressed groups.

Partner leading the UC1: International Hellenic University (IHU), Greece

Locations: areas along the border line between Greece and North Macedonia (Thessaloniki and Skopje)

Beneficiaries: Beneficiaries of this pilot case study implementation are students of primary and secondary schools of North Macedonia and Greece of the areas along the border line between Greece and North Macedonia (Pelagonia Vardar, South District, Florina, Kastoria, Pella, Kilkis, Kozani), as well as tourists and visitors of the abovementioned villages, towns and cities.

Pilot Use cases and scenarios for education and training

Pilot case study 1: Training of children and adolescents

Target audience:
pupils of primary schools of Greece and North Macedonia (Piraeus, Chalkida, Skopje),
pupils of secondary schools of Greece and North Macedonia (Piraeus, Chalkida, Skopje),

Overview of the training programme:
The training programme targeting pupils of primary schools aged 6 to 11 will use the Virtual School methodology.

The training for children and adolescents aged 12 to 18 years will be complemented by innovative educational material (both text and multimedia) related to the labelling and risk management from natural or technological disasters. These training activities will focus not only on the prevention or the initial actions to be taken after an event but also on how to proceed. The ultimate goal is to complete the training by drawing up action plans, as well as setting up specific groups of tasks / responsibilities that will complete the training program.

Pilot Use cases and scenarios for education and training

The training for children and adolescents aged 12 to 18 years

The topics of the training course are:

- Firefighting - fire protection in urban and agricultural environments
- Earthquakes
- Floods
- Marine accidents
- Rescue - panic management
- The above training programme will be implemented in situ in all 3 cases.

Format and Duration: The training programme for children and adolescents will include classroom learning and practical training in the classrooms of the participating schools, conducted by teachers appointed by IHU and using role players to give added realism, based on civil protection scenarios. The Virtual School attempts to educate students to recognize good practices dealing with Natural Disasters

Pilot Use cases and scenarios for education and training

1. A three-dimensional School Model created by the students.



2. The use of a computer with an Internet connection, printer (monochrome or colour), and a mobile device, such as a tablet.

Pilot Use cases and scenarios for education and training

3. The use of the educational material and instructions provided to teachers and students by the AETMA Lab.



4. The instalment of the ARTutor (Version 3), which is an Augmented Reality educational platform developed by the AETMA Lab.



INTERNATIONAL HELLENIC UNIVERSITY konnektable TECHNOLOGIES

Pilot Use cases and scenarios for education and training

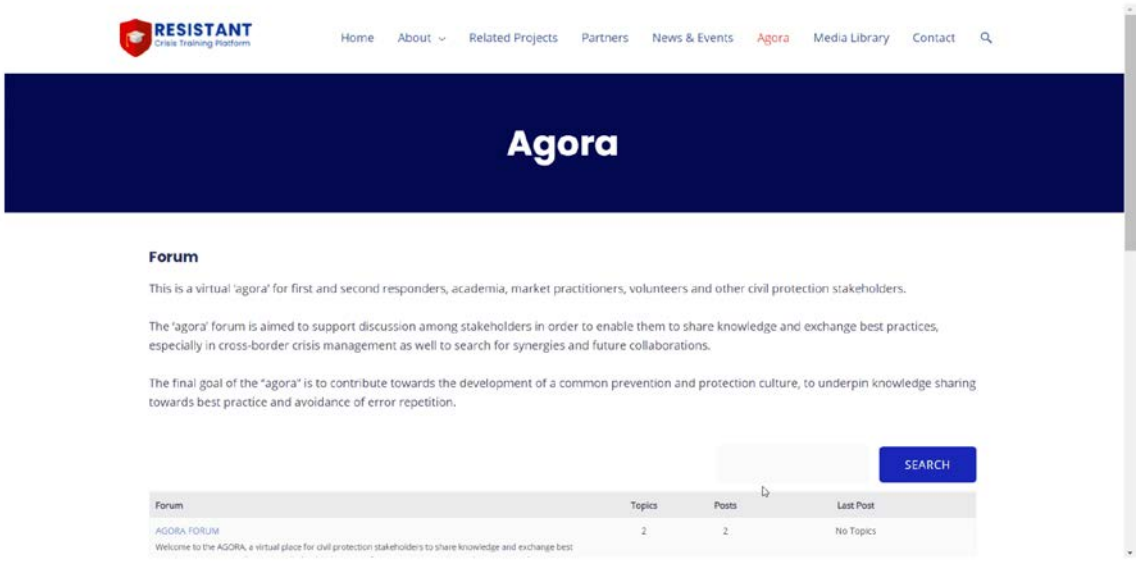
Students' feedback via AR.





Utilization of school's evacuation plan via Virtual School training

INTERNATIONAL HELLENIC UNIVERSITY konnektable TECHNOLOGIES







https://www.resistantproject.eu/



6. Webinar length

As before, ROADMAP Consortium agreed on 2 hours and 30 minutes, allowing Speakers to have up to 20 minutes to present, then Q&A after each presentation using the Q&A box. In the end, the remaining time allowed a debate starting from the main topics and questions from the audience.

7. Promotion and organisation

ADAI organized this webinar using the ZOOM platform, supporting up to 500 participants and performing a direct broadcast to the You Tube channel. The Q&A box was used to raise the questions, to avoid oral interventions that can great confusion and difficult management. Registration was done through a specific form from ZOOM, to have access to the webinar and resulting in a participant list. Two invitations were sent: "SAVE THE DATE" plus reminder having more information on the webinar.

As we did for the previous two seminars. We also used CIMNE, JRC, the CPN, GA, AG and ADAI networks as well as invited projects under the same ROADMAP call.

8. Attendance

The total number of the attendees was 129 plus more than 76 views on YouTube (https://youtu.be/B02nhUqSJeE).

3. Conclusions

In sum, the tree ROADMAP Webinars were organized to benefit project activities as well as DRM community. All three ROADMAP webinars were attended or viewed by more than 1000 people, representing a significant outcome of ROADMAP project. Firstly, project dissemination was achieved through a brief presentation at the beginning of each Webinar. Secondly, all insights and good practices shared among DRM stakeholders, improving our understanding for common issues and lessons learnt that may be applied elsewhere. Thirdly, all these fruitful discussions were exploited by ROADMAP consortium through improved project outcomes, including the Thematic and Vision Papers and the Solutions Explorer.