Development of the TATM metadata editor for the documentation of spatial data from the Hellenic area according to INSPIRE directive

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Abstract

The purpose of this work is the development of a new editor for creating, processing and updating valid metadata information for the geospatial data of the Greek area according to the INSPIRE directive of the European Union. The TATM metadata editor was developed within QGIS open source GIS using mainly Python programming language. Compared to existing metadata editors that were created under the INSPIRE Community Guidelines, the interface of this application incorporates a set of features designed to facilitate the Greek users to create easily valid metadata information. These features are described in this paper as well as technical details for its development.

Keywords: metadata, editor, INSPIRE, Greece, spatial data, open source.

1   Introduction

Metadata or data about data, is information that describe a resource. Standardized metadata information according to internationally accepted standards provide organizations to document and distribute their spatial data to Spatial Data Infrastructures (SDIs) through internet, enabling their potential users to find and use them (Sarafidis, 2008).

The INSPIRE is a European Union spatial data infrastructure for the sharing of spatial information among public sector organizations across Europe (INSPIRE, 2007)

In Greece in 2010 the Law 3882/2010 for the National Geospatial Information Infrastructure (NaGI2) was adopted as well as the obligation to create metadata information from any organization that owns or produces geospatial data and / or services.

The main available online application for metadata creation comes from the INSPIRE geoportal and is called INSPIRE metadata editor. Although this editor offers a user interface in Greek language, it is difficult for the users to understand the NSPIRE terminology included. Additionally, the Inspire Metadata editor as well as other metadata editors, are generic and due to this, do not focus on each peculiarity of the geospatial data for every country.

The present application creates standardized metadata information according to the technical guidelines of the INSPIRE directive, and overcomes weaknesses of the other INSPIRE compliant metadata editors.

2   The INSPIRE Metadata Editor and other metadata editors compliant with INSPIRE directive.

The INSPIRE Metadata Editor is the official web application for metadata creation that is compliant with the INSPIRE Implementing Rules as approved by the INSPIRE Regulatory Committee, and is available online from INSPIRE geoportal.

Apart from Inspire Metadata Editor, there are other editors developed for metadata creation according to INSPIRE Directive for documenting spatial data like GoeNetwork, CatMDEdit, European Open Source Metadata Editor (EUOSME), the Greek Inspire Metadata Editor (GIMED) etc. (OSGeo, 2018):

3   Difficulties and problems using metadata editors

Despite the fact that Inspire metadata editor as well as the other metadata editors, offer a friendly graphical user interface, the users have problems in understanding the scientific INSPIRE metadata terminology used by these applications. For example the terms "Resource" that refers to spatial data or the "Responsible Party" that refers to responsible organization, are quite confusing (Sarafidis, 2017).

Additionally, the metadata editors and tools mentioned are generic editors and due to this, there is no focus on the peculiarities of the geospatial data of every country of Europe.

4   The TATM Metadata Editor

The new application presented in this work is named TATM Metadata Editor and was developed in order to create valid metadata information according to INSPIRE guidelines optimized for the spatial datasets of the Greek area. The name TATM comes from the initial letters of the Greek name of the School of Rural and Surveying Engineering in Thessaloniki, Greece.

Initially, the project of TATM Metadata Editor started as a graduate thesis of one of the authors of this paper and developed further by the rest authors for research purposes.

The primary goal of the developers was the Editor to be built by the use of free software tools in a GIS environment. The QGIS open source software was found to be appropriate using the Python programming language (Zampoglou, 2016)

The editor at this stage of its development provides the ability to create metadata information compliant with INSPIRE directive for geospatial datasets of the Greek area (Fig. 1).

The TATM metadata editor is also an open source application and is available via GitHub development platform. The link to the editor is the following: https://github.com/FaidonZ/TATM_Metadata_editor

4.1 Improovements of TATM Metadata Editor

Except from the functions of the INSPIRE Metadata Editor and the other editors, TATM Metadata Editor presents the following improvements:

- Metadata information such as metadata for all national Greek organizations as well as for the spatial data are available in advance. (Fig. 3).
- Easy input of metadata information about the extent of the data. The automated methods of capturing the spatial data frame facilitate the process and minimize the chances of completing erroneous values (Fig. 4).
- More user friendly metadata terms is used. For example, instead of the term 'resource title', the term 'Geographic Information Title' is used, instead of the term 'Resource Locator' the term 'Geographical Data URL' etc.

