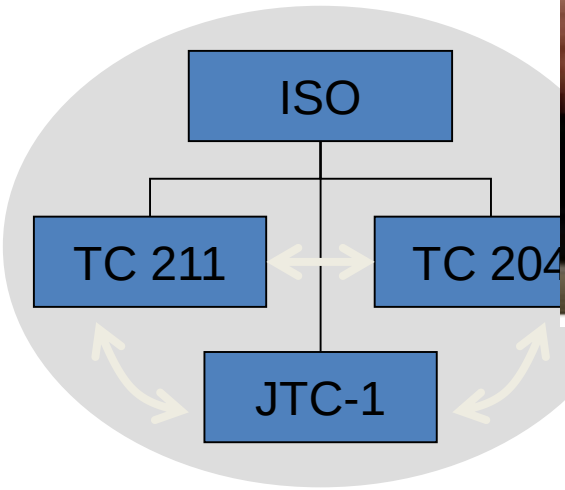
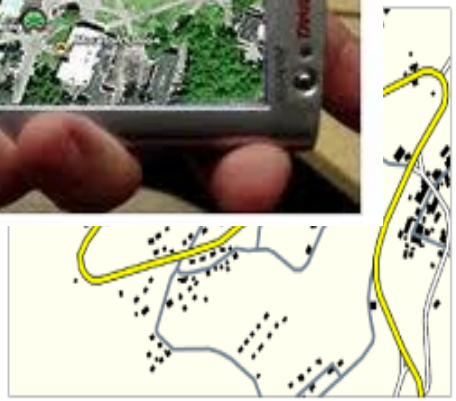
Aspetos Normativos da GeoInformação

ISO/TC 211
Geographic information/Geomatics





Sumário

- Características das Normas
- Classificação das normas
- A ISO
- Procedimento de Normalização
- ISO/TC211
- Esquema Espacial
- EPSG
- INSPIRE

Standards are the Foundation of Data Ecosystems

By Dr. Nadine Alameh

Location counts. There is no dearth of articles and talks around the 'new spatial revolution' or how 'location is at the heart of Industry 4.0.' The fact is that geospatial has finally moved up the value chain and is now being acknowledged as both an enabler *and* a differentiator in more domains than can fit in this article.

The growing recognition of 'geospatial' is largely due to location's unparalleled ability to function as the organizing principle that unites heterogeneous data. But while location allows us to *contextualize* diverse data, the ability to *seamlessly integrate* it for analysis requires standards.

More Prime Read

Geo4SDGs: Relevance to the Digital Age

Seamless data integration

Over time our community has evolved from being seen as geospatial pioneers to GIS technologists, and now, to experts at using location to integrate diverse data and create new value. One current example of this location-based value is how the geospatial industry mobilized to support responses to the COVID pandemic. Every dashboard, every quarantine/de-quarantine plan, and every contact-tracing app relies on location for data integration and contextualization, and every one of these applications is creating tremendous value for communities the world over.

htt

https://www.gwprime.geospatialworld.net/standards-are-the-foundation-of-data-ecosystems/

> Data integration sits at the heart of the decision-making, analysis, and prediction processes that help us make sense of, and exist in, our world. Because of humanity's newfound appetite for — even reliance on — data, we continue to invent new technologies that generate data about nearly every aspect of human activity

Standards and interoperability

The only way to create such a data ecosystem is for data providers and software developers to agree upon a set of standards that guarantee interoperability. Consensus-based open standards, when created by an engaged user community, ensure interoperability, enhance collaboration, and create a diverse, interoperable, decentralized software and data ecosystem that benefits all participants. Simultaneously, this means that the only requirement for participation in the ecosystem is compliance with its standards, making it as accessible for the small players as it does the large.

While it's impossible to create universal, perpetual standards, it *is* possible to design them to easily evolve in-step with technological progress, so that we don't have to start from scratch every few years. This is why the new OGC API family of standards are being developed in a fully modular and extensible fashion, and with

As Normas (standard)

O que é uma norma?

"regra de procedimento; principio; modelo; lei."

As boas normas são simples e únicas

Por exemplo as letras romanas são usadas há mais de 2000 anos e são capazes de se adaptar à maioria das línguas do mundo.

Por contraste os números romanos não tiveram tanto sucesso como norma e acabaram por desaparecer.

Características das Normas

Todos os dias contactamos com normas e quase não nos apercebemos do quanto estas contribuem para a simplificação ou facilitação de tarefas.

São exemplos:

Folha de papel A4, A3, etc

Formatos de ficheiros
*.DOC (MicrosofWord),
*.TIF, (Tagged Interchange Format, Adobe)
*.DXF (AutoCad), *.shp (Shape ESRI)

Perspectiva Linguística

(Em inglês o termo correspondente a **norma** é "**standard**", em Francês "**la norme**" e alemão "**die Norm**").

Uma organização internacional como a ISO (International Organization for Standardization) publica normas formais que têm algum nível de relevância no domínio das aplicações.

Estas normas são referidas por "**de-jure**" ("*pela lei*")

As empresas desenvolvem normas com o objectivo de melhor operar com os seus produtos.

Se o "standard" for bem aceite pela comunidade torna-se uma norma "**de-facto**" ("*na prática*")

Perspectiva Económica

O motivo para a industria investir na normalização é o retorno financeiro. Um estudo provou que os ganhos de normalização na industria alemã eram de 15 mil milhões de euros anuais (em 2000).

As razões para este ganhos são:

1. Normalização evita a opção de interfaces para um variado número de aplicações

2. Participação no processo de normalização coloca as empresas em vantagem relativamente às outras que não participam

3. As normas permitem as empresas terem vários fornecedores

4. As normas suportam o processo legislativo. Cerca de 20% das normas alemãs (DIN) são referenciadas por leis. Neste sentido as normas simplificam o processo legislativo

Perspectiva Nacional

Os princípios de normalização são:

Faz uma vez, faz certo, faz internacionalmente

No domínio das Tecnologias da Informação qualquer abordagem de âmbito nacional só poderá ser vista como referência de uma solução internacional.

De qualquer modo, as normas internacionais têm de ser adaptadas a cada país (linguística) e devem obter o contributo dos vários Estados.

Em Portugal a instituição participante é o
IPQ (Instituto Português de Qualidade)

O Instituto Portugues de Qualidade

"No quadro do Sistema Português da Qualidade (SPQ) - Decreto-Lei nº 142/2007, de 27 de Abril - o IPQ, como Organismo Nacional de Normalização (ONN), coordena a actividade normativa nacional, a qual está definida nas "Regras e Procedimentos para a Normalização Portuguesa, aprovadas por Despacho IPQ nº 26/2010 de 28 de Setembro."

"No que concerne à participação ao nível internacional, o IPQ assegura a representação de Portugal em inúmeras estruturas europeias e internacionais relevantes para a sua missão, designadamente,

European Committee for Standardization (CEN),

European Committee for Electrotechnical Standardization (CENELEC),

International Electrotechnical Commission (IEC),

Conference General des Poids et Mésures (CGPM),

International Organization for Legal Metrology (OIML), e

International Organization for Standardization (ISO)."

NORMALIZAÇÃO

As normas dão um enorme contributo em muitos aspetos das nossas vidas, embora muitas vezes, seja um contributo impercetível para o cidadão.
A vida seria muito difícil sem normas. O que aconteceria se, por exemplo, não existissem normas sobre produtos de construção, material elétrico ou sobre segurança de equipamentos? A título de exemplo sem dimensões normalizadas de contentores de carga, o comércio internacional seria mais lento e caro.


Norma Portuguesa
NP 4524
2013
Turismo de Ar Livre
Atividades de Turismo de Natureza
Instituto Português da Qualidade

Habitualmente desconhecemos o papel desempenhado pelas normas no aumento dos níveis de qualidade, segurança, eficiência, interoperabilidade, bem como no fornecimento de todos estes benefícios, com um custo mais económico.

Qualquer norma é considerada uma referência idónea do mercado a que se destina, sendo por isso usada em processos de legislação, de acreditação, de certificação, de metrologia, de informação técnica e de relações comerciais Cliente - Fornecedor.

As normas são documentos de aplicação voluntária, salvo se existe um diploma legal que as torne de cumprimento obrigatório.

A IMPORTÂNCIA DA NORMALIZAÇÃO

Cada um de nós no desempenho da sua atividade particular ou profissional rege-se, consciente ou inconscientemente, por normas.

A Normalização é a atividade que, de forma organizada, viabiliza a elaboração das normas.

As normas tornam a nossa vida mais fácil e incrementam o progresso. Se não acreditam, atentem no seguinte: quando nos deslocamos de automóvel, o combustível utilizado (gasolina sem chumbo) está normalizado pela EN 228, ou quando lavamos, secamos e passamos roupa temos, por trás do bom desempenho dos aparelhos utilizados, as normas NP EN 60335-2-7, NP EN 61121 e NP EN 60335-2-3, respetivamente.

As normas são documentos de caráter voluntário que definem requisitos técnicos aos quais respondem:

- produtos - por ex. capacetes de segurança industrial (EN 397); telefones móveis (NP EN 50360); panelas de pressão (NP EN 12778); brinquedos (segurança - série NP EN 71);
- métodos de ensaio - por ex. microbiologia alimentar - leites - contagem de bactérias termorresistentes (NP 462);
- processos de produção - por ex. funções e instrumentação para a medição e controlo de processos industriais (NP ISO 3511-1).

A atividade de Normalização nasceu da necessidade de dar resposta a problemas de natureza técnico-industrial, mas a tendência mais recente da normalização abrange áreas de um âmbito muito mais alargado como:

- serviços - por ex. turismo de habitação e turismo no espaço rural (NP 4494); transporte público de passageiros - rede de metro e linhas de autocarro urbano (NP 4475 e NP 4493 respetivamente);
- sistemas de gestão - por ex. sistemas de gestão da qualidade (NP EN ISO 9001); sistemas de gestão ambiental (NP EN ISO 14001); sistema de gestão de recursos humanos (NP 4427);
- questões de ordem ambiental - por ex. avaliação ambiental de sítios e organizações (NP ISO 14015); rótulos e declarações ambientais (NP EN ISO 14020);
- inovação - por ex. gestão da investigação, desenvolvimento e inovação (NP 4457);
- social - responsabilidade social (NP ISO 26000) e a ética (NP 4460-1).

A Normalização propicia a redução de custos para fornecedores e clientes, aumenta a transparência do mercado, ajudando a criar novos negócios e mantendo os existentes, pois são um meio de garantir aos clientes que os produtos/serviços detêm o adequado grau de qualidade, segurança e respeito pelo ambiente.

As normas facilitam igualmente as trocas comerciais na medida em que, para além da diminuição dos custos, reduzem as assimetrias de informação entre a oferta e a procura. Numa economia aberta como é a economia portuguesa, as atividades de Normalização são de extrema importância para reforço e credibilidade das transações comerciais, sejam elas efetuadas no mercado nacional ou além-fronteiras.

Características das Normas

Um outro tipo de normas são as normas da série ISO9000 para gestão de qualidade.

ISO 9000

É definido um conjunto de regras para investigar a eficiência na gestão da qualidade numa organização

Estes exemplos ilustram a natureza heterogénea da normalização.

As normas podem ser:

- Orientadas para a gestão ou técnicas
- Detalhadas ou abstractas
- Resultado do consenso internacional ou o resultado do desenvolvimento de uma empresa

Organizações Internacionais de Normalização

As várias organizações internacionais de normalização podem ser divididas em dois grupos:

Organizações Internacionais

A sua decisão é baseada no consenso

O seu funcionamento é baseado no financiamento de cada estado membro em função do seu potencial económico permitindo funcionar de forma independente dos estados ou empresas.

Exemplos:
ISO – International Organisation for Standardization
IEC - International Electrotecnical Organization
ITU – International Telecomunication Union

Organizações Internacionais de Normalização

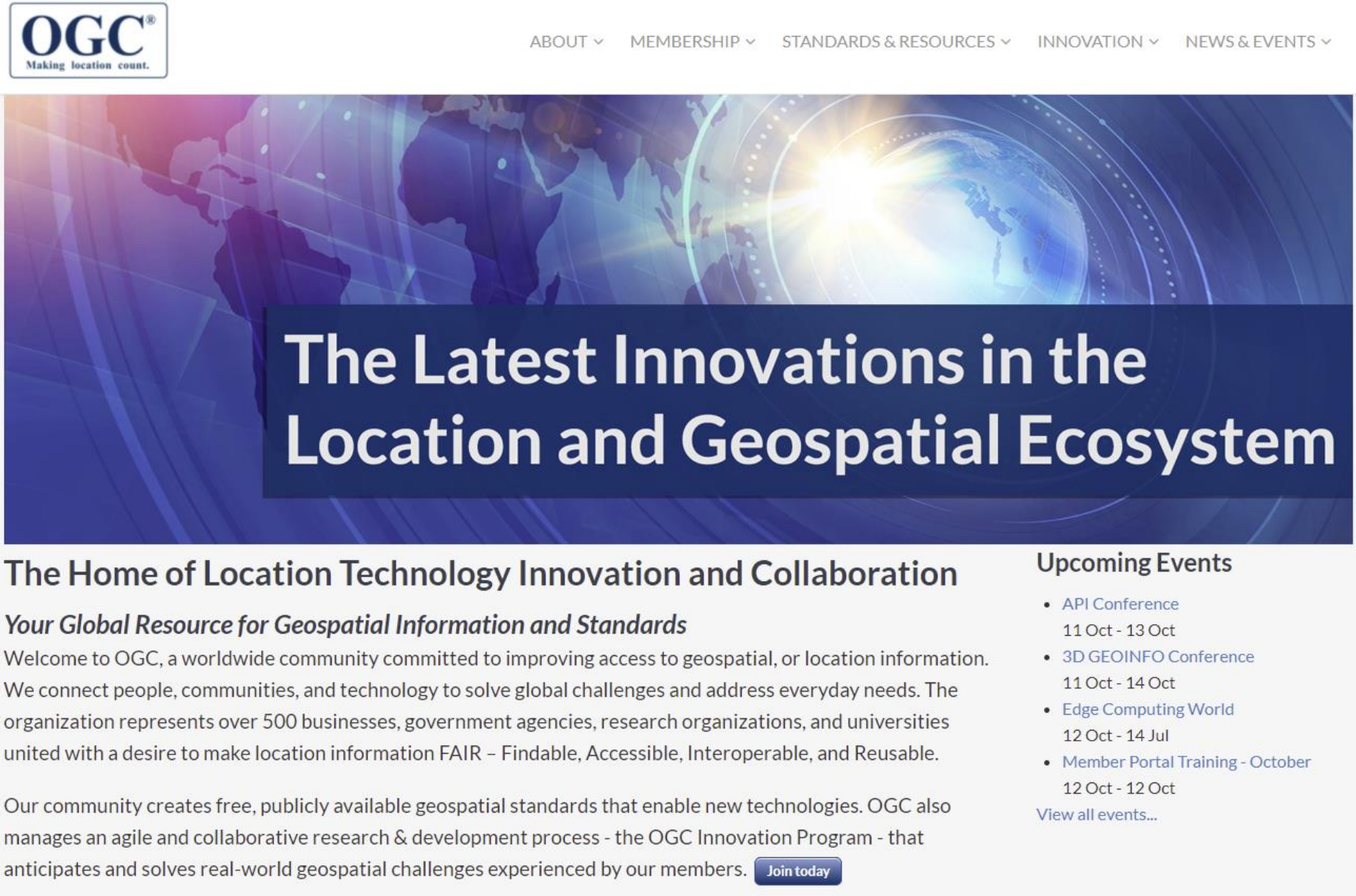
Consórcios Internacionais

São liderados pela industria com participação de agências governamentais.

O objectivo principal é defender os interesses dos seus membros.

Um dos interesses será desenvolver normas comuns de modo a potenciar outros desenvolvimentos (as normas "de-facto")

Exemplos:
OGC – Open Geospatial Consortium
(o maior e mais importante consorcio da comunidade da IG)
W3C – World Wide Web Consortium



https://www.ogc.org/

Ciências ULisboa

OGC

OGC Making location count.

ABOUT MEMBERSHIP STANDARDS & RESOURCES INNOVATION NEWS & EVENTS

OGC Standards and Resources

OGC Standards and Resources: Made by our Member Community for use by the Global Community

Standards

International standards that detail conceptual models, interfaces, or encodings to enable interoperability.
View all OGC Standards

Registries

Web accessible sources of information about things ("Concepts") the OGC defines or that communities ask that we host on their behalf. Applies FAIR principles for interoperability in systems.
Visit the OGC Definition Server

Best Practices

Member-agreed and -approved documents describing the use of one or more OGC standards to address a domain-specific topic or provide a solution to an interoperability challenge.
Read More on Best Practices

Community Practices

Documents describing implemented standards, specifications, or technologies that originate outside of OGC, but also address interoperability requirements in geospatial and related communities.

Engineering Reports

Developed in the OGC Innovation Program to highlight the initiatives completed by OGC members. They document the partners involved, the standards used, their importance, and potential future impacts.
Read more about Engineering Reports

Discussion Papers

Technology issues being considered in the Working Groups of the OGC Technical Committee. They create discussion in the geospatial information industry.
Read more about Discussion Papers

White Papers

Technology issues of interest to OGC Members and the geospatial community at large. They provide necessary background to highlight and forecast information and trends.
Read more about White Papers

OGC Reference Model

The OGC Reference Model (ORM) describes the OGC Standards Baseline and the relationships between the baseline documents.
Read the ORM

OGC Standards

Below is a list of OGC Implementation Standards.

Implementation Standards are different from the Abstract Specification. They are written for a more technical audience and detail the interface structure between software components. An interface specification is considered to be at the implementation level of detail if, when implemented by two different software engineers in ignorance of each other, the resulting components plug and play with each other at that interface.

Any Schemas (xsd, xslt, etc) that support an approved Implementation Standard can be found in the official OGC Schema Repository.

