



2008-09-26

Number of pages: 8

## ISO/TC 211 Geographic information/Geomatics

**Title:** Summary of the ISO workshop on address standards: Considering the issues related to an international address standard, held on 25 May 2008 in Copenhagen, Denmark

**Source:** ISO/TC 211/WG 7 Convenor

**Expected action:** For information

**Type of document:** Report

**Hyperlink:** <http://www.isotc211.org/opendoc/211n2536/>

**Reference:** N 2436

---

**ISO/TC 211 Secretariat**

**Standards Norway**  
Strandveien 18  
P.O. Box 242  
NO-1326 Lysaker, Norway

Telephone: + 47 67 83 86 71  
Telefax: + 47 67 83 86 01

E-mail: [bjs@standard.no](mailto:bjs@standard.no)

URL: <http://www.isotc211.org/>

# ISO workshop on address standards: Considering the issues related to an international address standard

25 May 2008

Copenhagen, Denmark

## Summary of the workshop compiled by:

Antony K Cooper

Logistics and Quantitative Methods, CSIR, PO Box 395, Pretoria, 0001, South Africa

Email: [acooper@csir.co.za](mailto:acooper@csir.co.za)

and

Serena Coetzee

Department of Computer Science, University of Pretoria, Pretoria, South Africa

Email: [scoetzee@cs.up.ac.za](mailto:scoetzee@cs.up.ac.za)

## 1. Introduction

An address should be considered more broadly than just a set of directions for delivering post or for courier services. An address is also used for a wide range of public and private service delivery, including goods delivery, planning infrastructure delivery, connecting utilities, billing, emergency dispatch, household surveys, serving summonses, and land and property registration. Addresses are also critical for services that are not necessarily performed at the address, such as for rates and taxes, opening bank accounts, buying on credit, securing an identity document, voting, obtaining employment, conducting household surveys, visiting friends; and providing a reference context for presenting other information. An address can also give people a status, by showing that they are part of society (Coetzee & Cooper, 2007), and hence in a position to receive services on demand because they can be 'found'.

Addresses don't live in isolation, and are widely recognized as being a key form of geospatial information. For example, INSPIRE (INfrastructure for SPatial InformationN in Europe) is a European Directive (i.e. law across the European Union) for developing a spatial data infrastructure (SDI) for Europe. Annex 1 of the Directive identifies nine priority spatial data themes, one of which is 'addresses' (European Parliament 2007). Addresses are used every day by citizens, businesses and government as a human understandable description of the location of a specific piece of information (Coetzee *et al*, 2008a).

The objectives with this document are to provide the interested reader with some background information about a workshop held to explore the possibilities of an international address standard, an overview of the presentations at the workshop, and some follow-up work from the workshop that is currently in progress.

## 2. ISO Workshop on address standards

During the meetings of ISO/TC 211, *Geographic information/Geomatics*, in Xi'an, China, on 31 October 2007, an informal meeting was held with delegates from South Africa, Australia, Denmark, Japan, the International Association of Oil and Gas Producers (OGP), United Kingdom and the United States of America, to discuss holding a workshop on standards for addresses, attached to the following ISO/TC 211 Plenary (the 26<sup>th</sup>) in Copenhagen, Denmark. The *ISO Workshop on address standards: Considering the issues related to an international address standard*, was then held on Sunday, 25 May 2008. It was hosted and sponsored by the Danish National Survey and Cadastre (KMS) and held under the auspices of ISO/TC 211's Working Group 7, *Information Communities*, in collaboration with the European Address Forum. Together with Morten Lind of

KMS, the authors arranged the workshop and edited the proceedings (Coetzee *et al*, 2008b), which are available online at:

[http://www.isotc211.org/Address/Copenhagen\\_Address\\_Workshop/index.htm](http://www.isotc211.org/Address/Copenhagen_Address_Workshop/index.htm)

The workshop provided national and international perspectives on address standards. The purpose of this workshop was to consider the issues related to an international address standard:

- What is an address?
- What is the definition of an address in current national address standards?
- What is the scope of current national address standards?
- Why do we need a national address standard?
- Can we benefit from an international address standard?
- Is there enough reason to move ahead with an international address standard?
  - If yes, what should the scope (more or less) be and how do we proceed?
  - Should we start with a Stage 0 Review Summary of the issues?

