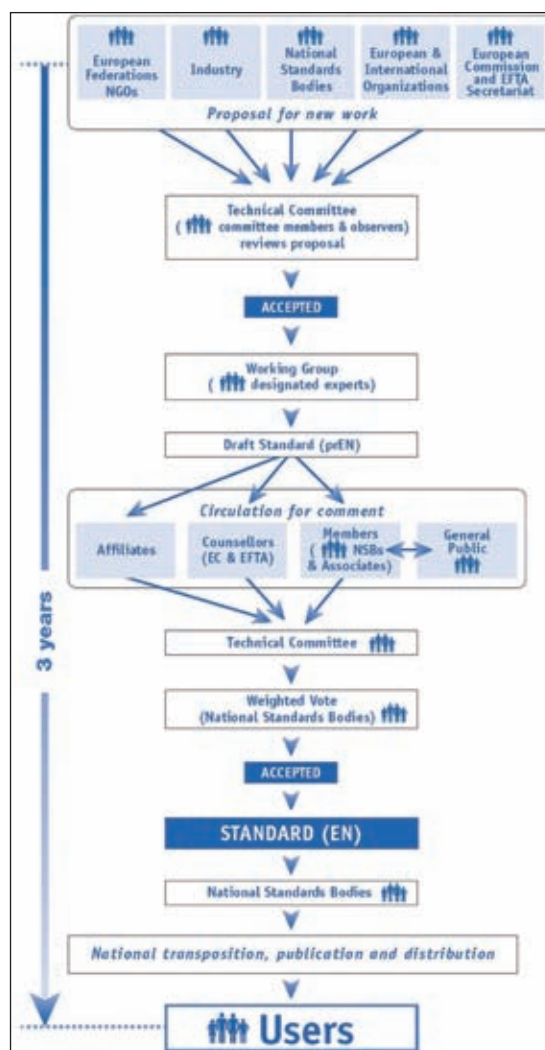


# Part 1: Standardization of Geo-information Standards in Practice

*The European directive known as Inspire came into force on May 15, 2007. Its purpose is to achieve an 'infrastructure for geographic information in Europe'. Once implemented in national legislation, this ambitious undertaking will have a considerable impact on the information management of government organizations.*

By: Huibert-Jan Lekkerkerk



Standardization trajectory within the CEN (source: www.cen.eu).

Various countries have been working towards a national geo-information infrastructure for some years. An important aspect of creating a national geo-information infrastructure is the adoption of various agreements between suppliers and users of geographic information. The terms of these agreements concern the organization, but (technical) stan-

dards also play a large role. This series of articles will discuss certain geo-information-related standards: what the standard describes, what it is for, and its impact on everyday processes. This article serves as an introduction and will discuss the various types of standards in the development of international standards.

## Standards

One way to differentiate between standards is based on the area of application. When considering information infrastructure we can distinguish between three important types of standards:

- Technical standards
- Semantic standards
- Guidelines and directives

### Technical Standards

These standards focus on the technical aspects of data exchange and storage. They specify how an exchange format such as GML should be defined or how services between two systems are to be built. This type of standard is usually defined on an (inter)national level by an organization such as the ISO (International Organization for Standardization) and the CEN (European Committee for Standardization), but Inspire is also involved in the development of this type of standard.

### Semantic Standards

This type of standard describes the meaning of the information or a part thereof. They are not concerned with the "how" of the exchange but more with the "what". Semantic standards are usually developed by a certain sector or domain and are only valid within that domain. Semantic standards that cross domains are usually framework standards developed on an (inter)national level.

### Guidelines and Directives

A guideline or directive is usually a set of agreements on how to define certain processes, for example a guideline on how to perform certain measurements. If such a guideline becomes normative for an entire industry it is usually standardized on an (inter)national level. Otherwise, the guideline is more of a 'best practice'.

## Open or Closed

Apart from the area of application, we can distinguish standards by the method used to define them. On that basis there are open and closed standards. An open standard should conform to the following [European Interoperability Framework]:

1. The standard is adopted and will be maintained by a not-for-profit organization, and its ongoing development occurs on the basis

of an open decision-making procedure available to all interested parties (consensus, majority decision etc.).

2. The standard has been published and the standard specification document is available either freely or at a nominal charge. It must be permissible to all to copy, distribute and use it for no fee or at a nominal fee.
3. Intellectual property - i.e. patents possibly present - of (parts of) the standard is irrevocably made available on a royalty-free basis.
4. There are no constraints on the re-use of the standard.

Based on this definition, standards developed and/or maintained by a company are usually closed since they are not maintained by a non-profit organization.

### (Inter)national Standardization Organisations

Considering geographic-oriented standards, the most important international standardization organizations are:

- OGC (Open Geospatial Consortium), a consortium between various large software vendors and users
- ISO (International Organization for Standardization)
- CEN (European Committee for Standardization).