Standards List | Standards Architecture Diagram

Standards Listing

A list of the OGC standards

Document Title (click to view/download)	Version	OGC Doc.#	Editor	Publication Date
CDB Multi-Spectral Imagery Extension CDB: Multispectral	1.0	17-080r2	Ryan Franz	2018
The "Multi-Spectral Imagery" extension defines how to encode and store reflected electromagnetic radiation from the infrared wavelengths into a CDB. The portion of the spectrum targeted is between the visible spectrum (current imagery and texture in CDB), and longer wavelength infrared that is See more...				
CF-netCDF3 Data Model Extension standard netcdf-data-model-ex	3.1	11-165r2	Ben Domenico and Stefano Nativi	2013
The OGC netCDF encoding supports electronic encoding of geospatial data, that is, digital geospatial information representing space and time-varying phenomena. This standard specifies the CF-netCDF data model extension. This standard specifies the CF-netCDF data model mapping onto the ISO 19123 c See more...				
Corrigendum 1 for OGC Web Services Common		11-157	Jim Greenwood	2011

OGC Standards

- 3D Tiles
- 3dP
- ARML2.0
- Cat: ebRIM App Profile: Earth Observation Products
- Catalogue Service
- CDB
- CityGML
- CityJSON
- Coordinate Transformation
- EO-GeoJSON
- Filter Encoding
- GML in JPEG 2000
- GeoAPI
- GeoPackage
- GeoSciML
- GeoSPARQL
- Geography Markup Language
- GeoRSS
- Geospatial eXtensible Access Control Markup Language (GeoXACML)
- Geospatial User Feedback (GUF)
- GeoTiff
- GroundwaterML
- HDF5
- I3S
- Indoor Mapping Data Format (IMDF)
- IndoorGML
- KML
- LandInfra/InfraGML
- LAS

A ISO (International Organization for Standardization)

+3

A ISA (International Federation of the National Standardizing Associations) foi fundada em 1926 e estava focada na engenharia mecânica. A sua actividade terminou em 1942.

Em 1947 sucedeu-lhe a ISO (International Organization for Standardization) como organização não governamental. A sua sede é em Genebra, Suíça.

O trabalho na ISO é baseado em três princípios:

Consensus

As diferentes visões dos diferentes parceiros são tomados em consideração. A aprovação de uma norma é feita com 75% dos votantes

Industry-wide

As normas deverão sempre conduzir a soluções globais que satisfaçam as necessidades da industria e dos consumidores

Voluteering

É baseado no envolvimento voluntário de todos as partes interessadas

A ISO (International Organization for Standardization)

O trabalho na ISO é descentralizado

O trabalho de normalização é realizado pelas

Comissões Técnicas (TC) e **Sub-Comissões (SC)**

Cada TC e SC tem o seu próprio secretariado numa instituição competente num qualquer lugar do mundo. Neste momento a ISO tem 186 TC e 50 SC.

No caso da TC-211 (IG/Geomatics) o secretariado é na Suécia,

O número de membros de um TC pode variar entre os 10 e 1000. No caso da TC211 são cerca de 60 que se encontram 2 vezes por ano.

Normas da IG-Geomática – TC211

As primeiras normas na área da IG surgiram na década de 1990.

(Embora já existissem na Europa há muitos anos normas para a execução de trabalhos nas áreas da Geodesia, Cadastro e Cartografia)

1991: O primeiro projecto para normalizar a informação geográfica, liderado pela AFNOR, a agência francesa, a Organização Europeia de Normalização CEN (Comité Européen de Normalisation) criou o Comité Técnico 287 (Geographic Information). O trabalho dessa comissão resultou em 8 pré-normas europeias.

1994: ISO/TC211 é criada e a congénere europeia foi extinta.

A Comunidade Europeia implementou recentemente (2007) uma iniciativa chamada INSPIRE que pretende desenvolver uma SDI a nível europeu. Este projeto é suportado nas normas ISO.

ISO/TC211

+2

A principal força impulsionadora da ISO/TC211 foi a Defence Geospatial Information Working Group (DGIWG) dos EUA e os esforços de normalização nos EUA e Canadá.

As outras duas organizações que contribuíram para o aparecimento da ISO/TC211 foram a IHO (International Hydrographic Organization) e a CEN/TC278 (Geographic Data Files, GDF)

Âmbito:	A Informação Geográfica / Geomática

As normas deverão especificar uma infra-estrutura e os necessários serviços para o manuseamento de dados geográficos incluindo a sua **gestão, aquisição, processamento, análise, acesso, representação e transferência**.

Quando possível a norma deverá estabelecer a ligação com outras normas das Tecnologias da Informação.

https://committee.iso.org/home/tc211

ISO/TC 211

Geographic information/Geomatics

Powered by ISO

About | Plenary meeting | Resolutions | Projects | Presentations | Resources | Links | Upcoming events

Members | Organisation | Working groups | Advisory groups | External liaisons | Internal liaisons | Contact

Scope

Standardization in the field of digital geographic information.
This work aims to establish a structured set of standards for information concerning objects or phenomena that are directly or indirectly associated with a location relative to the Earth.

These standards may specify, for geographic information, methods, tools and services for data management (including definition and description), acquiring, processing, analyzing, accessing, presenting and transferring such data in digital/electronic form between different users, systems and locations.

The work shall link to appropriate standards for information technology and data where possible, and provide a framework for the development of sector-specific applications using geographic data.

Do not miss the newsletter

We know not all have time to look at the web page but did you know you can keep yourself updated with ISO/TC 211 news via the Newsletter.

ISO/TC211

Group photo taken at the University of Maribor Faculty of Electrical Engineering and Computer Science in Maribor, June 2019.

If you are not receiving the Newsletter already let Mats Ahlin know and you will be on the list for the next one.

75

published ISO standards*

under the direct responsibility of ISO/TC 211

25

ISO standards under development*

under the direct responsibility of ISO/TC 211

* number includes updates

ISO/TC 211 Business Plan

Click here to access the business plan

Related ISO pages

Our page on iso.org

Who develops ISO standards?

Why get involved in standards development?

ISO/TC211

* number includes updates

SUSTAINABLE DEVELOPMENT GOALS

This committee contributes with 21 standards to the following Sustainable Development Goals:

TC

STANDARDS BY ISO/TC 211

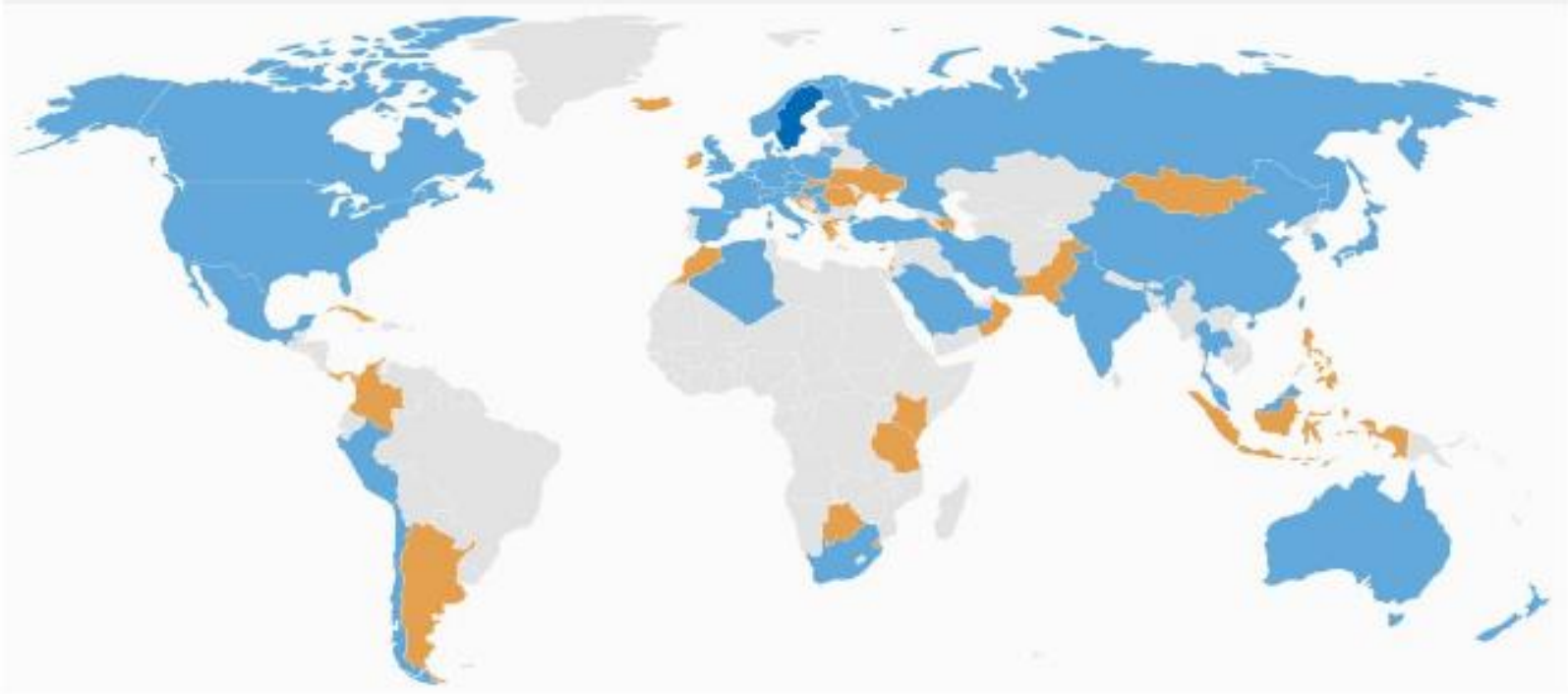
Geographic information/Geomatics

Filter: Published standards | Standards under development | Withdrawn standards | Projects deleted

Filter the list

STANDARD AND/OR PROJECT UNDER THE DIRECT RESPONSIBILITY OF ISO/TC 211 SECRETARIAT (75)	STAGE	ICS
ISO 6709:2008 Standard representation of geographic point location by coordinates	90.92	35.240.70
ISO 6709:2008/COR 1:2009 Standard representation of geographic point location by coordinates — Technical Corrigendum 1	60.60	35.240.70
ISO 19101-1:2014 Geographic information — Reference model — Part 1: Fundamentals	60.60	35.240.70
ISO 19101-2:2018 Geographic information — Reference model — Part 2: Imagery	60.60	35.240.70
ISO 19103:2015 Geographic information — Conceptual schema language	60.60	35.240.70
ISO 19104:2016 Geographic information — Terminology	60.60	01.040.35 35.240.70
ISO 19105:2000 Geographic information — Conformance and testing	90.92	35.240.70
ISO 19106:2004 Geographic information — Profiles	90.93	35.240.70
ISO 19107:2003 Geographic information — Spatial schema	90.92	35.240.70
ISO 19108:2002 Geographic information — Temporal schema	90.93	35.240.70
ISO 19108:2002/COR 1:2006 Geographic information — Temporal schema — Technical Corrigendum 1	60.60	35.240.70

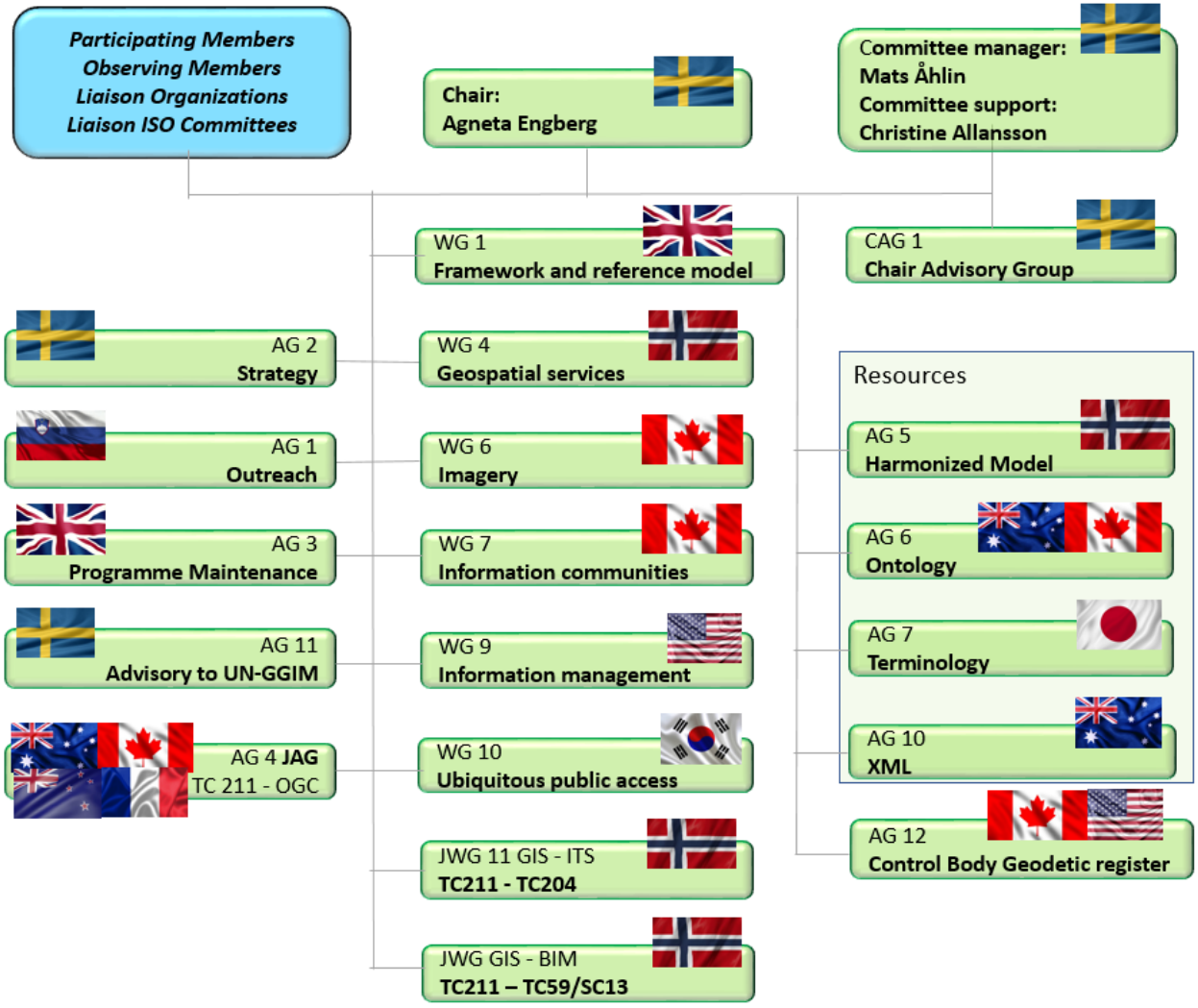
ISO/TC211 - Membros

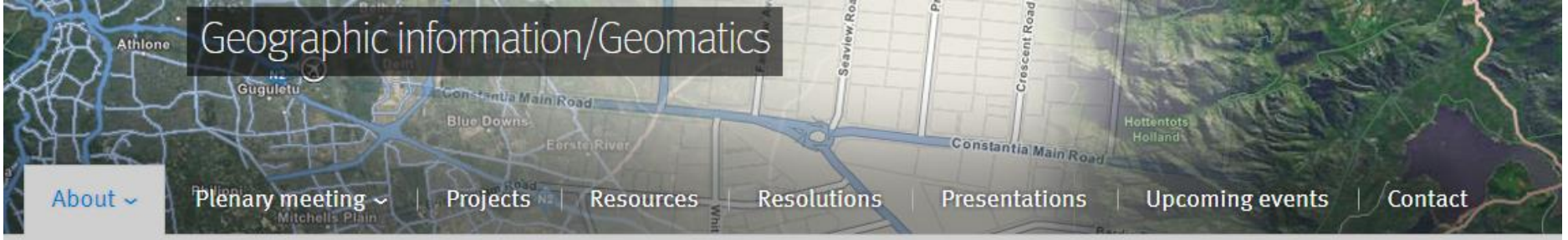


Secretariat

Sweden - Swedish Standards Institute (SIS)

ISO/TC211 - Estrutura





Active working groups

	Number on livelink
Working group 1 Framework and reference model Convenor: Mr. Andrew Jones, Australi (2013-11 - Reappointed 2016-12)	ISO/TC 211/WG 01
Working group 4 Geospatial services Convenor: Mr. Morten Borrebæk, Norway (1995-08 - Reappointed 2017-06)	ISO/TC 211/WG 04
Working group 6 Imagery Convenor: Mr. Doug O'Brien, Canada (2002-05 - Reappointed 2017-06)	ISO/TC 211/WG 06
Working group 7 Information communities Convenor: tdb	ISO/TC 211/WG 07
Working group 9 Information management Convenor: Mr. John Herring, USA (2011-05 - Reappointed 2017-06)	ISO/TC 211/WG 09
Working group 10 Ubiquitous public access Convenor: Professor Sang-Ki Hong, Korea (2008-01 - Reappointed 2017-06)	ISO/TC 211/WG 10

Next ISO/TC 211 meeting

Nov 27th - Dec 1st 2017 in Wellington, New Zealand

Register here

Practical information

Draft Agenda

May 28th - June 1st 2018 in Copenhagen, Denmark

Registration not open yet

ISO/TC 211 Publications (1)

Working Group 1 - Framework and reference model

Published standards/specifications
ISO 19101-1:2014 Geographic information - **Reference model** - Part 1: Fundamentals
ISO/TS 19103:2005 Geographic information - **Conceptual schema language** - Under revision in WG 4
ISO/TS 19104:2008 Geographic information - **Terminology** -
ISO 19105:2000 Geographic information - **Conformance and testing**

ISO/TR 19121:2000 Geographic information - Imagery and gridded data
WI 19124 Geographic information - Imagery and gridded data components - Completed with review summary, N 1017
ISO/TS 19129:2009 Geographic information - Imagery, gridded and coverage data framework - Moved to new WG 6
WI 19130 Geographic information - Sensor and data models for imagery and gridded data - Moved to new WG 6

ISO/TC 211 Publications (2)

