Web-based Tool to Facilitate Resilience-related Information Management

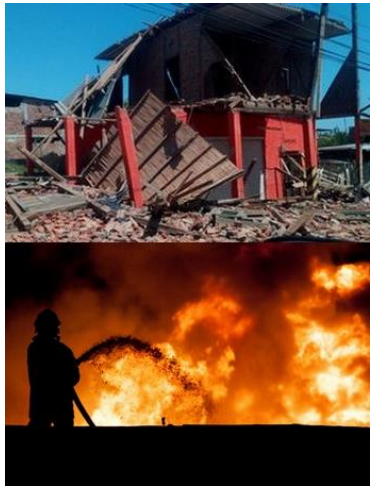
Hoang Long Nguyen, Rajendra Akerkar

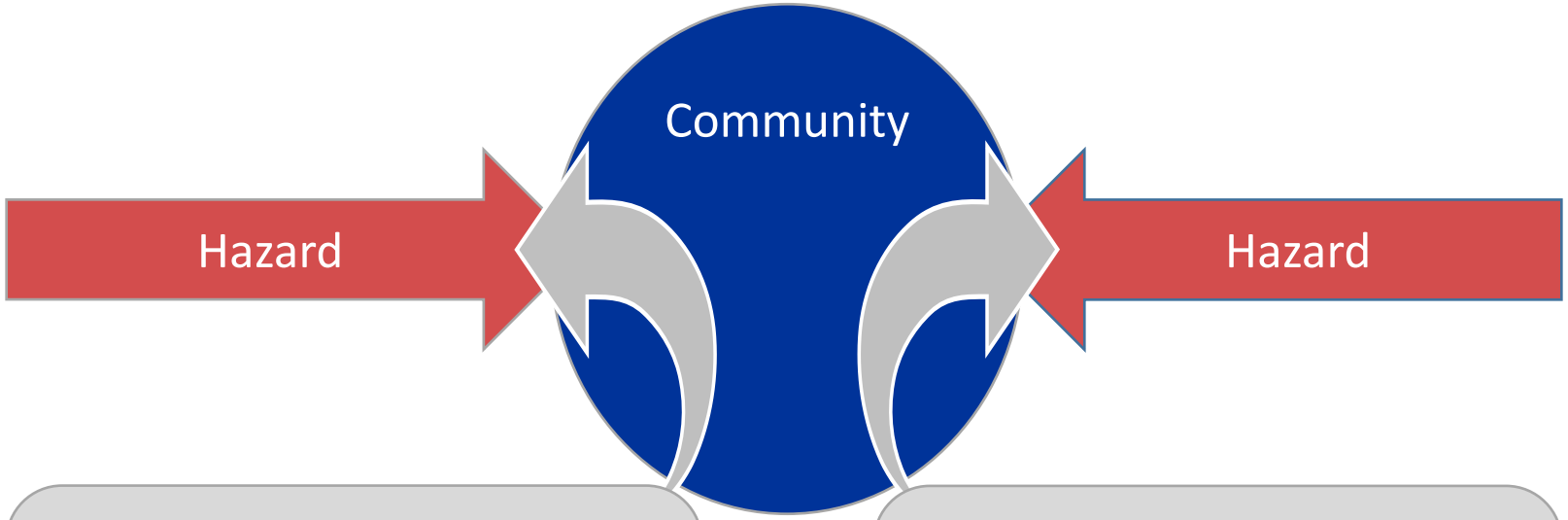
Western Norway Research Institute

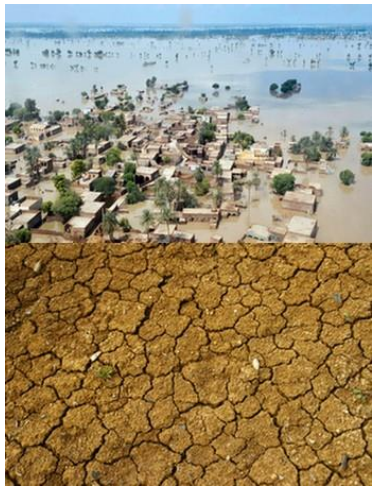
Salvatore Antonio Marchese, Valentino Gandolfo, Leonardo Luca Trombetta, Massimo Cristaldi, Uberto Delprato