4.2 Testing of TATM Metadata Editor

To verify the correctness and compatibility of the metadata information created by TATM metadata editor, the metadata files were inspected through INSPIRE Metadata Editor.

Further testing of the editor was applied by two surveying engineers they work in respective organizations in Thessaloniki, Greece: In the organization of the national public property and in the technical agency of the Municipality of Kalamaria.

5 Conclusions

The TATM metadata editor presented in this work is an approach to the solution of the problem that appear when creating standardized metadata information based on the technical guidelines of the INSPIRE directive on metadata. It was created using open source software and has a user-friendly interface and a set of new services compared to other metadata editors, as well as a more friendly to the end user metadata terminology in its graphic environment.

Future prospects of the TATM Metadata Editor are the application extension to document spatial dataset series and spatial data services. Another objective is to support metadata information in English language also.

References

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Figure 1.The user interface of the INSPIRE Metadata Editor in Greek language in "Identification Information" Tab. The reference to the spatial data to be documented is done by the translation of the term "resource" (the term "πόρου" in Greek flagged with a red square) which is unclear to the average user.
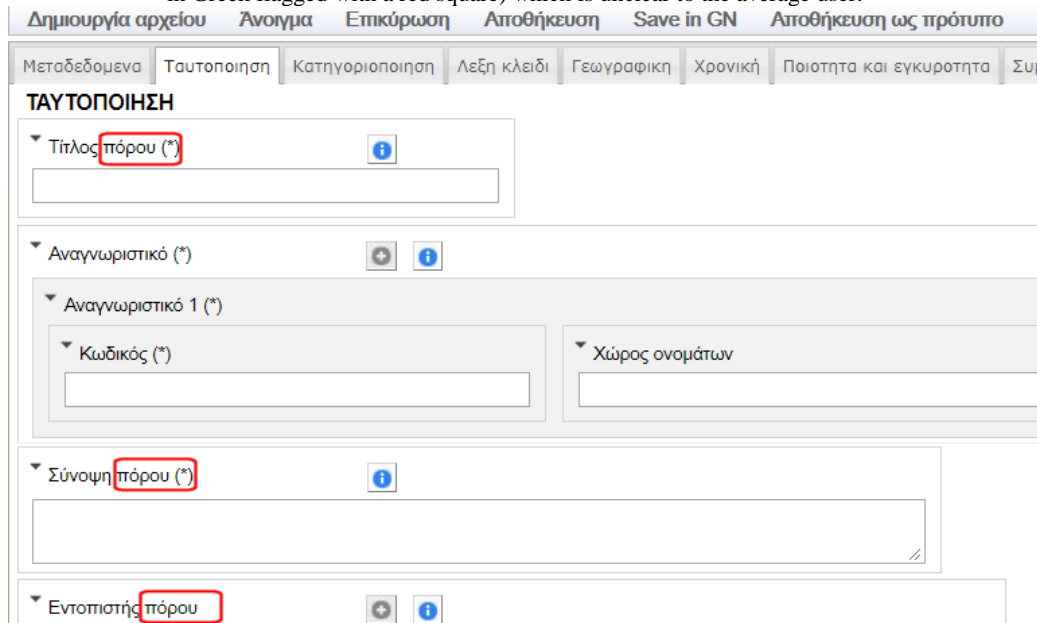