Working Group 4 - Geospatial services

ISO 19116:2004 Geographic information - Positioning services
ISO 19117:2012 Geographic information - Portrayal
ISO 19118:2011 Geographic information - Encoding
ISO 19119:2005 Geographic information - Services *(under revision)*
ISO 19119:2005 Amd 1:2008 Geographic information - Services - Amendment 1
ISO 19125-1:2004 Geographic information - Simple feature access - Part 1: Common architecture
ISO 19125-2:2004 Geographic information - Simple feature access - Part 2: SQL options *(under revision)*
ISO 19128:2005 Geographic information - **Web Map server interface**
ISO 19136:2007 Geographic information - **Geography Markup Language (GML)**
ISO 19136-2:2016 Geographic information - **Geography Markup Language (GML) - Part 2:** Extended schemas and encoding rules
ISO 19142:2010 Geographic information - **Web Feature Service**
ISO 19143:2010 Geographic information - Filter encoding *(under revision)*
ISO 19149:2010 Geographic information - Rights expression language for geographic information - GeoREL

ISO/TC 211 Publications (3)

Working group 6 - Imagery

Published standards/specifications

ISO/TR 19120:2001 Geographic information - Functional standards
ISO 19101-2:2008 Geographic information - Preference model - Part 2: Imagery
ISO 19115-2:2009 Geographic information - Metadata - Part 2: Extensions for imagery and gridded data *(under revision)*
ISO/TS 19129:2009 Geographic information - Imagery, gridded and coverage data framework
ISO/TS 19130:2010 Geographic information - Imagery sensor models for geopositioning *(under revision)*
ISO/TS 19130-2 Geographic information - Imagery sensor models for geopositioning - Part 2: SAR, InSAR, lidar and sonar
ISO/TS 19139-2:2012 Geographic information - Metadata - XML Schema Implementation - Part 2 : Extensions for imagery and gridded data
ISO/TS 19159-1 Geographic information - Calibration and validation of remote sensing imagery sensors - Part 1: Optical sensor

ISO/TC 211 Publications (4)

Working group 7 - Information communities

Published standards/specifications

ISO 19110:2005 Geographic information - Methodology for feature cataloguing
ISO 19110:2005 Amd. 1:2011
ISO 19115-1:2014 Geographic information - Metadata – Part 1: Fundamentals
ISO/TR 19122:2004 Geographic information/Geomatics - Qualification and certification of personnel

ISO 19126:2009 Geographic information - Feature concept dictionaries and registers
ISO 19137:2007 Geographic information - Core profile of the spatial schema
ISO/TS 19139:2007 Geographic information - Metadata - Implementation specifications *(under revision)*
ISO 19144-1:2009 Geographic information - Classification Systems – Part 1: Classification system structure
ISO 19144-1:2009 Corrigendum 1:2012
ISO 19144-2:2012 Geographic information - Classification systems - Part 2: Land Cover Meta Language (LCML)
ISO 19150 Geographic information - Ontology - Review summary N 2705
ISO/TS 19150-1 Geographic information - Ontology - Part 1: Framework
ISO 19150-2:2016 Geographic information - Ontology - Part 2: Rules for developing ontologies in the Web Ontology Language (OWL)
ISO 19152:2012 Geographic information - Land Administration Domain Model (LADM)

ISO/TC 211 Publications (5)

Working group 9 - Information management

Published standards/sepcifications
ISO 6709:2008 Standard representation of geographic point location by coordinates
ISO 19111-2:2009 Geographic information - Spatial referencing by coordinates - Part 2: Extension for parametric values
ISO/TS 19127:2005 Geographic information -- Geodetic codes and parameters *(under revision)*
ISO 19131:2007 Geographic information - Data product specifications
ISO 19131:2007/Amd 1:2011
ISO 19135-1 Geographic information - Procedures for item registration - Part 1: Fundamentals *(Revision of ISO 19135:2005)*
ISO 19135-2 Geographic information - Procedures for item registration - Part 2: XML Schema Implementation
ISO 19138:2006 Geographic information - Data quality measures (Withdrawn, replaced by ISO 19157:2013)
ISO 19145:2013 Geographic information - Registry of representations of geographic point location
ISO 19146:2010 Geographic information - Cross-domain vocabularies
ISO 19153:2014 Geospatial Digital Rights Management Reference Model (GeoDRM RM)
ISO 19156:2011 Geographic information - Observations and measurements
ISO 19157:2013 Geographic information - Data quality
ISO/TS 19158:2012 Geographic information - Quality assurance of data supply
ISO/TS 19162:2016 Geographic information - Well-known text representation of coordinate reference systems
Review summary: Geographic information - Amendment to ISO 19113:2002 Geographic information - Quality principles and ISO 19115:2003 Geographic information - Metadata

ISO/TC 211 Publications (6)

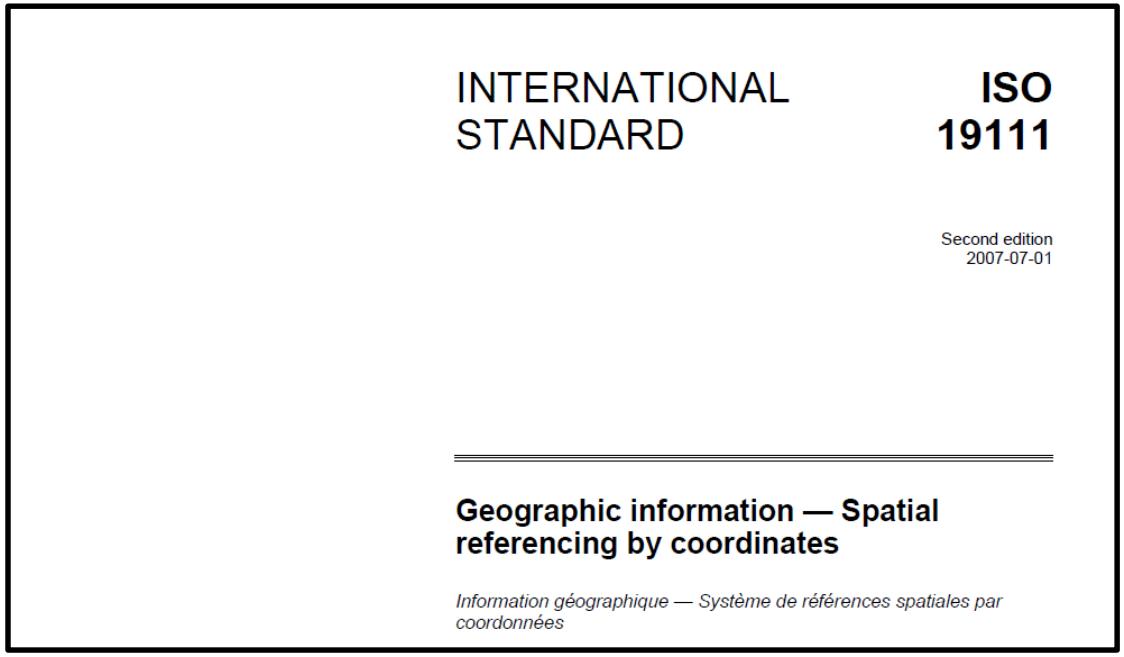
ISO/TS 19130:2010 Geographic information - Imagery sensor models for geopositioning	90.92	35.240.70
ISO/TS 19130-2:2014 Geographic information -- Imagery sensor models for geopositioning -- Part 2: SAR, InSAR, lidar and sonar	90.60	35.240.70
ISO 19131:2007 Geographic information -- Data product specifications	90.92	35.240.70
ISO 19131:2007/Amd 1:2011 Requirements relating to the inclusion of an application schema and feature catalogue and the treatment of coverages in an application schema.	60.60	35.240.70
ISO 19132:2007 Geographic information -- Location-based services -- Reference model	90.93	35.240.70
ISO 19133:2005 Geographic information -- Location-based services -- Tracking and navigation	90.93	35.240.70
ISO 19134:2007 Geographic information -- Location-based services -- Multimodal routing and navigation	90.93	35.240.70
ISO 19135-1:2015 Geographic information -- Procedures for item registration -- Part 1: Fundamentals	60.60	35.240.70
ISO/TS 19135-2:2012 Geographic information - Procedures for item registration -- Part 2: XML schema implementation	90.93	35.240.70
ISO 19136:2007 Geographic information -- Geography Markup Language (GML)	90.92	35.240.70
ISO 19136-2:2015 Geographic information -- Geography Markup Language (GML) -- Part 2: Extended schemas and encoding rules	60.60	35.240.70
ISO 19137:2007 Geographic information -- Core profile of the spatial schema	90.93	35.240.70
ISO/TS 19139:2007 Geographic information -- Metadata -- XML schema implementation	90.92	35.240.70
ISO/TS 19139-2:2012 Geographic information -- Metadata -- XML schema implementation -- Part 2: Extensions for imagery and gridded data	90.93	35.240.70

Formato de uma Norma ISO

Todos as normas têm o mesmo aspecto.

As normas ISO são documentos com uma estrutura rígida com páginas informativas e normativas

Têm uma página de rosto



INTERNATIONAL STANDARD

ISO 19111

Second edition
2007-07-01

Geographic information — Spatial referencing by coordinates

Information géographique — Système de références spatiales par coordonnées

Formato de uma Norma ISO

Escopo

INTERNATIONAL STANDARD **ISO 19111:2007(E)**

Geographic information — Spatial referencing by coordinates

1 Scope

This International Standard defines the conceptual schema for the description of spatial referencing by coordinates, optionally extended to spatio-temporal referencing. It describes the minimum data required to define one-, two- and three-dimensional spatial coordinate reference systems with an extension to merged spatial-temporal reference systems. It allows additional descriptive information to be provided. It also describes the information required to change coordinates from one coordinate reference system to another.

In this International Standard, a coordinate reference system does not change with time. For coordinate reference systems defined on moving platforms such as cars, ships, aircraft and spacecraft, the transformation to an Earth-fixed coordinate reference system can include a time element.

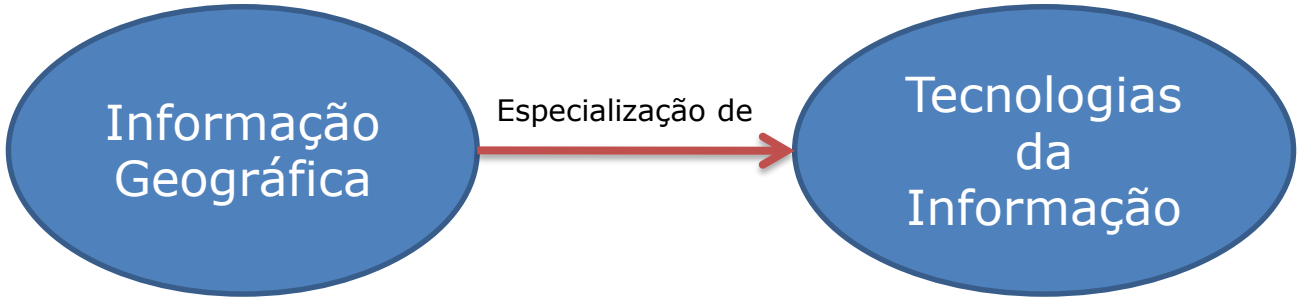
This International Standard is applicable to producers and users of geographic information. Although it is applicable to digital geographic data, its principles can be extended to many other forms of geographic data such as maps, charts and text documents.

Define sem ambiguidade o assunto do documento e os aspectos abordados indicando os limites de aplicabilidade.

O âmbito deverá ser sucinto de modo a ser usado como sumário para efeitos bibliográficos

Modelo de Referência (19101)

É assumido na família de normas ISO19100 que :



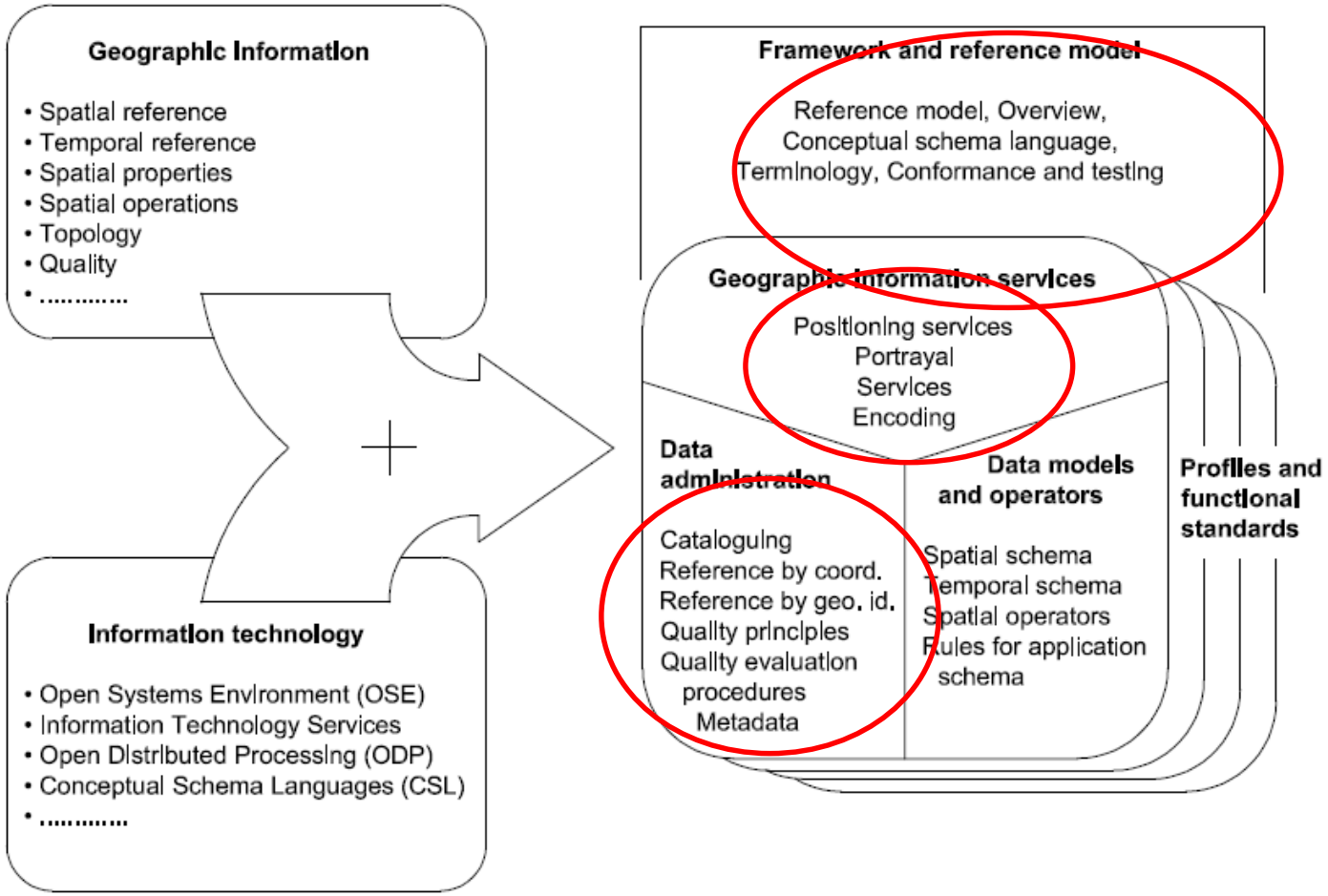
Por essa razão, a normalização da informação geográfica na série **ISO19100** é baseada na integração de conceitos de IG com conceitos de TI

A ISO19101 (Reference Model) define um modelo de referência hierárquico estruturado para a família ISO19100.

O modelo de referência é uma aplicação especial do "ponto de vista da informação" (semântica da informação e processamento da informação) que é identificado como o mais importante para a normalização da Geomática. Uma componente do modelo de referencia é baseado na abordagem computacional que se reporta aos serviços.

