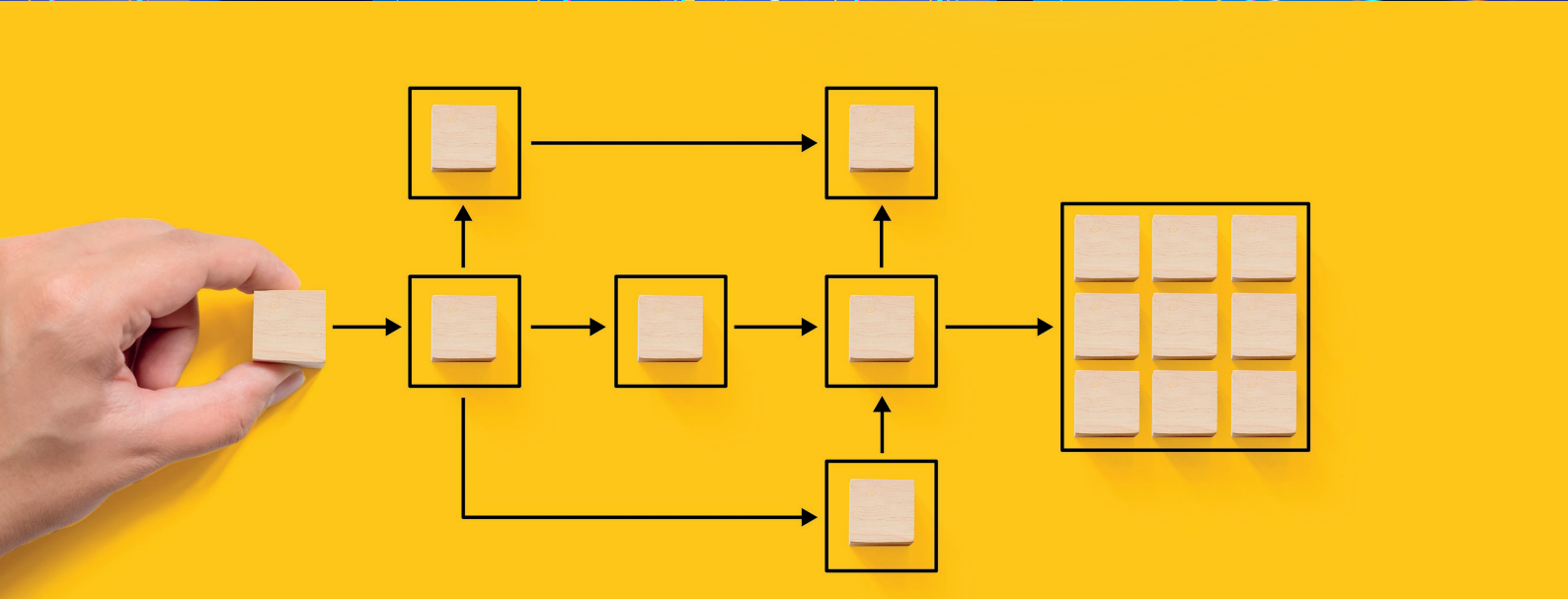# Implementing FAIR signposting to Eurac Research geospatial data catalogue

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Support action:

FAIR signposting and RO-Crate. During the 3 month support action, participants took part in three virtual workshops to implement FAIR Signposting and/or RO-Crate to improve the discovery and consumption of their content and/or metadata. Participants benefited from interacting with mentors representing FAIR Signposting and RO-Crate.

Keywords:

FAIR signposting, linkset document, spatial data

Summary:

With the aim to improve the machine actionability of their Environmental Data Platform, a team from Eurac Research implemented signposting on their catalogue of geospatial datasets using a linkset document.

Introduction

Eurac is a transdisciplinary research centre in Bolzano, with multiple institutes for domains such as Earth Observation, Regional Development, or Renewable Energy. Within Eurac, we work with spatial datasets as a Senior Researcher at the Center for Climate Change and Transformation (Piero) and a Technician at the Center for Sensing Solutions (Simone). To manage these datasets, we have the Environmental Data Platform (edp-portal.eurac.edu). This is a Spatial Data Infrastructure, managed by the Center for Sensing solutions, to collect and host spatial datasets from Eurac research and allow researchers and project partners to manage, process and share the data.

We are part of an informal FAIR team, with other people across Eurac institutes and the Research Support Office. We did a FAIR self-assessment of the institute last year, trying to evaluate whether we are compliant with each of the principles. Even if we had already spent a year reading about FAIR, the support action has really made a difference for all of us. We have learned a lot and now we are much clearer on what FAIRness means, especially for machines. We were always thinking in terms of the HTML page, for humans, but had a less concrete idea of what had to be done for machines and we never really got to investigate that. There are always many things to do and that never got top priority, until the support action brought the chance to prioritise it.

Even though we were willing to implement both of the methods of the support action, FAIR Signposting and RO-Crate, to improve the machine actionability of our platform, we decided to focus our effort during the support action in enabling Signposting on our catalogue of geospatial datasets, i.e from the landing page add signposting links to all connected objects and resources and try signposting from some component back to the landing page.