IES Solutions

Introduction







increase understanding of **resilience** in local communities

generate **tools** empowering local actors to strengthen their resilience

From research to innovation

Introduction

- **Problems and issues**
  1. Community resilience is **an intricate concept** that is arduous to capture and turn into explicit knowledge
  2. Different communities can face **similar difficulties** towards disasters and hazards

→ How to assist communities to **better understand resilience, highlight available resources** to build community resilience regarding different dimensions for **optimised management and share?**

→ **Objectives:**

- Propose a **general architecture for a resilience database – RESILOC Inventory –** that enables communities
  - to adopt a general methodology to collect, store, manage, and share resilience-based information
  - to analyse and learn from each other, reducing efforts in solving their own problems at a starting point

Scope of the Inventory

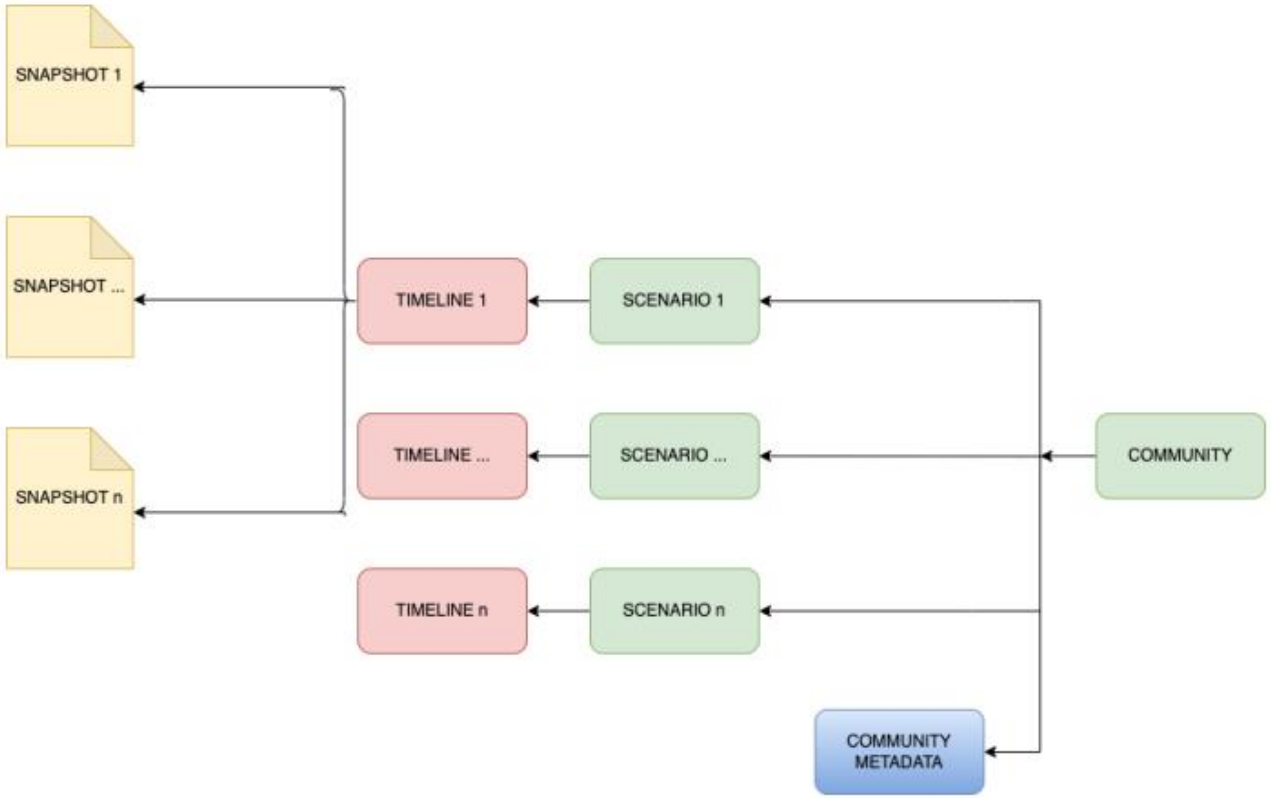
- The inventory is developed based on developers' experience, end-users' recommendations, and
  - Literature review:
    - Nguyen, H.L., Akerkar, R.: ***Modelling, measuring, and visualising community resilience: A systematic review***. Sustainability 12(19), 7896 (2020)
  - Database design:
    - Nguyen, H.L., Senarath, Y., Purohit, H., Akerkar, R.: ***Towards a design of resilience data repository for community resilience***. In: Proceedings of the 18th International Conference on Information Systems for Crisis Response and Management (ISCRAM 2021), Blacksburg, Virginia, USA, May 23-26, 2021. pp. 271-281 (2021)

