Policy brief

FAIR situation reports: a federated architecture to unlock trusted information from conflict-areas

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Executive Summary

Situation reports around the world help address underreporting in crisis areas. Ensuring that situation report data is structured, machine-actionable and interoperable ensures triangulation and corroboration of events, supporting accountability for atrocities and decision making by relevant actors.
We present a federated architecture that enables findable and interoperable dataset creation, turning situation reporting into an evidence infrastructure for better decisions and stronger evidence trails.

Around the world, uncertainty is growing amid climate change and environmental-related crises, as well as heightened military conflict. In the greater Horn of Africa, a mix of pressures have brought forth the world's worst humanitarian crisis, taking place in Sudan.[1] Whilst the civil war has led to countless atrocities committed on both warring sides,[2] environmental disasters are a constant looming threat.[3]

In such regions, the need for trustworthy information from the ground is crucial for decision-making, at local, regional and international level. Yet, accessing information from the ground is difficult due to challenges related to connectivity and the operation of agencies on the ground. Where information is available, it is often fragmented and difficult to analyse.

To respond to this need for information, countless initiatives have been set-up to publish regular situation reports, focusing on different facets based on relevance for that entity. EEPA too, has been regularly publishing situation reports on the Horn of Africa since 2020, especially focusing on conflict-areas which may be underreported on.

However, to really represent the situation on the ground, the information that is collected for the reports need to be structured in a way that allows machine-actionability for extraction of insights, and interoperability with other relevant datasets to enable triangulation and

[1] https://www.un.org/en/spotlight-on-sudan/1000-days
[2] https://news.un.org/en/story/2025/09/1165784
[3] https://gain.nd.edu/our-work/country-index/

corroboration of events. The significance of this also lies in documenting events and crimes that take place, to fight impunity on war crimes.

A federated architecture for situation report information

EEPA, in collaboration with our partners, has been working on setting up a federated architecture that enables and supports:

1. The creation of datasets that conform to the FAIR-OLR principles.[4]
2. Interoperability between humanitarian datasets, to facilitate triangulation of situation report datasets, with datasets on for instance refugee protection needs or reporting of conflict-related sexual violence.
3. The findability of humanitarian datasets, whilst accessibility is only possible under strict access conditions decided by the data owners.
4. Querying across multiple datasets for easier extraction of insights (this is dependent on access conditions).

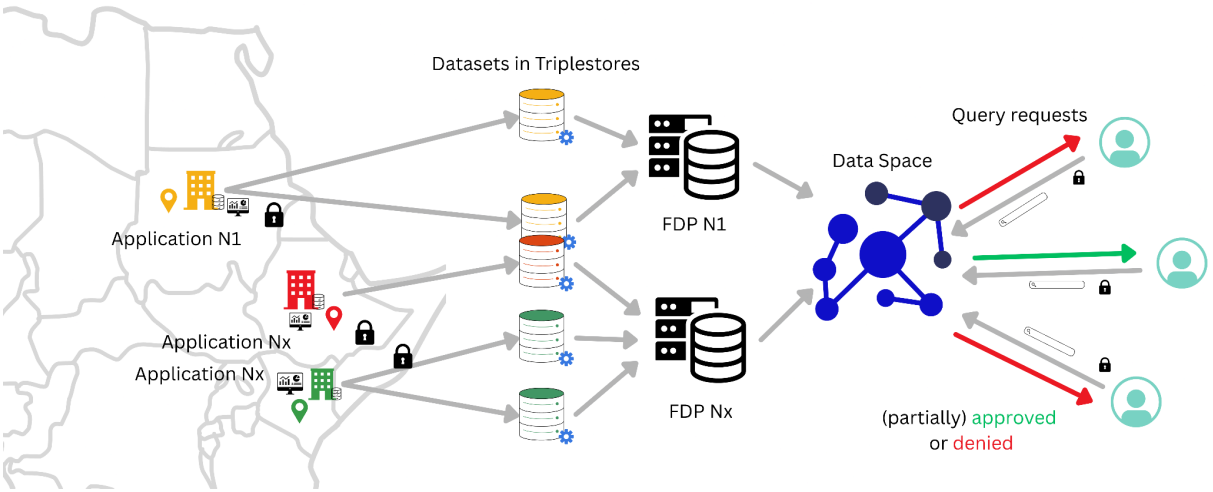

Figure 1. Federated architecture for the collection and storing of situation report information for analysis and interoperability across datasets.

