

# DIRECTED – Disaster Resilience for Extreme Climate Events providing Interoperable Data, Models, Communication and Governance



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## 1 The DIRECTED Mission

**Overcome silos** between technical and political authorities of all levels, including organizations, sectors and disciplines by improving communication among Disaster Risk Management (DRM) and Climate Change Adaptation (CCA) actors while supporting **2 Interoperability**.

**Build capacity** and partnerships through collaboration between involved actors that last beyond the project in **3 Real World Labs**.

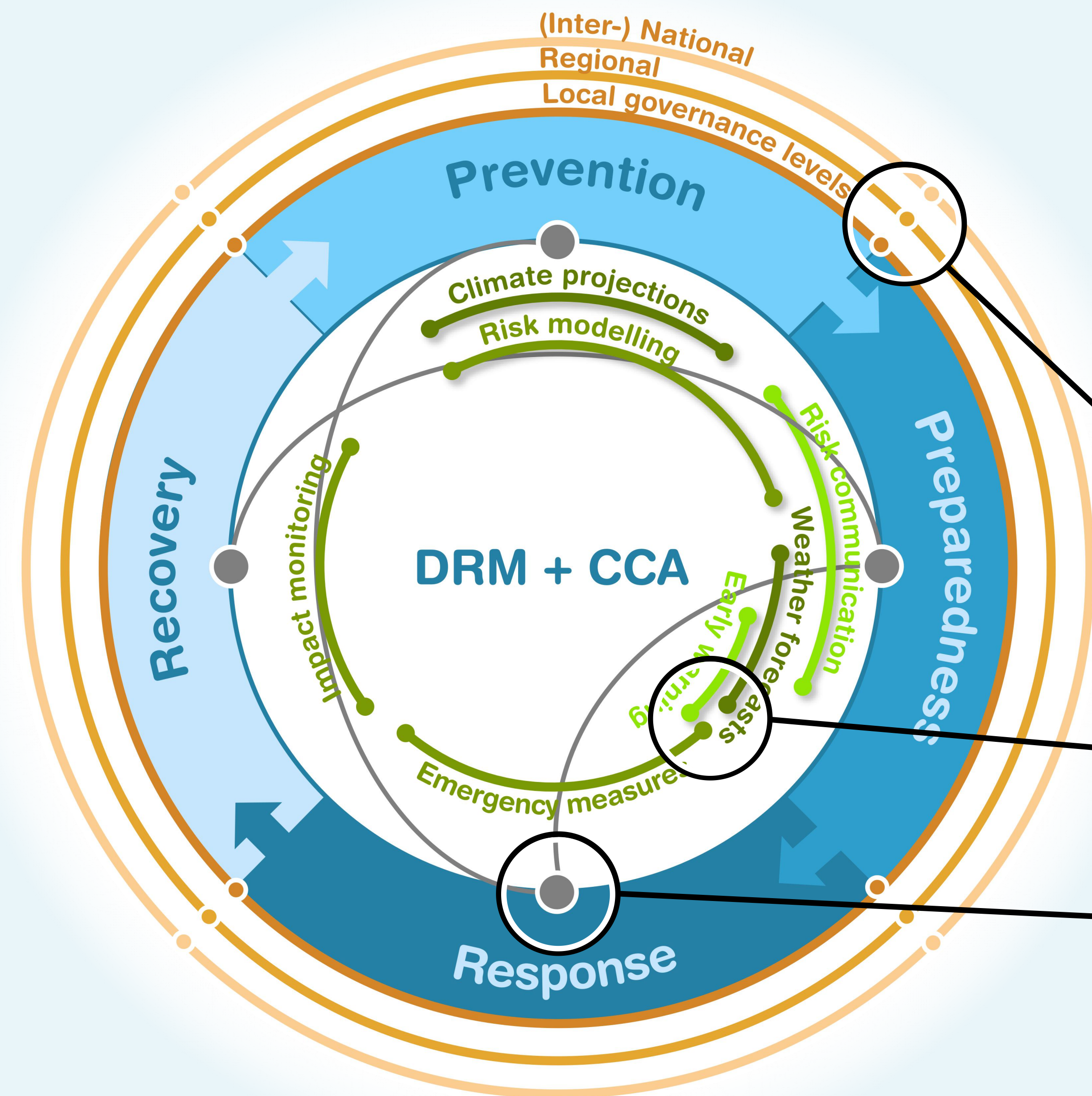
**Promote Multi-Risk-Thinking** with the novel transdisciplinary multi-risk governance framework for climate extremes **4 Risk Tandem**.

**Exploit open data** and open science, improving capabilities for more effective decision making, including knowledge and tools developed within past, present and future research initiative in our **5 Data Fabric**.

The **DIRECTED** team of 18 partners in 8 European countries in cooperation with local stakeholders pursue this mission from **2022-2026**.

### Multi-Risk-Thinking

Floods   Droughts   Heatwaves   Forest fires   Storms



## 2 Interoperability Concept

On the way to a **disaster-resilient society**, the DIRECTED project overcomes silos, develops capacities and sustainable cooperation, strengthens multi-risk thinking, utilizes synergies, and promotes the concept of **Interoperability**. This is accomplished by researching, reviewing and improving existing taxonomies, data standards, APIs and frameworks in the DRM and CCA. The iterative **co-production** approach of the Risk Tandem Framework ensures that the needs of our **RWLs** are at the center of all developments. We focus on:

- Governance Interoperability:** Increase cooperation across institutions, sectors and scales of all actors in DRM + CCA
- Data and model interoperability:** Supporting the use of interconnected models for decision making in different phases of DRM + CCA
- Information interoperability:** Improving the integration and flow of information between the different phases of DRM + CCA

## 3 Real World Labs in Europe

Real World Labs (RWL) create collaborative environments for learning and innovation through co-production workshops, demonstrations and training, as well as promoting multi-level collaborative risk governance among actors managing disaster risk and climate change adaptation.