Scope of the Inventory

- Primary users: **Local authorities**
- Secondary users: **First responders and emergency services**
- Beneficiaries: **Citizens and the civil society**
- Local Resilience Teams

Conceptual Architecture

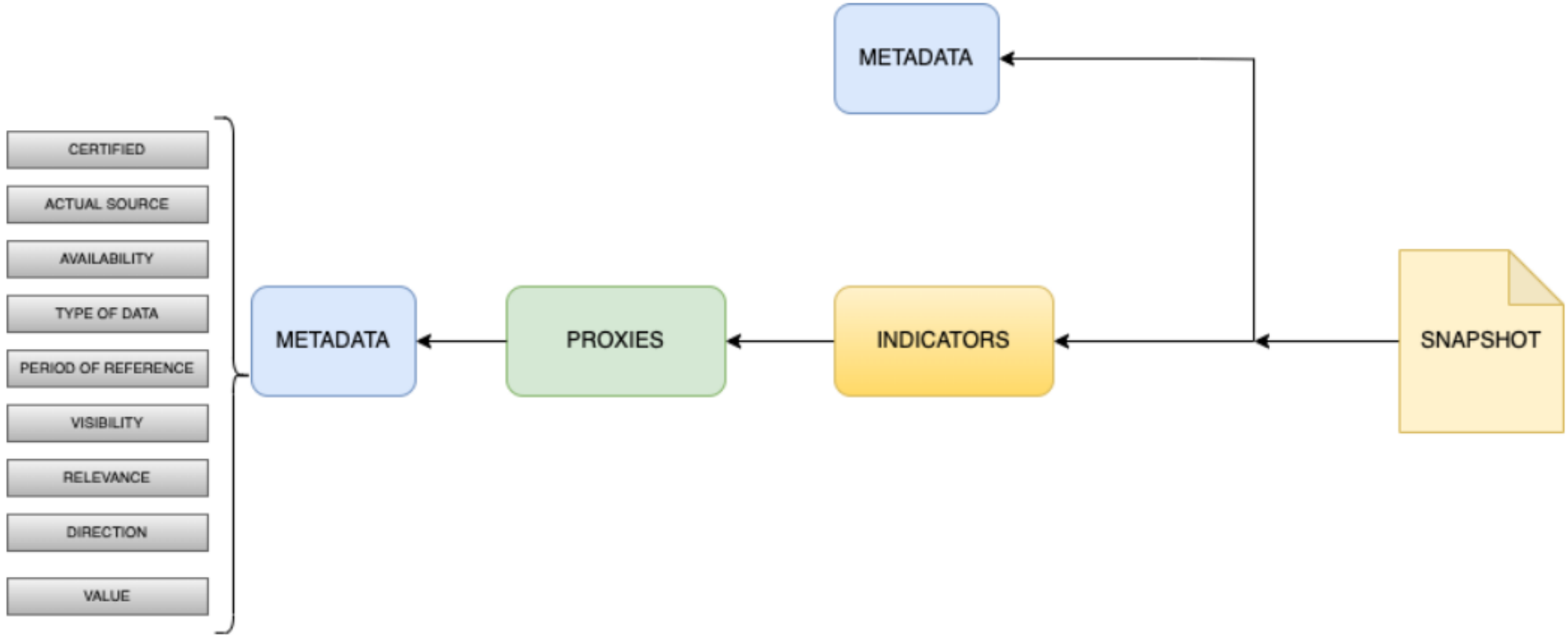
- All the data in the RESILOC Inventory must belong to communities pre-defined by stakeholders