Figure 1 demonstrates the overall federated architecture, in which data from the ground is collected and structured according to the shared Common Data Model, and then stored locally by data owners. The datasets are made visible on FAIR Data Points, which contain metadata about the datasets. The datasets on the FAIR Data Points, in turn, are visible and queryable in a shared data space, where users can request for access to information contained within these datasets.

FAIR by design reporting of situation report information

[4] FAIR-OLR stands for data being Findable, Accessible under well defined conditions, Interoperable and Reusable, whilst adhering to clear data Ownership, Localisation and Regulatory Compliance.

To facilitate the creation of structured datasets, conforming to the shared Common Data Model, an application has been developed that facilitates the inputting of information from sources from the ground. The application enables users to customise input-forms for their organisations and reporting needs. This data is then immediately stored in the correct format and linked to relevant vocabularies that enable interoperability with other datasets using the same vocabularies. This ensures that all situation report data is stored in clear datasets, and tagged with relevant metadata, including date, source, and location.

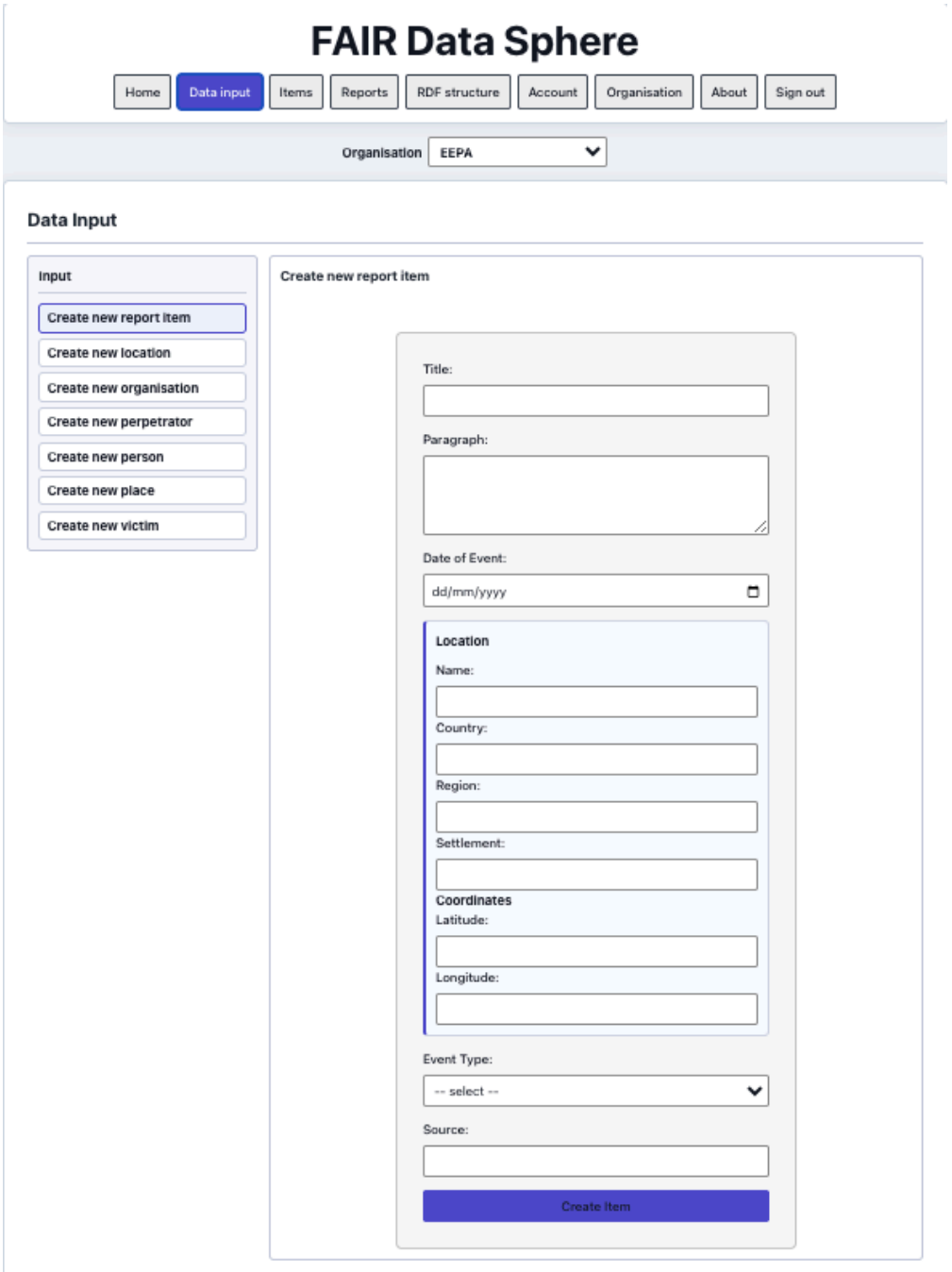

Figure 2. Data input page for storing information for situation reports in a

FAIR-compliant way.

The results from the project and work conducted to facilitate the creation of FAIR situation report datasets, has led to the formulation of the following recommendations:

Recommendations

For international policymakers:

- Mandate interoperable reporting requirements for cross-border humanitarian data systems. Include minimum standards for common data models, shared vocabularies, and machine-readable metadata as part of donor funding conditions for situation-reporting and crisis-information initiatives.
- Fund scalability and sustainability, not just prototypes. Provide multi-year support for federated architectures, FAIR Data Points, and the maintenance of ontologies/common models, including capacity building for local partners and long-term technical stewardship.
