On interoperability of research information based on CERIF in the Republic of Moldova

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Abstract

The paper is dedicated to the interoperability of research information based on the Common European Research Information Format (CERIF) and its realization in the Republic of Moldova by adapting it to local needs and realities.

Keywords: interoperability, research information, CERIF, CRIS.

1 Introduction

At present, the way the scientific research is organized and conducted, essential changes based on cooperation and new ways of knowledge dissemination using digital technologies and new collaborative tools are imposed. The new approach is driven by the exponential growth of information and the availability of digital technologies, driven by the globalization of the scientific community and by the growing demand from society to find solutions to today's challenges. Research, Development and Innovation (RDI) decision-makers and society as a whole need access to accurate, comprehensive, credible and visible information on scientific resources, activities and results. In these conditions, re-usability and interoperability of data became one of the main problems in organizing and monitoring of research activities, and research results dissemination.

The need for a standard of interoperability of data related to research process comes from the fact that at least a big part of research is

done based on public funds and the society would like to know how efficiently these funds are spent. So there is a need for countries, research organisations and decision bodies, implied in exchanging information related to research, to have a common language of reference and the same understanding of notions.

The Common European Research Information Format (CERIF) comes to help to solve this problem.

2   CERIF

CERIF is developed by an international not-for-profit association, euroCRIS, with the goal to promote cooperation within and share knowledge among the research information community and interoperability of Current Research Information Systems (CRIS) through CERIF [1].

CERIF includes the concept (conceptual level), description (logical level) and formalization (Physical Level) about research entities and their relationships.

Basic entities of the CERIF are: project, person and organisation unit. All other entities that appear in CERIF are related to them, for example, result publication, result product, equipment, funding, event, country, etc (see Fig.1 [1]).

Some of the advantages of CERIF are: a CRIS can be implemented using a subset or superset of the full CERIF model; its architecture is neutral; it supports relational, object-oriented or information retrieval data model.

Today CERIF is used as a model for implementation of a standalone CRIS (but interoperation ready), as a model to define the wrapper around a legacy non-CERIF CRIS to allow homogeneous access to heterogeneous systems and as a definition of a data exchange format to create a common data warehouse from several CRISes.

In order to operate with the same terms EuroCRIS developed CERIF Ontology Specification and Semantic Vocabulary. CERIF Ontology Specification provides basic concepts and properties for describing research information as semantic data, and CERIF Semantic Vo-
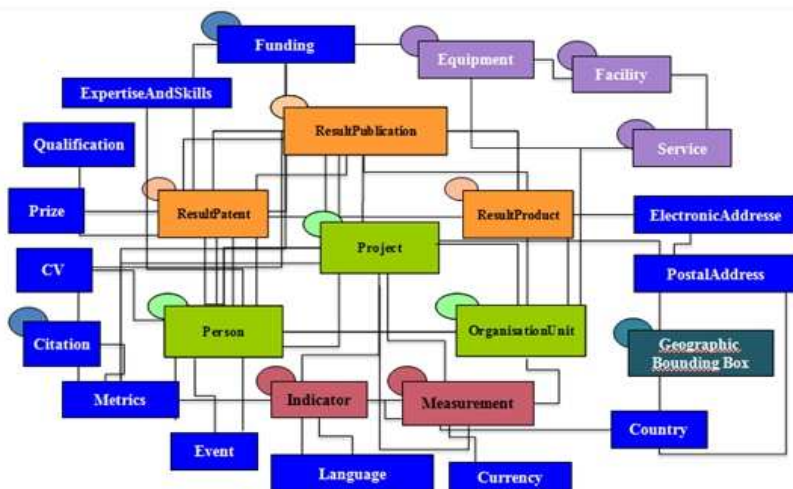
Figure 1. CERIF entities

cabulary provides general relationship and type terms for the research domain.

Today such giants of bibliographic data management systems as Clarivate Analytics (former Thomson Reuters), OpenAIRE, Elsevier developed tools based on CERIF to facilitate data exchange with their software systems.

3   MD-CERIF

There are several information systems in the Republic of Moldova with the goal to help researchers and the society to deal with processes of organizing, conducting, monitoring research activities and dissemination of research results. Some of them are: National Bibliometric Instrument (https://ibn.idsi.md/) [2], EXPERT on-line (https://expert.idsi.md/) [3], Research and Development Indicators of the Republic of Moldova (http://indicator.idsi.md/)[4]) – developed

by Information Society Development Institute (ISDI), as well as institutional repositories based on DSpace platform [5] – developed and maintained by many Moldovan universities and some research organisations [6].

In order to achieve interoperability among these and other national and international systems, IDSI proposed a compatible standard to be used in the Republic of Moldova, called MD-CERIF.

MD-CERIF is based on a subset of entities of CERIF data model and the corresponding relations between them (Fig. 2).
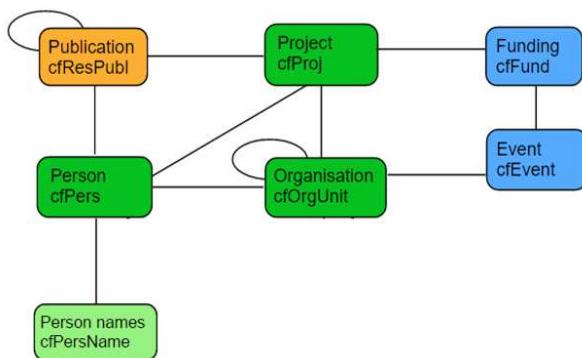

Figure 2. MD-CERIF data model based on a subset of CERIF

At the first stage, it was decided to limit to the following research entities and their relationships: Person, Project, Organisation Unit (base or first level entities), Publication (result entity), Funding, Event (second level entities).

MD-CERIF data model contains description of every entity: attribute, applied vocabulary, cardinality, format and related entity.

Semantic layer is very important for MD-CERIF data model. In order to use the same terms and nomenclatures, and to enhance their comprehension, IDSI adapted CERIF semantic vocabulary (v. 1.3) to the needs and realities of Moldovan RDI system. Thus, 28 new classification terms were included, and translations in Romanian language

for all terms in the MD-CERIF semantic vocabulary were added.

A corresponding detailed documentation on MD-CERIF is presented on the web page of the SCIFORM project conducted by IDSI during 2015-2018 [7].

4 Conclusion

In this paper a short description of CERIF standard is presented together with its adaptation (MD-CERIF standard) to the national needs and realities.

MD-CERIF with adapted semantic vocabulary are proposed to be used in the Republic of Moldova in order to contribute to the interoperability of information related to scientific research within academia in Moldova and abroad.

The data model described by MD-CERIF will be permanently updated and improved. The Project team will continue to pursue the CERIF standard as well as some good practices examples such as OpenAIRE to harmonize MD-CERIF.

The proposed standard MD-CERIF and its associated documents (semantic vocabularies, etc) may contribute to the fortification of the e-Infrastructure of RDI sphere in the Republic of Moldova in accordance with the needs specified in [8]

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