Overview of the Inventory

Conceptual Architecture

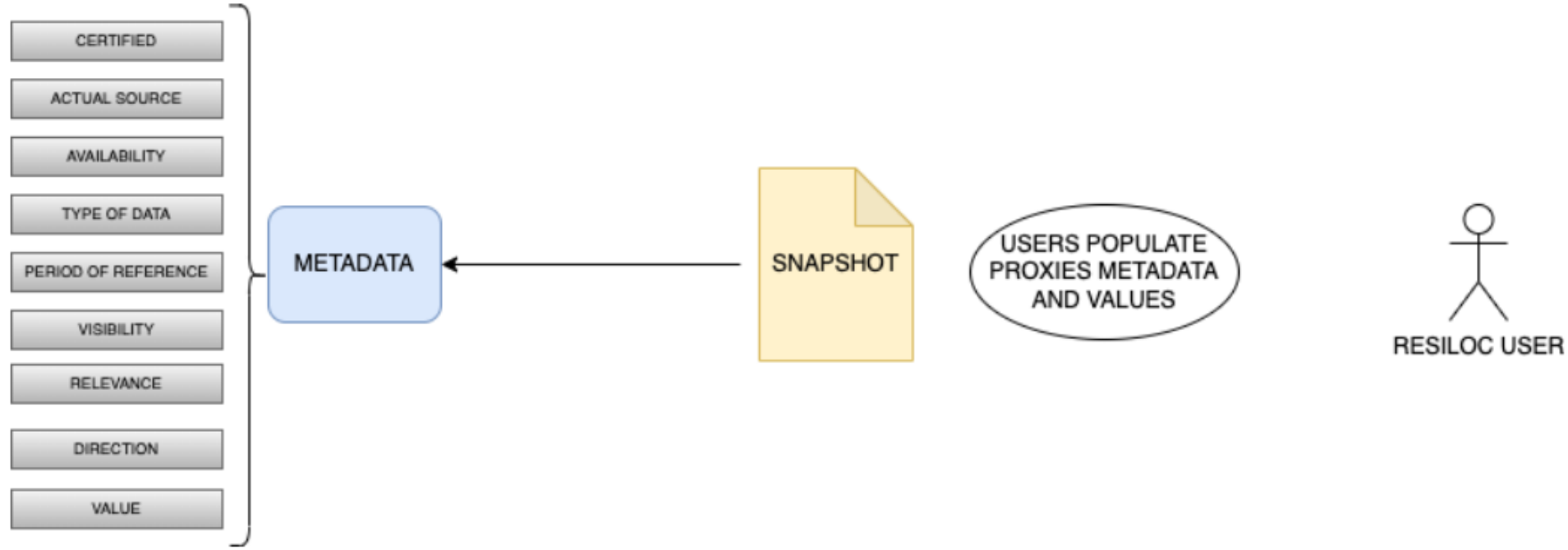
- Each Timeline related to a specific Scenario - contains one or more Snapshot Datasets added at a specific point in time