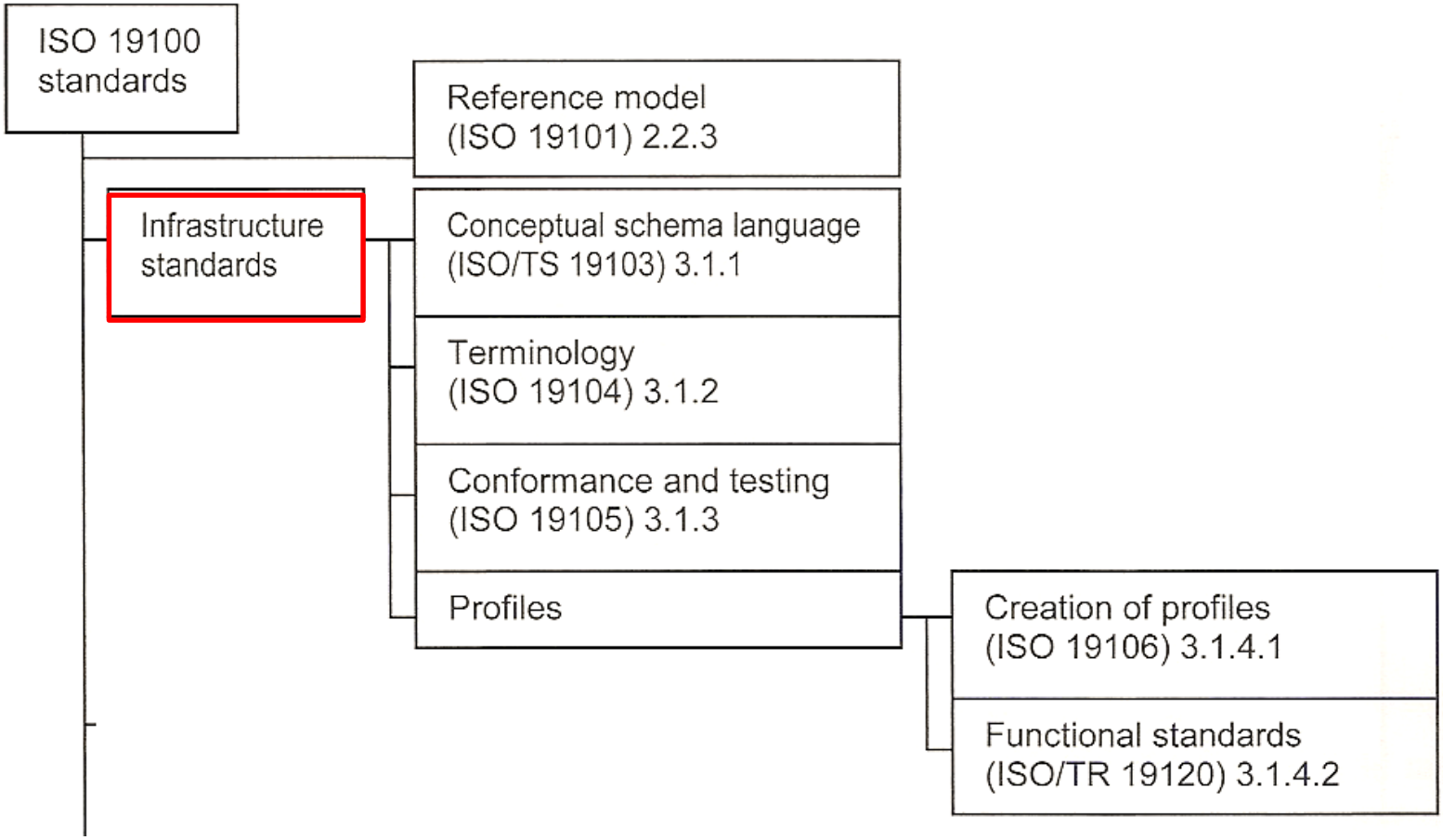
Modelo de Referência (19101)

+3

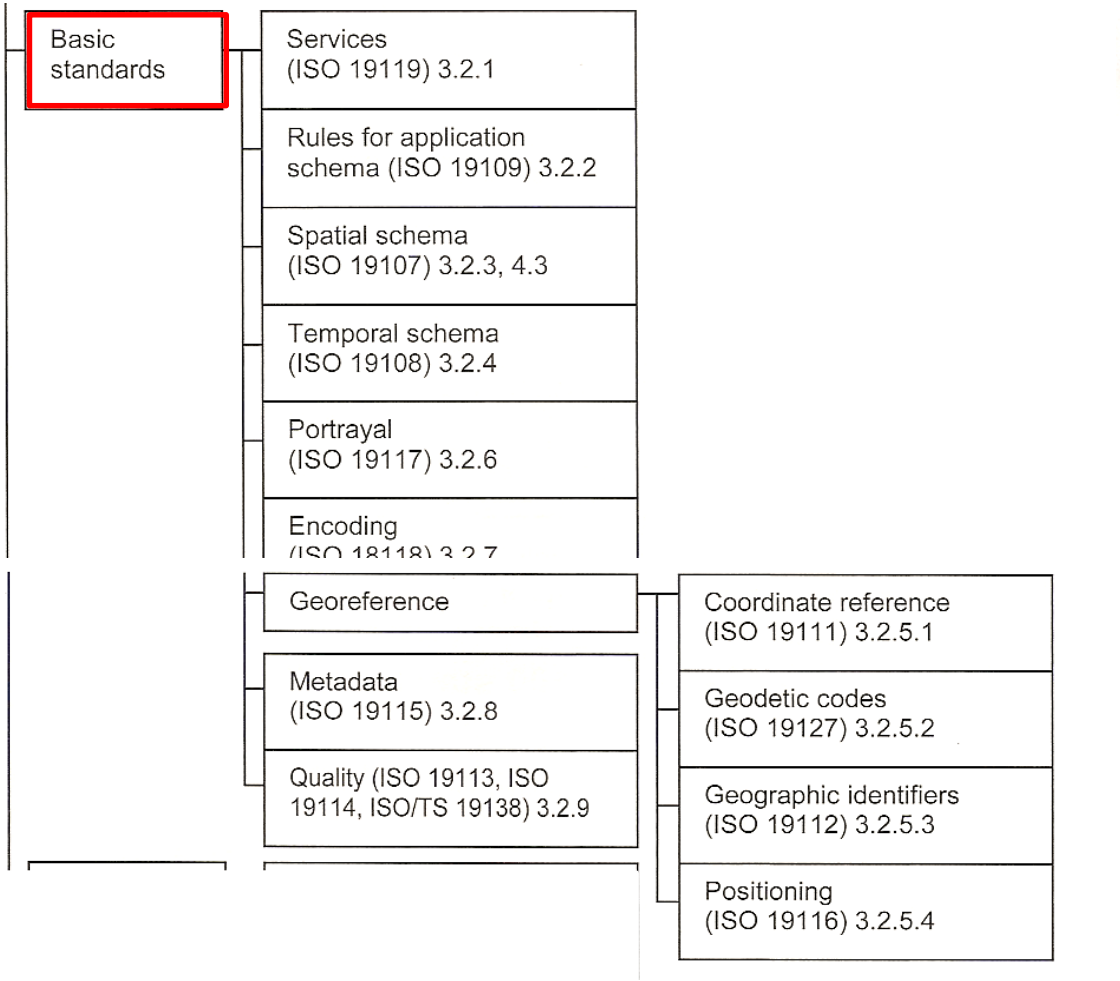


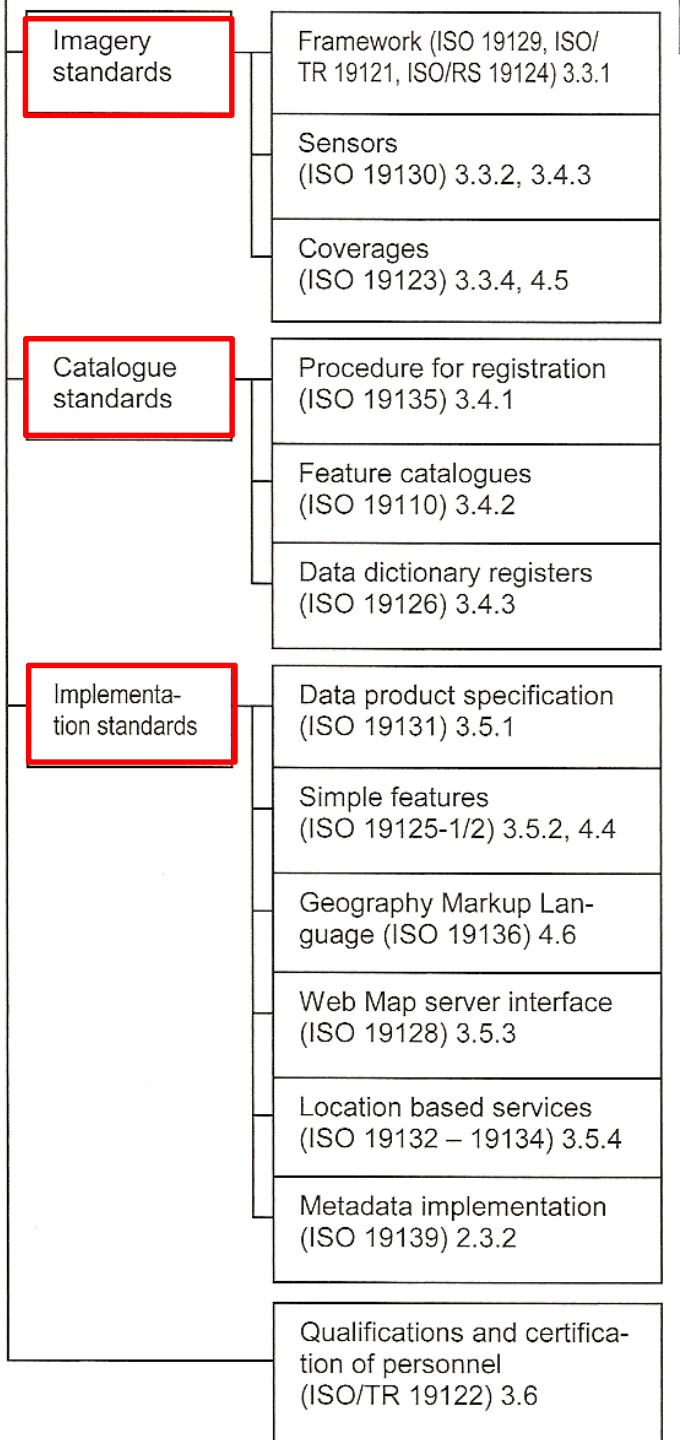
Road-Map das ISO 19100

+2



Road-Map das ISO 19100





ISO 19104 Terminology

B.179
feature
abstraction of real world phenomena

NOTE A feature may occur as a **type** (B.503) or an **instance** (B.253). Feature type or feature instance shall be used when only one is meant.

[ISO 19101:2002]

B.180
feature association
relationship (B.395) that links **instances** (B.253) of one **feature** (B.179) **type** (B.503) with instances of the same or a different feature type

[ISO 19110:2005]

B.181
feature attribute
characteristic of a **feature** (B.179)

EXAMPLE 1 A feature attribute named "colour" may have an **attribute** (B.18) **value** (B.515) "green" which belongs to the **data type** (B.121) "text".

EXAMPLE 2 A feature attribute named "length" may have an attribute value "82.4" which belongs to the data type "real".

ISO 19104 Terminology

B.201
geodetic coordinate system
ellipsoidal coordinate system
coordinate system (B.90) in which **position** (B.365) is specified by **geodetic latitude** (B.204), **geodetic longitude** (B.205) and (in the three-dimensional case) **ellipsoidal height** (B.156)

[ISO 19111:2007]

B.202
geodetic datum
datum (B.124) describing the **relationship** (B.395) of a two- or three-dimensional **coordinate system** (B.90) to the Earth

[ISO 19111:2007]

B.203
geodetic height
ellipsoidal height
h
distance of a **point** (B.352) from the **ellipsoid** (B.154), measured along the perpendicular from the ellipsoid to this point, positive if upwards or outside of the ellipsoid

NOTE Only used as part of a three-dimensional **ellipsoidal coordinate system** (B.155) and never on its own.

[ISO 19111:2007]

B.204
geodetic latitude
ellipsoidal latitude
φ
angle from the equatorial plane to the perpendicular to the **ellipsoid** (B.154) through a given **point** (B.352), northwards treated as positive

[ISO 19111:2007]

Aquisição de Dados

A ISO não normaliza os procedimentos de aquisição de dados para um SIG.

As normas ISO 19100 apenas fornecem linhas de orientação e elementos de metadados para descrever a **origem** e **qualidade dos dados**

As normas relevantes são:

ISO 19113	– Quality principles
ISO 19114	– Quality Evaluation Procedures *
ISO 19115	– Metadata
ISO 19115:2	– Metadata for imagery

* Aconselha sobre os diferentes níveis de detalhe para o controlo de qualidade

Aquisição de Dados

Supondo que temos de escrever um relatório do controlo de qualidade do nosso SIG. Este relatório deverá ser normalizado de acordo com a norma ISO 19114.

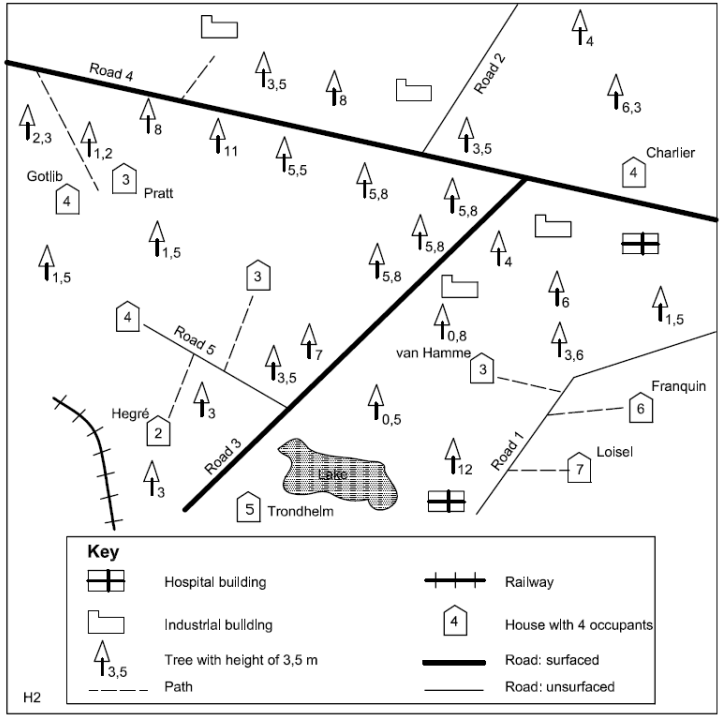
Deverá incluir os valores dos "elementos de qualidade dos dados" ("data quality elements") da seguinte forma:

Completude (Completeness)	: 100%
Consistência Lógica (Logical Consistency)	: sem erros
Exactidão posicional (Positional accuracy)	: ± 5 m
Exactidão temporal (temporal accuracy)	: a última revisão foi há três anos, a informação da Câmara Municipal foi fornecida na última Primavera.
Exactidão Temática (Thematic accuracy)	: a carta topográfica não tem indicação das paragens de autocarro ou outros elementos similares para efeitos de turismo

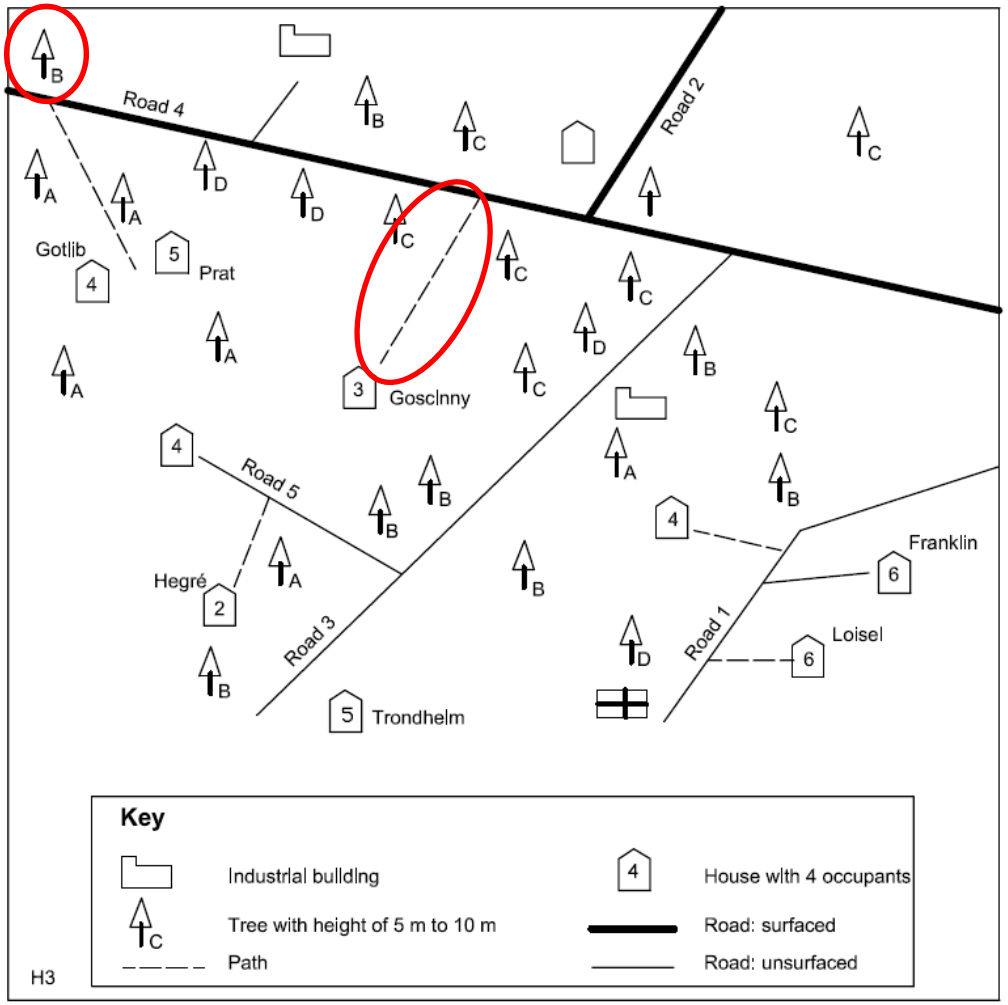
A ISO19115 (Metadata) fornece as normas formais de todos os elementos necessários

Representação Gráfica

Universo do Discurso



Base de dados



Relatório da Qualidade (19114)

G.3.2 Completeness

ISO 19113 defines completeness as the presence and absence of features, their attributes and their relationships. Completeness in this example is classified by feature class. The types of measures tested for are commission and omission. Table G.1 depicts a way to classify completeness.

Table G.1 — Completeness by feature class

Feature class	Number of instances in the universe of discourse	Commission count	Commission percentage[a]	Omission count	Omission percentage[b]
Path	7	0	0	2	29
Road	5	2	40	0	0
Tree	25	3	12	2	7
Industrial building	4	0	0	2	50
House	10	1	10	1	10
Hospital	0	1	100	0	0

[a] Commission percentage = number of included items/number of items in the universe of discourse × 100

[b] Omission percentage = number of omitted items/number of items in the universe of discourse × 100

Linguagem do esquema conceptual

A ISO19103 define um perfil **UML (Unified Modelling language)** para a Informação Geográfica.

