



UNITED NATIONS
ECONOMIC AND SOCIAL COUNCIL

Dist.:
LIMITED

E/ECA/NRD/CART/200
01 February 1993

Original: ENGLISH

Economic Commission for Africa

Eighth United Nations Regional
Cartographic Conference for Africa

Addis Ababa, Ethiopia
22-27 February 1993

RECENT AND CURRENT ACTIVITIES OF ICA
IN THE FIELD OF GEOGRAPHICAL INFORMATION SYSTEMS

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International Cartographic Association

The International Cartographic Association has been created in 1959 as a non-governmental organization. It has now 70 national members which are national cartographic associations and 10 affiliate members. Its aims are:

- a) to contribute to the understanding and solution of world-wide problems through the use of cartography in decision-making processes;
- b) to foster the international dissemination of environmental, economic, social and spatial information through mapping;
- c) to provide a global forum for discussion of the role and status of cartography;
- d) to facilitate the transfer of new cartographic technology and knowledge between nations, especially the developing nations;
- e) to carry out or to promote multi-national cartographic research in order to solve scientific and applied problems;
- f) to enhance cartographic education in the broadest sense through publications, seminars and conferences;
- g) to promote the use of professional and technical standards in cartography.

ICA works through international cartographic conferences every two years and on a continuous basis through its commissions and working groups which receive terms of reference from the General Assembly every four years. With the commissions and working groups, ICA is an active network of and between cartographers belonging to the main academic, scientific, technical and commercial organizations all over the world.

ICA has links with international bodies. It has been granted non-governmental organization of the United Nations Economic and Social Council and of UNESCO, and Scientific Associate of the International Council of Scientific Unions (ICSU).

Four ICA commissions are directly involved in geographical information systems (GIS): the standing commission on Education and Training, the standing commission on advanced Technology, the commission on Standards for the Transfer of Spatial Data, and the commission on Spatial Data Quality. For each one will be presented the recent activities, the terms of reference received in October 1991 and the current activities and projects.

1. Standing Commission on Education and Training

The Standing Commission on Education and Training has been working in the past in two areas:

- a) the publication of a handbook for cartographic technicians
- b) the organization of seminars.

The handbook 'Basic Cartography for Students and Technicians' consists in two volumes and one exercise manual. It has been published in English and the first volume has been translated into Spanish, Tahiti, Chinese and Hindi. The revision of the first volume is in process and a third volume mainly dealing with modern aspects of Cartography will be published in 1993.

The Commission has been in charge of seminars in various countries with large international attendance. Since 1984 three seminars took place:

- a) a seminar on the Education of Cartographers in Rabat, Morocco;
- b) a seminar on Advanced Cartographic Education and Training in Wuhan, China;
- c) a seminar on Basic Cartography in Bangkok, Thailand.

For the preparation of such seminars and for helping in the coordination of lecturers, expert seminars have also been held since 1988 and proceedings have been published for each of them:

- a) seminar on Teaching computer assisted Map Design in Munich, Germany;
- b) seminar on Teaching Cartography for Environmental Information Management in Enschede, the Netherlands;
- c) seminar on Teaching the Interface between Cartography, Remote Sensing and GIS in Budapest, Hungary;
- d) seminar on Teaching the History of Cartography in Uppsala, Sweden;
- e) seminar on Surveying and Mapping aspects of GIS and Visualisation in Washington, U.S.A.

These seminars combined methodological papers for the teachers, papers on theoretical and technical issues, and presentation of actual work in each field. They have in mind a technological transfer through the cartographic community and especially towards developing nations.

The terms of reference of the commission on education and training for the period 1991-1995 are:

1. To revise, re-edit and update the currently available English language texts relating to Basic Cartography, and to expand the scope of the series by the preparation of a third volume.
2. To support and encourage the early publication of the Basic Cartography series in the other official ICA language (French).
3. To conceptualize, encourage and assist in the implementation of workshops and seminars for the updating of current cartographic teaching programmes, stressing the role of the cartographer.
4. To foster student awareness and appreciation of the cartographic potential afforded by the continuing development and application of geographical information systems.

The current activities mainly deal with the revision and the completion of the Basic Cartography series. A lot of experts and training seminars are scheduled in the next four years on Surveying and Mapping Aspects of GIS and Visualization, on Teaching Map and Spatial Data Use, on Cartographic Education in Europe, on Teaching the History of Cartography, on Advanced Cartography and on Teaching Basic Cartography and GIS.

2. Standing Commission on Advanced Technology

In 1991 and as a result of a four-years effort, the commission on advanced Technology has published 'Advances in Cartography', a 252-pages book with eleven chapters on the main topics of the discipline in the digital age: Prospects for the impediments against a new cartography in the 1990s; Design of cartographic databases; Development of cartographic data bases; Cartographic data management; Spatial query languages; Issues of quality and uncertainty; Cartographic database exchange standards; Vehicle navigation systems; Computer-assisted map design; Cognitive cartography: a new heart for a lost soul; Institutional and societal components of cartographic research.