Snapshot of a Scenario

Conceptual Architecture

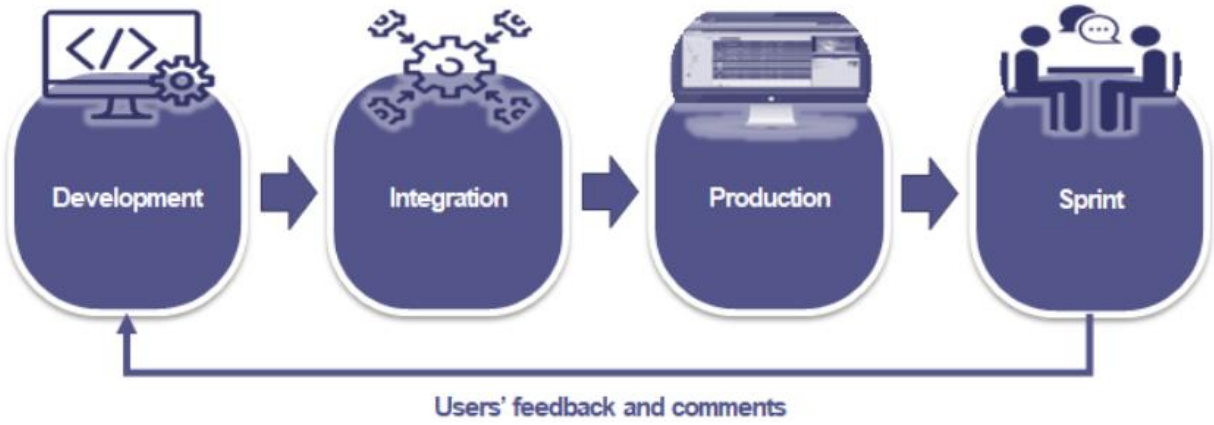
- We gather appropriate information about communities and resilience from various sources to complete a full picture of the required elements
- The information collected is used for further calculating indicators and building resilience dimensions