Well over 40 people attended the workshop (including members of the INSPIRE Technical Working Group (TWG) on Addresses), which was more than expected. The following is the programme of presentations, with the presenting author underlined:

- *Overview of an address and purpose of the workshop*, Antony Cooper, Convenor of ISO/TC211's WG 7
- *Addressing the Needs of INSPIRE: The challenges of improving interoperability within the European Union*, Andrew Coote, INSIPRE Address Thematic Working Group
- *A general approach to addressing*, Rob Walker, United Kingdom
- *Ubiquitous public access and address standards*, Sang-Ki Hong, Convenor of ISO/TC211's WG 10 – Ubiquitous public access
- *Address data exchange in South Africa*, Serena Coetzee, Chair of ISO/TC 211's Programme Management Group
- *AS/NZS 4819:2003 : Geographic information - Rural and urban addressing and AS/NZS 4590:2006 : Interchange of client information*, John Hockaday, Australia
- *A conceptual framework for the description of Place Identifiers*, Reese Plews and Shigekazu Kawano, Japan.
- *Developing a Comprehensive Standard for US Address Data*, US Address Standard Working Group
- *Universal Postal Union (UPU) – International Postal Addressing Standards*, Ruth Jones and Joe Lubenow, Universal Postal Union (UPU)
- *Addresses as an infrastructure component: Danish experiences*, Morten Lind, Denmark
- *ISO/TC211 perspective on an international address standard*, Olaf Østensen, Chair of ISO/TC211

### 3. Summary of the presentations

The following is a summary of the salient points from these presentations.

**Cooper** (2008) provided the background to the workshop and gave an overview of an address. He drew on the work of Coetzee *et al* (2008a) to identify the commonalities between various definitions to produce a composite definition of an address:

*A structured, unique, complete, common reference for actual or potential service delivery to a location.*

He also presented a preliminary taxonomy of addresses, which could be used to identify for which types of addresses a standard caters, and for which it does not. He concluded by presenting three models for an international address standard:

- A *toolset* that could be drawn on for describing or building an address standard. These tools could include the common terms and definitions of an address, address elements and related concepts (as a vocabulary or an ontology); and/or a framework for describing an address system.
- The *superset of all other address standards*, incorporating all their different concepts of addresses, address elements and related concepts. Superficially a good option, in practice it will invariably produced an unwieldy standard that is difficult to use.

- The *universal interface between other standards*, providing the general model of an address, address elements and related concepts, as opposed to being merely a collection of special cases (Cooper 2008).

**Coote** (2008) identified three key issues that the INSPIRE TWG has encountered to date, and one that will be an issue in the future. These are probably issues for other international standards development initiatives, as well:

- *Language*: English is the language used for their deliberations, yet it is not the first language of most of the TWG. It is difficult enough engaging in complex, detailed arguments in one's first language, without the added complication of using a second or third language.
- *Distributed Team*: While teleconferences and email help, there is no substitute for face to face meetings for debating key conceptual issues.
- *Cross-theme Overlaps*: Eight different TWGs are working in parallel on the priority themes in Annex 1 of the INSPIRE Directive, with the scope of the Address TWG intersecting so many different themes.
- *Adoption and implementation*: Once a proposed standard has been completed by the technical experts, it is another challenge to take it through the management and political debates to get it adopted and implemented (Coote 2008).

**Walker** (2008) concludes that addresses can be created for a variety of addressable objects, and not just those that receive mail deliveries. He feels that the issues of addressing are about data management, not data formats, with the primary requirement for standards being a definitive dataset of addressable objects of particular types. Rules are also required for naming and numbering properties, streets and the geospatial areas used in addressing. The maintenance of a standard address dataset requires:

- Definition of categories of addressable objects;
- Adoption of core address components;
- A clear address lifecycle;
- A rule base to manage other aspects; and
- Data management and quality management (Walker 2008).

**Hong** (2008) identified the challenge of extracting unambiguous location information from the maze of different address formats. He considers the location information of a feature to be easily discoverable in ubiquitous geographical information (UBGI) environment, through using a *geo-labelling* mechanism, which facilitates exchange without further conversion or transformation through an overarching mechanism for spatial referencing using a dynamic position identification scheme, such as u-position (Hong 2008). If geo-labelling depends on government initiatives, though, it will be a major challenge to find the resources required in a country such as South Africa. However, if it can become a popular application on mobile telephones, it will generate its own momentum to make the resources available.