In 2011 a cloudburst event caused insured losses of €700M in Copenhagen and droughts have become an emerging climate related risk in the region. We aim to improve DRM and CCA in the RWL with a focus on governance and policy integration, and to co-ordination and collaboration across municipal boundaries. The RWL is led by Region Hovedstaden.

The Capital Region of Denmark

The Erft river was among the most affected regions by the flood in July 2021. We aim to investigate how climate-change impacts will affect the frequency and severity of floods to obtain robust estimations of design values for defence measures. The RWL led by the Erft water board aims to build long lasting European RWL partnerships.

Rhine-Erft Region

Danube Region

We aim to use and improve state-of-the-art models and datasets such as the Future Danube Model to predict imminent natural disasters in the Danube basin. In collaboration with local stakeholders, including practitioners, civil defense organizations, regional authorities, and members of the private sector we promote multi-risk thinking, and facilitate cross-border risk management. The RWL is led by Genillard & Co.

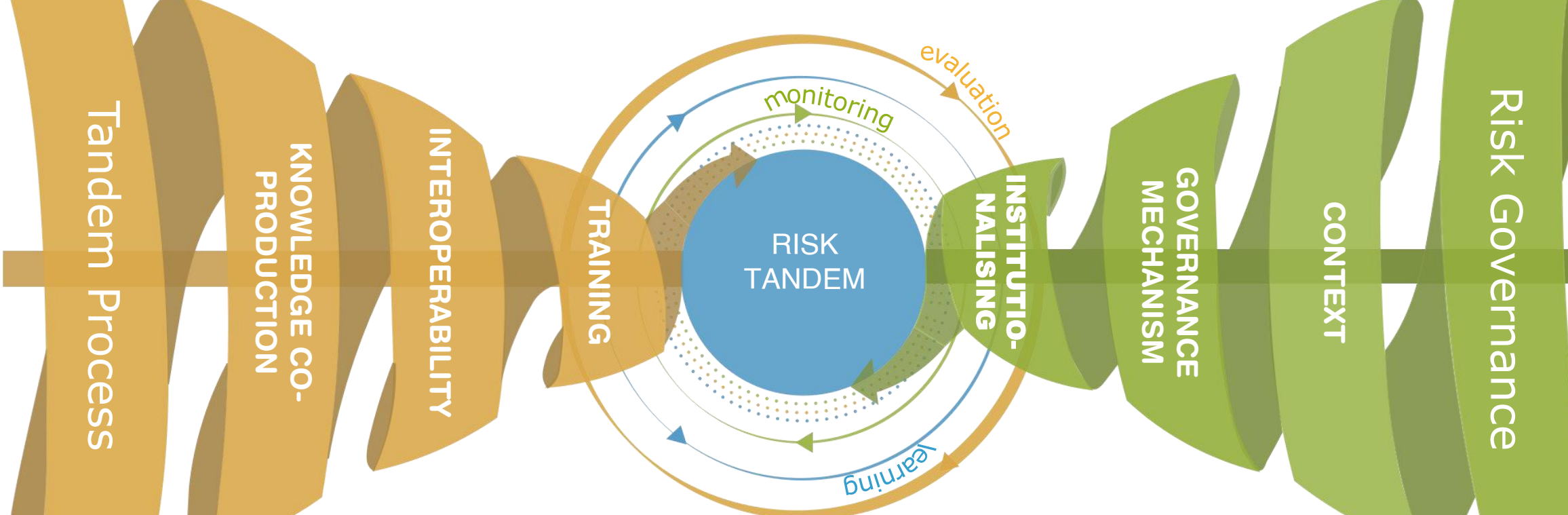
Emilia Romagna Region

We aim to implement new tools and models, increase risk awareness and build capacities to tackle DRM and CCA challenges such as wild fires in Comacchio e Mesola, floods and storm surges at the coast of Rimini. The RWL is led by the Civil Protection (ARSTPC-ER) and Hydrometeo Service (ARPAE) of Emilia Romagna.

## 4 Risk Tandem Framework

**Risk Tandem** combines co-production approaches with risk governing frameworks to develop DRM & CCA solutions with stakeholders by:

1. Connecting knowledge via **co-production** and co-exploration
2. Identifying decision-relevant needs in an **iterative** process
3. Increasing capacities, and strengthening communication and networks that translate into **resilience**



Coping with uncertainty, strengthening resilience and supporting transformative learning are central components of **RWL activities**. Context specific application of risk management tools and approaches (IRGC Risk Gov. Framework, Risk Layering approach, SHIELD model) will support **Risk Governance** in RWLs.

## 5 Data Fabric

We develop an **integrated** yet **federated** system, that connects different instances and data sources on premises, public and private clouds under a centralized platform interface. The DIRECTED Data Fabric will be **flexible** to adapt to changing CCA and DRM requirements in terms of data, models and visualisations. We make use of **open source** software and standards such as GeoNode and OGC.