Many geographic-oriented standards were developed primarily by the OGC and from there, through the ISO, were adopted as international standards. Such a standard can then be adopted by the CEN or national standardization bodies. But a standard can also be developed by a national standardization body and from there, through either CEN or ISO, be adopted as a European or international standard.

### Sector Specific Standards

Apart from (inter)national organizations, there are a number of organizations that operate within a certain domain, usually within a certain country. Within the Netherlands, for example, the IDSW (InformationDesk standards Water) is responsible for maintaining and developing information standards relating to water management. These standards are usually classified as semantic standards and guidelines/directives.

### Standardization Process

One of the major differences between an open and a closed standard lies in decision making. With an open standard everybody should be allowed to take part in the standardization process. This leads to a process that is fairly



Inspire logo  
(source: [www.ec-gis.org](http://www.ec-gis.org)).

complicated and takes several years to complete. Within the ISO the following steps are distinguished in the process:

1. Proposal
2. Preparation
3. Commission
4. Enquiry
5. Approval
6. Publication.

During development of the standard a relatively small number of specialists form a working group under the guidance of a so-called technical commission (TC – ISO: TC211; CEN: TC287). Draft standards developed by the working group are checked by the technical commission and, during the final stages of the development, also with the national standardization bodies.

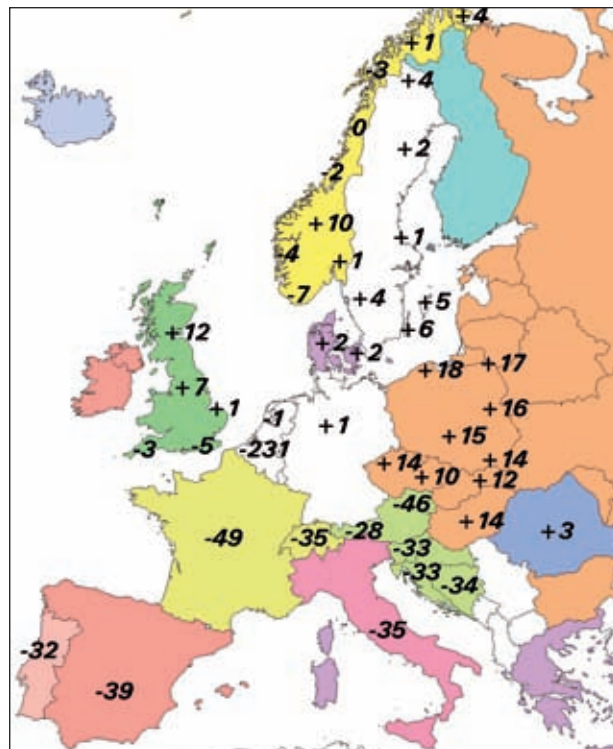
During enquiry the draft standard is publicized for comment.

Based upon the nature of the comments the draft standard is either changed according to the comments and then re-sent for additional comment, or is considered not viable as an international standard. It can then be publicized as a guideline if deemed important enough.

The resulting ISO standard is not mandatory or put into law, but those wishing to do business on a worldwide basis would be foolish not to adopt it since it provides easier access to new markets. Whenever an ISO standard is adopted by CEN, however, or the CEN develops a specific standard, the situation changes. European national standardization bodies must adopt a CEN standard and must also de-activate all conflicting national standards. Since national standards are usually referred to in legislation, this can have a serious impact on the industry of that country if a conflicting standard was in operation before the publication of the CEN standard.

### Inspire

Inspire is concerned with the exchange of environmentally-related geographic information from European governments. The idea is to create a central European Information Infrastructure wherein national geo-information sources are coupled to each other within a central infrastructure. It is therefore only concerned with the environmental information being exchanged between levels of government and not with the information used within an organization for its own purposes. Inspire defines which information should be made available, and against which restrictions.



Differences between the national vertical datums (height reference) within signify the need for standardization (source: [www.ec-gis.org](http://www.ec-gis.org)).

The first category of data, including orthoimagery, needs to be made available via Inspire in 2010.

### Standardization and Inspire

Inspire not only defines which information should be made available, but also the method by which it should be made available, or which standards should be used. For this purpose Inspire operates independently from CEN although they cooperate closely. Inspire has three important drafting teams writing the so-called implementing rules:

- Metadata
- Data specifications harmonization
- Network specifications.

At the moment the draft implementing rules for Metadata have been published. These draft implementing rules are directly based on ISO standard 19115. It is expected that the definitive implementing rules will be published later this year.

The data specifications harmonization team is concerned with semantic standardization, whereas the network specifications team is defining the implementing rules for the technical standardization of the infrastructure.

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OCG: [www.opengeospatial.org](http://www.opengeospatial.org); CEN: [www.cen.eu](http://www.cen.eu).