United Nations Group of Experts on Geographical Names

GEOGRAPHICAL NAMES – LOCATION IDENTIFIERS: EMBRACING DIGITAL TRANSFORMATION

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Overview

Since the early days of United Nations activities on the standardization of geographical names in the 1960s, the world has experienced enormous advances in technology and in communication media. With these advances, the methods of recording, storing and disseminating geographical names data have changed considerably from handwritten paper records to sophisticated digital databases published on the web through interactive applications. New opportunities and challenges are envisaged through linked open data approaches for geographical name data management. Reliable and authoritative information is still required, but today the demand is for names data to be available in a timely fashion, to be flexible in selection and format to suit user needs, and to be easily linked with other geospatial information. Meeting these requirements, while recalling and respecting the cultural heritage of geographical names, provides ongoing challenges.

The results of technological change

- For centuries, lists of geographical names have been compiled for reference purposes, as for example, indicating results of exploration, for census activities, or as indexes to atlases. These lists using a logical order of geographical names are referred to as **gazetteers** and were traditionally in paper format.
- For much of the twentieth century, offices of national geographical names boards stored their names information in card files and in document folders, and from time to time, published gazetteers of the officially recognized names. Since the 1980s, **national geographical names databases** have increasingly become digital, with a variety of names listings produced from the data files. From the 1990s, UNGEGN has been promoting the establishment of national geographical names websites with querying and download capabilities, to encourage the use of official names in cartographic and Geographic Information System (GIS) products, and as elements of national spatial data infrastructures. In 1998, UNGEGN concluded that the use of the Unicode standard (ISO/IEC 10646) best addressed issues of data compatibility and character display by facilitating the digital exchange of multi-scriptual geographical names data.
- Although many countries have already created complex interactive relational names databases linked to other geospatial information through persistent identifiers, and others have names as attributes to geospatial features as a layer in GIS, many developing countries do not have their geographical names data available in such ways. One group addressing this for Africa is the United Nations Economic Commission for Africa (UNECA). **UNECA** is supposed to develop a free **database/gazetteer software** that provides compatibility of databases between African countries and can also be customized to address the data needs of individual countries.
- Most geographical names databases today still use the simple **single-point sets of coordinates** for locating a named feature. Geographical names as part of a holistic geospatial information management might require delineation of the extents of features to enable more accurate application and analysis of named features.

Ongoing challenges and initiatives

- Geographical names data is usually collected and made available at the national or sub-national level. However, today there is a considerable need for data covering **multi-national areas,** regardless of political boundaries, for instance, to facilitate humanitarian aid following natural disasters and in response to different cross-border initiatives.

- The UNGEGN Secretariat is hosting UNGEGN's multilingual, multi-scriptual world geographical names database on the web, titled **World Geographical Names Database**. In map or tabular format, users are able to find country names in the six United Nations languages as well as in the language(s) of the countries themselves. Names of capitals and cities with a population over 100,000 are also included in this online database.

  (See http://unstats.un.org/unsd/geoinfo/geonames/)

- In Europe, several initiatives have been initiated or are ongoing to **network national geographical names databases** across the continent using web services technology. The responsibility for maintaining the data shall continue to rest with the individual countries, while users will be able to access multi-national data with common standards, through a central server. Names of features crossing international boundaries are coordinated, and a variety of exonyms, unambiguously linked to the officially recognized endonyms, are also available to database users. (For details see https://www.mapsforeurope.org/datasets/open-gazetteer) Furthermore, in Europe a Directive for the Infrastructure for Spatial Information in the European Community (INSPIRE) exists which includes common Implementing Rules (IRs) for geographical names. (For details see https://inspire.ec.europa.eu/id/document/tg/gn)

  UNGEGN's **Working Group on Geographical Names Data Management** provides information for the creation, maintenance and outputs of geographical names data and aspects of data exchange formats and standards and contributed to the UNGEGN publication *Technical reference manual for the standardization of geographical names*. Apart from being the link for UNGEGN with international bodies involved with technical database standards, the Working Group faces challenges at two different levels: (a) the exchange of forward-thinking ideas (like 'linked data') and best practices among countries that have highly developed national spatial data infrastructures comprising the provision of national geographical names data for multi-purposes, and (b) addressing the needs of developing countries with little or no database capabilities. (See https://unstats.un.org/unsd/ungegn/working_groups/wg2.cshtml)

- The UN initiative on **Global Geospatial Information Management** (GGIM), provides a forum for UN member states to discuss the broad spectrum of critical issues involved with effective use of geospatial information to address problems of major global significance. For any spatial data infrastructure, geographical names are key entry points, and UNGEGN and UN-GGIM have an active programme of collaboration (See http://ggim.un.org)

- The United Nations requires up-to-date data to provide coordinated information for relief efforts. So UNGEGN has been actively encouraging countries to establish national names authorities and national geographical names databases, and as well as GGIM, has been supporting the work of UN-Second Administrative Level Boundaries (**SALB**) (See https://www.unsalb.org/)

- A worldwide challenge for society today is the realization of optimum use of geospatial capabilities through internet services. Spatial data infrastructures have mainly been aimed at managing geospatial data, rather than the broader need of managing data spatially. It is said that 80% of information influencing our daily lives has spatial dimensions. It is preferable that data be collected once - at the local level - and this has given rise to **crowd-sourcing and wiki approaches** to data gathering. To address this issue, UNGEGN and national authorities need to increase public awareness of the benefits of standardization and address issues of accepting or rejecting these 'new' geographical names.

- **Linked Data** is gaining increasing use across the world and will support UNGEGN's vision of making standardized geographical names more easily and more widely accessible for national and international use and re-use. It can also make the work of names authorities and geographical names experts much easier, and open up opportunities for new applications or streamlining production and maintenance of existing maps and gazetteers.