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Contents

Page

Foreword

This document (CEN/TR 15449-4:2013) has been prepared by Technical Committee CEN/TC 287 “Geographic information”, the secretariat of which is held by BSI.

Attention is drawn to the possibility that some of the elements of this document may be the subject of patent rights. CEN [and/or CENELEC] shall not be held responsible for identifying any or all such patent rights.

CEN/TR 15449, *Geographic information - Spatial data infrastructures*, consists of the following parts:

— *Part 1: Reference model*

— *Part 2: Best practices*

— *Part 3: Data centric view*

— *Part 4: Service centric view*.

Introduction

Spatial Data Infrastructure (SDI) is a general term for the computerised environment for handling data that relates to a position on or near the surface of the earth. It may be defined in a range of ways, in different circumstances, from the local up to the global level.

This Technical Report focuses on the technical aspects of SDIs, thereby limiting the term SDI to mean an implementation neutral technological infrastructure for geospatial data and services, based upon standards and specifications. It does not consider an SDI as a carefully designed and dedicated information system; rather, it is viewed as a collaborative framework of disparate information systems that contain resources that stakeholders desire to share. The common denominator of SDI resources, which can be data or services, is their spatial nature. It is understood that the framework is in constant evolution, and that therefore the requirements for standards and specifications supporting SDI implementations evolve continuously.

SDIs are becoming more linked and integrated with systems developed in the context of e-Government. Important drivers for this evolution are the Digital Agenda for Europe, and related policies[1)]. By sharing emerging requirements at an early stage with the standardization bodies, users of SDIs can help influence the revision of existing or the conception of new standards. A number of recommendations are made within the Eye on Earth White Paper [1] which provides additional context and background to the service centric view.

The users of an SDI are considered to be those individuals or organisations that, in the context of their business processes, need to share and access geo-resources in a meaningful and sustainable way. Based on platform- and vendor-neutral standards and specifications, an SDI aims at assisting organisations and individuals in publishing, finding, delivering, and eventually, using geographic information and services over the internet across borders of information communities in a more cost-effective manner.

Existing material about SDIs abounds. The following reports have been taken into account in the preparation of this Technical Report:

- legal texts and guidelines produced in the context of INSPIRE;
- documents produced by ISO/TC 211 (and co-published by CEN);
- documents produced by the Open Geospatial Consortium (OGC), including the OpenGIS Reference Model (ORM) [2];
- the European Interoperability Framework and related documents;
- deliverables from European Union-funded projects (e.g. ORCHESTRA, GIGAS, SANY, ENVISION, ENVIROFI, EO2HEAVEN)[2)].

Considering the complexity of the subject and the need to capture and formalise different conceptual and modelling views, CEN/TR 15449 is comprised of multiple parts:

- *Part 1: Reference model*: This part provides a general context model for the other Parts, applying general IT architecture standards;
- *Part 2: Best Practice*: This part provides best practices guidance for implementing SDI, through the evaluation of the projects in the frame of the European Union funding programmes;

1) As described in Part 1 of this Technical Report.

2) A list of EU Funded projects is given in Part 2 of this Technical Report.

- *Part 3: Data centric view*: This part addresses concerns related to the data, which includes application schemas and metadata;

- *Part 4: Service centric view*: This current document.

Further parts may be created in the future.

1 Scope

This Technical Report describes a service-centric view of a Spatial Data Infrastructure (SDI).

The Service Centric view addresses the concepts of service specifications, the methodology for developing service specifications through the application of the relevant International Standards, and the content of such service specifications described from the perspective of the five Reference Model of Open Distributed Processing (RM-ODP) viewpoints:

- the enterprise viewpoint addresses service aspects from an organisational, business and user perspective;
- the computational viewpoint addresses service aspects from a system architect perspective;
- the information viewpoint addresses service aspects from a geospatial information expert perspective;
- the engineering viewpoint addresses service aspects from a system designer perspective;
- the technology viewpoint addresses service aspects from a system builder and implementer perspective.

The intended readership of this Technical Report is those people who are responsible for creating frameworks for SDI, experts contributing to INSPIRE experts in information and communication technologies and e-government that need to familiarise themselves with geographic information and SDI concepts, and standards developers and writers.

2 Normative references

Not applicable.

3 Terms and definitions

For the purposes of this document, the following terms and definitions apply.

3.1
architecture
fundamental organisation of a system embodied in its components, their relationship to each other and the environment, and the principles guiding its design and evolution

[SOURCE: IEEE 1471-2000].

3.2
architectural style
co-ordinated set of architectural constraints that restricts the roles/characteristics of architectural elements and the allowed relationships among those elements within an architecture that conforms to that style

[SOURCE: [3], modified]

3.3
conceptual formalism
set of modelling concepts used to describe a conceptual model

[SOURCE: EN ISO 19101:2005]

EXAMPLE UML meta model, EXPRESS meta model.

Note 1 to entry One conceptual formalism can be expressed in several conceptual schema languages.