**Coetzee** (2008) feels that countries such as South Africa would benefit from an international address standard in several ways:

- Promoting the development of addressing tools (eg: for geocoding addresses), both commercial and open source;
- Providing consultants with tools that could be re-used at various local authorities, building an address-related skills base;
- Fast-tracking the assignment of addresses in previously unaddressed areas;
- Establishing a common vocabulary for addresses and related concepts;
- Promoting address data interoperability, thus enabling the exchange of address data and facilitating the collation of address data into larger databases, such as for governance in a country (elections, surveys, etc).

For address data bases, Coetzee also proposes using a *data grid*, a form of service-oriented architecture based on web services and free from centralized control, that allows data from multiple organizations and their administrative domains to be presented as a single virtual dataset (see also Coetzee & Bishop, 2008). She concludes that the South African address standard can contribute to the development of an international address standard because of the variety of address types used in the country (Coetzee, 2008).

**Hockaday's** (2008) presentation included an animated clip illustrating the new form of rural addressing in Australia, which is a useful tool for promoting the correct use of address standards and other countries could

consider developing similar promotional material. He pointed out that there was no benefit to Australia or New Zealand in having a new international address standard to replace their existing standards. However, the benefits of an international address standard include providing a consistent method of locating and addressing addresses and facilitating automatic sorting for national and international mail. Australia has found that their address standards have helped emergency services provide quicker responses by re-aligning the catchments for fire stations better and by providing more accurate locations for rural addresses (Hockaday 2008).

**Plews and Kawano** (2008) presented a conceptual framework for the description of Place Identifiers (PIs), which provides a simple, flexible structure that allows each community to use their own identifiers (retaining uniqueness within their respective community), yet facilitating representations of common places between communities. The PI framework defines services for the registration, management, conversion, discovery and exchange of PIs. The PI framework caters for spatial referencing by coordinates and by geographical identifiers, such as addresses. They have discovered that the same place is often described differently between user communities, and feel that the PI reference model could facilitate linkages between different addressing systems. They conclude that there are many issues to be resolved before an international address standard could be developed, and that future workshops such as this one should be planned (Plews & Kawano 2008).

**Anderson** presented on behalf of the Address Standards Working Group (Wells M *et al* 2008), the street, landmark and postal address data standard proposed for the USA. It defines the address elements and attributes needed for database records, data validation and documentation, data exchange and creating mailing lists. It classifies addresses by their internal syntax, rather than their business purpose, and provides an address reference scheme (local rules for assigning new addresses and checking old ones). It provides for geo-referencing addresses to both coordinates and linear referencing. The proposed standard includes metadata and data quality tests. In conclusion, the ASWG believes that address elements vary little from country to country and that syntaxes will vary more, and would like to correspond with other groups following similar approaches to the creation of a national address data standard (Wells M 2008).

**Jones and Lubenow** (2008) discussed the UPU's postal addressing standard (UPU S42) 2006, which uses templates to define an address in a destination country so that it can be used by all the members of the UPU and their postal operators. The templates are described in a human-readable notation and in XML. The international postal addressing standard is an important prerequisite for effective postal operation and interconnecting the global network. Its key benefits are:

- Improves the value of mail as a means of communication;
- Efficient processing of international mail, even to the extent of being as efficient as domestic mail;
- Promotes the compatibility of UPU and international postal initiatives;
- Supports automation compatibility, barcode accuracy, postage payment accuracy, and timely and consistent processing, and reduces operational and delivery costs; and
- Improving the efficiency and reliability of mail enhances the value of mail as a communications medium, resulting in increases in the volume of mail.

They feel that it is essential for any international address standard to be based on address elements to avoid customized parsing of elements for every country, language and script. They conclude by pointing out that without a delivery point data base, users of the UPU S42 templates can identify addresses which are definitely invalid (because they are incomplete or wrongly structured), but with a delivery point database, they can identify valid addresses, so the UPU is helping its members establish databases of postal information including delivery points (Jones & Lubenow 2008).