The use of designed RESILOC Inventory

AGILE Implementation of the Inventory

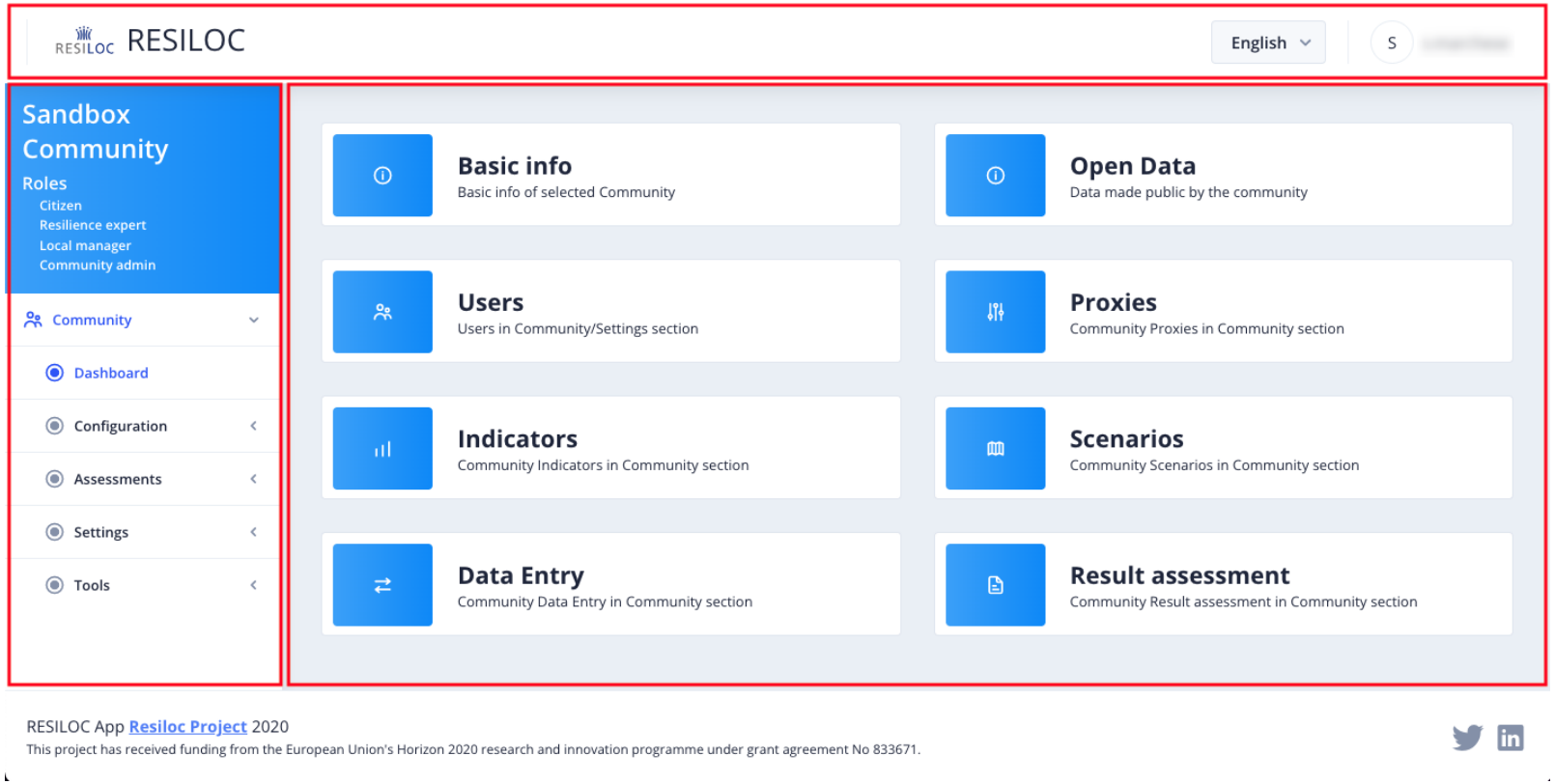
- We used Agile software development to develop the Inventory.
- The Agile methodology aims to shorten the time between the decision-making process and the feedback gained from the community users.



The RESILOC Inventory development process

The Inventory dashboard

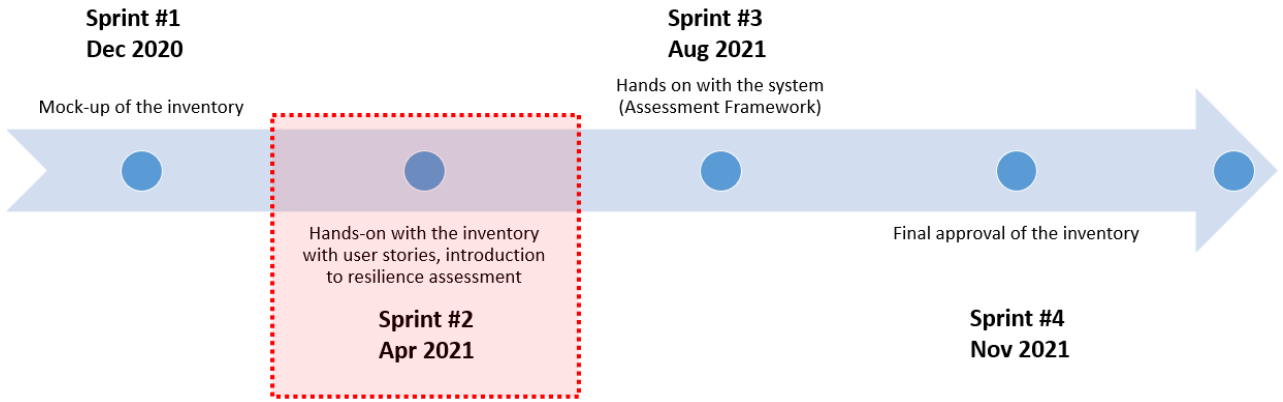
- To meet the functional requirements gathered from end users, all interface components are designed to maintain a high level of **usability, security and efficiency.**



The RESILOC Inventory dashboard

User Validation

- The development of the RESILOC Inventory was validated **through 4 Sprints**.