A UML é uma norma ISO/IEC 19501-1

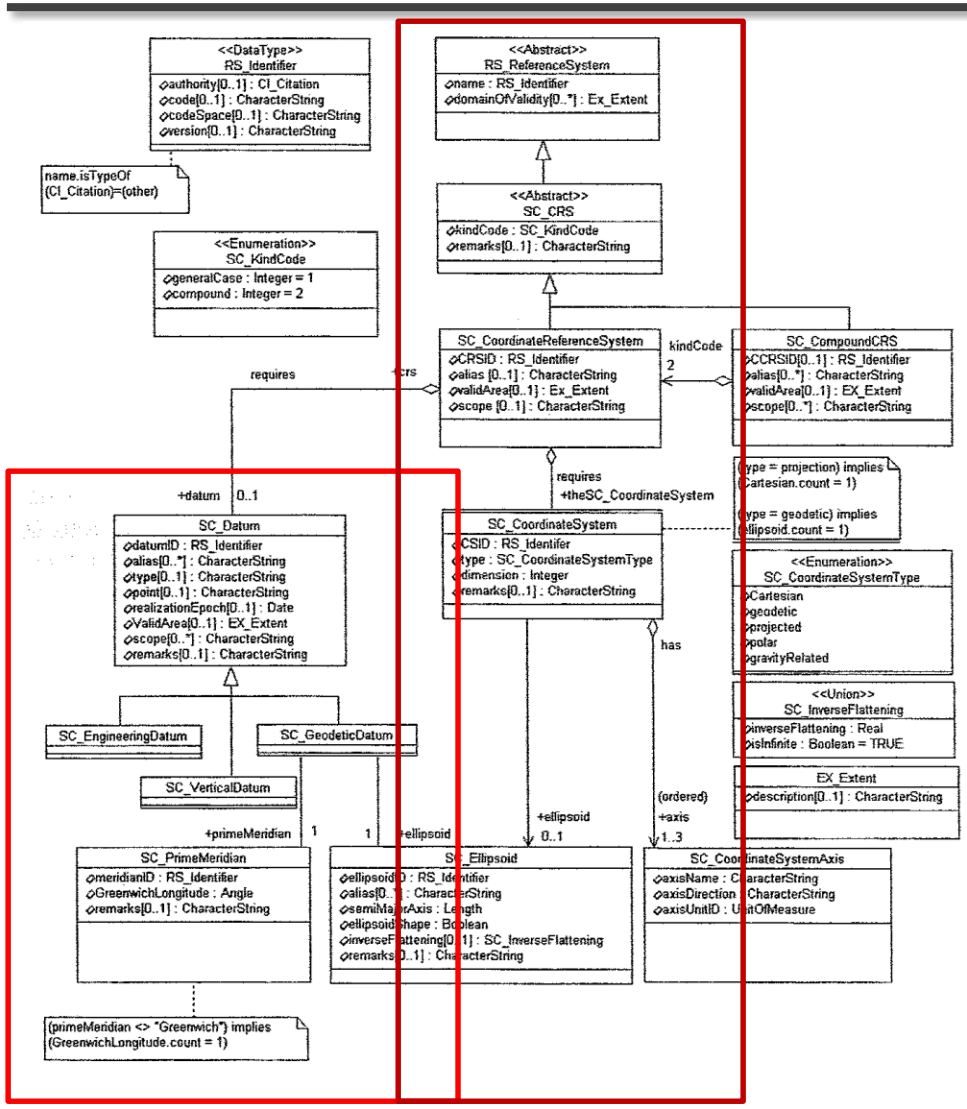
EXPRESS é uma linguagem conceptual usada no campo da engenharia mecânica e foi normalizada pela ISO/TC184

Os esquemas conceptuais em UML são baseados em elementos gráficos e léxicos enquanto que os esquemas em EXPRESS contêm apenas texto.

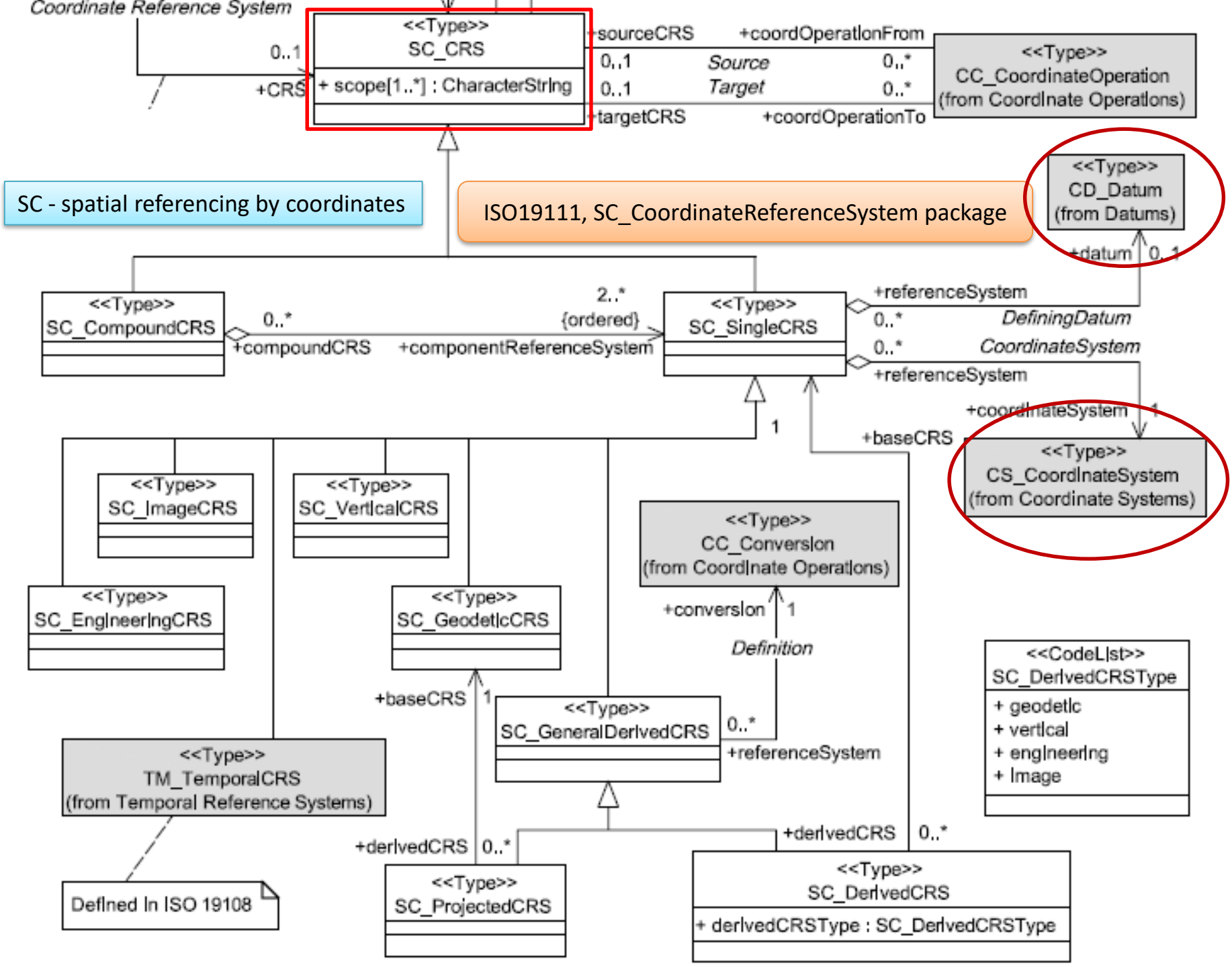
De acordo com as normas ISO 19100 ambas as linguagens são válidas para modelação de IG. Contudo UML é preferível.

Exemplo de Esquema UML
19111 - Spatial Referencing by Coordinates

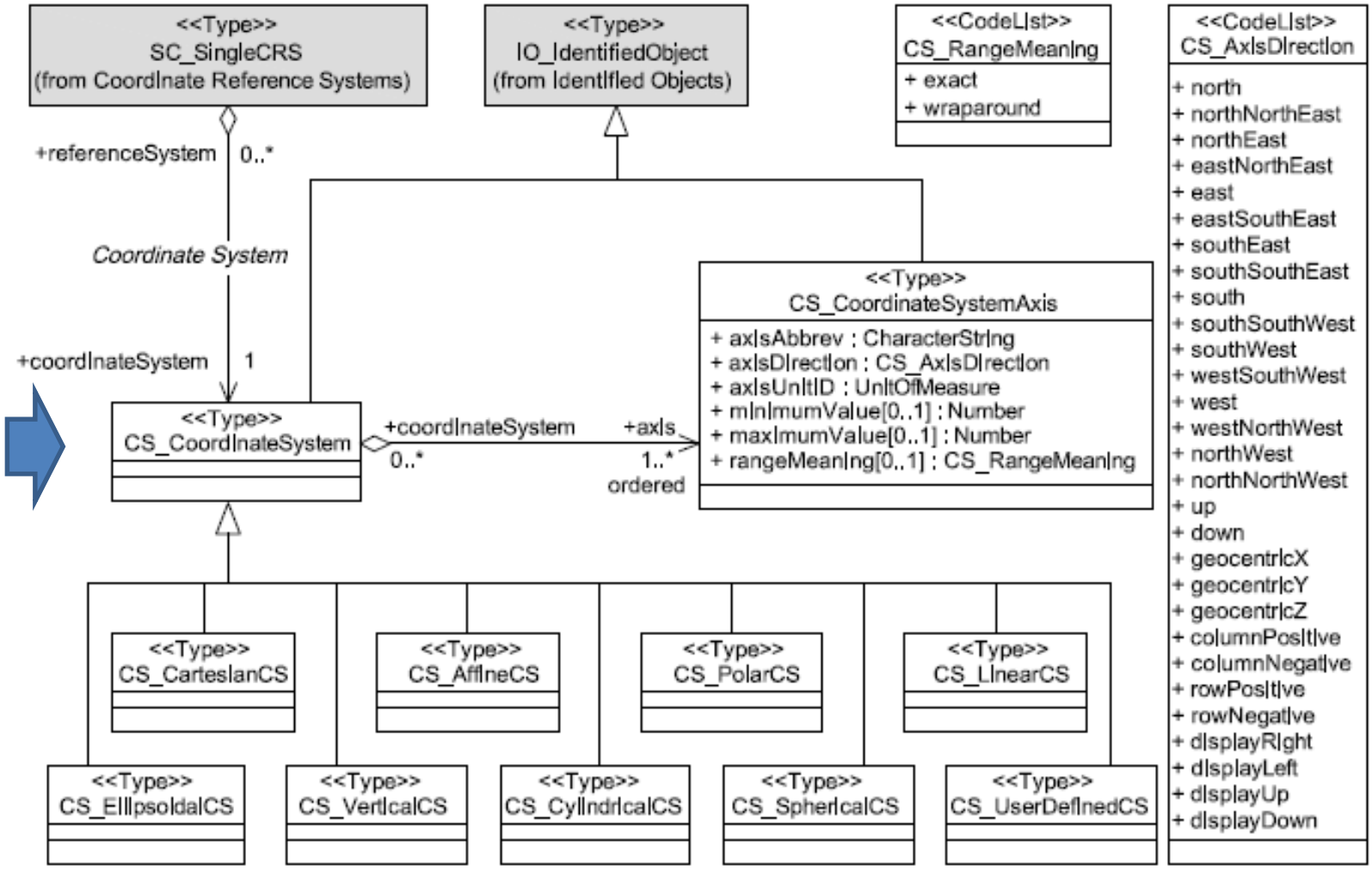
+2



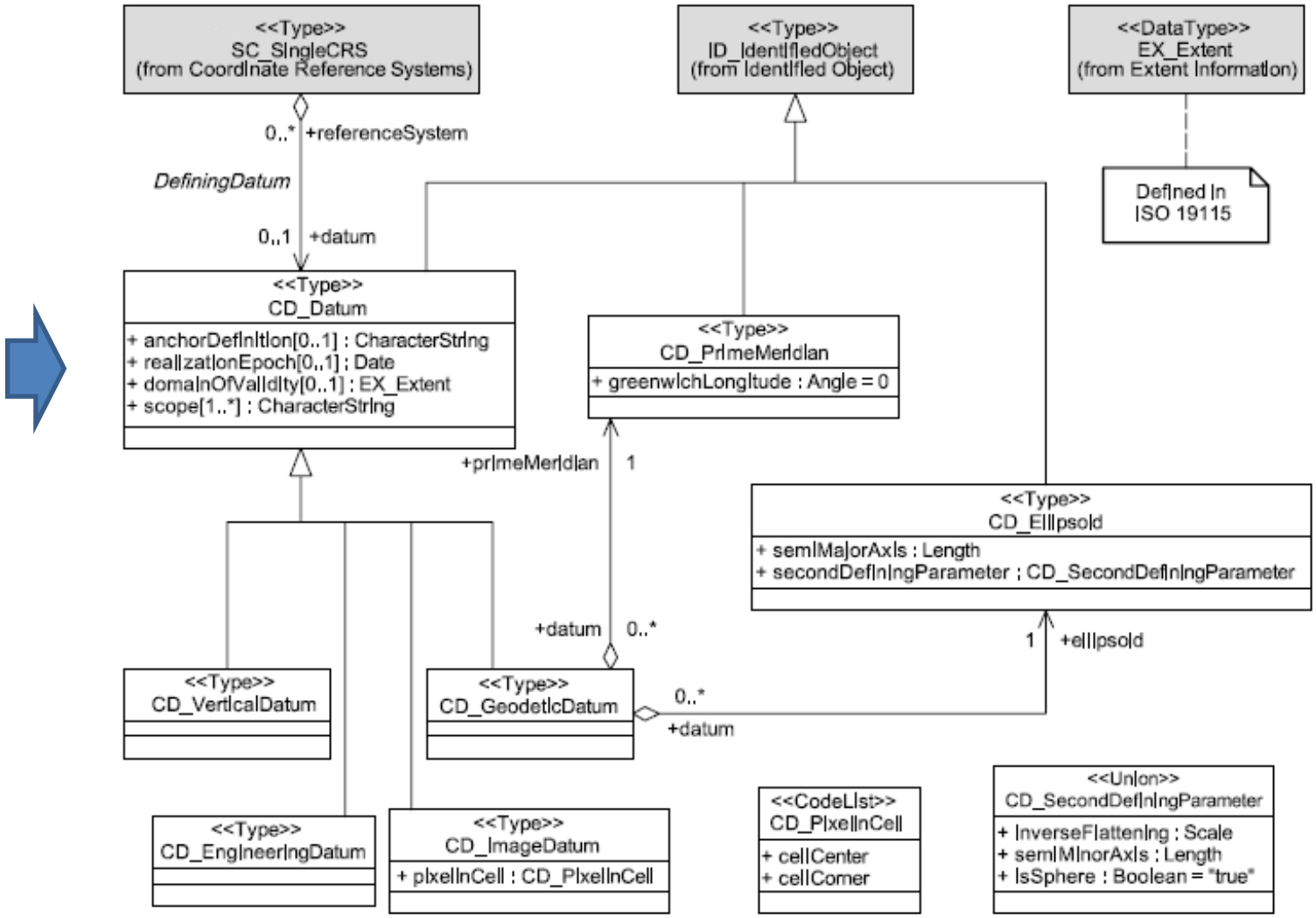
Basicamente, consiste em duas árvores de generalização uma com a classe mãe RS_ReferenceSystem e outra com a classe SC_Datum.
O Diagrama de classes é normativo


Coordinate Reference System
<<Type>>
SC_CRS
+ scope[1..*] : CharacterString
0..1
+CRS
+sourceCRS
+coordOperationFrom
0..1
Source
0..*
0..1
Target
0..*
+targetCRS
+coordOperationTo
<<Type>>
CC_CoordinateOperation
(from CoordInate OperatIons)
SC - spatial referencing by coordinates
ISO19111, SC_CoordinateReferenceSystem package
<<Type>>
CD_Datum
(from Datums)
+datum
0..1
<<Type>>
SC_CompoundCRS
0..*
+compoundCRS
2..*
{ordered}
+componentReferenceSystem
<<Type>>
SC_SingleCRS
+referenceSystem
0..*
DefiningDatum
0..*
CoordinateSystem
+referenceSystem
+coordInateSystem
1
+baseCRS
1
<<Type>>
CS_CoordInateSystem
(from Coordinate Systems)
<<Type>>
SC_ImageCRS
<<Type>>
SC_VertIcalCRS
<<Type>>
CC_ConversIon
(from CoordInate OperatIons)
<<Type>>
SC_EngIneerIngCRS
<<Type>>
SC_GeodetIcCRS
+conversIon
1
Definition
<<CodeLIst>>
SC_DerIvedCRSType
+ geodetIc
+ vertIcal
+ engIneerIng
+ Image
+baseCRS
1
<<Type>>
SC_GeneralDerIvedCRS
0..*
+referenceSystem
<<Type>>
TM_TemporalCRS
(from Temporal Reference Systems)
+derIvedCRS
0..*
+derIvedCRS
0..*
Defined In ISO 19108
<<Type>>
SC_ProjectedCRS
<<Type>>
SC_DerIvedCRS
+ derIvedCRSType : SC_DerIvedCRSType

CS_CoordinateSystem package



CD_Datum package



Changes to Access to EPSG definitions from the OGC Definitions Server

Post date: 3 August 2020

Any software implementors that access EPSG Coordinate Reference System (CRS) definitions through the OGC Definitions Server should read this blog post.

Publishing of EPSG CRS definitions through the OGC Definitions Server is enabled by the IOGP Geodetic Registry API (epsg.org). The IOGP Geodetic Registry API is undergoing an upgrade that will require some changes to both the data model and the interface through which EPSG definitions are retrieved from the OGC Definitions Server.