**Lind** (2008) suggested that an address system is democratic because it is in the public domain; it is useful even for those without technical devices; and it is known and recognized across all age groups, professions, and branches of public management, and across national boundaries. Where they exist, addresses are an essential tool for locating phenomena, events or information important for citizens, businesses and public administration. From the 1980s, the common address data concept and format in Denmark facilitated coordination and data interchange between the population, building and dwelling, and property assessment registers, and from the 1990s the business entity register as well. For example, this enabled censuses to be conducted several times a year, using the registers. However, the common data format does not ensure that the address content is the same across the registers. Their approach has been to treat addresses as independent objects types (as opposed to being attributes or properties of other object types), to which other object types would be linked. He concludes with several key points concerning addresses:

- The authority of the address system needs to be clearly defined (if possible by law) and the custodianship of address data needs to be transparent;
- Address data must reflect the real world addresses;
- Address data must be updated and unambiguous in order to avoid errors, uncertainty and mistakes;
- Address data should be available for all users with as few barriers for use as possible;
- Address data should be standardized and well formed to enable efficient data processing and to provide the best possible competition between different application vendors; and
- Generic regional or global standards should enable use of, and access to, address information seamless across borders and regardless of differences in address schemas, etc (Lind 2008).

Østensen (2008) concluded the workshop by identifying the possible role of ISO/TC 211 in developing an international address standard. ISO/TC 211 has several standards related to addresses, such as ISO 19112:2003, *Geographic information – Spatial referencing by geographic identifiers*. Key issues in the development of an international address standard include:

- The need to address and respect cultural and lingual differences, which could require a framework (abstract) standard at a sufficiently high level;
- The standard should be globally relevant and consider the various national standards and activities, and should not aim to replace working standards;
- It should ensure that the domain is mature enough for standardization and draw on existing good practices, such as from the project EURADIN (EUROpean ADresses Infrastructure);
- There must be a clear scope and justification for the standard.
- The ISO timelines for developing standards need to be considered;

A possibility is to begin with a Stage 0 Review Summary to identify exactly what aspects of addresses should be standardized. These could include an address ontology, information model, encoding and/or access services (Østensen 2008).

## 4. The way forward

Coetzee *et al* (2008a) outlined various organizational routes towards developing an international address standard, such as using industry consortia, inter-governmental agencies or open standards generating bodies, giving benefits and disadvantages for each. They favoured using ISO as they felt that would allow the broadest participation from governments, academia, industry, NGOs, civil society and international organizations such as UPU and the Organization for the Advancement of Structured Information Standards (OASIS). To promote accessibility to the standard documents, they suggested either developing it as an overarching abstract standard, from which national profiles can be developed, or as a joint project with an international organization that makes their standards available for free to the general public. They also recommended that ISO/TC 211 should take the lead, because addresses are a fundamental geospatial data theme and because ISO/TC 211 has already developed several standards directly applicable to an international address standard (Coetzee *et al*, 2008a). As detailed above in Section 3, Cooper (2008) outlined three models that could be used for the international address standard: a toolset, the superset of all other address standards, or the universal interface between other address standards.

The workshop was successful in presenting different viewpoints on addresses and address standards, and also in initiating discussions amongst representatives from parties with an interest in an international address standard. Currently, in collaboration with the UPU, the INSPIRE TWG on Addresses and others, the authors are informally exploring the options for establishing a mechanism within ISO for developing a suite of international address standards. The suite could begin with a reference model for address data and/or the terminology for addresses.

## Acknowledgements

We would like to thank the National Survey and Cadastre of Denmark for sponsoring and hosting the ISO Workshop on address standards, especially Morten Lind and Jan Hjelmager. Parts of this summary have been drawn from our paper *The South African address standard and initiatives towards an international address*

standard, to be presented on 30 September 2008 as part of the academic track at the FOSS4G 2008 Conference, incorporating the GISSA 2008 Conference, in Cape Town, South Africa.