- Create incentives for corroboration and quality assurance. Support funding and standards for cross-source verification workflows (e.g., event-level linking, provenance tracking, and uncertainty/credibility tagging) to reduce fragmentation and improve the reliability of reported incidents.
- Strengthen evidence pathways for accountability. Back mechanisms that help convert structured incident data into defensible records (provenance, chain-of-custody where relevant, consistent identifiers, and crime-category mappings) to support investigations and reduce impunity.

For EU policymakers

- Require FAIR-OLR alignment as a condition for EU-supported crisis information systems.
- Support EU-to-global interoperability. Fund mapping efforts between EU-supported humanitarian datasets and widely used humanitarian schemas/ontologies so that Horn-of-Africa situation-report data can be triangulated with other datasets across borders.
- Support capacity building for local data owners. Provide training and resourcing for field contributors and local agencies to correctly input data, use linked vocabularies, and manage access permissions responsibly.

For NGOs

- Apply the FAIR-OLR principles on all datasets for better extraction of insights.
- Publish dataset-level metadata with clear access terms. Make datasets findable via indexes while clearly stating the access conditions and permitted use cases,

enabling other actors to request access appropriately.

- Adopt a standardized “event data” lifecycle. Ensure every report follows consistent procedures for event creation, source/provenance capture, geolocation handling, versioning, and linkage to other records, so the data remains usable for analytics and verification.
- Adopt relevant standards on data formats and metadata vocabularies to ensure interoperability with datasets in the wider sector.

Links:

The application is documented here: https://github.com/VODAN-Development

The application forms a production tool for the local repositories that form the Humanitarian Data Space (HDS). The HDS is available here: https://www.humanitariandataspace.com/

The HDS is supported by the Africa Health Data Space: https://aun.mu.edu.et/ahds/