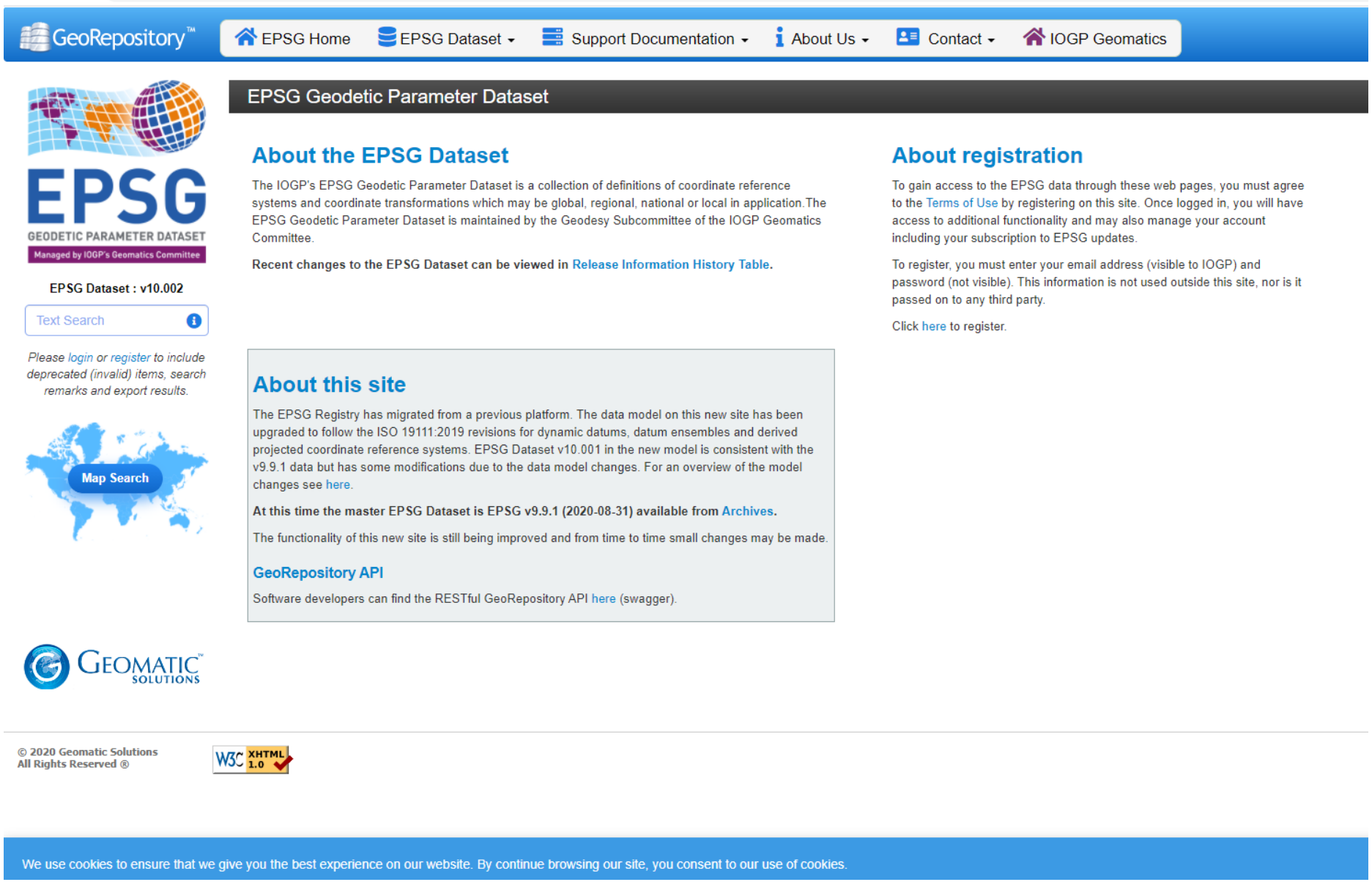
IOGP will take the legacy IOGP Geodetic Registry API offline in September, 2020. A related announcement is at https://epsg.org

Therefore, OGC is planning to reconfigure the OGC Definitions Server to support the upgraded IOGP Geodetic Registry API by then or soon after.

A proposed mapping from the current OGC URIs to the current EPSG URNs and new EPSG URIs is shown below.

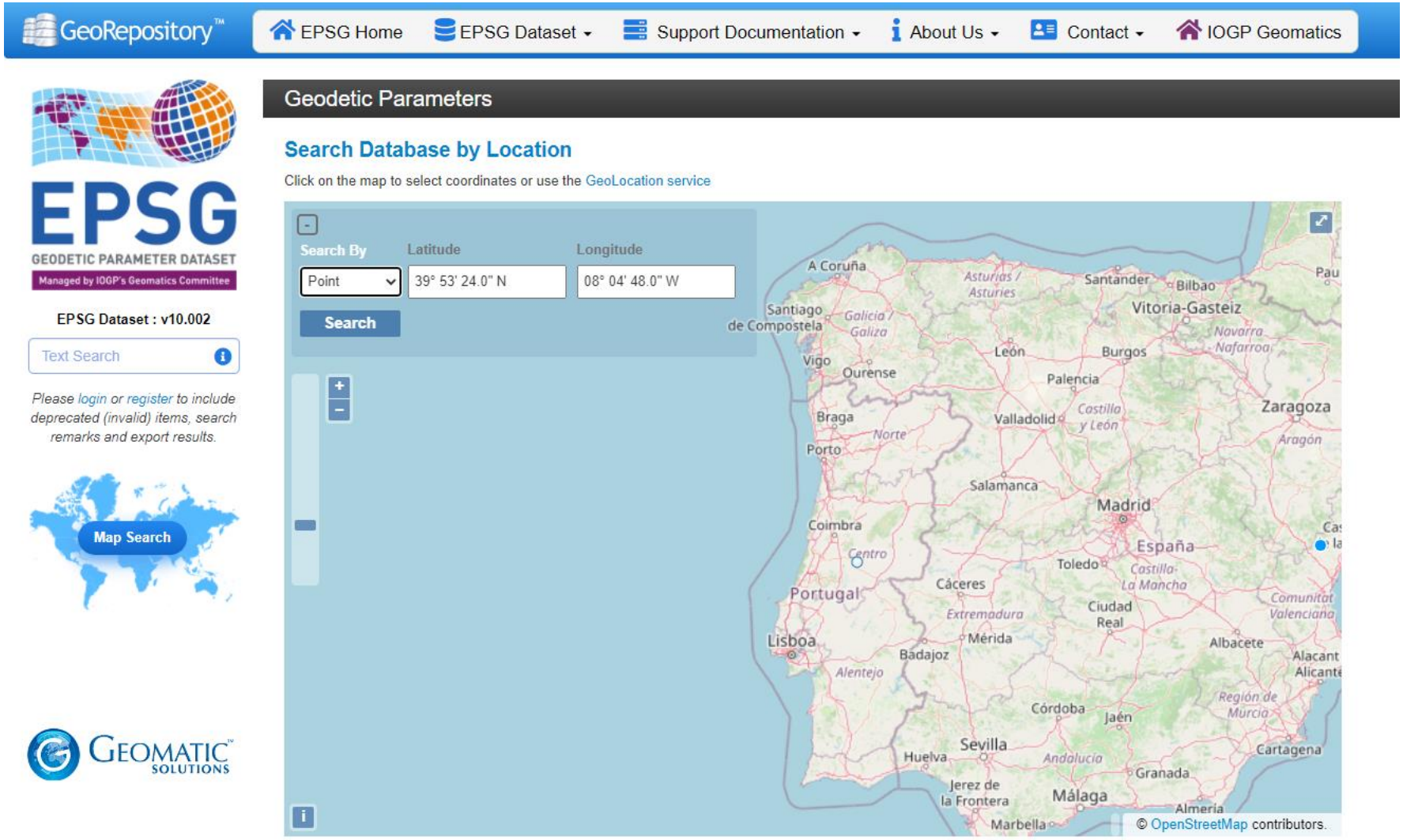
OGC Syntax	Current EPSG URN Syntax	Future EPSG URI Syntax	Notes
http://www.opengis.net/def/...	http://www.epsg-registry.org/export.htm?gml=urn:ogc:def:...	http://apps.epsg.org/def/...	1, 2, 11, 12, 13
...area/EPSG/0/[code]	...area:EPSG::[code]	...extent/EPSG/0/[code]/gml	3
...axis/EPSG/0/[code]			4
...axis-name/EPSG/0/[code]	...axis-name:EPSG::[code]	...axis-name/EPSG/0/[code]/gml	

https://www.ogc.org/blog/3260



https://epsg.org/home.html [European Petroleum Survey Group]

EPSG, geodetic parameters dataset



https://epsg.org/search/by-name/?sessionkey=&polygon=%7B%22type%22%3A%22Point%22%2C%22coordinates%22%3A%5B-8.08%2C39.89%5D%7D

Geodetic Parameters

Search Database

Text Search GO

point Clear all

Search Results (456 Objects Found) Export

Search results only display valid entries. Please login or register to include deprecated and invalid objects.

Report Selected Results

CRSs (197) | Transformations (146) | Point Motion Operations (0) | Concatenated Operations (3) | Conversions (34) | Datums (76) | More...

REPORT	NAME	CODE	TYPE	EXTENT	DATA SOURCE	REMARKS	REVISION DATE
	Cascais height	5780	vertical	Portugal - mainland - onshore	EPSG		14 March 2008
	Datum 73	4274	geographic 2D	Portugal - mainland - onshore	EPSG		6 January 2004
	Datum 73 / Modified Portuguese Grid	27493	projected	Portugal - mainland - onshore	EPSG	The projection parameters have...	14 March 2008
	Datum 73 / UTM zone 29N	27429	projected	Portugal - mainland - onshore	EPSG		2 June 1995
	ED79	4668	geographic 2D	Europe - west	EPSG		27 May 2005
	ED87	4231	geographic 2D	Europe - west	EPSG		6 January 2004
	EGM2008 height	3855	vertical	World	EPSG	Zero-height surface resulting...	17 July 2019
	EGM84 height	5798	vertical	World	EPSG	Zero-height surface resulting...	17 July 2019
	EGM96 height	5773	vertical	World	EPSG	Zero-height surface resulting...	17 July 2019
	ETRS89	4258	geographic 2D	Europe - ETRF by country	EPSG	Has been realized through ETRF...	14 March 2020
	ETRS89 / Portugal TM06	3763	projected	Portugal - mainland - onshore	EPSG		30 March 2020
	ETRS89 / UTM zone 29N	25829	projected	Europe - 12°W to 6°W and ETRS8...	EPSG	The distinction in usage betwe...	30 March 2020
	ETRS89 / UTM zone 29N (N-E)	3041	projected	Europe - 12°W to 6°W and ETRS8...	EPSG	ETRS89-LCC (CRS code 3034) use...	30 March 2020
	ETRS89 + EVRF2000 height	7409	compound	Europe - EVRF2000	EPSG	Replaced by ETRS89 + EVRF2007...	30 March 2020
	ETRS89 + EVRF2007 height	7423	compound	Europe - EVRF2007	EPSG	Replaces ETRS89 + EVRF2000 hei...	30 March 2020

First < Previous 1 2 3 4 Next > Last

Items per page: 50

Geodetic Parameters

Search Database

Text Search GO

point Clear all

Search Results (456 Objects Found) Export

Search results only display valid entries. Please login or register to include deprecated and invalid objects.

Report Selected Results

CRSs (197) | **Transformations (146)** | Point Motion Operations (0) | Concatenated Operations (3) | Conversions (34) | Datums (76) | Mor

REPORT	NAME	CODE	TYPE	EXTENT
☐	Cascais height to EVRF2000 height (1)	5427	transformation	Portugal - mainland - onshore
☐	Cascais height to EVRF2019 height (1)	9439	transformation	Portugal - mainland - onshore
☐	Cascais height to EVRF2019 mean-tide height (1)	9440	transformation	Portugal - mainland - onshore
☐	Datum 73 to ETRS89 (1)	1657	transformation	Portugal - mainland - onshore
☐	Datum 73 to ETRS89 (3)	1992	transformation	Portugal - mainland - onshore
☐	Datum 73 to ETRS89 (4)	5036	transformation	Portugal - mainland - onshore
☐	Datum 73 to ETRS89 (5)	5037	transformation	Portugal - mainland - onshore
☐	Datum 73 to ETRS89 (6)	6189	transformation	Portugal - mainland - onshore
☐	Datum 73 to WGS 84 (1)	1658	transformation	Portugal - mainland - onshore
☐	Datum 73 to WGS 84 (3)	1983	transformation	Portugal - mainland - onshore
☐	Datum 73 to WGS 84 (4)	1987	transformation	Portugal - mainland - onshore
☐	ED50 to ETRS89 (13)	5040	transformation	Portugal - mainland - onshore

Coordinate Transformation: Cascais height to EVRF2000 height (1)

Transformation Details [VALID]

NAME:	Cascais height to EVRF2000 height (1)
CODE:	5427
VERSION:	EuG-Prt
VARIANT:	1
ACCURACY (M):	0.1
USAGE:	

Usage Details

SCOPE:	Change of height to a different vertical reference surface.
EXTENT:	Portugal - mainland - onshore

SOURCE CRS:	Cascais height
TARGET CRS:	EVRF2000 height

TRANSFORMATION PARAMETERS:

Parameter	Value	Reversible	Unit
Vertical Offset	-0.315	YES	metre

TRANSFORMATION METHOD: Vertical Offset

META DATA

REMARKS:	Determined at 5 points. RMS residual 0.013m, maximum residual 0.021m. The Cascais vertical reference surface is below the EVRF2000 vertical reference surface.
INFORMATION SOURCE:	EuroGeographics, http://crs.bkg.bund.de/crs-eu/
DATA SOURCE:	EPSG
REVISION DATE:	16 de outubro de 2017
CHANGE ID:	[2008.01] [2014.027]

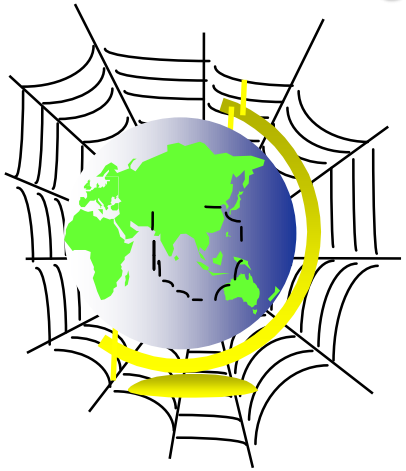
ALIAS:

Alias	Naming System	Remarks
PT_CASC / OH to EVRF2000	EuroGeographics Identifier	

ISO/TC 211 web-site

https://www.iso.org/committee/54904.html

Contém :



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- **Plan** your technology direction using a proven OGC process

EMERGENT TRENDS

Clusters of emerging trends that score high on the criteria, assessments and roadmaps are developed and provided in the complete OGC Technology Forecast. For example, COVID-19 has triggered the convergences of multiple geospatial trends in order to respond to the pandemic. Assessments of key trends are conducted to better characterize the most impactful trends. In a typical report, 6 clusters will be evaluated in-depth. TThe table below lists the current set of 12 emergent clusters. A full version of the OGC Tech Trends Report provides an in-depth evaluation and development roadmap of several of these clusters.

EMERGENT TRENDS CLUSTERS:


Responding to COVID-19


Connected Autonomous Vehicles


Cloud Native & Edge Computing


Urban Digital Twin


Spatial Data on the Web


New Space Exploration


Geospatial Data Science


Open API Management


AI & Machine Learning

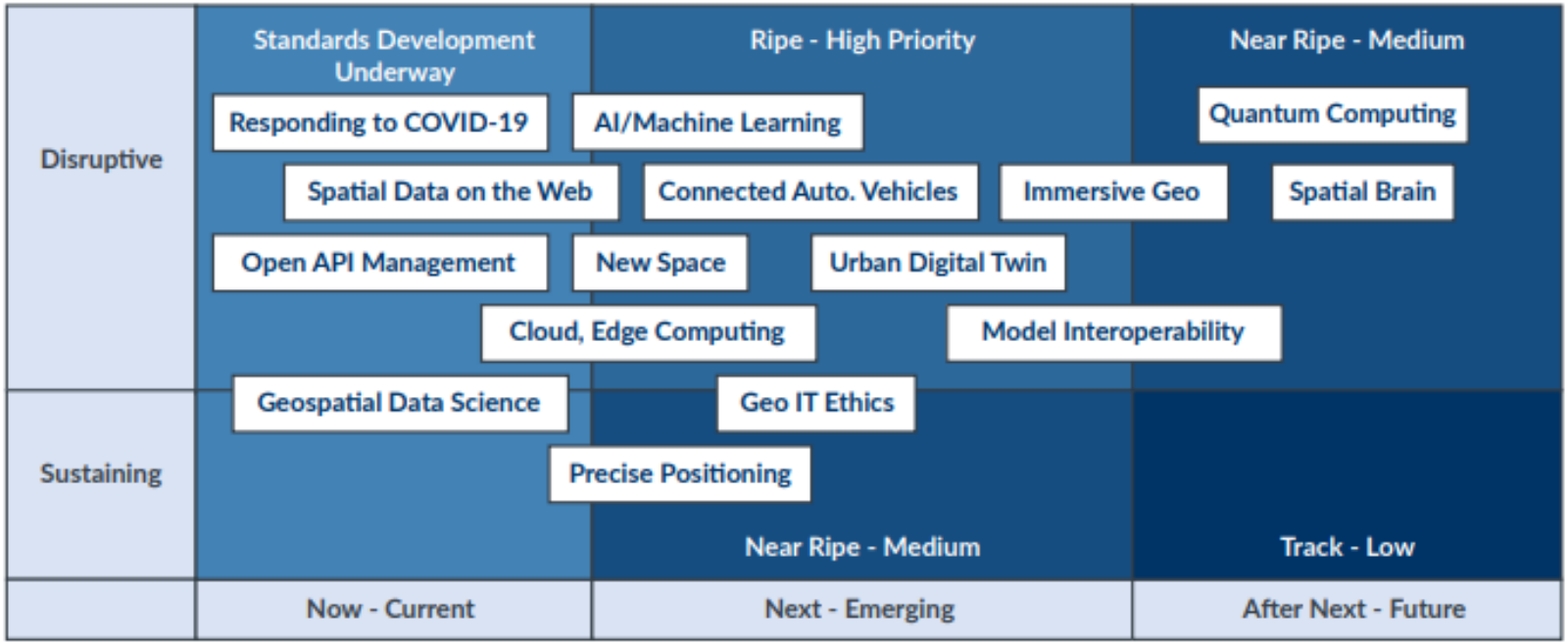

Geo IT Ethics


Immersive Geo: AR XR


Model Interoperability

Ciências ULisboa

TRENDS THAT ARE ASSESSED TO BE BOTH DISRUPTIVE AND NEXT ARE DEEMED TO BE OF THE HIGHEST PRIORITY.



2020-05-23

OGC Takes action based on the OGC Technology Forecast. As a hub for thought leadership and innovation on geospatial standards and innovation for all things related to location - OGC activities in the Standards Program and Innovation Program are developing the next generation geospatial technology ecosystem.