## References

- Coetzee S 2008, 'Address data exchange in South Africa', *ISO Workshop on address standards: Considering the issues related to an international address standard*, 25 May 2008, Copenhagen, Denmark, pp 38-49, University of Pretoria, ISBN 978-1-86854-689-3.
- Coetzee S and Bishop J 2008, 'Address databases for national SDI: Comparing the novel data grid approach to data harvesting and federated databases', *International Journal of Geographical Information Science (IJGIS)*, accepted for publication, to appear.
- Coetzee S and Cooper AK 2007, 'What is an address in South Africa?', *South African Journal of Science*, vol 103, no 11, pp 449-458.
- Coetzee S, Cooper AK, Lind M, Wells MM, Yurman SW, Wells E, Griffiths N & Nicholson MJ 2008a, 'Towards an international address standard', *GSDI 10*, 25-29 February 2008, St Augustine, Trinidad, 30pp.
- Coetzee S, Cooper AK and Lind M 2008b, *ISO workshop on address standards: Considering the issues related to an international address standard*, 25 May 2008, Copenhagen, Denmark. University of Pretoria, ISBN 978-1-86854-689-3, viewed 17 August 2008, [http://www.isotc211.org/address/Copenhagen\\_Address\\_Workshop/workshop.htm](http://www.isotc211.org/address/Copenhagen_Address_Workshop/workshop.htm)
- Cooper AK 2008, 'Overview of an address and purpose of the workshop', *ISO Workshop on address standards: Considering the issues related to an international address standard*, 25 May 2008, Copenhagen, Denmark, pp 3-11, University of Pretoria, ISBN 978-1-86854-689-3.
- Cote A 2008, 'Addressing the Needs of INSPIRE: The challenges of improving interoperability within the European Union', *ISO Workshop on address standards: Considering the issues related to an international address standard*, 25 May 2008 Copenhagen, Denmark, pp 12-22. University of Pretoria, ISBN 978-1-86854-689-3.
- European Parliament, 2007, *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)* [2007] OJ L 108/1, viewed 11 November 2007, [http://inspire.jrc.it/directive/l\\_10820070425en00010014.pdf](http://inspire.jrc.it/directive/l_10820070425en00010014.pdf).
- Hockaday J 2008, 'AS/NZS 4819:2003: Geographic information – Rural and urban addressing and AS/NZS 4590:2006: Interchange of client information', *ISO Workshop on address standards: Considering the issues related to an international address standard*, 25 May 2008, Copenhagen, Denmark. University of Pretoria, ISBN 978-1-86854-689-3.
- Hong S-K 2008, 'Ubiquitous public access and address standards', *ISO Workshop on address standards: Considering the issues related to an international address standard*, 25 May 2008, Copenhagen, Denmark, pp 28-37. University of Pretoria, ISBN 978-1-86854-689-3.
- Jones R and Lubenow J 2008, 'Universal Postal Union (UPU) – International Postal Addressing Standards', *ISO Workshop on address standards: Considering the issues related to an international address standard*, 25 May 2008, Copenhagen, Denmark, pp 90-93. University of Pretoria, ISBN 978-1-86854-689-3.
- Lind M 2008, 'Addresses as an infrastructure component: Danish experiences', *ISO Workshop on address standards: Considering the issues related to an international address standard*, 25 May 2008, Copenhagen, Denmark, pp 94-105. University of Pretoria, ISBN 978-1-86854-689-3.
- Østensen OM 2008, 'ISO/TC211 perspective on an international address standard', *ISO Workshop on address standards: Considering the issues related to an international address standard*, 25 May 2008, Copenhagen, Denmark. University of Pretoria, ISBN 978-1-86854-689-3.
- Plews R and Kawano S 2008, 'A conceptual framework for the description of Place Identifiers', *ISO Workshop on address standards: Considering the issues related to an international address standard*, 25 May 2008, Copenhagen, Denmark, pp 71-79. University of Pretoria, ISBN 978-1-86854-689-3.

- Walker R 2008, 'A general approach to addressing', *ISO Workshop on address standards: Considering the issues related to an international address standard*, 25 May 2008, Copenhagen, Denmark, pp 23-27. University of Pretoria, ISBN 978-1-86854-689-3.
- Wells M, Anderson C, Perkins H, Wells E & Yurman S 2008, 'Developing a Comprehensive Standard for US Address Data', *ISO Workshop on address standards: Considering the issues related to an international address standard*, 25 May 2008, Copenhagen, Denmark, pp 80-89. University of Pretoria, ISBN 978-1-86854-689-3.