Approach taken:

We found signposting easy to implement on our platform. The first step was to identify the page that we were going to use as the landing page for Signposting. Which one to use was not immediately obvious for us as we have different components hosting data and metadata, each with their own landing pages, but we came to the conclusion that the landing page for the signposting implementation should be the page the dataset DOI points to. We then added a link to a linkset document in this landing page header and exposed the document as a button there too. To add the linkset, we simply intercepted the requests of landing pages in the server, and added the information that we could gather about the object itself and related entities into the linkset document. A new endpoint ./linkset/<UID> was opened in the server API for accessing the document. In order to acquire all possible information, the server fetches external metadata document of the object itself (e.g. from Datacite) and
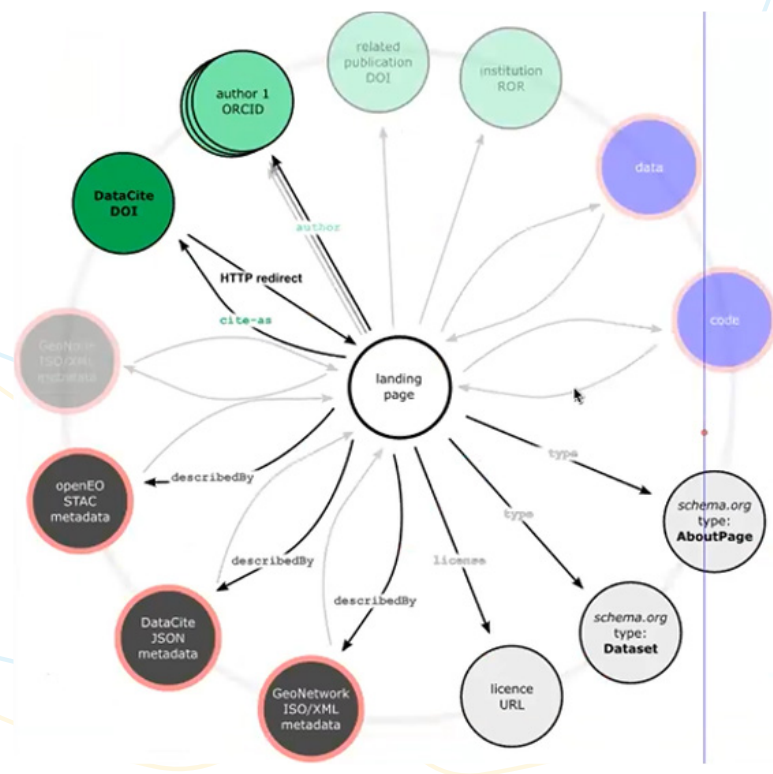

Figure 1. Diagram of the deployment

parses all useful information for the signposting before returning the response (e.g. authors, institutions involved).

Simone's team, which is managing the data infrastructure, are also participating in the FAIR Assessment Challenge. We were in continuous dialogue and shared our discoveries. The signposting solutions that we learned in this support action, helped them increase the FAIRness score.

The visual representations of signposting shown during the support action presentations were very useful. They had the links to and from the landing page and then those links also had other nodes greyed out.

Challenges encountered and addressed:

During the support action, signposting was presented as a way to lower the barriers and as straightforward to both understand and implement, and so it was. We didn't encounter many challenges. We just had some confusion regarding whether and when to use linkset documents instead of HTTP header links, and other small implementation details. And perhaps also some duplicate or not duplicate dilemmas, given that other existing standards allow for machine-to-machine metadata exposure (e.g. Dublin Core links in the HTML or JSON-LD schemas).

Before the start of the support action, the role of the landing page in signposting was not completely clear to us, as we have many different components, each with its own landing page. There is the landing page of the component which gives the data, then there is another server with another platform for the metadata catalogue and there is another landing page there, and then we have our own crafted landing page. Initially it was confusing what needed to be exposed and what could be left out. We were unsure whether we needed to select one and put it at the centre of the FAIR digital object network of links. After the introduction to signposting in the support action, it was clear to us that it is not an unusual situation to have all these links to different things and that we don't need to expose everything. We just need to identify a landing page and select the links we want to expose.

Impact:

The support action has helped us change our mindset towards FAIR Digital Objects. Signposting is already live in our installations, and we have already put RO-Crate metadata files as a requirement to project partners when providing datasets to be stored in our infrastructure. The support action has sped up what normally would have been a slow, casual progress.

From the technical point of view, implementing the signposting inside the portal helped me, Simone, to understand how to make data FAIR. Although we already had a procedure to compile the metadata and share it online, this action has helped us refine it and make it more pragmatic. I knew the theory, but this has helped me understand its usefulness not only for machine-to-machine interaction, but also for humans. Now looking at the metadata, I can detect quite clearly what is missing in the structure of compiling the metadata. Beyond the specific methods, this action has helped us know what are the logical entities that need to be connected.

We would like to give a talk to others involved in FAIR data topics in our organisation on what we have learned, showing what signposting links we are still missing after the initial implementation and make a roadmap to implement them.

Even if we put our focus on FAIR signposting, the support action has helped us make a big step forward on the understanding of RO-Crates, and we will continue to use our platform to trial the implementation of signposting and RO-Crate support.

We expect that getting a high FAIR score in existing assessment tools (e.g. F-UJI) will underpin the trust that we get as a research institution from local authorities and international partners. Being a Trusted Repository (maybe

even certified) will also have a positive effect in the ability to get European projects funded and, therefore, on the feasibility of doing good research at Eurac.

Key message:

We would recommend going for signposting, as this is really FAIRness for machines in action, and greatly improves the digital transparency and quality of your institution. Despite the simplicity of FAIR signposting, a proper analysis of the state of things and a design of the implementation is needed as architectures are complex. For us, drawing our own signposting nodes and arrows diagram was useful.