Inspire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INSPIRE
Infrastructure for Spatial Information in the European Community
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INSPIRE DIRECTIVE
In Europe a major recent development has been the entering in force of the INSPIRE Directive in May 2007, establishing an infrastructure for spatial information in Europe to support Community environmental policies, and policies or activities which may have an impact on the environment.
INSPIRE is based on the infrastructures for spatial information established and operated by the 27 Member States of the European Union. The Directive addresses 34 spatial data themes needed for environmental applications, with key components specified through technical implementing rules. This makes INSPIRE a unique example of a legislative "regional" approach.
Legislation
Directive 2007/2/EC of the European Parliament and of the Council of 14 March 2007 establishing an Infrastructure for Spatial Information in the European Community (INSPIRE) was published in the official Journal on the 25th April 2007. The INSPIRE Directive entered into force on the 15th May 2007
To ensure that the spatial data infrastructures of the Member States are compatible and usable in a Community and transboundary context, the Directive requires that common Implementing Rules (IR) are adopted in a number of specific areas (Metadata, Data Specifications, Network Services, Data and Service Sharing and Monitoring and Reporting). These IRs are adopted as Commission Decisions or Regulations, and are binding in their entirety. The Commission is assisted in the process of adopting such rules by a regulatory committee composed of representatives of the Member States and chaired by a representative of the Commission (this is known as the Comitology procedure).
Directive 2007/2/EC of the European Parliament and of the Council of 14 March 2007 establishing an Infrastructure for Spatial Information in the European Community (INSPIRE) 14.03.2007
INSPIRE Metadata Regulation 03.12.2008
Commission Decision regarding INSPIRE monitoring and reporting 05.06.2009
Commission Regulation (EC) No 976/2009 of 19 October 2009 implementing Directive 2007/2/EC of the European Parliament and of the Council as regards the Network Services 19.10.2009
Corrigendum to INSPIRE Metadata Regulation 15.12.2009

INSPIRE – DIRECTIVE 2007/2/EC

DIRECTIVES

DIRECTIVAS

DIRECTIVAS

DIRETTIVE

DIRETTIVA 2007/2/CE DEL PARLAMENTO EUROPEO E DEL CONSIGLIO

del 14 marzo 2007

che istituisce un'Infrastruttura per l'informazione territoriale nella Comunità europea (Inspire)

INSPIRE – DIRECTIVE 2007/2/EC

Será que é irrelevante esta questão? (da designação)

Infraestrutura para (de)

- Informação Ambiental
- Informação Geográfica
- Informação Cartográfica

Art. 4 - The Infrastructure for Spatial Information in the European Community (Inspire) should assist policy-making in relation to policies and activities that may have a direct or indirect impact on the **Environment.**

Termos:

'spatial data' means any data with a direct or indirect reference to a specific location or geographical area; (ISO : geographic feature)

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English (en)

http://inspire.ec.europa.eu/

European Commission

INSPIRE KNOWLEDGE BASE

Search...

Infrastructure for spatial information in Europe

European Commission > INSPIRE

Home | Learn | Implement | Participate | Use | Toolkit

INSPIRE Video

https://www.youtube.com/watch?time_continue=22&v=xew6qI-6wNk

Focus On

Latest News

25/08/2021
Re3gistry presented at the Italian event for Public Administrations
18/08/2021
Vacancy: Scientific Project Officer - Data spaces for the "twin" digital and green transitions
05/08/2021
European Commission partnering with FOSS4G 2021

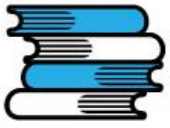
All News

Events

25/10/2021
INSPIRE conference 2021
26/02/2021
Webinar: INSPIRE Coverage data and service implementation candidate good practice
11/12/2020
INSPIRE Community Forum Webinar

All Events

Quick Links





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INSPIRE Principles
INSPIRE Legislation
Implementing Rules
INSPIRE Technical Guidance
Who's who?
Training

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About INSPIRE

The INSPIRE Directive aims to create a European Union spatial data infrastructure for the purposes of EU environmental policies and policies or activities which may have an impact on the environment. This European Spatial Data Infrastructure will enable the sharing of environmental spatial information among public sector organisations, facilitate public access to spatial information across Europe and assist in policy-making across boundaries.

INSPIRE is based on the infrastructures for spatial information established and operated by the Member States of the European Union. The Directive addresses 34 spatial data themes needed for environmental applications.

The Directive came into force on 15 May 2007 and will be implemented in various stages, with full implementation required by 2021.

This video provides an overview of why INSPIRE is needed and what types of spatial are covered by INSPIRE.

Data Specifications

The INSPIRE Implementing Rules on interoperability of spatial data sets and services (IRs) and Technical Guidelines (Data Specifications) specify common data models, code lists, map layers and additional metadata on the interoperability to be used when exchanging spatial datasets.

Datasets in scope of INSPIRE are ones which come under one or more of the 34 spatial data themes (below) set out in the INSPIRE Directive. Interoperability in INSPIRE means the possibility to combine spatial data and services from different sources across the European Community in a consistent way without involving specific efforts of humans or machines. Interoperability may be achieved by either changing (harmonising) and storing existing data sets or transforming them via services for publication in the INSPIRE infrastructure.

While the Implementing Rules specify what must be implemented at an abstract and generic level, the non-binding Technical Guidelines specify how legal obligations could be implemented, making reference to existing geospatial standards where appropriate. Implementing these Technical Guidelines will maximise the cross-border and cross-thematic interoperability of INSPIRE spatial data sets and services as well as guaranteeing interoperability with other sectors.

Each Annex has a set of milestones for when metadata, data, and network services for datasets are to be available, set out in this roadmap.

ANNEX: 1

- Addresses
- Administrative units
- Cadastral parcels
- Coordinate reference systems
- Geographical grid systems
- Geographical names
- Hydrography
- Protected sites
- Transport networks

Implement

Guide for implementers
Roadmap
Data Specifications
Monitoring & Reporting
Metadata
Network Services
Data and Service Sharing
Spatial Data Services
Maintenance and Implementation Framework

Data Specifications

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Learn

Data Specifications > Themes > Cadastral parcels

Areas defined by cadastral registers or equivalent.
Annex 1

Description

INSPIRE Data Specification on Cadastral Parcels – Technical Guidelines 3.1

Read/Compare Technical Guidelines

Registry entry for [Cadastral parcels]

Thematic Clusters Links

Topographic and Cadastral Reference Data
Cadastral parcels

[Cadastral parcels] Data on INSPIRE Geoportal

Find Your Scope

Implementations

Data Models

Data Schema

Experts

http://inspire.ec.europa.eu/Themes/122/2892

INSPIRE Data Sets - EU & EFTA Country overview

INSPIRE Geoportal Data Set Statistics

172876
Metadata records

28521
Downloadable Data Sets

32357
Viewable Data Sets

Spatial scope coverage:
- National
- Regional

Select a COUNTRY

Austria	503 | 427 | 439	Finland	625 | 97 | 111	Latvia	138 | 42 | 69	Portugal	631 | 268 | 277
Belgium	602 | 460 | 497	France	43371 | 2399 | 3039	Liechtenstein	49 | 9 | 11	Romania	116 | 28 | 32
Bulgaria	134 | 23 | 23	Germany	44692 | 22029 | 23627	Lithuania	125 | 99 | 31	Slovakia	266 | 36 | 45
Croatia	114 | 10 | 22	Greece	58 | 58 | 58	Luxembourg	306 | 213 | 248	Slovenia	93 | 12 | 12
Cyprus	42 | 32 | 34	Hungary	121 | 23 | 20	Malta	157 | 136 | 152	Spain	219 | 153 | 47
Czech Republic	143 | 54 | 68	Iceland	147 | 7 | 0	Netherlands	196 | 120 | 132	Sweden	251 | 172 | 202

A Directiva INSPIRE

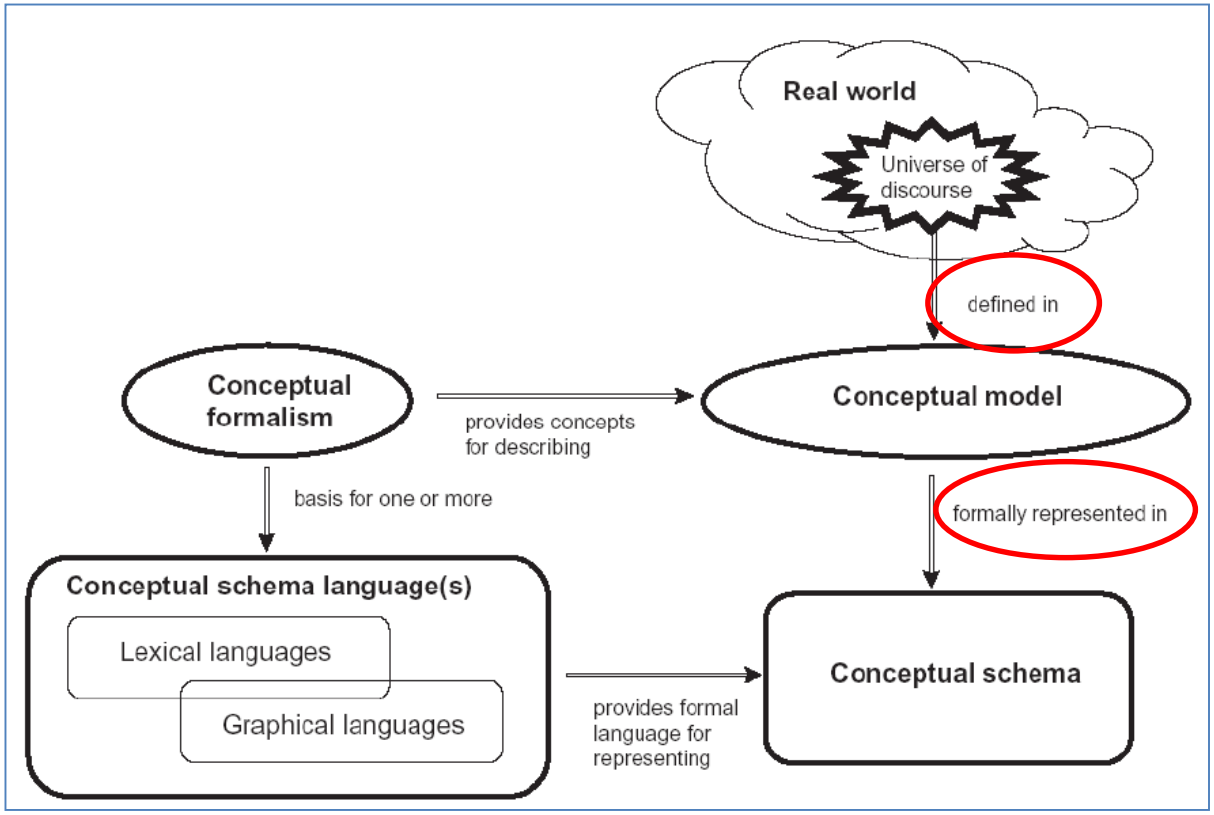
A presente directiva abrange os conjuntos de dados espaciais que satisfaçam as seguintes condições:

- Estarem relacionados com uma zona sobre a qual um Estado-Membro tenha e/ou exerça jurisdição;
- Estarem disponíveis em formato digital;
- Serem mantidos por entidades públicas (ou terceiras) por conta da mesma;
- Dizerem respeito a um ou mais dos temas enumerados nos anexos I, II ou III.

A presente diretiva NÃO exige a recolha de novos dados espaciais.

Generic Conceptual Model

Requirement 4	The reference model specified in ISO 19101 shall be used as the reference model of the INSPIRE data specifications.



Conceptual schema language

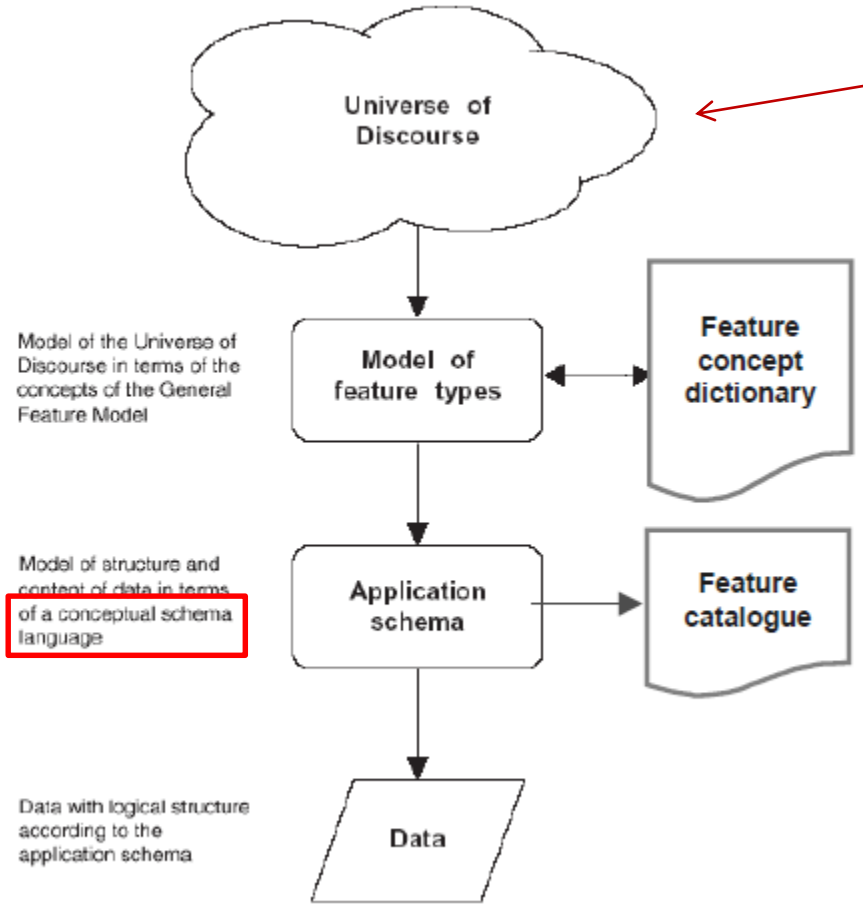
Requirement 20	Every INSPIRE application schema shall be specified in UML, version 2.1.

The use of a common conceptual schema language (i.e. UML) allows for an automated processing of application schemas and the encoding, querying and updating of data based on the application schema – across different themes and different levels of detail.

Requirement 21	Every spatial object type and its properties shall be shown in class diagrams in the UML package describing the application schema (or packages contained by that package).

Requirement 22	The use of UML shall conform to ISO 19109 8.3 and ISO/TS 19103 with the exception that UML 2.1 instead of ISO/IEC 19501 shall be used.

General Feature Model



"Community environmental policies and policies or activities which may have an impact on the environment"

The spatial object types of an INSPIRE application schema shall be represented in a corresponding feature catalogue.

ISO 19110

General Conceptual Model

2 Normative references

EN ISO 19101:2005, Geographic information — Reference model

ISO/TS 19103:2005, Geographic Information — Conceptual schema language

NOTE A revision of the standard is a current work item of ISO/TC 211. To the extent possible, alignment of this document with the future version has been taken into consideration.

EN ISO 19107:2005, Geographic information — Spatial schema

EN ISO 19108:2005, Geographic information — Temporal schema

EN ISO 19109:2006, Geographic Information — Rules for application schemas

EN ISO 19110:2006, Geographic information — Methodology for feature cataloguing

EN ISO 19135:2007, Geographic information — Procedures for item registration

EN ISO 19136:2009, Geographic Information – Geography Markup Language

ISO/TS 19139:2007, Geographic Information – Metadata – XML Schema implementation

ISO 19156:2011, Geographic Information – Observation and Measurements

UML 2.1.2, Unified Modelling Language (UML) Superstructure and Infrastructure, Version 2.1.2

A Directiva INSPIRE

Methodology for the development of data specifications (D2.6_v3.0.pdf)

Apart from logical consistency (see the Generic Conceptual Model clause 20), the INSPIRE Directive **does not** spell out

(D2.6) 7.5 Data quality

ISO 19131 requires a data specification to cover the data quality elements and data quality subelements defined in ISO 19113. Those quality elements are:

- Completeness
- Logical Consistency
- Positional Accuracy
- Temporal Accuracy
-Thematic Accuracy

metadata

Methodology for the development of data specifications (D2.6_v3.0.pdf)

However, as INSPIRE is based on existing data, it won't be possible that all data sets will be compliant with the quality required (or at least desirable).

Recommendation 25
Specify the positional accuracy desirable in the common data specification; accept deviations and ask data providers to register them in metadata, at data set level.

In the INSPIRE **administrative unit** data specification, there are no mandatory quality requirements. However it is recommended that Member States provide the data at the source accuracy where possible targeting a minimal positional accuracy of **50 meters**. The actual values of data quality elements (omission, topological and conceptual consistency, positional, thematic, and temporal accuracy) have to be published as metadata, when they are available.

Methodology for the development of data specifications (D2.6_v3.0.pdf)

Recommendation 26
The main point to ensure consistency across national boundaries is to combine data sets at similar levels of detail.

Recommendation 27
The possible levels of detail to be considered for INSPIRE data specifications are:
- European
- National
- Regional
- Local

Example 1 (geology):
- european level (continent) : from 1 : 5 000 000 to 1 : 1 500 000.
- national level (nation) : 1 : 250 000 to 1 : 1 000 000
- regional level : from 1 : 250 000 to 1 : 25 0000
- local level : scale > 1 : 25 000.

Definition of Annex Themes and Scope

Estrutura dos dados Espaciais

Dados referência
(reference data)

+

Dados temáticos

Reference data is a series of dataset that everybody involved with geographic information uses to reference his/her own data as part of their work.

It is used as a common base to which **thematic data** may be referenced.

Os dados de referência deve cumprir três requisitos funcionais:

- fornecer uma localização inequívoca para a informação do utilizador
- permitir a fusão de dados de diversas fontes
- Fornecer o contexto que permita aos outros a melhor compreensão do que está a ser apresentado

Definition of Annex Themes and Scope

Reference Data

1. Geodetic reference data
2. Units of administration
3. Units of property rights (parcels, buildings)
4. Addresses
5. Selected topographic themes (hydrography, transport, height)
6. Orthoimagery
7. Geographical names

É expectável que os Dados de Referencia sejam produzidos ou organizados pelas Agencias Nacionais de Cartografia e Agencias Cadastrais.

