

## SUB-PROJECT 5

### **Experimental development of an ontology specific to the Romanian language and testing the effects of searches based on the Semantic Web at the level of online social networks (Semantic Media)**

Finally, the fifth technology developed within the project, aimed at using technologies based on signature structures in the search and interpretation of search results in online social networks (based on the meaning and conceptualization of terms, rather than on the strictly literary, technical identification of the words used in search) started by identifying and analyzing the role of ontologies in the semantic web and analyzing the efficiency of the use areas of various ontological languages in the semantic web, namely the identification of existing ontologies and the development of a Guide of good practices for creating the ontology specific to the Romanian language at the level of online social networks. The activities continued through the experimental testing of searches based on the semantic web at the level of the online social network after the development of the ontology specific to the Romanian language and the realization of qualitative research to determine the functionality and utility problems of the ontology at the level of the online social network. During the reporting period, the implementation of the Semantic Media mode and its integration into the FutureWeb common interface was completed and the structuring of the research and technological services offer and the presentation in the ERRIS platform with the study of the integration of the reality services was completed augmented in an online social networks.

The development of the ontology specific to the Roman language was carried out both visually with the help of the free editor for ontologies Protégé 5.5.0, and by directly editing the description made with the help of Turtle syntax, using the generic editor Visual Studio Code 1.51. Apache Jena Fuseki 2 was also used for SPARQL. The verification of the correctness of the ontology was carried out using the Hermit 1.4 inference motor. As an area of future research, the developed ontology will allow the analysis of the emotions expressed by users in the

messages posted on social networks. The testing of the ontology prototype was carried out both through a qualitative evaluation and through a quantitative evaluation, in order to establish how the integration of semantics at the level of the FutureWeb social network impacts the users.

The developed prototype envisages the modeling of the specialized concepts relevant to the futureweb social network and its users. Thus, it was resorted to identifying the relevant terms and to elaborating a database to be subsequently included in the modeling program of the ontology.

In the elaboration of the ontology for the FutureWeb platform, a complete staging was used in the creation of the ontology, namely:

- Establishing the scope and objectives of ontology
- Analysis of existing ontologies
- Compiling a list of terms that will appear in the ontology
- Defining classes and class hierarchy
- Define class properties
- Define the types of properties
- Create instances

Descriptions associated with the concepts in the ontology of the CSO were extracted using the SPARQL language, using an application developed using the C# language, with the help of the Microsoft .NET Core platform and the dotNetRDF library. Previously the ontology was loaded on a severe Apache Fuseki that allows SPARQL queries.

By integrating with the FutureWeb platform, it allows semantic searches, being identified both the terms used in search, as well as equivalent terms, defined in ontology. Rthe result is found in the database generated by semantic processing partners, then a message with a preconfigured link for the search will be displayed under the search field.

## Search

Our semantic interpreter found: [artificial intelligence](#)

[▶ Advanced search settings](#)

The implementation of the signature technology elements in the FutureWeb platform was carried out through two ways, namely, the construction of a specific HumHub module (the support through which the project platform was developed) and the integration of a suite of jQuery scripts that make it possible to communicate with the API the Microsoft .NET Core platform and the dotNetRDF library. Thus, the main IndexController controller has been updated to include the data of two methods specific to the semantic API.