

Flanders Research Information Space: an indispensable regional CRIS system to efficiently monitor progress in open science

Abstract

In 2019, the Flemish government launched an ambitious Open Science policy and committed to annual investments to make publicly funded research data openly accessible according to the principle *'as open as possible as closed as necessary'*, in line with the European Open Science Cloud (EOSC). The Flemish Department of Economy, Science, and Innovation (EWI) set up the Flemish Open Science Board (FOSB) in December 2019 in which the research institutions themselves take the lead to develop a roadmap for the implementation of an Open Science policy in Flanders (Flemish government Note, VR 2019 2012 DOC.1265/1BIS). Key performance indicators were established around ORCID, open access, data management planning, open data and FAIR data. The progress in these KPIs was to be measured and monitored via *Flanders Research Information Space* (FRIS), the research portal of the Flemish government (www.researchportal.be).

The FRIS-portal is a regional current research information system (CRIS) and a research discovery platform governed by the Department Economy, Sciences and Innovation (EWI) of the Flemish government. The platform allows metadata of publicly funded research data (e.g. researchers, research institutions, publicly funded projects and publications) to be retrievable. More than 60 research performing and research funding organisations (e.g. universities, higher education colleges, strategic research centres) supply metadata to the portal, legally governed by a variety of decrees and covenants.

As the metadata are used to monitor the Flemish policy on science and innovation, the accuracy of the data is of great significance. The FRIS portal operates with a knowledge model with data objects related to research output (researchers, projects, publications etc.) that are interlinked and to which metadata, information models and classifications are attached. A part of the research performing and funding institutions deliver metadata on research information (persons, organizations, projects, publications, etc.) in real-time directly to FRIS via CERIF-XML (Common European Research Information Format)¹ via their institutional repositories and research infrastructures. In that sense, information about research data can be linked and enriched with information about related projects, publications etc.

To ensure a standardised and uniform delivery of the data, the diverse stakeholders use the same underlying information models and classifications, which are developed by ECOOM-Hasselt, strategic partner of FRIS, in consultation with the data providers.

1

Semantically defined metadata standards are developed and implemented in mutual agreement. This is unique in Europe and makes FRIS eminently suitable for monitoring the open science KPIs.

To monitor the Flemish Open Science policy, five key performance indicators (KPIs) were outlined in the Flemish government's KPI Note (VR 2020 0412 MED.0379/1): ORCID, Open Access, Data Management governance, Open Data, and FAIR data. This abstract focuses on the monitoring of the open data and FAIR data KPIs via FRIS.

The open data indicator states that research data underlying scientific publications that are funded with Flemish public means should become openly available. The KPI on FAIR data requires research data that underpin scientific publications (resulting from Flemish public funding) to become more FAIR: Findable, Accessible, Interoperable, and Reusable (Wilkinson et al., 2016). To be able to reliably monitor the KPIs on open and FAIR data via the FRIS-portal, a semantically harmonised application profile for the delivery of metadata on research data sets was developed. The DataCite metadata schema was adopted as the point of entry and was adapted to the Flemish context by incorporating additional metadata properties to measure and monitor the degree of FAIRness and openness of datasets through FRIS.

In order to apply metrics for the open data indicator, stakeholders agreed to provide information on the access rights and licensing of datasets on a mandatory basis. Further, additional metadata elements were added on top of the DataCite scheme: 'Link to publication', 'Link to project' & 'Legitimate opt-out'. These metadata elements allow to link the datasets to other research output such as publications and projects, which is necessary to be able to filter on Flemish funded projects in order to be able to monitor the Flemish Open Science KPIs. The property 'Legitimate opt-out' permits data providers to explain why the data are not open.

Finally, the Flemish coalition agreement on Open Science states that a FAIR data label has to be assigned to each dataset reflecting its degree of FAIRness (Flemish government Note, VR 2019 2012 DOC.1265/1BIS). To this end, an additional metadata property 'FAIR Data Label' was added to the application profile in anticipation of a European FAIR metric.

Conclusion

CRIS systems with semantically harmonised information models are crucial for monitoring open science KPIs. In order to use reliable metrics for the Open Science indicators (e.g. Open data label, FAIR data label) it is of great importance that the FRIS data providers agree on semantically harmonized metadata elements.

References

Flemish Government. (2019a). Nota aan de Vlaamse regering. Open Science beleid voor Vlaanderen en de oprichting van de Flemish Open Science Board (FOSB). Retrieved from https://www.ewi-vlaanderen.be/sites/default/files/bestanden/nota_aan_de_vlaamse_regering_-_open_science_beleid_voor_vlaanderen_en_de_oprichting_van_de_flemish_open_science_board_fosb.pdf

Flemish Government. (2020). Nota aan de Vlaamse regering. Open Science beleid in Vlaanderen: roadmap, KPI's en meerjarenplan. Retrieved from <https://www.ewi-vlaanderen.be/sites/default/files/bestanden/5fc5f514b328e9000c0007f7.pdf>

DataCite Metadata Schema 4.3 [Internet]. 2019. Available from: <https://schema.datacite.org/> [Accessed: 2020-12-22].

Wilkinson, M. D., Dumontier, M., Aalbersberg, I. J., Appleton, G., Axton, M., Baak, A., ... & Mons, B. (2016). The FAIR Guiding Principles for scientific data management and stewardship. *Scientific data*, 3(1), 1-9