Anexos

The data themes of INSPIRE are divided in modular blocks. "Annexes I and II focus on reference data, while Annex III focuses on data for environmental analysis and impact assessment.

Annex I

1. Coordinate reference systems
2. Geographical grid systems
3. Geographical names
4. Administrative units
5. Addresses
6. Cadastral parcels
7. Transport networks
8. Hydrography
9. Protected sites

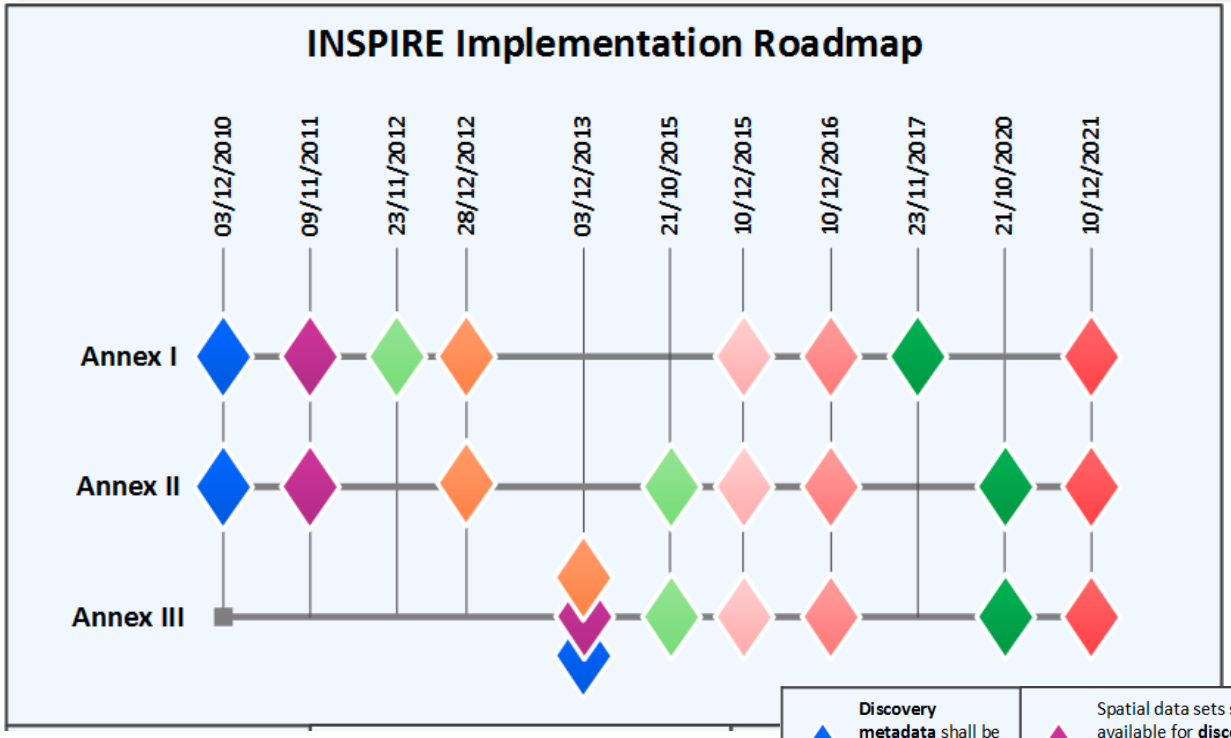
Annex II

10. Elevation
11. Land cover
12. Ortho-imagery
13. Geology

Annex III

14. Statistical units
15. Buildings
16. Soil
17. Land use
18. Human health and safety
19. Utility and governmental services
20. Environmental monitoring facilities
21. Production and industrial facilities
22. Agricultural and aquaculture facilities
23. Population distribution – demography
24. Area management/restriction/regulation zones & reporting units
25. Natural risk zones
26. Atmospheric conditions
27. Meteorological geographical features
28. Oceanographic geographical features
29. Sea regions
30. Bio-geographical regions
31. Habitats and biotopes
32. Species distribution
33. Energy Resources
34. Mineral resources

Implementation Roadmap



Discovery metadata shall be available for spatial data sets and services

Spatial data sets shall be available for **discovery and view** from the INSPIRE geo-portal (data does not yet need to be conformant to IR-ISDSS)

Spatial data sets shall be available for **download and transformation** (whenever applicable[1]) from the INSPIRE geo-portal (data does not yet need to be conformant to IR-ISDSS[2])

Newly collected and extensively restructured spatial data sets shall be **conformant** to IR-ISDSS (incl. **metadata for interoperability**) and available through network services

All spatial data sets shall be **conformant** to IR-ISDSS (incl. **metadata for interoperability**) and available through network services

All invocable spatial data services shall be **conformant to Annex V of IR-ISDSS** (incl. **metadata**)

Invocable spatial data services related to newly collected and extensively restructured spatial data sets shall be **conformant to Annexes VI and** (where practicable) **VII of IR-ISDSS** (incl. **metadata**)

All invocable spatial data services shall be **conformant to Annexes VI and** (where practicable) **VII of IR-ISDSS** (incl. **metadata**)

IR-ISDSS = Implementing Rules on interoperability of spat
1089/2010), including its amendments Regulations (EU
[1] Transformation Services only need to be provided if dat
other means (see Art. 7(3) of the INSPIRE Directive)
[2] With the exception of newly collected and extensively r
compliant with the IR-ISDSS by 23/11/2012

Coordinate Reference Systems (CRS)

O âmbito do tema *Coordinate reference systems abrange os Sistemas de Referencia de Coordenadas Geodésicas (Geodetic Coordinate* Reference Systems (CRS)) necessários para referenciar de forma inequivoca a informação espacial como um conjunto de coordenadas (X, Y, Z) e /ou latitude, longitude e altitude .

As coordenadas latitude, longitude e altitude elipsoidal podem ser calculadas a partir das coordenadas (X,Y,Z) usando um elipsóide de referencia.

As **coordenadas planas** (cartográficas) são calculadas a partir da latitude e longitude usando uma projeção cartográfica apropriada. São adoptadas e recomendadas diferentes projeções para diferentes objectivos.

Coordinate Reference Systems (CRS)

Requirement 1	For the three-dimensional and two-dimensional (horizontal component) coordinate reference systems, the European Terrestrial Reference System 1989 (ETRS89) shall be used for the areas within the geographical scope of ETRS89.
Requirement 2	The International Terrestrial Reference System (ITRS) or other geodetic coordinate reference systems compliant with ITRS shall be used in areas that are outside the geographical scope of ETRS89.
Requirement 3	For the computation of latitude, longitude and ellipsoidal height, and for the computation of plane coordinates using a suitable mapping projection, the parameters of the GRS80 ellipsoid shall be used.
Requirement 4	For representation with plane coordinates one of the Lambert Azimuthal Equal Area (ETRS89-LAEA), the Lambert Conformal Conic (ETRS89-LCC) or the Transverse Mercator (ETRS89-TMzn) projection shall be used.

Coordinate Reference Systems (CRS)

Requirement 8	For the vertical component on land, the European Vertical Reference System (EVRS) shall be used to express gravity-related heights for the areas within the geographical scope of EVRS.

Requirement 9	Other vertical reference systems related to the Earth gravity field shall be used to express gravity-related heights in areas that are outside the geographical scope of EVRS.

Recommendation 6	For referring the coordinate reference systems adopted by INSPIRE, identifiers presented in the table 1 are recommended.

Recommendation 7	For referring a compound CRS, one 2D and one 1D system combined together, the respective identifier shall be created by appending the identifiers of the 2D and 1D CRS with a slash between both.

EXAMPLE When both ETRS89-GRS80 and EVRS the CRS used the identifier shall be ETRS89-GRS80/EVRS.

Coordinate Reference Systems (CRS)

Table 1

Identifier	Type of coordinates
ETRS89-XYZ	Cartesian coordinates in ETRS89 in space (X,Y,Z)
ETRS89-GRS80h	Geodetic (geographic) coordinates and ellipsoidal height in ETRS89 on the GRS80 ellipsoid (Latitude, Longitude, Ellipsoidal height)
ETRS89-GRS80	Geodetic (geographic) coordinates in ETRS89 on the GRS80 (Latitude, Longitude)
EVRS	Height in EVRS (H)
LAT	Depth of the sea floor, where there is an appreciable tidal range (D)
MSL	Depth of the sea floor, in marine areas without an appreciable tidal range, in open oceans and effectively in waters that are deeper than 200m (D)
ISA	Pressure coordinate in the free atmosphere (P)
PFO	Pressure coordinate in the free ocean (P)
ETRS89-LAEA	ETRS89 coordinates projected into plane coordinates by the Lambert Azimuthal Equal Area projection (Y,X)
ETRS89-LCC	ETRS89 coordinates projected into plane coordinates by the Lambert Conformal Conic projection (N,E)
ETRS89-TMzn[18] (29N)	ETRS89 coordinates projected into plane coordinates by the Transverse Mercator projection (N,E)

Geographical grid systems

Definition:
'grid' means a network composed of two or more sets of curves in which the members of each set intersect the members of the other sets in an algorithmic way,

Geographical Grids = Quadricula Geográfica

Requirement 1	The Grid_ETRS89-LAEA as defined in this document shall be used as a geo-referencing framework for the themes where grids with fixed and unambiguously defined locations of equal-area grid cells are needed.

The grid – proposed as the multipurpose Pan-European standard – is based on the ETRS89 Lambert Azimuthal Equal Area coordinate reference system with the centre of the projection at the point 52° N, 10° E and false northing: Y_0 = 3210000 m, false easting: X_0 = 4321000 m (CRS identifier in INSPIRE: ETRS89-LAEA).

The grid is designated as Grid_ETRS89-LAEA. For identification of an individual resolution level the cell size in metres is appended to the name.

EXAMPLE The grid at a resolution level of 100km is designated as Grid_ETRS89-LAEA_*100K*.

HUMBOLDT

Towards the Harmonisation of Spatial Information in Europe

HUMBOLDT contributes to the implementation of a European Spatial Data Infrastructure (ESDI) that integrates the diversity of spatial data available for a multitude of European organisations. It is the aim to manage and advance important parts of the implementation process of this ESDI.

The main goal of the HUMBOLDT project is to enable organisations to document, publish and harmonise their spatial information. The software tools and processes created will demonstrate the feasibility and benefits of an Infrastructure for Spatial Information in Europe as planned by the INSPIRE initiative (♂ INSPIRE), meeting the goals of Global Monitoring for Environment and Security (♂ GMES).

The technical goal of HUMBOLDT is to support Spatial Data Infrastructure (SDI) enablement by providing the functionalities for covering the data hamonisation process as a whole. The HUMBOLDT Tools and Services are built on current state of the art and standards, designed to provide solutions to all types of users, data custodians as well as private end-users. HUMBOLDT enables the use of single functionalities as part of your own infrastructure.

Learn more about HUMBOLDT

At a Glance provides a concise overview on the project's benefits.

Scenarios present example use cases explaining the application areas of HUMBOLDT.

Get Involved! Find out about possibilities to participate in and benefit from HUMBOLDT.

Please also visit our ♂ Community Website and the ♂ HUMBOLDT Training Platform.

HUMBOLDT Video

Download the HUMBOLDT Video: [MP4] [OGV] [WEBM]

Humboldt

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Test drive HALE 2.8.0

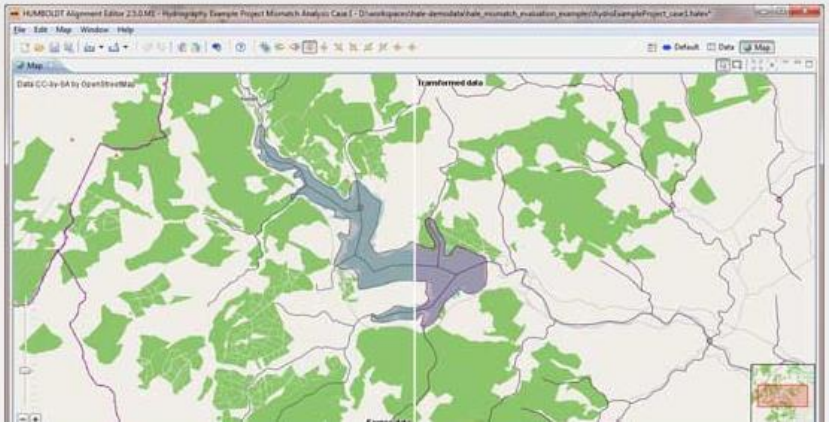
Recent blog posts:

HALE – The HUMBOLDT Alignment Editor

Status: Stable, active development

The mapping of elements such as Feature Types and Attributes of one conceptual schema (e.g. GML Application Schemas, Database Schemas or UML models) to another is a cornerstone of data harmonisation. The HUMBOLDT Alignment Editor (HALE) is a tool for defining and evaluating conceptual schema mappings. HALE allows domain experts to create logically and semantically consistent mappings and to transform geodata based on these mappings. Furthermore, a major focus is put on the documentation of the schema transformation process and its impacts, e.g. in the form of lineage information attached to the resultant transformed data.

Watch the HALE Tutorial for getting started!



HALE uses a high-level language for expressing the mappings. They can later be used by the Conceptual Schema Transformer processing component to execute a data transformation, e.g. from a non-harmonised data source to a INSPIRE-compliant data set.

To make this complex process

News

GeoServer App-Schema Integration: HALE 2.9.4 is out

2015-11-02: HALE has been supported well by the community in the past months with contributions, through support subscriptions and projects. ...

» more

AGILE 2013 workshop on Data Harmonisation

Members of the data harmonisation panel and the wider community will host the «Data Complexity Challenge – New Approaches to Data Harmonisation» preconference workshop at AGILE 2013, 14th of May, Leuven, Belgium.

» more (blog post)

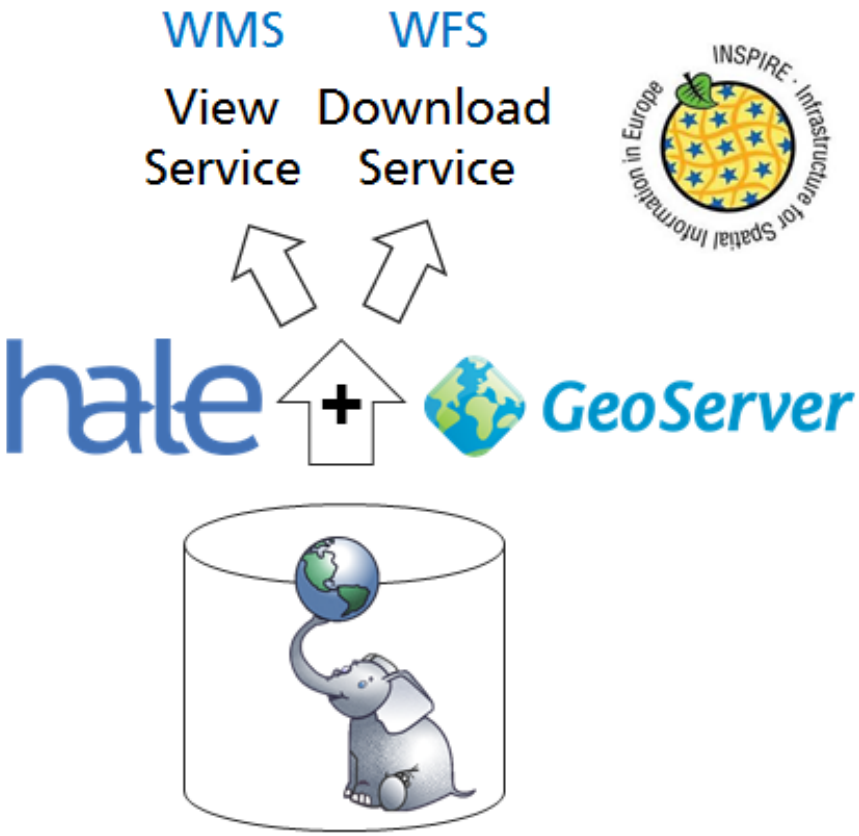
» more (AGILE WS paper)

HALE Evaluation

2012-04-20: The HUMBOLDT Alignment Editor Usage Evaluation and Comparison Questionnaire is online now. If you are a HALE user, please consider participating

GeoServer App-Schema configuration

Publishing OGC services based on GML Application Schemas and Complex Features with GeoServer is now easier than ever. Use HALE to define the mapping from your data store to an application schema, such as INSPIRE or NAS. Then, upload the resulting configuration for the GeoServer App-Schema plugin directly to your GeoServer instance. This feature was developed together with GeoSolutions S.R.L, Italy. More information on the new feature including future plans is available at the GeoSolutions Blog.



Ver programa HALE

SNIT e SNIG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PRODUTOS E SERVIÇOS
Sistema Nacional de Informação Territorial
SNIT
Clique Aqui →
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O que é o SNIT?
SNIT
IGT em vigor
SSAIGT
IGT em publicação
PCGT/PEC
IGT em curso
CRUS
CUP
Apresentação SNIT
Ver vídeo
Ver Vídeo
Acesso Simples
Ver Vídeo
Acesso Avançado - Infraestrutura de Dados Espaciais (IDE)
Enquadramento e evolução
Enquadramento e evolução do Sistema Nacional de Informação Territorial.
Objetivos e destinatários
Principais objetivos e destinatários do Sistema Nacional de Informação Territorial.
Vantagens
Benefícios do Sistema Nacional de Informação Territorial para o cidadão e para a eficiência e eficácia dos serviços.
Serviços WEB
O SNIT inclui um sistema de acesso à informação através da Web, o que permite aos seus utilizadores frequentes a utilização da informação gráfica nos respetivos ambientes de trabalho.

http://www.dgterritorio.pt/sistemas_de_informacao/snit/igt_em_vigor__snit_/acesso_simples/

INSPIRE

Página Inspire (ver vídeo)

http://inspire.jrc.ec.europa.eu/

Data Specifications

http://inspire.jrc.ec.europa.eu/index.cfm/pageid/2

Ver datamodels
Descarregar XML

Projecto Humboldt

http://www.esdi-humboldt.eu/home.html

Importar BuildingsBase no HALE