



geo!DEA.ro



## ***GEodata Openness Initiative for Development and Economic Advancement in Romania***

*Joint Research Project under the Romanian-Swiss Research Programme*

*Project Number: IZERZO-142129*



PROGRAMUL DE COOPERARE ELVEȚIANO-ROMÂN  
SWISS-ROMANIAN COOPERATION PROGRAMME

## **Geodatabase data model**

### **Main Authors**

Nadia Panchaud and Ionuț Iosifescu – ETH Zurich, Switzerland

Codrina Ilie – Technical University of Civil Engineering Bucharest, Romania

**Issue / Revision:** 1 / 0

**Date:** 31.10.2014

**IKG**

Institute of Cartography  
and Geoinformation

**ETH**

Eidgenössische Technische Hochschule Zürich  
Swiss Federal Institute of Technology Zurich



Universitatea Tehnică  
de Construcții București  
Centrul de Cercetare  
Ingineria Apelor Subterane



*This page is intentionally left blank.*

<b>GEOIDEA.RO Report</b>		
<b>GRANT AGREEMENT NR:</b>  IZERZO-142129	<b>SUBJECT:</b>  Geodatabase data model	<b>PROJECT COORDINATOR:</b>  ETH Zurich
<b>ISSUE / REVISION:</b> 1 / 0	<b>INTERNAL REFERENCE :</b> geoidea_deliverable_13	
<b>ABSTRACT:</b>		
<p>The aim of the Geodatabase data model document is to describe and explain an optimal conceptual structure for the content of the spatial database that provides the GEOIDEA.RO geoportal with datasets. It describes the different themes that an open geoportal should be able to offer in order to be functional and covering most general aspect of available data. Additionally, it informs the potential availability and openness of those datasets for Romania.</p>		
<p>Project co-financed by a grant from Switzerland through the Swiss Contribution to the enlarged European Union. Responsibility for the content of this report resides in the author or organisation that prepared it.</p>		
<p><b>MAIN AUTHORS:</b> NADIA PANCHAUD, IONUȚ IOSIFESCU, CODRINA ILIE</p> <p><b>COPYRIGHT:</b> THIS REPORT IS LICENSED UNDER THE CREATIVE COMMONS ATTRIBUTION-SHAREALIKE 4.0 INTERNATIONAL LICENSE (CC BY-SA 4.0)</p>		

*This page is intentionally left blank.*

## TABLE OF CONTENTS

<b>1. INTRODUCTION .....</b>	<b>1</b>
1.1 Purpose .....	1
1.2 Abbreviations .....	1
1.2.1 General abbreviations.....	1
1.2.2 Acronyms of institutions.....	1
<b>2. GEODATABASE DATA MODEL .....</b>	<b>3</b>
2.1 Methodology.....	3
2.2 Geodatabase Conceptual Data Model .....	3
<b>3. REFERENCES .....</b>	<b>4</b>

*This page is intentionally left blank.*

## 1. INTRODUCTION

This document describes the conceptual data model for the spatial database belonging to the architecture of the geoportal of the GEOIDEA.RO project.

### 1.1 Purpose

The overall purpose of this deliverable is two-fold: on one side, to provide a conceptual guidance for the implementation of a common data model in geospatial database, and on the other side to create an overview of all the common geospatial datasets that are or will become available under an open license.

Due to the unavailability so far of a critical mass of open geospatial data in Romania, that would allow an appropriate modelling, the conceptual guidance will be strongly referred to the implementation guidance of the INSPIRE directive, to which open Romanian datasets will very probably comply. Therefore, the main focus of this deliverable will be to create an overview of the open datasets to be expected and of the administrations responsible for providing these datasets. Furthermore, for an additional but related goal, we present from the opinion of the project, the prospects for the availability of the open Romanian datasets.

### 1.2 Abbreviations

#### 1.2.1 General abbreviations

INSPIRE Infrastructure for Spatial Information in the European Community

#### 1.2.2 Acronyms of institutions

	<b>Romanian</b>	<b>English</b>
AACR	Autoritatea Aeronautică Civilă Română	Romanian Civil Aeronautical Authority
AFDJ	Administrația Fluvială a Dunării de Jos	River Administration of The Lower Danube
ANAR	Administrația Națională Apele Române	Romania National Water Administration
ANCP	Agenția Națională de Cadastru și Publicitate Imobiliară	National Agency for Cadastre and Land Registration
ANPM	Agenția Națională pentru Protecția Mediului	National Agency for Environmental Protection
ANRM	Agenția Națională pentru Resurse Minerale	National Agency for Mineral Resources
APIA	Agenției de Plăți și Intervenție pentru Agricultură	Agency for Payment in Agriculture
CarpatCLIM	Clima Regiunii Carpatice	Climate of the Carpathian Region Project
CFR	Căile Ferate Române	National Company of Railway Carrier