Figure 2.The user interface of the TATM Metadata Editor as it runs as plugin within QGIS software in "Identification Information" Tab. The reference to the spatial data to be documented is done by the term "gevgraphical data" (the term "γεωγραφικών δεδομένων" in Greek in the form flagged with a red square).
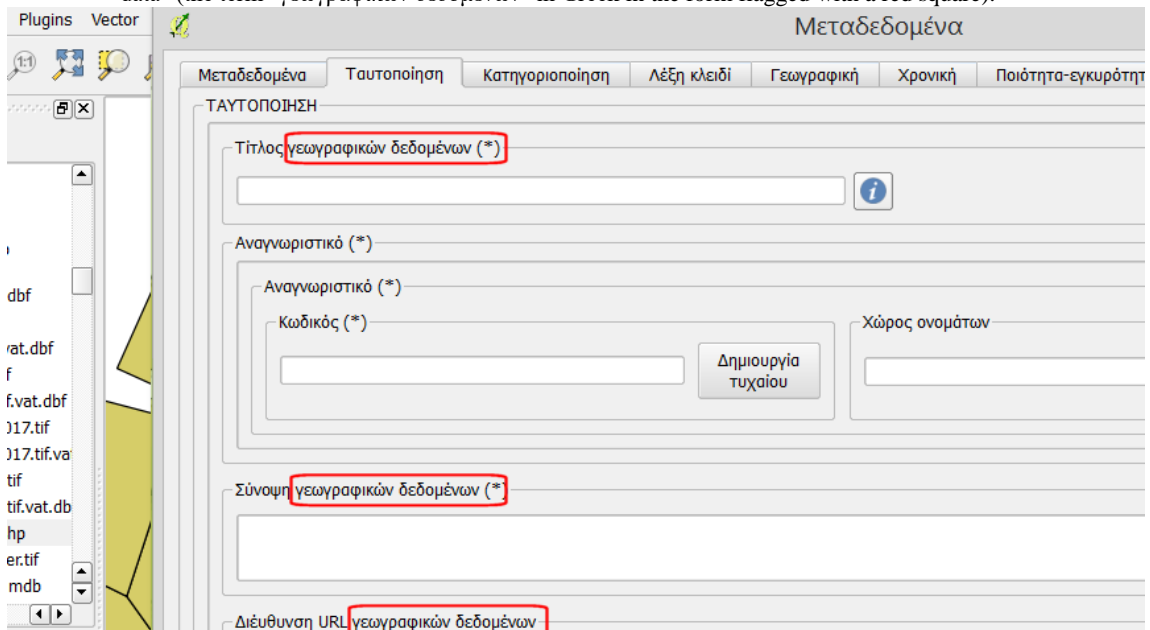
Figure 3. Selection of the responsible organization for the spatial data from a list according to the respective Ministry where the organization belongs as shown in the red square to the right. The metadata of the selected organization are available in advance and update automatically the related with the organization fields indicated by the red arrows.
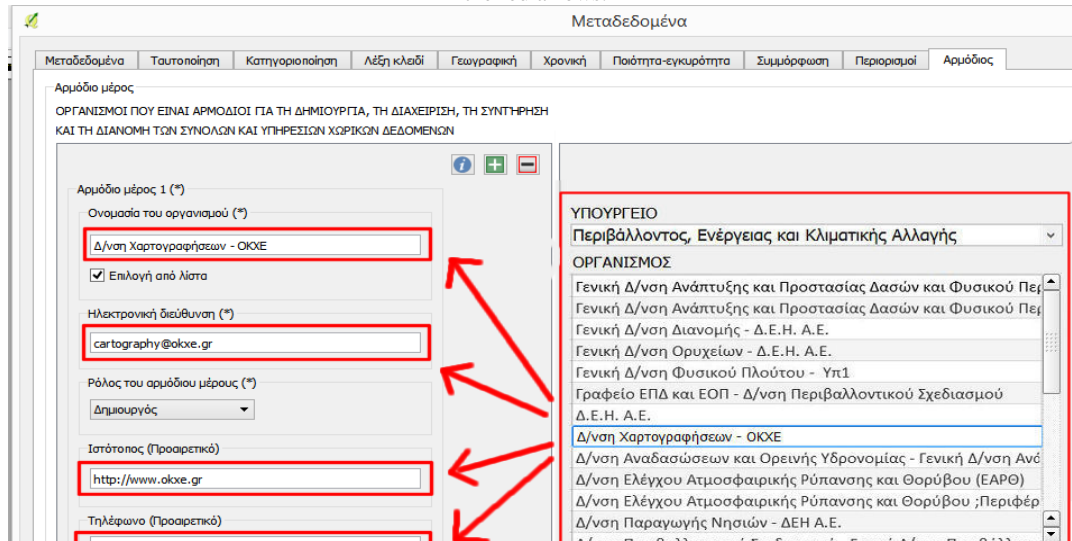

Figure 4.The interactive interface where the extent metadata information are entered. The user can enter the extent either manually by entering the bounding box on the map shown in form, or capture the bounding coordinates of the spatial data automatically by pressing the button flagged with a red square