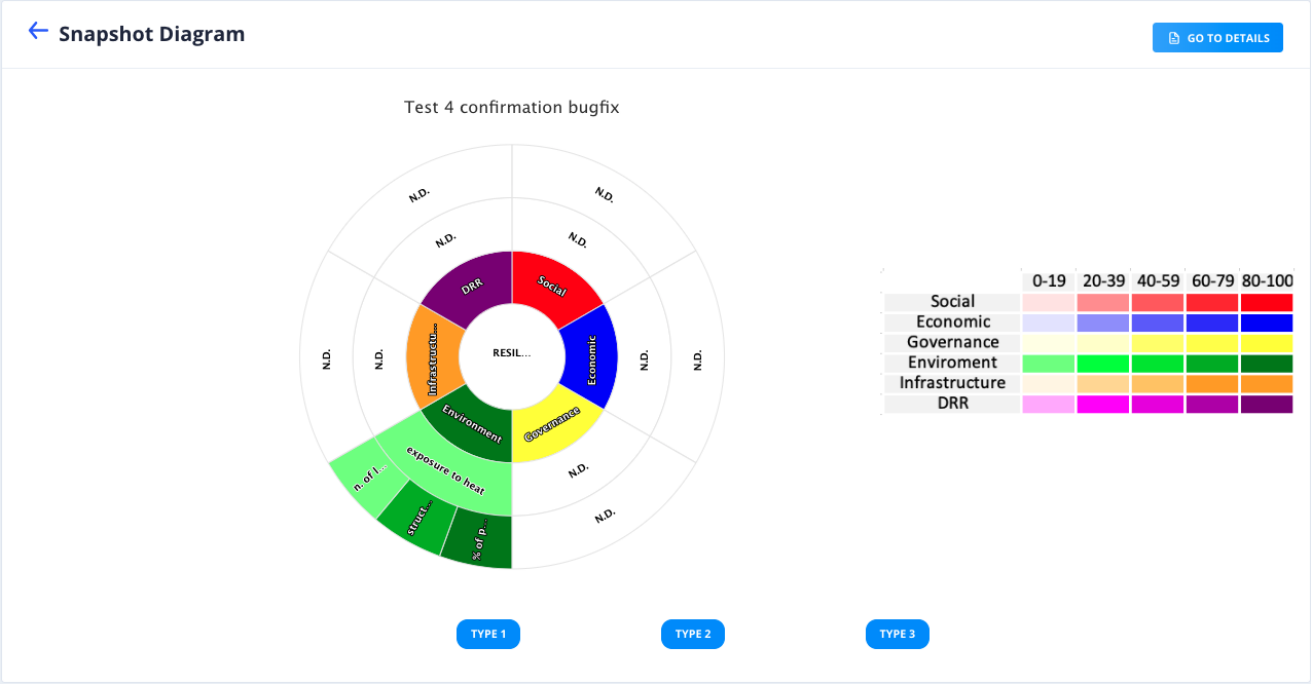


- On usability aspects, researchers and community representatives gave positive responses, expressing appreciation for the developed system.
- Users manifested the necessity of a widespread use of tooltips and the implementation of a notification system.

The RESILOC Inventory dashboard

Conclusion and Future Work

- The Inventory is developed as a web-based set of interfaces, services, and datastores with varied features for collecting and organizing data through numerous functions at hand.
- Next, we will complete developing a resilience assessment functions based on data collected.



The Platform for Resilience Assessment

Thank you!

RESILOC