DDNIRD	Institutul Național de Cercetare - Dezvoltare Delta Dunării	Danube Delta National Institute for Research and Development
DTM	Direcția Topografică Militară	Military Topographic Directorate
GEOECOMAR	Institutul Național de Cercetare-Dezvoltare pentru Geologie și Geoecologie Marină	National Research and Development Institute for Marine Geology and Geoecology
ICAS	Institutul de Cercetări și Amenajări Silvice	Forest Research and Management Institute
ICPA	Institutul de Cercetari pentru Pedologie și Agrochimie	National Research and Development Institute for Soil Science Agro-Chemistry and Environment
IGAR	Institutul de Geografie - Academia Română	Institute of Geography - Romanian Academy
IGR	Institutul Geologic al României	Geological Institute of Romania
INS	Institutul Național de Statistică	National Statistical Institute
MDRAP	Ministerul Dezvoltării Regionale și Administrației Publice	Ministry of Regional Development and Public Administration
MECC	Ministerul Mediului și Schimbărilor Climatice	Ministry of Environment and Climatic Changes
Meteo România	Administrația Națională de Meteorologie	National Meteorological Administration
ROSA	Agenția Spațială Română	Romanian Space Agency



## 2. GEODATABASE DATA MODEL

### 2.1 Methodology

The development of the conceptual model for the database is based on the INSPIRE directive rather than on actual data, due to the scarcity of open Romanian datasets in sufficient mass and diversity so far. The INSPIRE (2007) model is very detailed and consists of a concrete data model and thus we use the thematic organization and vocabulary of the model in a simplified and generalized manner to build the geodatabase conceptual model. Although the relevant INSPIRE documents are not repeated in this document, both the Annex I (INSPIRE 2014, for the latest technical guidelines) and the Annex II & III (INSPIRE 2013, for the latest technical guidelines) of the Directive have been taken in account.

### 2.2 Geodatabase Conceptual Data Model

The conceptual model shows different themes pertaining to spatial datasets. The model is roughly organized along two axes: the priority level of the datasets (left: high priority; right: low priority) and their belonging to either Annex I or Annex II & III (top: Annex I; bottom: Annex II and III). The priority level was set to high if the thematic was pertaining to datasets of significant public interest or to basic datasets that are widely needed.

Additionally, the Romanian public institutions that hold datasets pertaining to one or more thematic are indicated next to it. Most of the themes are covered by at least one institution. There are a few exceptions to that: first, datasets regarding geophysical phenomenon are traditionally held by private companies that do the surveying, second, datasets in the field of hydrogeology, including groundwater are in the hand of other institutions, such as research institutions or projects at the European level and third, CarpatClim is also a European project.

Furthermore, the potential of openness for the different themes has been assessed and coded into five categories. Some datasets categories have a very low potential, mainly due to their sensitive (e.g. energy resources and orthoimagery) or private nature (e.g. building and addresses), or their specificity (e.g. cable transportation information). Datasets categories assigned a low potential usually have a good accuracy, but the experience showed that the institutions that produce or collect the data are not yet oriented toward the release of their data to the public in the near future. A medium potential has been attributed to datasets categories that belong to institutions that have demonstrated some interest toward opening their datasets. For example, the National Survey Agency (ANCPI) has not released the cadastral parcels dataset, but they build a searching and viewing service for it. The high potential and the already available datasets are the ones that have either been put into scrutiny by the INSPIRE directive or that have benefited from an external project help for their processing and releasing to the public. The attribution of the different potential to the themes has been realized based on the experience of working and collaborating with the institutions and thus it is a categorization that is still evolving.

The conceptual model does not specify the format of the data so far, but it is also recommended to follow the INSPIRE guidelines.