The terms of reference of the commission on Advanced Technology for the period 1991-1995 are:

- a) Identify research and development topics important to the continued advancement of cartography and promote scientific interchange through participation in and sponsorship of conferences and symposia.
- b) Promote and develop publications relevant to advanced cartographic technology. These publications will include collections of research papers, monographs, bibliographies, or other work as deemed appropriate by each working group.
- c) Continue the Commission method of utilizing working groups to focus on specific themes, involve interested researchers and generate results for ICA in the following fields:

1. generalization;
2. multimedia applications for cartography,
3. data encoding issues for global GIS,
4. environmental applications of GIS,
5. temporal issues in GIS design,
6. base design,
7. social implications of advanced technology.

3. Commission on Standards for the Transfer of Spatial Data

As a working group of the commission on Advanced Technology, the now commission on Standards for the Transfer of Spatial Data has published in 1991 'Spatial Database Transfer Standards: Current International Status'. After an introduction on the approaches to spatial database transfer standards, this monograph reviews the progresses in various countries: Australia, Austria, Canada, China, Finland, France, Germany, Hungary, Japan, New Zealand, Norway, South Africa, Sweden, Switzerland, United Kingdom, United States, as well as among two international bodies: CERCO (Comité Européen des Responsables de la Cartographie Officielle) and DGIWG (Digital Geographic Information Working Group, made of representatives of NATO members).

The terms of reference of the commission on standards of the Transfer of Spatial Data for the period 1991-95 are:

1. To exchange information and reports by the ICA member nations and relevant international bodies concerning the development of standards for the transfer of digital spatial data.
2. To serve as a focal point of information concerning digital spatial data transfer developments throughout the world.
3. To identify research needs that arise from the standard process.
4. To organize reporting sessions on the Commission's activities at the 1993 and 1995 ICA Conferences.
5. To develop and publish: a) criteria relating to standards for the transfer of spatial data; and b) descriptions of the characteristics of national and international standards in terms of those criteria.

The criteria will be organized in the following way:

1. administrative information,
2. transfer context,
3. transfer scheme,
4. conceptual data model scheme,
5. transfer mechanism,
6. transfer elements,
7. update information,
8. quality information,
9. feature information,
10. attribute information.

A draft paper has been discussed in Washington DC in August 1992 in order to publish a document during Spring 1993. Anticipated work for 1993-1995 involves preparation and publication of descriptions of each standard based on the published criteria.

4. Commission on Spatial Data Quality

According to the terms of reference for the period 1991-1995, the commission on Spatial Data Quality will develop, document, and publish criteria and methodology for assessing the quality of digital spatial data sets:

1. Develop and document a comprehensive set of data quality criteria.
2. Develop and document a standardized rating scheme against those criteria.
3. Develop a methodology for data quality testing.
4. Publish an ICA manual for assessing digital spatial data quality.

As a background of these activities is the scope of cartography in the new age of the information era. During the last General Assembly of ICA (Bournemouth, UK, 1991), a new definition has been proposed for cartography: 'the discipline dealing with the conception, production, dissemination and study of maps', where a map is being defined as 'a symbolised image of geographical reality, representing selected features or characteristics, resulting from the creative effort of its author's execution of choices, and thus designed for use when spatial relationships are of primary relevance'. Both definitions include traditional or paper-driven cartography as well as digital cartography and geographic information systems.

With GIS and at least in a first period, collecting and exchanging information seem to eclipse the capability of evaluating the information. However one aim and experience of cartography is the analysis of information at various stages: assessment of data sources, modelling of located phenomena, selection and representation of coded objects, visualization. We try in our activities to combine the technology and the man: the technology is a tool more and more efficient but can only process and present the information decided by a man for a

man. Assessment, modelling, selection, codification are still the primary skills of cartographers. But cartographic data are not intended for archives in libraries and museums. They are intended for decision-making processes, and with new technologies the users of GIS will be decision-makers who are not professional cartographers.

The International Cartographic Association and its commissions, which gather both technologists and cognicians, is prepared and willing to contribute in the dissemination of cartographic knowledge and tools towards the wide community of decision-makers and the public-at-large. It is a clear way to demonstrate the social value of cartography to mankind.

If this 8th UN Regional Cartographic Conference for Africa supports the proposal, the International Cartographic Association will be very glad to contribute to the organization of a seminar on Geographical Information Systems in the African Context, with the experience and expertise of its commissions members. The topical to be covered would then have to be precisely defined from the discussions and results of this Conference.