Dr. Katharina Weitz Department of Artificial Intelligence, Fraunhofer HHI

Al for Natural Disaster Management Workshop on Reimagining Disaster Risk Reduction: The Role of Standardization and Innovative Technologies

Fraunhofer

HHI

17.10.2024 – WTSA, New Delhi

## International Standards on AI for Natural Disaster Management?

Guidelines, on how to use technology

Produced by an international SDO

Mandatory by adoption into national laws

The key to ensuring **interoperability** and **harmonization** 

# **Standardization – Fill the Gaps & Follow the Trends**



Laying the groundwork for standards

#### ITU/WMO/UNEP Focus Group on "AI for Natural Disaster Management"





## **Standardization - Identification of Gaps**

What topics are (not) addressed by existing standards?



#### Phase of AI use in natural disaster management



## **Standardization – Identification of Trends**

How does this compare with research?



Images: Kuglitsch et al. (2022)

5 08.11.2024 © Fraunhofer

Monique Kuglitsch, Arif Albayrak, Raúl Aquino, Allison Craddock, Jaselle Edward-Gill, Rinku Kanwar, Anirudh Koul, Jackie Ma, Alejandro Marti, Mythili Menon, Ivanka Pelivan, Andrea Toreti, Rudy Venguswamy, Tom Ward, Elena Xoplaki, Anthony Rea, and Jürg Lüterbacher. (2022) "Artificial Intelligence for Disaster Risk Reduction: Opportunities, challenges, and prospects". In: WMO Bulletin nº 71

🗾 Fraunhofer

## **Proof-of-Concept Projects**

### Mediterranean and pan-European forecast and EWS against natural hazards









© Fraunhofer

MedEWSa



08.11.2024

## **Proof-of-Concept Projects**

## Trusted Extremely Precise Mapping and Prediction for Emergency Management







## **Proof-of-Concept Projects**

Trusted Extremely Precise Mapping and Prediction for Emergency Management







CRP reveals the concepts used by an AI for a given prediction.



Create more human-friendly explanations by using concept relevance propagation





Original fire detection model

Improved fire detection model







**Next Steps** 

#### Launch to be hosted by Barcelona Supercomputing Center on 6 November 2024.

Transition was announced by the ITU Secretary-General at AI for Good Global Summit on 30 May 2024.

resilience

Artificial intelligence (AI) can help countries tackle climate volatility and reduce disaster risks. A new global initiative explores how.

Learn more









# ITU/WMO/UNEP Focus Group -> ITU/WMO/UNEP/UNFCCC/UPU Global Initiative

**Resolutions** Resilience to natural hazards through AI solutions ITU Global Initiative

## **Next Steps**

Building on the outputs of the Focus Group





#### Research & innovation

- Explore new AI applications for managing natural hazards
- Delve into advancements in related emerging technologies

#### Standards & best practices



- Update technical reports from FG-AI4NDM
- Deep-dive on topics of relevance
- Develop AI readiness framework and PoC studies
- Support capacity sharing



# Thank you for your attention!



Dr. Katharina Weitz Department of Artificial Intelligence, Fraunhofer HHI <u>katharina.weitz@hhi.fraunhofer.de</u>

Fraunhofer HHI Einsteinufer 37 10587 Berlin www.fraunhofer.de



Al-genereated image using Ideogram.Al