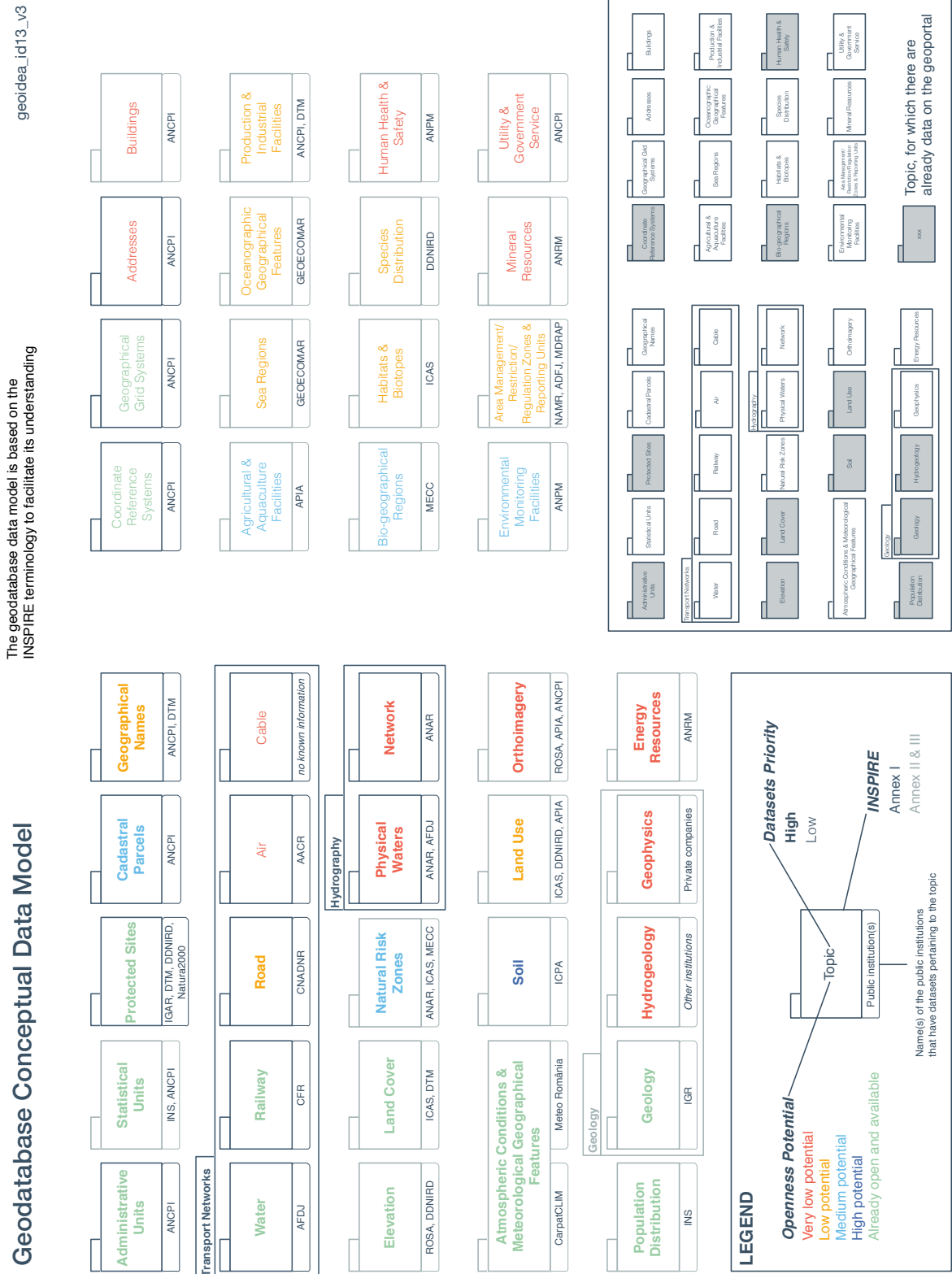


Figure 1. Geodatabase conceptual data model.

### 3. REFERENCES

INSPIRE (2007). Directive 2007/2/EC of the European Parliament and of the Council of 14 March 2007. <http://inspire.ec.europa.eu> (for the home page and) [http://eur-lex.europa.eu/legal-content/EN/ALL/;ELX\\_SESSIONID=G2t8J8INgjJM8nG8BbpRvCXZJynLJRWPIQgk5MNVGWTJJ8M2qkSI-410840848?uri=CELEX:32007L0002](http://eur-lex.europa.eu/legal-content/EN/ALL/;ELX_SESSIONID=G2t8J8INgjJM8nG8BbpRvCXZJynLJRWPIQgk5MNVGWTJJ8M2qkSI-410840848?uri=CELEX:32007L0002) (for the directive itself). Accessed 31.10.2014.

INSPIRE 2013. Technical Guidelines to Annex II & III. <http://inspire.ec.europa.eu/index.cfm/pageid/2>. Accessed 31.10.2014

INSPIRE 2014. Technical Guidelines to Annex I. <http://inspire.ec.europa.eu/index.cfm/pageid/2> . Accessed 31.10.2014.